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Analyzing and Characterizing Why Men Seek Care for Lower Urinary Tract Symptoms

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Abstract

Purpose of Review The goal of this paper is to summarize existing literature on prevalence of lower urinary tract symptoms (LUTS) that may be attributed to benign prostatic hyperplasia (BPH, LUTS/BPH), factors associated with seeking treatment and treatment success, and subjective and objective methods of evaluating LUTS.

Recent Findings Men primarily seek treatment for LUTS/BPH because bother overcomes barriers to treatment. Factors such as severity, bother, or persistence of symptoms primarily motivate individuals to seek treatment, while low-symptom severity mainly leads individuals to not seek treatment. Among men that seek treatment, nocturia and storage symptoms predominate. LUTS are assessed with self-report questionnaires; subjective evaluations translate moderately well to objective measurements of LUTS severity.

Summary Current symptom classifications and patient groupings may be overly simplified and not evidence-based. Further studies evaluating novel symptom clusters and patient-centered BPH treatment approaches can guide future treatment.

Keywords Lower urinary tract symptoms · Benign prostatic hyperplasia · Care-seeking behavior

Introduction

Lower urinary tract symptom (LUTS) is an umbrella term with many causes including neurologic, prostate changes, bladder dysfunction, and other age-related changes. While benign prostatic hyperplasia (BPH) is commonly used interchangeably with LUTS in older men, this term is narrowly defined as a histologic diagnosis characterized by progressive, non-malignant growth of prostatic cells. While most of the pathology in at least in older men is LUTS attributed to BPH (LUTS/BPH), our understanding of the interaction between the prostate and the nuances of voiding dysfunction have expanded recently.

Classically, authors have described LUTS using traditional characterization of storage, voiding, and possibly post-micturition categories. Storage symptoms (previously described as "irritative") include nocturia, frequency, and urgency. Voiding symptoms include hesitancy, intermittency, double voiding, and incomplete emptying and were previously called "obstructive" symptoms. While not always acknowledged, post-micturition symptoms (e.g., post-void dribbling) may be included. While these are certainly still applicable, these categories are broad and do not exclusively group symptoms by pathologic etiology. For instance, frequency may be due to bladder overactivity (classically a cause of storage symptoms) or due to a need for frequency voiding due to incomplete emptying (part of voiding symptoms).

The reason for this review is to summarize existing literature on factors that influence individuals to seek treatment for LUTS/BPH, factors that impact success of treatment, and methods by which we evaluate the subjective LUTS experience and correlate these with objective measurements.

Epidemiology of BPH, LUTS, and LUTS/BPH

BPH is an extremely prevalent histologic finding among aging men and is a significant cause of disease burden. Several studies have indicated that the prevalence of BPH increases with

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age particularly as men enter their 50s and 60s. Historical reports have estimated that approximately 50% of men have a pathological diagnosis of BPH by the time they reach an age range of 51–60 and that this percentage increases at older age ranges with almost all men over the age of 80 demonstrating glandular hyperplasia [1].

While not all men with histologic BPH have LUTS, the prevalence of LUTS among men is common and frequently attributed to BPH. The landmark EPIC study from 2004 sought to estimate prevalence of LUTS among men and women in 5 countries (Canada, Germany, Italy, Sweden, and the UK). Almost 2/3 of men over the age of 40 surveyed in this study expressed having at least one urinary symptom with older age making men more likely to report LUTS [2].

More recent works have expanded on disease prevalence. A 2016 study on prevalence and incidence rates of LUTS/BPH approximated that the prevalence among men over 50 years old was at least 50%, while prevalence rates of men over 70 years old was over 80% [3]. In another study assessing men with at least one urinary symptom, prevalence was similar in that 80% of men reported symptoms by the age of 70 [4]. When looking at treatment requirements, older men are more likely to receive treatment for LUTS/BPH [5]. A large systematic analysis on the Global Burden of Disease published in 2012 demonstrated that BPH and associated LUTS were one of the top 25 most common medical conditions [6]. However, cross study comparisons and amalgamation of data remain difficult due to variance in assessment methods and different definitions of LUTS/BPH between studies [3].

Factors Are Associated with Seeking Care for LUTS

When patients are asked to characterize their chief LUTS complaint (CLC), they are most likely to indicate that nocturia is what drove them to see the urologist. As nocturia's etiology is complex and may be associated with several comorbidities or behavioral issues, current treatment regimens often fail to alleviate symptoms with nocturia often being persistent or recalcitrant to treatment [7•]. Among study respondents in EPIC, nocturia was the single most reported urinary symptom among men, even when definition was changed from urinating 1 time per night (48.6% of all men of all ages) to 2 times per night (20.9% of same pool of individuals). Interestingly, men with storage symptoms more commonly reported having LUTS than those primarily suffering from voiding or post-micturition symptoms [2].

Other studies have also demonstrated that nocturia is frequently a major motivator for pursuing treatment, or indirectly support this claim by showing that other urinary symptoms are not often the primary impetus for seeking treatment. Mild hesitancy was found commonly in a survey of Finnish men; however, it was not associated with significant bother or motivation to seek treatment [8]. Another study indicated that elevated post-void residual (PVR) levels are only loosely associated with seeking care for LUTS, suggesting that incomplete emptying is not always a good indicator of LUTS severity [9]. Together, these studies show that urinary hesitancy and incomplete emptying of the bladder (both voiding symptoms) are often well tolerated by patients. Other studies have indicated that storage symptoms are considered more bothersome by men than voiding symptoms [10].

Bother and persistency of symptoms are usually associated with seeking care [7•, 11]. However, there are numerous factors that impact the ability or effort for individuals to seek care for treatment of LUTS with demographic factors often predicting care-seeking behavior. In an interview-based study, participants reported a variety of reasons they did or did not seek care for their LUTS. Authors found the primary reason individuals seek treatment for urinary symptoms is that their symptoms are new, continuing, or becoming bothersome to the point that their LUTS are impacting their quality of life. Low-symptom severity and cost were found to be major factors for seeking treatment along with the perception that treatment benefits would not outweigh the costs or side effects of treatment. Additionally, respondents reported fear of seeing a provider as the provider may uncover more significant underlying issues. Griffith et al. also showed that low-symptom severity, believing that symptoms were normal, or thinking that their symptoms were untreatable, is another significant predictor of individuals not seeking treatment [11].

In a study looking at patient demographics, Liu et al. demonstrated that among a cohort of men who had worsened LUTS over a year long period without seeking care, there was higher proportion of men of non-white race and men who had low levels of education. These findings imply that these demographic factors might be barriers to seeking treatment [12].

What Are Common LUTS Comorbidities?

There are several common comorbidities associated with onset, severity, and persistence of LUTS/BPH. Baseline patient factors and comorbidities associated with more severe LUTS bother for men are non-white race, hypertension, life stress, worse baseline urinary frequency, and urge incontinence [12]. Moreover, worsened LUTS over time is more likely to occur among men who are non-white or diabetic [12].

Other studies have also demonstrated a possible connection between cardiovascular disease and LUTS [13]. These conditions share several risk factors and are both associated with metabolic syndrome; however, these findings are largely a correlation and not a causation at this time. The interrelation between CVD and LUTS can potentially be used as risk factors for each condition, likely due to their mutual relationship with metabolic syndrome [13].

Have We Been Characterizing LUTS Incorrectly?

Self-reported symptom assessments allow physicians to evaluate a patient's perceived LUTS severity, persistence, and impact of their urinary symptoms on their quality of life [7•, 9, 10, 12, 14••, 15–18].

More recently, several studies from the Lower Urinary Tract Dysfunction Research Network (LURN) have identified ways to categorize men with LUTS into novel diagnostic clusters identified as LUTS patient subgroups. Four distinct symptom clusters have been identified that are different from traditional diagnostic categories [14••]. These clusters are as follows: M1, who mainly demonstrated symptoms of hesitancy, straining, weak stream, intermittency, incomplete emptying, frequency, and nocturia; M2, who primarily had post-micturition symptoms of post-void dribbling and post-void urinary incontinence as well as weak stream; M3, who expressed having frequency and nocturia without urinary incontinence; and M4, who predominantly reported severe frequency, urgency, and urge incontinence. The clusters described in this study were characterized based on collections of symptoms that were commonly shared between large groups of men in the study, as well as differences in the severity of those symptoms [14••].

Traditional symptom classification of LUTS using broad categories like storage, voiding, and post-micturition can often lead to treatments that are not addressing the primary complaint. These new clusters defined by the LURN, while not drastically different from our classic groupings, introduce different way of categorizing symptoms based on how often they present together, which could be helpful for guiding future treatment [14••]. Other studies examining these novel symptom clusters have indicated that improvement in LUTS via standardized treatment shows varying degrees of improvement between these subgroups.

Another LURN study from 2019 sought to explore changes in symptoms after an extended treatment course in individuals who fell into these novel groups. Investigators in this study compared patients by symptom cluster and treatment received over the course of 12 months. Their findings demonstrated that different symptom clusters showed different degrees of improvement depending on the cluster and the treatment. For example, individuals in clusters M1 and M4 had higher percentages of individuals reporting improvement in symptoms after 12 months of treatment with any LUTS medication. However, individuals in cluster M3 had the highest percentage of individuals reporting improvement in symptoms after 12 months of treatment with physical therapy [15]. While specific treatments that cause significant LUTS improvement have not been identified for specific novel clusters, the varying degree of rectification with a standardized treatment indicates a need for further study to identify differences between these groups. Further information on this topic will help delineate specific treatment regimens that work best for each novel cluster to improve clinical outcomes.

The American Urological Association Symptom Index (AUA-SS) and LUTS tool are traditional symptom indices that allow men to express how bothersome their LUTS are by asking them for 7-day recall (LUTS tool) or 4-week recall (AUA-SS) of their urinary symptoms [16]. One study found that when asked to recall urinary symptoms in the last week or the last month, patients demonstrated recall reports that focused more on average experience of a given urinary symptom in reporting, rather than the most recent/worst experience. These findings demonstrate evidence that patients do not use mental shortcuts when reflecting on the severity of their urinary symptoms on the AUA-SS and LUTS tool questionnaires [16]. McVary et al. found that the AUA-SS scores for storage and voiding symptom categories are reliable in evaluating therapeutic response in patients with BPH/LUTS. This study also conveyed that storage symptom improvement noted on the AUA-SS was the primary cause of improved symptom and bother scores [10]. As a result, this study suggests that while the AUA-SS is a relatively reliable tool for assessing LUTS/BPH improvement after treatment, the questionnaire overrepresents voiding symptoms. One downfall of the AUA-SS is that it only provides an overall quantitative value for voiding symptoms accompanied by a QoL question that simply asks patient to describe if their QoL is impacted by all their voiding symptoms [10]. This questionnaire does not discern if the reason patient seeks care is because of several symptoms or because they have one particularly bothersome chief LUTS complaint that treatment should be focused on [7•]. Additionally, the clinician should consider that the AUA-SS does not specifically ask about incontinence which is an obviously troubling symptom for patients.

CASUS is an attempt at a more comprehensive LUTS symptom score questionnaire than the AUA-SS. CASUS is meant to provide a wider range of self-reported LUTS experiences and help identify symptom subgroups [17]. This self-report questionnaire includes a collective of questions about urinary symptoms based on the AUA-SS, LUTS tool, and other studies. The researchers who created CASUS also established new questions not previously on other self-reported LUTS assessments. These novel questions dive deeper into nuanced LUTS than other questionnaires by asking about experiences such as sensation-related symptoms, rather than only assessing standard storage, voiding, and post-micturition symptoms [17]. CASUS utilizes a new subjective assessment method that shows promise for aiding in future LUTS research and pinpointing clinically important patient subgroups [17].

The LURN symptom index (LURN-SI) is an alternative LUTS self-report assessment created by the LURN that is based on elements from the CASUS, AUA-SS, and UDI-6 (women only). The LURN-SI is meant to be an abridged version of the extensive CASUS questionnaire that also integrates male urinary symptom assessments from the AUA-SS with female urinary symptom assessment from the UDI-6 into a single questionnaire [18]. Upon application of the LURN-SI in men, correlations have been relatively high between findings with the LURN-SI scores and AUA-SS scores. Therefore, if the AUA-SS is the benchmark to compare other LUTS assessments to, the LURN-SI demonstrates it is a relatively accurate questionnaire for assessing severity of LUTS in men [18].

These new symptom characterizations and assessment tools can help delineate symptom subgroups that are different from the traditional categorizations of storage, voiding, and post-micturition symptoms [14••, 17]. As previously discussed in this review, the LURN observational studies used the AUA-SS and LUTS tool to demonstrate symptom clusters that were distinctly different from traditional symptom subgroups in either of these questionnaires [14••]. Furthermore, the CASUS study established a novel, comprehensive symptom score based on the AUA-SS, LUTS tool, and aspects of symptoms not measured in any known symptom score questionnaire. Of note, preliminary studies using CASUS have revealed previously unidentified sensation-related and incontinence-related LUTS subcategories that were significant in women but not in men [17].

Do Objectives and Subjective Assessments of LUTS Show Similar Results?

Symptom score questionnaires are given to patients to assess severity and characteristics of their LUTS and see if these assessments align with objective measurements like uroflow, post-void residual, or urodynamics. This combination of subjective and objective measurements can then be used to guide future treatment. Depending on an individual patient's presentation, symptom scores can be a moderately reliable assessment of symptom severity and help to identify specific symptoms that are most bothersome in a patient; therefore, these assessments may translate well to objective measurements of LUTS severity [10, 16]. Symptom score reports are subjective measurements of LUTS, while voiding diaries and office testing are objective measurements of LUTS. Therefore, it is reasonable to question if findings match from these different types of assessments.

Voiding diaries are daily logs of urinary output and fluid intake. These diaries assess voiding patterns and can correlate these with fluid intake. These assessments do not have a recall period because the patient needs to record information in real time. While voiding diaries provide an objective measurement, these place a burden on patients to accurately record this data. Flynn et al. assessed concordance between voiding diaries and recall reports (AUA-SS and LUTS tool) taken over the same reporting period. Authors found relatively high correlations in symptom severity between symptoms reported in daily voiding diaries and in recall reports for both men and women using either the AUA-SS or LUTS tool. This demonstrates that, in general, findings from subjective recall questionnaires match objective findings from voiding diaries [16].

Post-void residual (PVR) measurements are an office assessment using ultrasound or straight catheterization to determine residual urine left in the bladder after voiding. PVRs are an objective measurement and are particularly good for assessing severity of incomplete emptying of the bladder [9]. Peterson et al. compared PVRs to the LUTS tool and AUA-SS results of patients, hypothesizing that a given patient's definitive PVR result would not necessarily indicate more severe symptom scores. This study compared patients from the LURN database (individuals with LUTS) to patients from RELIVE and EPI (individuals without LUTS) to see if there was any notable difference in their PVRs [9, 19, 20]. They notably determined that men in the LURN symptomatic group demonstrated weak correlations between elevated PVRs and incomplete emptying on the AUA-SS as well as weak stream on the LUTS tool, but most other symptoms on self-assessments from men in this cohort showed no correlation or a negative correlation with elevated PVRs. Overall, the study determined that PVR assessments demonstrate results similar recall questionnaires for certain symptoms (notably voiding/post-micturition symptoms), but not for many other symptoms [9].

Conclusion

LUTS/BPH is a highly prevalent condition often with significant impact on quality of life. A growing body of literature demonstrates new and innovative ways to better characterize and quantify urinary symptoms. Demographic factors, specific symptoms, symptom severity along with a variety of more nuanced patient factors predict seeking care for LUTS. Future studies on LUTS and LUTS/BPH will further elucidate why men seek care for LUTS/BPH and how treatment options may better address specific and troubling individual symptoms.

Compliance with Ethical Standards

Conflict of Interest Landau: none.

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Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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- •• Of major importance

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