

Behavioral Interventions for Managing Lower Urinary Tract Symptoms in Men: A Literature Review from 2018 to 2024

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ABSTRACT

Lower Urinary Tract Symptoms (LUTS) largely affect aging men, leading to significant healthcare burdens. Behavioral intervention to LUTS has been used widely in clinical settings, but its effectiveness has yet to be fully understood. This review study aimed to evaluate evidence regarding the effectiveness of behavioral interventions to LUTS in men between 2018 and 2024. A search of the literature was performed using MEDLINE, PubMed, and ClinicalTrials.gov databases, and six relevant studies that focused on self-management strategies with or without pharmacotherapy were identified and reviewed. The evidence shows that behavioral interventions such as symptom self-management through lifestyle modification exhibit promising results in alleviating LUTS severity and symptoms of voiding frequency, nocturia, and postmicturition dribble. However, existing evidence is quite limited, and this reduces confidence in the observed effectiveness of behavioral interventions. Future investigation is warranted and should prioritize methodological rigor such as manualized intervention protocol, unbiased study designs, larger sample sizes, and standardized outcome measures to strengthen the development, implementation, and evaluation of behavioral interventions to LUTS in men.

Keywords: Lower Urinary Tract Symptoms (LUTS); Behavioral intervention; Self-management; Men's health

INTRODUCTION

Lower Urinary Tract Symptoms (LUTS) are a cluster of chronic urinary disorders that affect nearly half of the world population and are prevalent in aging men [1-4]. By the age of 60, nearly 30% of all men experience LUTS due to Benign Prostatic Hyperplasia (BPH) [5]. Unresolved LUTS are associated with increasing urinary retention, infections, hospital visits, rising healthcare costs, reduced productivity, and worsening quality of life for patients [6-8]. Behavioral interventions that modify lifestyle to foster symptom self-management provide an alternative treatment approach to medications. A systematic review of studies published between 2000 and 2017 concluded that behavioral treatments had shown promising results in alleviating LUTS, but the evidence was limited, as only two clinical trials and a few other studies had tested a behavioral intervention to men's LUTS [9]. Because behavioral treatments are noninvasive, low cost, and can be effective, we have reviewed

the literature between January 2018 and March 2024 in order to evaluate the advancement of behavioral treatments for LUTS in men.

LITERATURE REVIEW

A rapid review of the literature from January 2018 to March 2024 was performed by two reviewers that selected articles and extracted data in accordance with the PRISMA statement. Eligible studies consisted of self-management (behavioral) interventions targeting men's LUTS. Studies were excluded if they contained a cancer diagnosis, pediatrics, studies not published in English, female participants, and non-human trials. The search encompassed MEDLINE, PubMed, and ClinicalTrials.gov databases, employing specific search terms to identify relevant literature. A total of 278 articles were initially retrieved, with subsequent screening resulting in the exclusion of 233 studies during title and abstract review. Further exclusion of

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additional studies upon full-text review left 6 articles for inclusion in the review shown in (Figure 1).

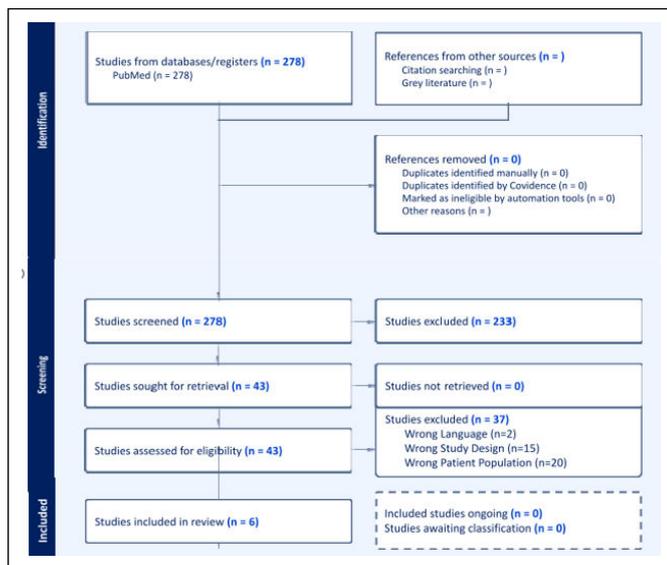


Figure 1: Process of study identification and selection.

RESULTS

Behavioral intervention and self-management

Two studies examined the effect of behavioral intervention on LUTS severity. In a systematic review and meta-analysis study, Albarqouni and colleagues evaluated the effect of self-management alone or combined with drug therapy in comparison with a usual care or drug therapy alone [10]. Based on analyses of 8 Randomized Clinical Trials (RCTs) including 1,006 adult men, self-management interventions demonstrated a clinically significant reduction in International Prostate Symptom Score (IPSS) at 6 months compared to usual care (MD= -7.4, 95%, CI: -8.8 to -6.1) and showed similar effectiveness to drug therapy at 6 to 12 weeks (MD=0.0, 95%, CI: -2.0 to 2.0). Additionally, when added to drug therapy, self-management provided an additional benefit at 6 weeks (MD= -2.3, 95%, CI: -4.1 to -0.5). The evidence was deemed to have moderate quality and supports the effectiveness of self-management interventions for treating LUTS in men.

TRIUMPH study is a two-arm cluster RCT that was carried out in 30 primary care practices in the United Kingdom [11]. It examined the effectiveness of a standardized care intervention for treating LUTS in 1,077 men. The intervention arm participants received a manualized booklet containing standardized advice on symptom self-management from a health care provider and were followed up over 12 weeks, and the control arm participants had usual care. Study results showed a statistically significant difference in IPSS at 12 months; the intervention arm showed a lower score, indicating less severe symptoms and a small benefit of the intervention (adjusted MD=-1.81 points, CI: -2.66 to -0.95, $p<0.001$). Secondary outcomes, involving patient-reported urinary symptoms, quality of life specific to LUTS, cost savings, and perception of LUTS, also showed a positive effect attributing to the intervention.

Managing specific lower urinary tract symptoms

Three studies examined behavioral interventions to specific symptoms of nocturia, postmicturition dribble, and overactive bladder. In a systematic review of treatments for Primary Postmicturition Dribble (PMD) in adult males, Albakr, et al., analyzed four clinical trials comprising 344 patients without prior prostate/urethral surgery [12]. Two of the four trials compared physical therapy (e.g., pelvic floor muscle exercises and urethral milking) and counseling (lifestyle advice). One trial showed that 75% of patients in the intervention group (pelvic floor muscle exercises) reported no PMD at 6 months compared to no improvement in the control group (counseling). Another trial showed that both intervention arms (urethral milking and pelvic floor muscle exercises) improved PMD, albeit pelvic floor muscle exercises ranked superior from the urethral milking arm. The control group (counseling) showed no improvement. Findings suggest that behavioral modifications are effective at reducing PMD volume.

Miller, et al., examined the effectiveness of pharmacological therapy plus behavioral therapy vs. behavioral therapy alone [13]. Urinary diaries from 93 patients were retrospectively reviewed with 156 diaries taken from patients only prescribed behavioral modification and 57 diaries taken from patients prescribed at least one LUTS drug in addition to behavior modification. Although improvement in 24-hour urinary frequency supported pharmacotherapy ($p=0.01$), there was no significant change of nocturia in either group.

An RCT across three sites led by Burgio, et al., compared the efficacy of combined behavioral and drug therapies with each therapy alone for treating Overactive Bladder (OAB) symptoms in men aged 40 years or older that had urinary urgency voiding 9 or more times in 24 hours [14]. There was a significant reduction in voiding frequency in all three groups ($p<0.001$ per group) and in the mean frequency of nocturia in all groups ($p<0.001$). However, the combined therapies resulted in greater reductions in voiding frequency than did drug therapy alone ($p<0.001$), although it did not significantly differ from behavioral therapy alone ($p=0.19$). The voiding frequency was significantly lower in the behavior-alone than the medication-alone groups ($p<0.001$). Overall, combined pharmacological and behavioral therapies produced a greater improvement in OAB symptoms than pharmacological therapy alone, but not different from behavioral therapy alone.

Physical activity

Silva, et al., reviewed 6 clinical trial studies that compared physical activity with watchful waiting or alpha-blockers on treating moderate to severe LUTS among a total of 652 men aged 40 and older [15]. Four studies used PFME as the physical activity and two other studies used Tai Chi or intense exercise. The length of interventions ranged from 2 to 12 months. Although the studies have shown changes in symptoms scores for LUTS, the authors concluded that they have low confidence in the effectiveness of physical activity on treating LUTS, because the quality of evidence from these studies was very low

due to subject selection bias, attrition, lack of proper blinding, and reporting bias.

DISCUSSION

This review study presented evidence in favor of a behavioral intervention approach to LUTS in men. Albarqouni et al.'s meta-analysis of 8 RCTs provided best evidence for the effect of behavioral interventions on reducing the severity of LUTS. Moreover, the evidence suggests that self-management of LUTS mitigates nocturia, voiding frequency, and postmicturition dribble-dribble, which are of the most bothersome symptoms. These findings are largely consistent with a body of literature regarding the effectiveness of behavioral intervention to urinary incontinence in prostate cancer patients. In this literature, an underlying mechanism of behavioral intervention has begun to emerge. An RCT study has shown that self-efficacy (i.e., learned confidence in self-management) and social support were significantly and independently associated with reduction of urinary incontinence in prostate cancer patients that received surgery and/or radiotherapy [16]. It was hypothesized that confidence-led continuing pelvic floor muscle exercises likely resulted in muscle-strengthening and thus improved urinary function, and this behavior can be enhanced by gained problem-solving skills, social support, and especially, peer support. The implication is that social support facilitates social learning of lifestyle modification and should be incorporated into the existing behavioral intervention approach to LUTS in men.

CONCLUSION

Existing evidence supports behavioral interventions for managing LUTS in men. However, a major study limitation is that some reviewed studies had heterogeneous study samples of men whose LUTS might not be fully attributed to aging-related BPH. Further, in this rapid review, we did not fully appraise the bias inherent in each reviewed study. The main lesson we learned is that studies of the efficacy of behavioral treatments for men's LUTS remain scarce. Future research is urgently needed to determine effective management strategies, with a focus on rigorous study design, well-defined patient populations (e.g., LUTS due to BPH), larger sample sizes, and standardized outcome measures to enhance the evidence base and inform clinical practice.

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