


## Urinary incontinence in the elderly: A comprehensive review of epidemiology, biopathology, clinical manifestations, diagnosis, and treatment

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**ABSTRACT**

This study presents a comprehensive review of geriatric urinary incontinence, addressing its subtypes, epidemiology, biopathology, causes in the elderly, transient considerations, functional urinary incontinence, clinical manifestations, diagnosis, and treatment options. The survey, conducted from November 2023 to February 2024, used a systematic approach across biomedical databases, including PubMed, Scopus, and Google Scholar. Relevant search terms were applied, such as "geriatric urinary incontinence", "urge incontinence", "stress incontinence", among others. There was no restriction of language or date of publication in the selection of studies. The literature review highlights that urinary incontinence, characterized by the involuntary extravasation of urine, predominantly affects women and increases with age. It is estimated that up to one-third of community-dwelling older adults and half of hospitalized patients suffer from transient incontinence. The associated costs in the U.S. exceed \$83 billion annually. In addition to the financial impacts, incontinence can lead to serious physical complications and emotional impacts, such as shame and social isolation. The biopathology of urinary incontinence in the elderly involves changes in the detrusor muscle, urethral changes, and prostatic obstruction in men, in addition to neurological factors. Overactivity of the detrusor muscle is the most common cause, followed by stress urinary incontinence and urethral obstruction in men. Functional urinary incontinence, associated with cognition and mobility deficits, is another relevant type. Diagnosis involves clinical evaluation, voiding diary and, in some cases, urodynamic evaluation for complex cases. Treatment encompasses behavioral therapy, pharmacotherapy, and surgical procedures. Behavioral therapy, including voiding habit re-education and pelvic floor exercises, is an essential approach. Medications, such as anticholinergics and mirabegron, are modestly effective but can have side effects, especially in the elderly. Surgical procedures, such as urethral sling and neuromodulation, are options for severe or refractory cases. This review highlights the importance of a comprehensive understanding of geriatric urinary incontinence, not only because of its prevalence and social impacts, but also because of the variety of causes and treatment options available. Future directions for research include further investigations into the efficacy and safety of existing therapies, especially in elderly populations.

**Keywords:** Geriatric urinary incontinence, Epidemiology, Biopathology, Diagnosis, Treatment.



## INTRODUCTION

Urinary incontinence, characterized by the involuntary extravasation of urine in sufficient quantity to constitute a health or social problem, is a prevalent condition that significantly affects the quality of life and well-being of millions of people worldwide, especially the elderly population <sup>2</sup>. This condition encompasses several forms, including urge incontinence, stress incontinence, and mixed incontinence, each with its own characteristics and implications <sup>7</sup>.

Urinary incontinence is more than twice as prevalent in women as in men, increasing with age <sup>7</sup>. It is estimated that between 15 and 30% of older adults living at home, one-third of those seeking emergency care, and half of those living in long-term care facilities suffer from more persistent forms of this condition <sup>6</sup>. In addition to the physical impact, urinary incontinence has significant emotional implications, affecting self-esteem, interpersonal relationships, and participation in daily activities <sup>1</sup>.

Associated with factors such as pelvic floor muscle weakness, detrusor muscle hyperactivity, and biopathological changes, urinary incontinence in the elderly presents considerable challenges for clinical practice <sup>3</sup>. Stigma and the constant need to manage the problem can lead to feelings of shame and social isolation, highlighting the importance of effective interventions to offer comprehensive support to affected individuals <sup>7</sup>.

This review aims to explore and synthesize the current knowledge on geriatric urinary incontinence, addressing epidemiological and biopathological aspects, causes in the elderly, clinical manifestations, diagnosis, and treatment options. Based on an extensive literature review, we seek to provide a comprehensive and up-to-date view of this condition, highlighting the importance of early identification, appropriate management, and therapeutic approaches to improve the quality of life of older adults affected by urinary incontinence.

By better understanding the complexities of this multifaceted condition, we hope to contribute to improving clinical practice and promoting the well-being of older adults, as well as highlighting the continued need for research and development of new therapeutic approaches. This article thus seeks to provide a solid foundation for healthcare professionals, researchers, and caregivers seeking to understand, treat, and improve the lives of those facing geriatric urinary incontinence.

## METHODOLOGY

A literature review was conducted to address geriatric urinary incontinence, its subtypes, epidemiology, biopathology, causes in the elderly, transient considerations, functional urinary incontinence, clinical manifestations, diagnosis, and treatment options. The survey was conducted from November 2023 to February 2024, using a systematic approach across several biomedical



databases, including PubMed, Scopus, and Google Scholar. Relevant search terms were used, such as "geriatric urinary incontinence", "urge incontinence", "stress incontinence", "epidemiology of urinary incontinence", "causes in the elderly", among others. There was no restriction on language or date of publication during the selection of studies.

Initially, relevant articles were identified through electronic databases and consultation of specialized books on geriatric urology and geriatric medicine. After applying the exclusion criteria, which included duplicate studies, articles not directly related to geriatric urinary incontinence, and animal studies, the articles were selected for analysis. Studies addressing aspects related to epidemiology, biopathology, causes in the elderly, clinical manifestations, diagnosis and treatment of geriatric urinary incontinence were included.

During data collection, pertinent information was extracted on the epidemiology of urinary incontinence in the elderly, risk factors, clinical manifestations, biopathological aspects, diagnosis, and treatment options. Data were analyzed qualitatively to identify patterns, trends, and gaps in the literature related to geriatric urinary incontinence. Relevant findings were highlighted and key points were synthesized to provide a comprehensive overview of the different aspects addressed.

This study is a literature review and did not involve the collection of primary patient data, so no ethical review was required. The selection of articles and data analysis were carried out in a systematic manner, however, they are subject to possible selection biases.

## LITERATURE REVIEW

Urinary incontinence, characterized by the involuntary extravasation of urine in sufficient quantity to constitute a health or social problem, encompasses several forms such as urge incontinence, stress incontinence and mixed incontinence<sup>3</sup>. In addition to the physical impact, this condition has significant emotional implications, affecting self-esteem, interpersonal relationships, and participation in daily activities<sup>5</sup>. Associated with factors such as pelvic floor muscle weakness and detrusor muscle overactivity, urinary incontinence is more prevalent in women, especially during and after pregnancy<sup>7</sup>. Stigma and the constant need to manage the problem can lead to feelings of shame and social isolation, highlighting the importance of effective interventions, such as behavioral therapies, medications, and surgeries, to offer comprehensive support to affected individuals<sup>7</sup>.

## EPIDEMIOLOGY

Urinary incontinence is more than twice as prevalent in women as in men, increasing its incidence with advancing age. Surprisingly, at least 18% of female university students report some degree of urinary incontinence, indicating the extent of this condition<sup>7</sup>. Estimates indicate that between 15 to 30 percent of older adults living at home, one-third of those seeking emergency care,



and one-half of those living in long-term care facilities suffer from more persistent forms of the condition <sup>6</sup>.

In addition to the financial aspects, urinary incontinence can lead to serious physical complications, such as perineal rashes, pressure ulcers, urinary infections, sepsis, falls, and fractures <sup>9</sup>. Emotionally, it is linked to embarrassment, stigmatization, isolation, depression, anxiety, sexual dysfunction, and even the risk of institutionalization <sup>10</sup>. For many critically ill older adults, incontinence is considered a worse outcome than death.

Despite its adverse consequences and high prevalence, geriatric incontinence continues to be widely neglected, both by patients themselves and by health professionals <sup>11</sup>. This lack of attention is especially worrisome because the increasing prevalence with age is more related to diseases and functional disabilities than to age itself <sup>3</sup>. What is encouraging is that urinary incontinence is generally treatable and often curable in all age groups, including in frail older adults <sup>7</sup>. However, the approach to elderly and frail patients should be more comprehensive than that used in younger patients, taking into account their specific conditions and needs <sup>3</sup>.

## BIOPATHOLOGY

Urinary continence at any age depends not only on the integrity of lower urinary tract function, but also on adequate mental activities, mobility, motivation, and manual dexterity <sup>8</sup>. Although urinary incontinence in younger patients is rarely associated with deficits in these areas, it is common for it to occur in elderly patients, and can cause or aggravate urinary incontinence and influence therapeutic approaches <sup>2</sup>.

With advancing age, bladder capacity does not change, but bladder sensitivity and contractility decrease <sup>6</sup>. At the cellular level, the detrusor (smooth) muscle develops a "dense band pattern", characterized by dense sarcolemma bands with depletion of caveoles <sup>6,7</sup>. This depletion contributes to the age-related decline in bladder contractility <sup>6</sup>. In addition, an incomplete disjunction pattern develops, with scattered protrusion junctions, which may be the basis for the high prevalence of involuntary bladder contractions (detrusor overactivity) in elderly individuals of both sexes <sup>3</sup>. Ischemia and/or inflammation of the bladder are also probable factors <sup>7</sup>. In women, urethral length and sphincter strength decrease, while in most men the prostate increases in size, causing obstruction in about half of them <sup>7</sup>. The post-void residual volume in the bladder also increases in both sexes, but typically to less than 100 mL <sup>3</sup>.

In addition, the elderly often excrete most of their fluid intake during the night, even in the absence of venous insufficiency, kidney disease, congestive heart failure, or prostatism <sup>3</sup>. This change in nocturnal fluid excretion is associated with increased sleep disturbances with age, leading



to most older adults having one or two episodes of nocturia per night <sup>3</sup>. Although none of these alterations directly cause urinary incontinence, all of them predispose to it <sup>3</sup>.

This predisposition, together with the increased likelihood of an elderly person suffering from further pathological, physiological, or pharmacological aggravation, explains the increased prevalence of urinary incontinence with age <sup>3,7</sup>. Therefore, the onset or exacerbation of urinary incontinence in an elderly individual is usually related to precipitating factors that go beyond the lower urinary tract and are amenable to medical intervention.

In addition, treatment of precipitating factors alone may be sufficient to restore continence, even in the presence of urinary system dysfunction <sup>6</sup>. For example, an episode of hip arthritis in a woman with age-related detrusor hyperactivity may decrease mobility enough to convert urinary urgency into urinary incontinence <sup>3,7</sup>. Arthritis treatment, rather than involuntary contractions of the detrusor muscle, not only restores continence, but also relieves pain and improves mobility <sup>12</sup>. Due to its frequency, reversibility and association with morbidities other than urinary incontinence, transient precipitating causes should be addressed as a priority <sup>12</sup>.

## TRANSIENT URINARY INCONTINENCE IN THE ELDERLY: CAUSES AND CONSIDERATIONS

Transient urinary incontinence affects up to one-third of community-dwelling older adults and up to half of acutely hospitalized patients <sup>13</sup>. Although most transient causes are outside the lower urinary system, three points deserve to be highlighted. First, the risk of transient urinary incontinence increases when there are not only physiological but also pathological changes in the lower urinary system <sup>7</sup>. Anticholinergic agents are more likely to cause overflow urinary incontinence in individuals with weak or obstructed bladders, while excess urine output may lead to urge urinary incontinence in people with detrusor overactivity or impaired mobility <sup>6,11</sup>. Secondly, these transient causes can persist if left untreated and should not be ignored just because urinary incontinence is long-standing <sup>7</sup>. Third, identifying the most common cause is of little value, as causes vary between individuals, and geriatric urinary incontinence is rarely the result of a single factor <sup>3,7</sup>.

## CAUSES OF URINARY INCONTINENCE IN THE ELDERLY

The causes of established urinary incontinence related to the lower urinary system are diverse and have significant implications for clinical management <sup>3</sup>. Overactivity of the detrusor muscle, also known as involuntary contraction of the bladder or overactive bladder, is the most common cause of dysfunction of the lower urinary system in incontinent older adults, accounting for approximately two-thirds of cases <sup>10</sup>. From a histological point of view, detrusor muscle hyperactivity is associated with the complete disjunction pattern, characterized by widening of the intercellular space, reduction



of normal (intermediate) muscle junctions, and formation of new protrusion junctions and very close pillars that connect the cells in chains<sup>7</sup>. These connections can facilitate the change of cell coupling from a mechanical mechanism to an electrical mechanism, resulting in involuntary contraction of the bladder<sup>7</sup>. Other potential causes include ischemia, abnormalities in suburothelial myofibroblasts, and alterations in the structural and functional control mechanisms of the central nervous system<sup>6</sup>.

There are important implications for detrusor muscle overactivity, which can occur in two distinct forms in the elderly, one with preserved contractile function and the other with contractility impairment. Firstly, patients with weakened bladder due to detrusor hyperactivity with compromised contractility often develop urinary retention, which may mimic conditions observed in cases of outlet obstruction and underactivity of the detrusor muscle<sup>7,9</sup>. Secondly, even in the absence of retention, this condition can mimic other causes of urinary incontinence of the lower urinary system<sup>7</sup>. For example, if involuntary contraction of the detrusor muscle occurs during stress maneuvers without a weak contraction being detected, detrusor hyperactivity with impaired contractility may be misdiagnosed as stress urinary incontinence<sup>6,7</sup>. In addition, this condition may be associated with urinary urgency, frequency, weak urinary flow, high amount of residual urine, and bladder trabeculation, which may mimic prostatic obstruction in men<sup>3,7</sup>. Treatment with anticholinergics for this condition may result in urinary retention due to other urinary conditions, requiring alternative therapeutic approaches<sup>7</sup>.

Stress urinary incontinence, which is the second most common cause of urinary incontinence in older women and the predominant one in middle-aged women, usually reflects urethral hypermobility associated with some degree of sphincter weakness<sup>3,7</sup>. On the other hand, stress urinary incontinence is rare in men, except when resulting from sphincter injury after radical prostatectomy<sup>7</sup>. Urethral obstruction is the second most common cause of urinary incontinence in older men, although most men with obstruction are not incontinent<sup>3</sup>. When obstruction is associated with urinary incontinence, it usually manifests as urge urinary incontinence due to the associated detrusor muscle overactivity; Overflow urinary incontinence is uncommon<sup>12</sup>. Outflow obstruction is rare in women, but may occur due to suspension of the bladder neck or urethral fold associated with a large cystocele<sup>7,12</sup>.

Underactivity of the detrusor muscle is usually idiopathic and, when it causes urinary incontinence, is associated with overflow urinary incontinence (in less than 10% of urinary incontinence cases)<sup>6</sup>. Damage to the innervation of the lower urinary system can result in several types of dysfunction<sup>7</sup>. A brain injury can lead to detrusor muscle overactivity, while a spinal cord injury above the sacral level can cause detrusor muscle overactivity and detrusor-sphincter dyssynergia, leading to bladder outlet obstruction and hydronephrosis<sup>6,7,12</sup>. On the other hand, a spinal cord injury below the sacral level can result in hypoactivity of the detrusor muscle and/or



weakness of the sphincter<sup>7</sup>. Damage to peripheral and autonomic nerves can also cause additional complications<sup>12</sup>.

### FUNCTIONAL URINARY INCONTINENCE: CAUSES AND IMPLICATIONS

"Functional" urinary incontinence, often considered a distinct type of geriatric urinary incontinence, is associated with deficits in cognition and mobility<sup>12</sup>. This term suggests that urinary system function is normal, however, even in continent elderly, normal urinary function is rare and uncommon in incontinent older adults<sup>11,12</sup>. It is important to note that urinary incontinence is not inevitable, even in cases of dementia or immobility<sup>3</sup>. In institutionalized older adults with more severe dementia, about 20% are continents; Among those who have the ability to transfer from bed to chair, almost half are continent<sup>3</sup>.

Patients with functional impairment are more susceptible to factors that cause transient urinary incontinence<sup>9</sup>. The diagnosis of functional urinary incontinence may arise from failure to identify these reversible causes<sup>3</sup>. In addition, if these individuals with functional impairment also have urethral obstruction or stress urinary incontinence, they may benefit from specific treatments<sup>4,5</sup>. However, it is important to note that functional impairment often contributes to urinary incontinence<sup>5</sup>. An approach that investigates both the causes of functional urinary incontinence and those of transient urinary incontinence can sufficiently improve the condition, avoiding the need for further investigations<sup>2</sup>.

### CLINICAL MANIFESTATIONS

The manifestations of transient urinary incontinence can vary depending on the underlying condition. In established urinary incontinence, detrusor overactivity usually results in urge urinary incontinence<sup>7</sup>. This is characterized by urine leakage that follows a sudden or intensified urge to urinate, moderate to large urine volume loss, increased urinary frequency (more than 8 extravasations/day), nocturia, and urinary incontinence during the night<sup>3,6</sup>. However, some patients with detrusor muscle overactivity may not have symptoms of urinary urgency<sup>6</sup>.

On the other hand, stress urinary incontinence results in urine leakage that coincides instantaneously with the onset and cessation of coughing or another cause of increased abdominal pressure, and is rare during the night<sup>2</sup>. Some patients may report both types of urinary incontinence, known as mixed urinary incontinence, but it is helpful to determine which component is more bothersome to the patient<sup>7</sup>. In men with sphincter injury after radical prostatectomy, involuntary urine leakage can be described as similar to intermittent dripping from a faucet<sup>1</sup>. Occasionally, patients present with urinary incontinence, which is more difficult to characterize clinically without additional testing<sup>7</sup>.





## DIAGNOSIS

Targeted clinical assessment along with the use of a voiding diary plays a crucial role in understanding and treating urinary incontinence<sup>7</sup>. The voiding diary can offer valuable diagnostic insights and guide the treatment plan<sup>7</sup>. For example, identifying specific patterns of urinary incontinence can reveal important information. For example, the occurrence of urinary incontinence only between 8 a.m. and 12 p.m. may be related to the use of a loop diuretic taken in the morning<sup>12</sup>. Similarly, overnight urinary incontinence in a man with dementia and congestive heart failure, but not during a period of napping in his wheelchair, is likely linked to nocturnal diuresis associated with heart failure, rather than dementia or mobility difficulty<sup>6,12</sup>.

Another example is the case of a woman with volume-dependent stress urinary incontinence, who may experience urine leakage only on the way to the bathroom after a night's sleep when her bladder is fuller, usually more than 400 mL. These detailed patterns can provide valuable clues for diagnosis and treatment. In addition, the assessment of post-void residual volume is essential, as urinary retention can be difficult to detect with physical examination alone<sup>1,8</sup>. Post-void residual volume should be routinely assessed, except in young women with a classic picture of stress urinary incontinence who seek only behavioral therapy<sup>7,10</sup>.

Regarding urodynamic evaluation, it is generally recommended in situations where diagnostic certainty is required, such as before surgical procedures in elderly patients, or when there is suspicion of a serious underlying cause of urinary incontinence, such as brain injury, bladder or prostate carcinoma, among others<sup>6,7</sup>. Urodynamic evaluation comprises a series of tests designed to evaluate the lower urinary system during the filling and emptying phases of urination<sup>7</sup>. The choice of tests depends on the specific clinical picture and the questions to be answered<sup>7</sup>. For example, measuring detrusor muscle pressure and urine flow during urination can detect urethral obstruction, while monitoring bladder and urethral pressures during bladder filling and coughing can be useful for patients with an atypical mixed urinary incontinence<sup>6</sup>.

## TREATMENT

The comprehensive treatment of urinary incontinence requires a multifactorial approach, considering the transient causes, underlying clinical conditions, functional disabilities and changes in the urinary system itself<sup>5,6</sup>. Sanitary napkins and diapers play a role as adjuvants, but they are not a substitute for a more specific treatment<sup>4,5</sup>.

### Behavioral Therapy

Behavioral therapy is an important pillar in the treatment of urinary incontinence. This includes guidance on proper urination habits, the use of a voiding diary to monitor patterns,



adjustments in fluid and caffeine intake, weight loss for women with overweight and stress urinary incontinence, adequate physical activity, and the use of aids such as urinals <sup>7,12</sup>. Bladder and pelvic floor retraining exercises are also essential to strengthen the muscles involved <sup>6</sup>. Studies show that behavioral therapy is comparable to pharmacotherapy for urge urinary incontinence <sup>8,10,11</sup>. For stress urinary incontinence, behavioral therapy has been shown to be more effective than medications, although it is less effective than surgery <sup>7</sup>.

### Pharmacotherapy

FDA-approved medications for urge urinary incontinence, known as bladder relaxants, have been shown to be modestly effective <sup>7</sup>. These drugs include anticholinergics and the  $\beta$ 3-adrenergic agonist mirabegron <sup>6</sup>. Although anticholinergics are effective, they can cause side effects such as xerostomia, constipation, and mental confusion, especially in elderly patients with cognitive deficits <sup>7,12</sup>. The choice of medication depends on the individual characteristics of the patient <sup>9</sup>. Desmopressin is discouraged in the elderly due to its adverse effects <sup>7</sup>. It is essential to start with a low dose and gradually increase to minimize side effects <sup>7</sup>. The combination of behavioral therapy and drugs for urge urinary incontinence may be more beneficial than using treatments alone <sup>11,13</sup>.

### Surgical Procedures

Surgery is an effective option for stress urinary incontinence and mixed incontinence in women of all ages, including the elderly <sup>7</sup>. Procedures such as urethral sling and urethral tape suspension have long-lasting results <sup>6</sup>. For more complex cases or in men after radical prostatectomy, an artificial sphincter may be an option <sup>7</sup>. Periurethral injections of bulking agents are useful in mild cases of stress urinary incontinence <sup>12</sup>. For urge urinary incontinence, surgical interventions such as neuromodulation, tibial nerve stimulation, and onabotulinum toxin injections are considered as third-line options <sup>7</sup>. However, these procedures have similar efficacy to pharmacotherapy and may not be as effective in elderly patients, who are also at higher risk of urinary retention and infections <sup>7</sup>.

## RESULTS AND DISCUSSION

A review of the literature revealed a significant prevalence of urinary incontinence in the elderly, being more than twice as common in women as in men <sup>7</sup>. It is estimated that between 15 to 30% of older adults living at home, one-third of those seeking emergency care, and one-half of those living in long-term care facilities suffer from more persistent forms of the condition <sup>6</sup>. These figures highlight the breadth and relevance of geriatric urinary incontinence as a public health problem.

The impact of urinary incontinence on the quality of life of the elderly is significant, affecting not only physical health, but also emotional and social aspects <sup>1,5</sup>. Studies show that incontinence is



associated with decreased self-esteem, social isolation, depression, and anxiety<sup>10</sup>. In addition, the constant need to manage the problem can lead to a reduction in participation in daily activities and interpersonal relationships<sup>1,5</sup>.

Understanding the biopathology of urinary incontinence in the elderly is crucial for the development of effective therapeutic strategies<sup>3</sup>. Histological studies have shown that, with advancing age, changes occur in the detrusor muscle, such as the development of a "dense band pattern" characterized by dense sarcolemma bands and depletion of the careolas<sup>7,12</sup>. These changes contribute to the age-related decline in bladder contractility and to the prevalence of involuntary bladder contractions (detrusor overactivity) in the elderly<sup>3,12</sup>.

In addition, in elderly women, a shortening of the urethral length and a reduction in sphincter strength are observed, while in men, the increase in the size of the prostate can cause obstruction in about half of the cases<sup>7</sup>. These anatomical changes contribute to stress urinary incontinence and urethral obstruction, respectively, in both sexes.

Urinary incontinence in the elderly is also associated with disorders in neurological control of the bladder<sup>6</sup>. Brain and spinal cord injuries can lead to detrusor muscle overactivity, while peripheral nerve damage can result in varied voiding dysfunction<sup>6,7</sup>. Understanding these pathophysiological mechanisms is critical to directing appropriate treatment.

Overactivity of the detrusor muscle is the most common cause of urinary incontinence in the elderly, accounting for approximately two-thirds of cases<sup>7,12</sup>. This phenomenon is associated with histological changes, such as the complete disjunction pattern, which can mimic other causes of urinary incontinence of the lower urinary system (Yokoyama et al., 2013; Abrams et al., 2003). In addition, detrusor muscle underactivity, although less common, is associated with overflow urinary incontinence and may be idiopathic or related to neurological damage (Gammie et al., 2013).

The diagnosis of urinary incontinence in the elderly involves a systematic approach, which includes a detailed clinical history, symptom assessment, physical examination, and specific tests<sup>1,8</sup>. Voiding diaries are useful tools for recording voiding patterns, while bladder ultrasound can be used to assess residual post-urination and structural abnormalities<sup>7</sup>. Urodynamics is considered the gold standard for assessing bladder and urethral function, aiding in the differential diagnosis between different forms of urinary incontinence<sup>3,6</sup>.

The treatment of urinary incontinence in the elderly is multifaceted and should be customized according to the underlying cause, individual characteristics of the patient, and the severity of symptoms. Non-pharmacological interventions, such as pelvic floor exercises and behavior modification, are often recommended as first-line treatment<sup>5,6</sup>. Studies show that pelvic floor training can significantly improve symptoms in elderly women with stress urinary incontinence<sup>6</sup>.



In addition, assistive devices, such as pads and external catheters, may be useful for managing urinary incontinence in older adults with limited mobility or in cases of severe incontinence <sup>4,5</sup>. For more complex cases, pharmacological therapy may be considered, including the use of antimuscarinics for urge incontinence and alpha-adrenergic agonists for overflow incontinence <sup>7</sup>. However, it is important to consider the side effects and potential drug interactions in frail older adults<sup>3,7</sup>.

In selected cases that are refractory to conservative treatment, surgical interventions, such as urethral sling for stress urinary incontinence in women or prostate reduction surgeries in men, may be recommended <sup>7</sup>. The choice of surgical intervention should be carefully evaluated, taking into account the patient's general health, expectations, and associated risks <sup>7</sup>.

This review highlights the complexity and relevance of geriatric urinary incontinence, a condition that significantly affects the quality of life and well-being of older adults. Understanding the biopathology, causes, clinical manifestations, and treatment options is critical for an effective and personalized therapeutic approach. Integration of non-pharmacological, pharmacological, and surgical interventions, where appropriate, can offer significant improvements in patients' symptoms and quality of life.

However, it is essential to acknowledge the limitations of this review, including the lack of specific data on subgroups of older adults, heterogeneity in the included studies, and the possibility of selection bias. Future research should continue to explore new therapies, prevention strategies, and multidisciplinary approaches to improve the management of geriatric urinary incontinence. Collaboration between healthcare professionals, researchers, and caregivers is key to addressing this public health challenge and improving the quality of life for older adults affected by urinary incontinence.

## CONCLUSION

Geriatric urinary incontinence represents a significant public health challenge, affecting the quality of life and well-being of millions of older adults worldwide. This review addressed several aspects related to urinary incontinence in the elderly, including its epidemiology, biopathology, causes, clinical manifestations, diagnosis, and treatment options. The results highlight the complexity of this condition, which is influenced by a complex interplay of anatomical, physiological, and neurological factors.

The considerable prevalence of urinary incontinence in the elderly, especially in women, highlights the importance of effective prevention and treatment strategies. The impact on the quality of life of affected older adults, including decreased self-esteem, social isolation, and impairment of daily activities, underscores the need for holistic and personalized approaches.



Understanding the underlying biopathology, which includes changes in the detrusor muscle, shortening of urethral length in women, and urethral obstruction in men, is critical for differential diagnosis and therapeutic planning. The diversity in clinical manifestations, ranging from urge incontinence to stress incontinence, requires a careful and multidisciplinary approach.

The available treatment options, which include non-pharmacological interventions, pharmacotherapy, and surgical procedures, offer a variety of approaches to managing urinary incontinence in older adults. However, it is crucial to consider the individual characteristics of the patient, the risks and benefits of each intervention, as well as the potential side effects, especially in frail older adults.

Ultimately, this review highlights the ongoing need for research and collaboration between healthcare professionals, researchers, and caregivers to advance the field of geriatric urinary incontinence. More effective prevention strategies, new therapies and multidisciplinary approaches are essential to improve the management of this condition and thus improve the quality of life of affected older adults.

Therefore, to address this public health challenge, it is critical to continue to explore new therapies, prevention strategies, and multidisciplinary approaches to improve the management of geriatric urinary incontinence. Collaboration between healthcare professionals, researchers, and caregivers is crucial to identify better treatment strategies, improve the quality of life for affected older adults, and reduce the overall impact of this condition.



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