

Urinary incontinence in the elderly

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A – Development of the concept and methodology of the study; B – Query – a review and analysis of the literature; C – Submission of the application to the appropriate Bioethics Committee; D – Collection of research material; E – Analysis of the research material; F – Preparation of draft version of manuscript; G – Critical analysis of manuscript draft version; H – Statistical analysis of the research material; I – Interpretation of the performed statistical analysis; K – Technical preparation of manuscript in accordance with the journal regulations; L – Supervision of the research and preparation of the manuscript

Abstract

Introduction and aim. Urinary incontinence is a common health problem the prevalence of which increases with age, negatively affecting the quality of life of patients. This condition is characterized by uncontrolled, involuntary urine leakage. People affected by urinary incontinence are at a greater risk of depression, reduced social and sexual functioning, and increased dependence on caregivers.

The aim of the present publication is the introduction of urinary incontinence as an issue in the elderly population, as well as the organization of knowledge on the topic with the inclusion of results from new research.

Method. A literature review of urinary incontinence in elderly patients was conducted using bibliometrics from the period between 2017 and 2025. This literature review included publications from the PubMed database. Select subject classification key terms were used in the analysis of the bibliographic data. The keywords included in the search were: elderly, elderly person, urinary incontinence, care, urinary incontinence risk factors, quality of life, conservative treatment, pharmacotherapy, geriatric problems related to urinary incontinence in elderly people.

Brief summary of the current state of knowledge. Urinary incontinence is a complex illness, most often resulting from the accumulation of a variety of risk factors—demographic, related to lifestyle, chronic conditions and prior medical interventions. It manifests primarily as stress, urge or mixed incontinence. Contemporary therapeutic approaches prioritize non-pharmacological methods, including pelvic floor muscle training under supervision and behavioral therapy. Collaboration of a multidisciplinary team plays a significant role in patient care. Through education and motivational support, it coordinates the treatment process and facilitates the patient's systematic rehabilitation.

Summary. Urinary incontinence in older adults is a major health concern that significantly reduces the quality of life and poses a challenge for families and caregivers alike. Due to the multifactorial etiology of this condition, its diagnosis and treatment require a comprehensive, individually tailored approach, in which the involvement of nursing staff promotes maintenance of long-term therapy and improves the quality of life of patients.

Keywords: elderly, urinary incontinence, care.

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INTRODUCTION

Urinary incontinence is common in older people and its prevalence increases with age and affects the quality of life for men and women alike. Urinary incontinence is not a normal condition related to aging, but a pathology that affects the quality of life. Patients with urinary incontinence are at higher risk of depression, impaired social and sexual functioning, and dependence on caregivers [1].

Urinary incontinence (UI) is defined as the uncontrolled and involuntary leakage of urine. This condition affects approximately 10% of the total population, occurring twice as often in women than in men [2]. The prevalence of UI among middle-aged and elderly women is significantly higher, with estimates ranging from 30% to 60% [3]. It is thus a common concern affecting older adults and may have serious consequences for patients with this condition and their caregivers [4].

AIM

The aim of the present publication is the introduction of urinary incontinence as an issue in the elderly population, as well as the organization of knowledge on the topic with the inclusion of results from new research.

CURRENT STATE OF KNOWLEDGE

Aging-related processes affect the entire body, ranging from the subcellular level (e.g., cell membranes, and genetic material in DNA) to entire systems and organs. With age, these changes lead to a decline in the body's functional reserves, causing individual organs to cease functioning properly [5]. In consequence, an increasing number of symptoms and conditions emerge simultaneously, including urinary incontinence.

Proper urinary control, otherwise known to as continence, depends on the overall functioning of both the lower urinary tract itself and key non-urinary functions, such as cognitive abilities, mobility, as well as a patient's appropriate motivation. Changes associated with the body's natural aging process lead to a gradual decline in the functional capacity of the bladder, delayed urination, and a weakened ability to effectively suppress sudden urination urges. Additionally, post-micturition residual urine may occur, although its volume typically does not exceed 50 to 100 ml.

Along with ageing, a change in the rhythm of urination is also frequently observed, involving a shift from daytime dominance to nocturia, typically involving one or two episodes of waking up at night to urinate. Although the described physiological changes are not a direct cause of urinary incontinence, they significantly predispose individuals to it occurring. Any minor additional risk factor, such as physiological stress, a comorbid pathological condition or pharmacological effects, is then enough to substantially increase this predisposition [6].

Urinary incontinence is a complex condition, the development of which rarely depends on one single cause. It is most often the result of an accumulation of various risk factors—ranging from demographic and lifestyle factors to prior medical conditions and medical interventions. Understanding these factors is key to effective prevention and treatment [4].

Age is a factor that significantly impacts the prevalence of urinary incontinence, as most studies indicate a steady increase in moderate and severe UI throughout adulthood, although there is also a distinct peak in mild UI prevalence during the perimenopausal period [7].

Obesity is also widely recognized as the most well-documented risk factor for urinary incontinence in women, which is a fact supported by numerous studies demonstrating a positive and consistent correlation between a high body mass index (BMI) and the prevalence of incontinence. Epidemiological data indicate that the risk of urinary incontinence in obese women is approximately twice as high as for women in the normal weight range, and this association remains significant regardless of age [8].

As far as women are concerned, pregnancy and childbirth are also considered key risk factors in urinary incontinence, as the increasing number of vaginal deliveries is associated with an increased likelihood of developing the condition. Even a single delivery increases this risk, and subsequent labors increase it linearly. At the same time, there is a significant difference between methods of delivery, as a significant protective

effect of cesarean section has been demonstrated, compared to vaginal delivery, the latter of which nearly doubles the risk of stress urinary incontinence in the long run [9].

Another factor which may contribute to urinary incontinence is the use of oral hormone replacement therapy, including estrogen (with or without progestin). Major clinical trials (the WHI Hormone Replacement Trial) have shown that women ingesting oral estrogens were approximately twice as likely to develop stress urinary incontinence compared to the placebo control group [10].

The risk of urinary incontinence is additionally significantly increased in individuals with multiple chronic conditions and comorbidities. Among these, illnesses characterized by symptom of cough are of key importance, as well as diabetes, heart failure, chronic kidney disease, and urinary tract infections. Furthermore, significant risk factors include neurological disorders (such as stroke or multiple sclerosis), oncological conditions, as well as disorders affecting the patient's mental state and overall condition, such as cognitive impairment, depression, and sleep issues [9].

Previous gynecological procedures should also be taken into account, as they constitute a risk factor on the basis of their possibility of leading to postural disruptions of the true pelvis (such as its prolapse) and contribute to the damage of neural pathways innervating the bladder and pelvic floor [11].

Constipation may also contribute to urinary incontinence, as it causes the lower gastrointestinal tract to stretch. This puts pressure on the bladder, which can reduce its effective capacity and irritate the bladder wall. Furthermore, retained fecal matter may directly press on the urethra, thereby hindering proper bladder emptying. Consequently, the bladder becomes overfilled, which ultimately leads to overflow incontinence [12].

In the case of men, the risk of urinary incontinence is closely related to prior urological procedures and prostate disorders. Prostatectomy (removal of the prostate) and cystectomy (removal of the bladder) often constitute the direct cause of UI. This is due to possible damage of the urethral sphincter muscles [11].

According to the classification of micturition disorders developed by the Standardization Committee of the International Continence Society (ICS), there are three main types of urinary incontinence, which differ in terms of their underlying mechanisms and clinical presentation. Stress urinary incontinence, for example, results from urethral insufficiency, which leads to involuntary urine leakage during activities that involve increased abdominal pressure. This results in episodes of incontinence, usually mild in severity, which occur during physical exertion, coughing, sneezing, laughing, lifting heavy objects or sudden changes in body position [13].

On the other hand, urge incontinence is caused by an overactive bladder. It is characterized by a sudden, uncontrollable urge to urinate just before leakage occurs, which in this case is usually large in volume [14]. This is often accompanied by frequent urination and nocturia, forcing the patient to wake up multiple times during the night and occasionally also involves bedwetting.

The final category is mixed urinary incontinence, which is a combination of the two mechanisms described above. In this form of the condition, the patient experiences urine leakage associated with both physical exertion and urethral insufficiency, as well as strong urges resulting from overactive bladder [13].

Rarer forms of urinary incontinence include, among others, overflow UI, occurring mainly in men with bladder outlet obstruction (e.g., due to benign prostatic hyperplasia), which leads to leakage from an overstretched bladder. Other forms include enuresis (including nocturnal enuresis, typical in children), constant leakage of urine, and extraurethral incontinence, in which urine escapes through pathways other than the urethra, such as fistulas. The classification is supplemented by situational cases, where incontinence occurs at specific moments, such as during laughter or sexual activity [14].

MATERIALS AND METHOD

The analysis covered scientific content drawn from PubMed, an English-language online database of the National Library of Medicine, National Institutes of Health in Bethesda, MD, USA (<http://www.ncbi.nlm.nih.gov/PubMed>), SCOPUS, and Google Scholar, covering medical articles with a focus on content related to urinary incontinence in the elderly. The review covered literature published in the available scientific databases between 2017 and 2025, this timeframe selected for analysis on the assumption that it encompasses the most recent scientific reports on the subject. Advanced search options based on keywords or combinations thereof were used in the process of searching for scientific articles (Step 1, Table 1).

In accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards, inclusion and exclusion criteria were defined for the present analysis. Clearly stating these criteria is essential to ensure the transparency, completeness and reliability of the review.

Inclusion criteria consisted of:

- Publications about urinary incontinence in elderly people
- Articles published between 2017 and 2025
- Clinical research, reviews, meta-analyses
- Literature in the English language
- Literature published under a free access link

Exclusion criteria consisted of:

- Publications about urinary incontinence in younger age groups
- Articles published before 2017
- Literature in languages other than English
- Literature available only for a fee
- Reviews, conference materials, letters to the editor, book chapters and notes taken during conferences or workshops

TABLE 1. Step one – trend analysis based on key words.

Key words	elderly, elderly person, urinary incontinence, care, urinary incontinence risk factors, quality of life, conservative treatment, pharmacotherapy, geriatric problems related to urinary incontinence in elderly people
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RESULTS

The analysis confirmed that, on the 20th of April 2026, the PubMed scientific database contained 4,316 publications on urinary incontinence in the elderly from 2017 to 2025.

A detailed analysis was conducted on 29 studies directly related to the issue in question, as illustrated in Table 2.

TABLE 2. Detailed analysis of 29 studies on urinary incontinence in older adults.

Research author	Title/Topic
Arlandis S. et al. 2021 DOI: 10.1016/j.eururo.2022.01.045	European guidelines for the management of lower urinary tract symptoms
Balalau OD et al. 2021 DOI: 10.22543/7674.81.P5359	Risk factors for urinary incontinence in older women
Batmani S. et al. 2021 DOI: 10.1186/s12877-021-02135-8	Prevalence and factors related to urinary incontinence in older adults women worldwide: a comprehensive systematic review and meta-analysis of observational studies
Becher KF et al. 2019 DOI: 10.1007/s15006-019-0130-7	Overview of the diagnosis and treatment of incontinence in elderly people
Brown HW et al. 2019 DOI: 10.1097/AOG.0000000000003422	Randomized trial of group therapy in older women with urinary incontinence
Chong E. et al. 2018 DOI: 10.1016/j.jamda.2017.12.103	Research on the relationship between frailty syndrome and the prevalence of incontinence
Drake MJ et al. 2018 DOI: 10.1002/nau.23773	Recommendations regarding urodynamic testing in elderly people
Fisher SR et al. 2024 DOI: 10.1186/s40814-023-01440-w	Comparison of the effectiveness of various treatment methods for urinary incontinence in the elderly population
Giraldo-Rodríguez L. et al. 2019 DOI: 10.1002/nau.24096	Epidemiological study of the elderly population with urinary incontinence in Mexico
Irik L et al. 2025 DOI: 10.1007/s00345-025-05999-2	The analysis of gender differences and risk factors in individuals aged 55+ with urinary incontinence
Kalata U. et al. 2023 DOI: 10.3390/jcm13010185	Impact of incontinence on the mental health of elderly women
Kari Bo. Et al. 2017 DOI: 10.1007/s00192-016-3123-4	An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for the conservative and nonpharmacological management of female pelvic floor dysfunction
Kobashi KC et al. 2017 DOI: 10.1016/j.juro.2017.06.061	AUA/SUFU guidelines for the surgical treatment of stress urinary incontinence
Kuchel GA et al. 2024 DOI: 10.1093/gerona/glae126	Urinary incontinence as a multifactorial geriatric syndrome
Le Berre M. Et al. 2020 DOI: 1217-1233. doi: 10.1002/nau.24344	A scoping review on caffeine consumption and lower urinary tract symptoms in adults
Leung WKC et al. 2024 DOI: 10.1186/s12889-024-18703-7	Impact of a sedentary lifestyle on incontinence symptoms
Lightner DJ et al. 2019 DOI: 10.1097/JU.0000000000000309	Guidelines for overactive bladder in adults and elderly people
Lino VTS et al. 2019 DOI: 10.1371/journal.pone.0217456	Research into the relationship between incontinence and functional impairment in elderly people
Lukacz ES et al. 2017 DOI: 10.1001/jama.2017.12137	The urinary incontinence in women
Meyer P. 2017 DOI: 10.1016/j.purol.2017.01.004	Diagnostic and therapeutic algorithms for elderly adults with urinary incontinence
Nambiar AK et al. 2018 DOI: 10.1016/j.eururo.2017.12.031	European guidelines on the diagnosis and conservative treatment of urinary incontinence
Newman DK 2019 DOI: 10.3928/00989134-20190111-03	The review of voiding training techniques in long-term care
O'Connor E. et al. 2021 DOI: 10.2147/IJGM.S289314	A comprehensive review of conservative treatment for urinary incontinence in older adults
Raasthoj I. et al. 2018 DOI: 10.1007/s00192-018-3804-2	Impact of social relationships and medical support on women with incontinence
Scharp D. et al. 2023 DOI: 10.1016/j.gerinurse.2023.08.005	Comorbidities in elderly people with incontinence
Shang X. et al. 2022 DOI: 10.3389/fendo.2023.1220551	The meta-analysis on BMI and the risk of incontinence
Sun B. et al. 2022 DOI: 10.1136/bmjspcare-2019-002034	Effectiveness of electroacupuncture in older women
Weber-Rajek M et al. 2019 DOI: 10.5114/pm.2019.90376	Pelvic floor muscle training in elderly women
Xue K et al 2020 DOI: 10.1186/s12894-020-00735-x	Prevalence and associated factors of urinary incontinence in women living in China: a literature review

Pathophysiological factors, diagnosis and treatment of urinary incontinence in the elderly

Urinary incontinence is a complex condition which may be caused by a single pathophysiological factor or, more commonly, by several coexisting ones. Bladder outlet obstruction stands out among the primary mechanisms leading to loss of bladder control. It results from weakness of the urethral sphincter or pelvic muscles. An overactive bladder may constitute another etiological factor, which is characterized by contraction or excessive activity of the muscles of the bladder's wall (detrusor muscle) [15]. Conversely, weakness or hypofunction of the bladder wall muscles or bladder outlet obstruction (blockage of the outflow pathway) can lead to an inability to fully empty the bladder (retention) [7]. Importantly, urinary retention caused by these mechanisms, especially when both factors are present, can paradoxically result in overflow incontinence due to urine leakage from an overfilled bladder. Urinary leakage is also facilitated by poor coordination between the bladder wall muscles and the urethral sphincter, an increased urine output, and functional problems not directly related to the urinary system [15]. These mechanisms are triggered by a variety of causes. Urinary incontinence may be short-term and result from easily reversible conditions, such as urinary tract infections, infections or irritation of the vagina and constipation. Moreover, certain medications can cause temporary bladder control problems [16]. In contrast, long-term urinary incontinence is most often the result of chronic changes. These include permanent weakness of the bladder or pelvic floor muscles or their excessive activity. Another significant group of etiological factors is conditions leading to damaging of nerves controlling the bladder in the course of neurological diseases, such as multiple sclerosis, diabetes or Parkinson's disease. Furthermore, urinary incontinence can be caused by pelvic organ prolapse, i.e., the displacement of the bladder, rectum or uterus from their normal position. This condition disrupts the normal functioning of the bladder and urethra, leading to urine leakage. Finally, conditions that impair mobility, such as arthritis, make it difficult to reach the restroom quickly enough, which is classified as a functional urinary control problem [17].

Conducting a thorough medical history exam is a fundamental and indispensable component of urinary incontinence diagnosis, serving as a key tool in identifying its possible causes and assessing the impact of the condition on the patient's quality of life. It should include detailed information regarding the duration and onset of symptoms, their nature and severity, including the extent to which symptoms have affected the patient's daily functioning [18]. The medical history should account for the presence of lower urinary tract symptoms (LUTS), as well as any intestinal, neurological, and sexual symptoms that may indicate comorbid disorders or an underlying condition. It is important to determine whether LUTS are associated with the filling phase, the micturition phase, or occur immediately after urination, which allows for the proper classification of urinary incontinence as stress, urge, or mixed [19].

A key element of the medical history is also the identification of predisposing and exacerbating factors, such as smoking, prior surgical procedures or medications being ingested. This information may indicate what the potential etiology of the condition is and enables the targeting of initial conservative treatment through the modification of reversible factors.

The subsequent step is performing a physical examination, which should focus particularly on examining the abdomen to rule out the presence of a palpable mass or a distended bladder. The vagina and rectum should also be examined, assessing the condition of the vaginal mucosa for estrogen status, pelvic floor muscle tone, and signs of pelvic organ prolapse (POP) [20]. An important component of the examination is also performing the cough test, which is a valuable tool in the diagnosis of stress urinary incontinence [21].

Basic tests include a general urinalysis to rule out infection or hematuria, and maintaining a micturition diary, which allows for the assessment of urination frequency, urine volume and episodes of incontinence [22].

The EAU (European Association of Urology) guidelines recommend keeping a micturition diary for at least 3 days to reliably measure trends in urine volume and micturition frequency over a 24-hour period. In select cases, assessment of residual urine after micturition, a pad test or urodynamic studies may be considered, particularly when symptoms are atypical, persist despite conservative treatment or could be related to some suspected neurological cause [23].

Conservative methods constitute the basis of treatment for older adults with urinary incontinence and should be used as the first line of therapy due to its good efficacy, tolerability and low risk of complications. This approach includes addressing the underlying causes, introducing lifestyle modifications and the gradual implementation of additional therapeutic methods. An important element of treatment is the identification and optimization of therapy for comorbid conditions, which are common in the elderly and can exacerbate lower urinary tract symptoms. Particular attention should be paid to constipation, which is strongly associated with urinary incontinence. Although treating constipation alone does not always lead to symptom resolution, multimodal interventions can reduce symptom severity and alleviate urinary incontinence [1].

On the other hand, the cornerstone of urinary incontinence treatment is introducing lifestyle modifications, which can help reduce the severity of symptoms. Therefore, weight loss is recommended for patients who are overweight or obese, as this is one of the most well-documented modifiable risk factors for urinary incontinence. Limiting caffeine intake may also alleviate symptoms of frequent urination and urinary urgency [24]. However, fluid intake recommendations should be individualized to avoid dehydration and constipation. Moderate physical activity may also improve symptoms, particularly as part of a comprehensive management plan that includes pelvic floor muscle exercises. Although there is limited evidence regarding the direct impact of smoking cessation on urinary incontinence, quitting smoking ought to be recommended due to its general health benefits.

Behavioral therapy plays a fundamental role in the treatment of urinary incontinence, based on the concept of modifying abnormal behavioral patterns by replacing them with new, desired responses to stimuli. However, this method requires a high degree of self-motivation from the patient and close cooperation with a specialist. It is worth focusing on the implementation of physical and behavioral modifications, as they play a significant role in virtually every case of incontinence [25].

One of the key methods constituting the so-called first line of treatment is bladder training, which involves gradually and consciously extending the intervals between bathroom visits.

The goal of this process is to restore proper control over urination, increase bladder capacity, and reduce urgency, directly improving the patient's self-confidence. Although the effects of this therapy may sometimes take many weeks to appear, NICE guidelines suggest partaking in it for a minimum of six weeks, often in combination with medication if the frequency of urination is particularly bothersome [26].

Pelvic floor muscle training (PFMT) is also widely used, involving sequentially contracting and relaxing the structures that support the organs of the lower pelvis. Regular activation of these muscles does not only strengthen mechanical support but also reflexively inhibits contractions of the detrusor muscle, which significantly reduces episodes of urge incontinence. Such a training program should include at least eight contractions performed three times a day, and the most optimal results are achieved with therapy conducted under the supervision of a physical therapist for a period of three months at minimum [27].

The effectiveness of these exercises in cases of mixed urinary incontinence can be further enhanced by implementing biofeedback, which allows the patient to better control their own body's functions. It is worth noting that in men, pelvic floor muscle training is particularly recommended after radical prostatectomy, as it allows for a faster recovery and a return to full urinary continence, and is introduced usually between the third and sixth month after surgery [28].

Pharmacological treatment can also be used for urinary incontinence, primarily implementing antimuscarinic drugs and mirabegron, which are used in patients with an overactive bladder following ineffective conservative treatment. In postmenopausal women, topical estrogen therapy may be beneficial, while duloxetine may reduce symptoms of stress and mixed urinary incontinence, although its use is limited by the frequency of adverse effects.

On the other hand, surgical treatment of urinary incontinence is not widely used in older adults and is reserved for patients with severe symptoms or those resistant to conservative and pharmacological treatment. It requires individual assessment, taking into account potential comorbidities and the patient's overall health. In cases of urge urinary incontinence resistant to pharmacotherapy, intravesical injections of botulinum toxin type A and sacral nerve stimulation are used, which can significantly reduce symptoms, although they carry a risk of urinary retention or the need to repeat those procedures. In the treatment of stress urinary incontinence, suburethral sling implantation using the TVT or TOT method is most commonly performed. These procedures are highly effective and less invasive compared to the classic Burch colposuspension [14].

Treatment should be supplemented with education for patients, which would involve preparing the patient to effectively manage symptoms and prevent their worsening. This education should cover guidelines for proper fluid intake and diet, the prevention of constipation and urinary tract infections, as well as instructions regarding pelvic floor muscle exercises and bladder training. Other important elements include instructing patients on the use of assistive devices, modification of environmental factors, and the promotion of a healthy lifestyle, including weight loss. Comprehensive education helps to improve independence, comfort, and quality of life for older adults with urinary incontinence [29].

SUMMARY

Urinary incontinence is a common and significant health concern affecting the elderly, significantly reduces the quality of life of patients and poses a challenge for their families and caregivers. Due to the multifactorial etiology of the condition, diagnosis and treatment require a comprehensive and individualized approach, in which the involvement of a multidisciplinary team helps build the patient's motivation for partaking in long-term therapy. Conservative and non-invasive methods form the basis of treatment, as they are effective, well-accepted and should be used as the first line of treatment. The best results are achieved by combining various forms of therapy, tailored to the type of urinary incontinence experienced by the patient, their general condition and comorbidities, which allows for optimized symptom control and a significant improvement in the daily functioning of the elderly.

Authors' contributions

Z.K., I.W. – designed the study. M.D., P.S., D.B., O.K. – analyzed the data and wrote the manuscript. All of the study authors reviewed and approved the manuscript.

Conflicts of interest

The authors declared no potential conflicts of interest regarding the research, authorship, and/or publication of this article. This research did not receive any specific grant from any public, commercial, or non-profit funding institution. Artificial intelligence (AI) was not used in the creation of this publication.

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