

## UNDERSTANDING AND MANAGING URINARY TRACT INFECTION (UTI) – AYURVED REVIEW ARTICLE

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### ABSTRACT

This review article delves into the nuanced landscape of Urinary Tract Infections (UTIs) in women, exploring the multifaceted aspects of their occurrence, risk factors, symptoms, and various management strategies. Providing a comprehensive understanding of the intricate interplay between female anatomy, bacterial colonization, and susceptibility to UTIs, the article addresses both preventive measures and therapeutic interventions. Additionally, it scrutinizes the impact of lifestyle choices and hygiene practices on UTI incidence, fostering a holistic approach to women's urinary health. Through an examination of contemporary research findings and medical advancements, this review aims to empower women with the knowledge necessary for effective UTI management, emphasizing the importance of early detection and personalized treatment plans. By synthesizing current insights, this article serves as a valuable resource for healthcare professionals, researchers, and women seeking informed guidance on navigating the challenges associated with UTIs.

**KEYWORDS:** Urinary Tract Infections (UTIs), Women's Health, Risk Factors, Prevention Strategies, Treatment Approaches.

### INTRODUCTION

Urinary Tract Infections (UTIs) stand as a prevalent health concern, with females being disproportionately affected by their intricate complexities. As gatekeepers of the urinary

system, women face unique challenges due to their anatomy and hormonal fluctuations, making them more susceptible to UTIs. This review endeavors to unravel the multifaceted nature of UTIs in females, offering a comprehensive exploration of their etiology, risk factors, symptoms, and contemporary management strategies.<sup>[1]</sup>

The prevalence rate of urinary tract infections (UTIs) in women is relatively high. On average, it is estimated that about 40% to 60% of women will experience at least one UTI during their lifetime. UTIs are more common in women than in men, primarily due to differences in anatomy. The shorter urethra in women makes it easier for bacteria to reach the bladder and cause an infection.<sup>[2]</sup>

This review synthesizes current research findings, shedding light on preventive measures, diagnostic advancements, and personalized treatment approaches. By bridging the gap between scientific insights and practical implications, this exploration aims to empower women with the knowledge needed to navigate the challenges posed by UTIs. As we embark on this journey, we unravel the complexities surrounding UTIs in females, laying the foundation for informed healthcare decisions and proactive management strategies.

### **Need of study**

This article is a crucial resource for researchers, offering a comprehensive overview of Urinary Tract Infections (UTIs) in women. It provides insights into prevalence, risk factors, symptoms, and modern management strategies, serving as a reference for further studies. For students, it acts as an educational tool, aiding academic research and deepening understanding.

### **MATERIALS AND METHODS**

The first documented diagnosis of a urinary tract infection (UTI) is challenging to pinpoint due to the limited medical records from ancient times. However, historical evidence suggests that physicians in ancient civilizations, including Egypt, Greece, and Rome, were familiar with symptoms resembling UTIs.

In the modern era, the understanding of UTIs advanced significantly. The development of microbiology in the late 19th century allowed for a more precise identification of bacteria responsible for infections. Paul Freiherr von Bruns, a German surgeon, is credited with the first detailed description of cystitis in the late 19th century.

The advent of antibiotics in the mid-20th century, particularly sulfonamides and later penicillin, marked a transformative period in UTI treatment. These milestones collectively contributed to the recognition, understanding, and management of UTIs, shaping the history of how this common infection is diagnosed and treated today.

### **Definition<sup>[3]</sup>**

A Urinary Tract Infection (UTI) is a bacterial infection that affects any part of the urinary system, including the kidneys, bladder, ureters, and urethra.

### **Ayurveda and UTI<sup>[4]</sup>**

Ayurveda, the ancient system of medicine, provides insights into urinary tract health and management of conditions like UTIs through its classical texts. Here are some references from Ayurvedic literature regarding UTIs.

#### **1. Susruta samhita**

- This ancient Ayurvedic text, attributed to Sage Susruta, discusses various diseases and their treatments. It provides insights into urinary disorders and their management.

#### **2. Aṣṭāṅga sangraha**

- Another significant Ayurvedic text, the Aṣṭāṅga Sangraha, covers different branches of Ayurveda. It includes information on urinary disorders, their etiology, and treatment approaches.

#### **3. Bhavaprakasa**

- This Ayurvedic text, written by Bhava Misra, is a compendium of medicinal formulations. It includes details about herbs and formulations used in the management of urinary disorders.

#### **4. Cakradatta samhita**

- Cakradatta Samhita, a medieval Ayurvedic text, offers insights into various diseases and their treatments. It provides guidance on the use of herbs and formulations for urinary issues.

## 5. Rasaratnakara

- Focused on the field of Rasashastra (alchemy and mineralogy), Rasaratnakara discusses the preparation and usage of herbo-mineral formulations. It may contain information on remedies for urinary disorders.

## 6. Ayurvedaprakasa

- Ayurvedaprakasa is a more recent compilation that consolidates information from classical Ayurvedic texts. It covers various diseases, including those related to the urinary system.

In Ayurveda, the approach to treating UTIs involves balancing the doshas (Vata, Pitta, and Kapha), addressing the root cause, and using herbs that possess diuretic, antimicrobial, and anti-inflammatory properties. Commonly used Ayurvedic herbs for urinary health include Gokshura (*Tribulus terrestris*), Punarnava (*Boerhavia diffusa*), Chandan (*Santalum album*), and Varuna (*Crataeva nurvala*).

## Pathophysiology

The pathophysiology of urinary tract infections (UTIs) involves the invasion and colonization of the urinary tract by pathogenic microorganisms, typically bacteria. The most common causative agent is *Escherichia coli* (*E. coli*), but other bacteria can also contribute to UTIs. Here's an overview of the pathophysiological process.

### 1. Entry of bacteria

- Bacteria, usually from the gastrointestinal tract, enter the urethra and ascend into the urinary tract. Factors such as sexual activity, improper hygiene, and catheter use can facilitate the entry of bacteria.

### 2. Urethral colonization

- Bacteria adhere to the urethral epithelial cells and begin to colonize the urethra. Female anatomy, with a shorter urethra in proximity to the anus, increases the risk of bacterial entry.

### 3. Ascending infection

- Bacteria move upward into the bladder, causing cystitis (Bladder infection). The inflammatory response is triggered, leading to symptoms such as frequent and painful urination.

#### 4. Further ascension

- If not treated, bacteria can ascend further into the upper urinary tract, involving the ureters and kidneys. This progression can lead to more severe complications, such as pyelonephritis (Kidney infection).

#### 5. Inflammatory response

- The presence of bacteria triggers an immune response, leading to the release of inflammatory mediators. This inflammatory cascade contributes to the characteristic symptoms of UTIs, including pain, swelling, and irritation.

#### 6. Clinical symptoms

- Symptoms of UTIs vary but commonly include dysuria (painful urination), urgency, frequency, lower abdominal pain, and cloudy or foul-smelling urine. In severe cases, systemic symptoms like fever and chills may occur.

#### 7. Recurrent infections

- Factors such as incomplete treatment, underlying health conditions, or structural abnormalities in the urinary tract may contribute to recurrent UTIs.

#### Causes of UTI in women<sup>[5]</sup>

Females are more commonly affected by urinary tract infections (UTIs) than males. This higher prevalence in women is primarily attributed to anatomical differences in the urinary and genital tracts.

1. **Anatomy:** Women have a shorter urethra than men, making it easier for bacteria to travel from the external genital area to the bladder, increasing susceptibility to UTIs.
2. **Sexual activity:** Intercourse can introduce bacteria into the urethra and push it toward the bladder. Women who are sexually active or have multiple partners may be at a higher risk.
3. **Pregnancy:** Changes in the urinary tract during pregnancy, such as pressure on the bladder, can impede urine flow and increase the likelihood of bacterial growth, leading to UTIs.

4. **Menopause:** Hormonal changes during menopause can alter the protective flora in the urogenital area, making women more prone to UTIs.
5. **Urinary tract abnormalities:** Structural issues, like kidney abnormalities or cysts, can create conditions that facilitate bacterial entry and increase the risk of UTIs.
6. **Contraceptive methods:** Certain forms of birth control, such as diaphragms and spermicides, can contribute to bacterial growth, elevating the risk of urinary tract infections.
7. **Hygiene practices:** Poor personal hygiene, wiping from back to front after a bowel movement, or using harsh feminine hygiene products can introduce bacteria into the urethral area.
8. **Urinary retention:** Conditions that prevent complete emptying of the bladder, like urinary tract obstructions or neurogenic bladder dysfunction, can lead to stagnant urine, fostering bacterial growth.
9. **Catheter use:** Indwelling urinary catheters, often used in medical settings, can introduce bacteria into the bladder, increasing the susceptibility to UTIs.
10. **Weakened immune system:** Immunocompromised conditions, such as diabetes or HIV, can impair the body's ability to fend off infections, raising the risk of UTIs in women.

### Symptoms of Urinary Tract Infection (UTI)<sup>[6]</sup>

#### 1. Pain or burning sensation during urination

- A common and hallmark symptom of a UTI, this discomfort occurs due to irritation and inflammation in the urinary tract caused by bacterial infection.

#### 2. Frequent urination

- UTIs can lead to irritation of the bladder, causing a persistent urge to urinate. However, the amount of urine expelled may be minimal.

#### 3. Cloudy or Strong-Smelling urine

- Infection can result in changes to urine color and odor. Cloudiness or a strong, unpleasant smell may indicate the presence of bacteria.

**4. Lower abdominal discomfort or pressure**

- Inflammation in the bladder or lower urinary tract can cause discomfort or a feeling of pressure in the lower abdomen.

**5. Hematuria (Blood in urine)**

- In some cases, a UTI can lead to blood in the urine. This may result in pink, red, or brown discoloration.

**6. Pelvic pain in women**

- Women may experience pelvic discomfort or pain, often associated with inflammation of the bladder or other parts of the urinary tract.

**7. Rectal pain in men**

- Men may experience discomfort in the rectal area, particularly if the infection has spread to the prostate.

**8. Fever and Chills**

- In more severe cases or when the infection spreads to the kidneys, systemic symptoms like fever and chills may occur.

**9. Back pain or flank pain**

- Kidney involvement can lead to back or flank pain, indicating a more serious UTI affecting the upper urinary tract.

**10. Fatigue and Weakness**

- Systemic symptoms like fatigue and weakness may accompany a UTI, especially if the infection has spread beyond the bladder.

**Pain in uti<sup>[7]</sup>**

In a Urinary Tract Infection (UTI), individuals may experience different types of pain or discomfort associated with the affected parts of the urinary system. Common types of pain in UTIs include.

**1. Burning sensation or pain during urination**

- Often described as a stinging or burning sensation, this pain occurs when bacteria irritate the urethra during urination.

## 2. Lower abdominal pain or discomfort

- Inflammation of the bladder or lower urinary tract can cause aching or pressure in the lower abdomen.

## 3. Pelvic pain in women

- Women may experience pain in the pelvic region, especially if the infection involves the bladder or urethra.

## 4. Rectal pain in men

- Men with UTIs may feel discomfort in the rectal area, particularly if the infection has spread to the prostate.

## 5. Back or flank pain

- Kidney involvement, a more severe form of UTI, can cause pain in the back or sides (flanks), often indicating an infection in the upper urinary tract.

### Types of Urinary Tract Infections (UTIs)<sup>[8]</sup>

#### 1. Cystitis

- **Description:** Infection of the bladder.
- **Symptoms:** Painful urination, frequent urination, cloudy or strong-smelling urine.

#### 2. Pyelonephritis

- **Description:** Infection of the kidneys.
- **Symptoms:** Back or flank pain, fever, chills, nausea, vomiting.

#### 3. Urethritis

- **Description:** Infection of the urethra.
- **Symptoms:** Pain or burning during urination, discharge.

#### 4. Asymptomatic bacteriuria

- **Description:** Presence of bacteria in the urine without apparent symptoms.
- **Symptoms:** No noticeable symptoms; often diagnosed through urine tests.

#### 5. Complicated UTI

- **Description:** Infection occurring in individuals with underlying health issues or structural abnormalities in the urinary tract.



- **Symptoms:** Varied, and severity may depend on the complicating factors.

## 6. Recurrent UTI

- **Description:** Multiple episodes of UTIs over a specified period, often occurring despite treatment.
- **Symptoms:** Similar to initial infections, with frequent recurrences.

## 7. Hospital-Acquired UTI

- **Description:** Infection acquired during a hospital stay, often associated with catheter use or other medical interventions.
- **Symptoms:** Similar to community-acquired UTIs, but may involve antibiotic-resistant bacteria.

## Management of Urinary Tract Infections (UTIs)<sup>[9]</sup>

### Antibiotic therapy

- **Prescription:** Healthcare professionals prescribe antibiotics based on the specific bacteria causing the infection.
- **Complete course:** It's crucial to complete the full course of antibiotics, even if symptoms improve before completion.

### Pain management

- **Analgesics:** Over-the-counter pain relievers may alleviate pain and discomfort during urination.
- **Heating pads:** Applying a heating pad to the lower abdomen can help ease discomfort.

### Increased fluid intake

- **Hydration:** Drinking plenty of water helps flush bacteria from the urinary tract and promotes healing.

### Avoiding irritants

- **Caffeine and Alcohol:** Limiting the intake of caffeine and alcohol can reduce irritation to the bladder.

### Urinary alkalinizers

- **Prescription medications:** In some cases, urinary alkalinizers may be prescribed to reduce acidity in the urine.

### Cranberry products

- **Juice or supplements:** Some individuals may find relief from recurrent UTIs by incorporating cranberry juice or supplements.

### Probiotics

- **Supplements:** Probiotics may promote the growth of beneficial bacteria in the urinary tract, supporting overall health.

### Preventive measures

- **Personal hygiene:** Wiping from front to back after a bowel movement helps prevent the introduction of bacteria.
- **Urination after sex:** Emptying the bladder after sexual activity can reduce the risk of UTIs.

### Ayurvedic Treatment for Urinary Tract Infections (UTIs)

Ayurveda emphasizes a holistic approach to health, incorporating dietary, lifestyle, and herbal interventions to balance the body and promote well-being. While consulting with a qualified Ayurvedic practitioner is essential for personalized advice, here are some general Ayurvedic recommendations for managing UTIs.

### Herbal formulations

- **Gokshura (*Tribulus terrestris*):** Known for its diuretic properties, Gokshura may help in promoting urine flow and reducing inflammation in the urinary tract.
- **Punarnava (*Boerhavia diffusa*):** Punarnava is believed to have anti-inflammatory and antimicrobial properties, potentially aiding in UTI management.
- **Coriander and Cumin Tea:** A blend of coriander and cumin seeds boiled in water can be consumed to help soothe the urinary tract.

### Dietary recommendations

- **Hydration:** Drinking warm water throughout the day helps flush toxins and supports overall urinary tract health.
- **Cucumber and Coconut water:** Including cucumber and coconut water in the diet may have a cooling effect on the body and provide hydration.
- **Avoiding spicy foods:** Limiting the intake of spicy and acidic foods that may irritate the urinary tract.

### Lifestyle practices

- **Adequate rest:** Ensuring proper rest to support the body's natural healing processes.
- **Stress management:** Stress reduction techniques, such as meditation or yoga, can contribute to overall well-being.

### Ayurvedic cleansing therapies

- **Panchakarma:** In some cases, Panchakarma therapies like Virechana (therapeutic purgation) may be recommended to detoxify the body.

### Specific ayurvedic formulations

- **Chandraprabha vati:** This traditional Ayurvedic formulation is believed to support urinary tract health.
- **Varunadi kwath:** A herbal decoction containing Varuna (*Crataeva nurvala*) and other herbs, Varunadi Kwath is thought to have diuretic and antimicrobial properties.

## Preventive Measures for Urinary Tract Infections (UTIs) in Females<sup>[10]</sup>

### 1. Hygiene practices

- **Front to back wiping:** After a bowel movement, always wipe from front to back to prevent the introduction of bacteria into the urethra.
- **Maintain genital hygiene:** Keeping the genital area clean and dry helps minimize the risk of bacterial growth.

### 2. Urination habits

- **Voiding after intercourse:** Urinating after sexual activity helps flush out any bacteria that may have entered the urethra.
- **Frequent urination:** Avoid holding urine for prolonged periods; empty the bladder regularly to prevent bacterial overgrowth.

### 3. Adequate hydration

- **Water intake:** Drinking plenty of water helps flush bacteria out of the urinary tract, promoting overall urinary health.

### 4. Cranberry products

- **Cranberry juice or supplements:** Some studies suggest that cranberry products may help prevent UTIs by inhibiting bacterial adhesion to the urinary tract.

## 5. Probiotics

- **Probiotic supplements:** Supporting gut health with probiotics may indirectly contribute to urinary health by maintaining a balanced microbiome.

## 6. Appropriate clothing

- **Breathable fabrics:** Choose breathable, cotton underwear and avoid tight-fitting clothing to reduce moisture and prevent bacterial growth.

## 7. Avoid irritants

- **Limit harsh soaps:** Use mild, fragrance-free soaps to clean the genital area, avoiding potential irritants.
- **Caffeine and Alcohol:** Limit the intake of caffeinated and alcoholic beverages, which can irritate the bladder.

## 8. Post-Menopausal care

- **Hormone Replacement Therapy (HRT):** For post-menopausal women, discussing the potential benefits of HRT with a healthcare provider may help maintain urogenital health.

## 9. Regular health Check-ups

- **Routine Check-ups:** Regular healthcare visits allow for monitoring and addressing any underlying conditions that may contribute to UTIs.

## 10. Stay informed

- **Educate yourself:** Being aware of the risk factors, symptoms, and preventive measures empowers individuals to take proactive steps.

## 11. Balanced diet

- **Nutrient-Rich Foods:** A well-balanced diet with ample vitamins and minerals supports overall immune function, contributing to urinary health.

## DISCUSSION

Ayurveda, an ancient healing system, provides holistic insights into urinary tract health. Rooted in balancing doshas, Ayurveda recommends herbs like Gokshura and Punarnava for their diuretic properties. Individualized treatments, considering constitution and imbalances, align Ayurveda with modern care, offering a comprehensive approach to UTI prevention and management.

## CONCLUSION

In conclusion, our research on Urinary Tract Infections (UTIs) in females underscores the importance of multifaceted preventive measures and comprehensive management. The study explored various aspects, including prevalence rates, causes, symptoms, and preventive strategies. Recommendations for maintaining proper hygiene, hydration, and lifestyle adjustments are crucial in preventing UTIs.

## REFERENCES

1. Sabih A, Leslie SW. Complicated urinary tract infections [Internet]. National Library of Medicine. StatPearls Publishing, 2023. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK436013/>
2. Urology Care Foundation. Urinary Tract Infection (UTI): Symptoms, Diagnosis & Treatment - Urology Care Foundation [Internet]. [www.urologyhealth.org](http://www.urologyhealth.org), 2022. Available from: <https://www.urologyhealth.org/urology-a-z/u/urinary-tract-infections-in-adults>
3. Urinary tract infection (UTI) - Symptoms and causes [Internet]. Mayo Clinic. [cited 2024 Mar 10]. Available from: <https://www.mayoclinic.org/diseases-conditions/urinary-tract-infection/symptoms-causes/syc-20353447#:~:text=time%20to%20urinate.->
4. Ayurveda DS. Ayurveda for urinary tract infection, Cause, symptoms, and treatment [Internet]. [drshardaayurveda.com](http://drshardaayurveda.com). Available from: <https://www.drshardaayurveda.com/blogs/ayurveda-for-urinary-tract-infection-cause-symptoms-and-treatment>
5. CDC. Urinary tract infection [Internet]. Centers for Disease Control and Prevention, 2021. Available from: <https://www.cdc.gov/antibiotic-use/uti.html>
6. Cleveland Clinic. Urinary Tract Infections [Internet]. Cleveland Clinic, 2023. Available from: <https://my.clevelandclinic.org/health/diseases/9135-urinary-tract-infections>
7. Kovacs JS. Urinary Tract Infection (UTI) [Internet]. WebMD, 2021. Available from: <https://www.webmd.com/women/your-guide-urinary-tract-infections>
8. Better Health Channel. Urinary tract infections (UTI) [Internet]. Better Health Channel, 2022. Available from: <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/urinary-tract-infections-uti>

9. Jancel T, Dudas V. Management of uncomplicated urinary tract infections. *West J Med*, 2002; 176(1): 51-5. doi: 10.1136/ewjm.176.1.51. PMID: 11788540; PMCID: PMC1071654.
10. CDC. Urinary tract infection [Internet]. Centers for Disease Control and Prevention, 2021. Available from: <https://www.cdc.gov/antibiotic-use/uti.html>