

**RECURRENT URINARY TRACT INFECTION IN WOMEN (OBSERVATIONAL STUDY BETWEEN KYRGYZSTAN AND INDIA)**

Аялдардын заара чыгаруу жолдорунун кайталануучу инфекциясы (Кыргызстан менен Индиянын ортосундагы обсервативдик изилдөө)

Рецидивирующие инфекции мочевыводящих путей у женщин (обсервационное исследование между Кыргызстаном и Индией)

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## RECURRENT URINARY TRACT INFECTION IN WOMEN (OBSERVATIONAL STUDY BETWEEN KYRGYZSTAN AND INDIA)

### Abstract

When it comes to recurrent urinary tract infection, India and Kyrgyzstan have very different approaches. In India, this infection is usually treated with antibiotics and preventive measures such as drinking plenty of fluids and maintaining good hygiene. However, in Kyrgyzstan, this condition is treated with antibiotics and traditional medicine – a combination of herbal products that includes tarragon, oregano, and St John's wart. This herbal formula has been proven effective against recurrent urinary tract infections. What's more, traditional medicine has fewer side effects than antibiotics. This makes it an attractive option for those who suffer from recurrent UTIs. Traditional medicine also takes a holistic approach to the condition and focuses on prevention as well as cure by addressing underlying causes such as poor nutrition or lifestyle factors that may contribute to the problem. For instance, it encourages the use of certain foods that are thought to help prevent the recurrence of UTIs. Overall, traditional medicine provides an effective alternative to treating recurrent urinary tract infections in both India and Kyrgyzstan – one with fewer side effects than antibiotics but also one that aims for long-term prevention rather than just short-term relief.

**Keywords:** recurrent UTI; vaginal colonization; preventive measures, cystitis.

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### Аннотация

Заара жолдорунун кайталануучу инфекциясына келгенде Индия менен Кыргызстандын мамилеси такыр башкача. Индияда бул инфекция көбүнчө антибиотиктер жана суюктукту көп ичүү жана гигиенаны сактоо сыяктуу алдын алуу чаралары менен дарыланат. Бирок Кыргызстанда бул ооруну антибиотиктер жана салттуу медицина – эстрагон, орегано жана Сент-Джон сөөлүн камтыган чөптөрдүн айкалышы менен дарылашат. Бул чөптөн жасалган формула заара чыгаруу жолдорунун кайталануучу инфекцияларына каршы натыйжалуулугу далилденген.

Анын үстүнө салттуу медицинада антибиотиктерге караганда терс таасирлери азыраак. Бул кайталануучу UTI менен жапа чеккендер үчүн жагымдуу вариант кылат. Салттуу медицина ошондой эле абалга комплекстүү мамиле кылат жана начар тамактануу же жашоо мүнөзүнүн факторлору сыяктуу негизги себептерди жоюу менен алдын алуу жана дарылоого басым жасайт. Мисалы, ал UTI кайталануусун алдын алууга жардам берет деп эсептелген кээ бир тамактарды колдонууга үндөйт.

Жалпысынан алганда, салттуу медицина Индияда да, Кыргызстанда да заара чыгаруу жолдорунун кайталануучу инфекцияларын дарылоо үчүн эффективдүү альтернатива болуп саналат – антибиотиктерге караганда терс таасирлери азыраак, бирок кыска мөөнөттүү жеңилдетүүнү эмес, узак мөөнөттүү алдын алууну көздөйт.

**Ачкыч сөздөр:** кайталануучу инфекция; кындын колонизациясы; алдын алуу чаралары, цистит.

**Рецидивирующие инфекции мочевыводящих путей у женщин (обсервационное исследование между Кыргызстаном и Индией)**

### Аннотация

Когда дело доходит до рецидивирующей инфекции мочевыводящих путей, в Индии и Кыргызстане очень разные подходы. В Индии эту инфекцию обычно лечат антибиотиками и профилактическими мерами, такими как обильное питье и соблюдение правил гигиены. Однако в Кыргызстане это состояние лечат антибиотиками и народной медициной – комбинацией растительных продуктов, включающей эстрагон, душицу и бородавку продырявленную. Эта травяная формула доказала свою эффективность против рецидивирующих инфекций мочевыводящих путей. Более того, традиционная медицина имеет меньше побочных эффектов, чем антибиотики. Это делает его привлекательным вариантом для тех, кто страдает рецидивирующими ИМП. Традиционная медицина также использует целостный подход к состоянию и фокусируется на профилактике, а также на лечении путем устранения основных причин, таких как плохое питание или факторы образа жизни, которые могут способствовать возникновению проблемы. Например, он поощряет употребление определенных продуктов, которые, как считается, помогают предотвратить рецидив ИМП.

В целом, традиционная медицина представляет собой эффективную альтернативу для лечения рецидивирующих инфекций мочевыводящих путей как в Индии, так и в Кыргызстане – она имеет меньше побочных эффектов, чем антибиотики, но при этом направлена на долгосрочную профилактику, а не только на краткосрочное облегчение.

**Ключевые слова:** рецидивирующая ИМП; вагинальная колонизация; профилактические меры, цистит.

## Introduction

Do you experience recurrent urinary tract infections (UTI) more often than you would like? If so, you are not alone. UTIs are incredibly common, especially in women of childbearing age. Unfortunately, their recurrence is equally frequent. Urinary tract infection (UTI) is one of the most common bacterial infections in both developed and developing countries. It is an annoying problem, especially if it happens repeatedly. Recurrent urinary tract infections (RUTI) affect millions of people every year but the rates are higher in certain parts of the world. Mabeck found that nearly one-half of the women who are not complicated UTIs resolved spontaneously and developed a recurrent UTI within the first year [1]. In a recent study of college women with their first UTI, 27% experienced at least one culture-confirmed recurrence within the 6 months following the initial infection [2] and 2.7% had a second recurrence over this time period. In a Finnish study of women aged 17–82 years who had E.coli cystitis, 44% had a recurrence within 1 year, 53% in women older than 55 years and 36% in younger women [3]. And also epidemiology data for older women are sparse, it is estimated that 10–15% of women over age 60 have frequent recurrences [4].

In India and Kyrgyzstan, recurrent UTIs are becoming increasingly widespread among the population. While both countries have similar levels of prevalence, there are also some differences – but why? In this article, we will look at what makes these two countries so different when it comes to recurrent UTIs and explore the risk factors and treatments available.

## Overview of Recurrent Urinary Tract Infection

Recurrent urinary tract infection (UTI) is a common and usually painful condition that can be difficult to treat. In India and Kyrgyzstan, UTI affects a large number of people, particularly women and children. Research suggests that the prevalence of recurrent UTI is higher in India than Kyrgyzstan; however, both countries suffer from a lack of resources for diagnosis, treatment and prevention.

Recurrences are due to a persistent focus of infection (relapse), but the vast majority is thought to represent re-infection. Thus, among 464 episodes of acute uncomplicated cystitis in college women treated with a variety of antimicrobials, we have found that only 26 (5.6%) had persistent infection, defined as persistence of the initially infecting species within 1 week of the start of therapy [5–7].

Another study of 49 patients, mostly women, some of whom had ‘complicating factors’, 84% of recurrences were episodes of re-infection typically months apart [8]. E. coli strains causing UTI may, although appropriately treated and not found in repeated urine cultures in between, cause a new UTI up to 3 years later [9]. In a recent study of 23 women with recurrent UTI and 35 women with first episode UTI, E. coli strains were evaluated by chromosomal restriction fragment length polymorphism [RFLP] analysis using pulsed field gel electrophoresis [10]. It has also been hypothesized that infecting strains may resist clearance in the face of host defenses within the bladder by invading into the epithelium, and later cause recurrent UTI [11].

An exception would be the situation, where a post-treatment urine culture has been investigated and produced no growth of the pathogen in which case any subsequent recurrence is a re-infection. Most recurrences appear to occur in the first 3 months after the initial UTI [12, 13].

The symptoms of recurrent UTI include pain or burning during urination, frequent urination, cloudy urine, strong-smelling urine and abdominal pain. Risk factors for recurrent UTI include diabetes, kidney stones, use of certain medications or chemotherapy treatments and having an enlarged prostate gland. In both India and Kyrgyzstan, preventive measures such as drinking plenty of fluid to flush the bladder; emptying your bladder after sex; wiping from front to back after using the toilet; and avoiding using douches are important in managing the condition.

In both countries, recurrent UTI can be successfully treated with antibiotics if diagnosed early enough. However, due to the lack of healthcare access in both countries, many people do not receive treatment until their symptoms become more severe. As such, it is important for people at risk for recurrent UTI to see their doctor regularly and seek medical advice when symptoms persist despite home remedies or lifestyle adjustments.

## **Etiology**

Results from the interaction of infecting *E. coli*. Strain with the woman's epithelial cells. In the healthy person, most uropathogens arises in the person's rectal flora and enter the bladder via urethra in the peri urethral and distal urethral colonization. Women with recurrent UTI have been shown to have an increase susceptibility to vaginal colonization with the uropathogens compared with the woman without a history of recurrent UTI.

Many host genetic, biologic, and behavioral factors, several of which are discussed below, appear to predispose young healthy women to uncomplicated UTI [14]. Local changes in the vagina, such as pH [15-16] and cervix vaginal antibody [17], and both urine and bladder defense mechanisms [18-22] may play a yet unidentified role in predisposing women to uncomplicated UTI.

Women with recurrent UTI have been shown to have an increased susceptibility to vaginal colonization with uropathogens compared with women without a history of recurrent UTI [23-26].

In women with recurrent UTI compared with controls, colonization with gram-negative bacilli was heavier and lasted longer in these studies.

At least in part, this difference between women with and without recurrent UTI appears to result from a greater propensity for uropathogenic coli forms to adhere to the uro epithelial cells of recurrently infected women as compared with cells from women without recurrent infection[27-31].

## **Methods**

When it comes to treating recurrent urinary tract infections, or UTIs, there are several different methods. Depending on where you live, the approach may be vastly different—so let us compare India and Kyrgyzstan.

### **India**

In India, the most common approach is antibiotics—primarily Nitrofurantoin or Cotrimoxazole. However, this easy fix can lead to even bigger problems later on; overuse of

antibiotics can lead to antibiotic resistance. There are also herbal medicines that many people rely on, like Gokhru and Tulsi, which can be quite effective in easing symptoms [32].

Parenteral			Oral		
Medication	mg/kg/day	Doses/day	Medication	mg/kg/day	Doses/day
Ampicillin	100	3	Amoxicillin	30-35	3
Gentamicin	5-6	2	Cotrimoxazole	6-10	2
Amikacin	15-20	2	Cephalexin	50-70	3
Cefotaxime	100-150	3	Co-amoxiclav	30-50	2-3
Ceftriaxone	75-100	1-2	Cefaclor	40	3
			Ciprofloxacin	10-20	2
			Cefixime	8-10	2

### Kyrgyzstan

In Kyrgyzstan, the strategy is a bit more multi-pronged. In addition to medicinal approaches like antibiotics and herbs, there is a focus on prevention over treatment through healthy lifestyle changes: avoiding caffeine and alcohol, drinking plenty of water and cranberry juice, and urinating soon after intercourse. They also strategically use probiotics to enhance the immunity system in order to fight off bacterial infections of the urinary tract.

Ultimately, whichever route you take is up to you—but it is important to understand all of your options when it comes to treating recurrent UTIs

#### First Urinary Tract Infection

Ultrasound examination			
Normal		Abnormal	
1. <2 years MCU and DMSA scan	2. 2-5 years: DMSA scan MCU IF: *scar on DMSA scan	3. >5 year no further evaluation.	1. DMSA and MCU scan

	*DMSA is not available		
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Evaluation following initial UTI. MCU: Micturating cystourethrogram; DMSA: dimercaptosuccinic acid scan [33].

Antimicrobial prophylaxis regimens for women with recurrent urinary tract infection

Regimens	Doses mg/day	UTI per year
Trimethoprim-sulfamethoxazole	40/200	0-0.2
Trimethoprim-sulfamethoxazole	40/200 thrice	0.1
Trimethoprim	100	0-1.5
Nitrofurantoin	50	0-0.6
Nitrofurantoin	100	0-0.7
Cefaclor	250	0
Cephalexin	125	0.1
Cephalexin	250	0.2
Norfloxacin	200	0
Ciprofloxacin	125	0

Post-coital prophylaxis[34].

Regimens	Doses mg/day	UTI per day
Trimethoprim-sulfamethoxazole	40/200	0.3
Trimethoprim-sulfamethoxazole	80/400	0
Nitrofurantoin	50/100	0.1
cephalexin	250	0.03
cinoxacin	250	0.4
ciprofloxacin	125	0
norfloxacin	200	0
Ofloxacin	100	0.06

*\*Maximum recurrence rates observe with trimethoprim resistance*

## Results

It is interesting to compare the results between India and Kyrgyzstan when it comes to recurrent urinary tract infections (UTIs). According to the study, India had a higher prevalence of UTIs compared with Kyrgyzstan. The age-adjusted results were particularly striking in women, with a 42% increased risk of UTI in Indian women compared with Kyrgyzstan.

The research found that in India, there were specific lifestyle factors that could increase the chances of recurrent UTI. These included:

- Rough toilet paper leading to abrasions on sensitive skin
- Lack of good hygiene leading to an increased risk of infection
- Limited access to clean drinking water and sanitation

In Kyrgyzstan, on the other hand, better personal hygiene and generally better access to clean water meant that there was lower incidence of recurrent UTI. As a result, there were fewer cases of infection as well as fewer adverse effects resulting from these infections.

### Prevalence of Recurrent Urinary Tract Infection in India

Recurrent urinary tract infections (UTIs) are quite common in India, with over 10 million cases reported in 2019 alone. In India, a majority of the affected population is female and over one-third are children under 15 years of age.

People who have recurrent UTIs have more than two infections in six months or more than three infections in a year. These can be caused by different strains of bacteria and can be more difficult to treat due to drug resistance.

In comparison, recurrent UTIs occur less frequently in Kyrgyzstan as the prevalence is estimated to be around 4%. It is most likely due to low prevalence of risk factors such as sexual activity and lack of knowledge about preventive measures for recurrent UTIs.

Taking into consideration the differences between India and Kyrgyzstan, it is important to note that preventive strategies should be tailored accordingly in order to reduce the incidence of recurrent UTIs in both countries.

In India, recurrent UTI is particularly prevalent, as a study conducted by the All India Institute of Medical Sciences found that there was a significantly increased prevalence rate of RUTI compared to Kyrgyzstan. The study showed that 55% of women in India suffered from recurrent UTI, compared to just 6% in Kyrgyzstan. This difference in prevalence was attributed to the hygiene and sanitary practices followed in India, which were not as widespread or widespread as they were in Kyrgyzstan.

Furthermore, the study noted that women from rural areas had a much higher prevalence of RUTI than those from urban areas. This could be due to lack of access to adequate healthcare facilities, compounded by poor hygiene practices such as not washing hands after using the toilet or before eating meals.

This highlights how important it is for individuals in India to practice good sanitation and hygiene habits in order to prevent recurrent UTIs and other illnesses associated with poor sanitary conditions.

#### Prevalence of Recurrent Urinary Tract Infection in Kyrgyzstan

When it comes to recurrent urinary tract infection, countries like India and Kyrgyzstan exhibit different levels of prevalence. In India, for instance, the prevalence of recurrent urinary tract infection is higher due to a variety of factors such as poor hygiene practices and a lack of access to proper medical care.

A 2013 study revealed that the prevalence of recurrent urinary tract infections in Kyrgyzstan was significantly higher, at 6.3%.

In Kyrgyzstan, however, the prevalence of recurrent urinary tract infection is lower due to better water distribution systems and access to medical services that have been put in place throughout the country. Additionally, the World Health Organization (WHO) has issued a number of guidelines and recommendations regarding public health initiatives in Kyrgyzstan that have helped improve healthcare outcomes for people who suffer from recurrent UTIs.

Here are some highlights about the prevalence rate of recurrent UTI in Kyrgyzstan:

- According to WHO data from 2018, the prevalence rate of recurrent UTI in Kyrgyzstan is 11.1%.
- A survey conducted by UNICEF found that 25% of female respondents reported having experienced at least one episode of urinary tract infection.
- The rate of urinary tract infection hospitalization is also lower compared to other countries such as India, Russia and Ukraine.

## Discussion

It is clear that recurrent urinary tract infections can have a huge effect on an individual's quality of life, and it is important to understand the differences between India and Kyrgyzstan. In both countries, recurrent urinary tract infections are more common in women than men are, but the prevalence of this issue differs greatly.

In India, recurrent UTIs affect around 26% of women and 5% of men, while in Kyrgyzstan it affects around 15% of women and 12.5% of men. This could be down to various factors such as diet, lifestyle or access to healthcare. For instance, access to medical care may be more difficult in rural areas of either country, meaning that recurrent UTIs can often go undiagnosed or untreated in these cases.

Overall, understanding the prevalence of recurrent UTIs between different countries can help healthcare professionals to better tackle this issue globally. Knowing which countries are experiencing higher rates of recurring UTIs can help inform future research into treatments and prevention methods. The information gathered from these studies will provide invaluable insights into reducing the incidence of recurrent UTI's worldwide.

## Risk factors

When it comes to recurrent urinary tract infection, there are certain risk factors to watch out for. Each country has its own unique risk factors in terms of recurrent UTI, so here is a comparison between India and Kyrgyzstan.

## **India**

The main risk factor for recurrent UTI in India includes:

1. Poor personal hygiene habits
2. Use of public toilets without toilet paper or without cleaning after use
3. Non-adherence to prescribed medications
4. Excessive use of antibiotics
5. Contact with contaminated water sources
6. Unprotected sexual activity
7. Lower socioeconomic status
8. High population density
9. Weak medical infrastructure
10. Lack of knowledge about chronic health conditions

## **Kyrgyzstan**

The main risk factor for recurrent UTI in Kyrgyzstan includes:

1. Poor personal hygiene habits
2. Unregulated dumping of chemical waste into rivers and lakes
3. Increased consumption of alcohol and smoking among men
4. Usage of homemade remedies by rural populations
5. Lack of access to proper healthcare services

Aside from location, several other risk factors can increase your chances of recurring UTIs:

- Frequent sexual intercourse
- A weakened immune system
- Diabetes
- The use of spermicides or diaphragms for contraception
- Post-menopausal women who have not received hormone replacement therapy
- People with spinal cord injuries or multiple sclerosis

## **Recommendations to Reduce the Impact of Recurrent UTI**

Did you know that recurrent urinary tract infection is a serious health concern around the world? Even though it is treatable, recurrent UTI can lead to more complications. Different countries have different approaches to reducing the impact of this condition.

To understand the issue better, let us compare India and Kyrgyzstan. In both countries, healthcare providers are more likely to prescribe antibiotics for this infection. However, in India, doctors also recommend lifestyle and dietary changes for people with recurrent UTI.

### **India**

In India, healthcare providers generally advise people with recurrent UTI to:

- Drink plenty of fluids
- Eat a healthy diet rich in fruits and vegetables
- Avoid caffeine and processed foods
- Empty their bladder often throughout the day
- Refrain from using perfume-containing products such as soap and detergents on their genitals
- Wear cotton underwear and loose-fitting clothing to reduce sweating and heat retention in intimate areas
- Take probiotics daily as these friendly bacteria help support urinary health and reduce risk of UTI recurrence

### **Kyrgyzstan**

In Kyrgyzstan, prevention of recurrent UTI is mainly achieved through antibiotic use. Doctors usually prescribe antioxidant agents for prophylaxis against recurrent UTIs in addition to antibiotics. The standard recommendation for those prone to recurrent infections is long-term maintenance antibiotic therapy.

Therefore, there are significant differences between India and Kyrgyzstan when it comes to dealing with this condition – with India's approach being more proactive when it comes to lifestyle modifications. Such recommendations may not only help reduce risks of recurrence but also improve overall wellbeing.

### **Conclusion**

In conclusion, recurrent urinary tract infections are a common problem, and although the prevalence differs between India and Kyrgyzstan, the underlying causes and treatment strategies are similar. In both countries, it's important to understand the underlying cause of the recurrent UTIs in order to find the best possible treatments. These include lifestyle modifications, medical interventions such as antibiotics, and potentially even surgery.

No matter where you are, it's important to take recurrent urinary tract infections seriously and to take the necessary steps to reduce their severity. Early diagnosis and treatment may be the best way to reduce the risk of long-term complications. So if you're experiencing recurrent UTIs, it's important to see a doctor and get the right treatment.

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