



## PRESCRIBING PATTERN OF DRUGS FOR TREATMENT OF UTI IN POSTMENOPAUSAL WOMEN IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Introduction:** Urinary tract infections (UTIs) are most common bacterial infection in women and increase incidence after menopause. It's also found to have a negative impact in the quality of life of patients. Thus it is important to analyse and evaluate the prescribing pattern of drugs for UTI. **Objective:** to evaluate the prescribing pattern of drugs for treatment of UTI in post-menopausal women in tertiary care. **Methods:** In this prospective observational analysis, all postmenopausal patients presented with UTI in 6 months in Karuna Medical College Hospital, Vilayodi were included. Data regarding their past medical and medication history, laboratory data's and the prescribing pattern of drugs of the disease condition and their rationality is also analyzed. **Result:** our study showed the treatment of UTIs dominated with prescriptions of nitrofurantoin and cephalosporin (63.63%) followed by fluoroquinolones (18.18%), penicillin (13.63%). Most commonly prescribed non-pharmacological therapy is cranberry (9.09%) and D-mannose (9.09%) The supportive therapy widely prescribed are acetaminophen (37.87%), and antacids like pantoprazole (86.36%), disodium hydrogen citrate (30.30%) which was mostly used to resolve symptoms of disease. **Conclusion:** The core treatment of UTI is antibiotic among which nitrofurantoin and cephalosporine are prescribed mostly followed by fluoroquinolones and penicillins. Commonly prescribed non-pharmacological therapy is cranberry, D-mannose and probiotics. Other supportive therapy like acetaminophen, antacids etc are given for symptomatic relief.

**Key words:** Postmenopausal UTI, Pharmacological Management for UTI, Non- Pharmacological Management For UTI, Supportive Therapy For UTI.

### INTRODUCTION

Urinary tract infections (UTIs) are among the most common bacterial infection in humans and it remains to be one of the most common bacterial infections seen in adult women of all ages[1,2]. Among the female population, 6–10% of girls and young women have UTI. Furthermore, the incidence rate rises dramatically in the elderly population. Upto 50% of women in their lifetime, experience a recurrence in 6–12 months [4,5].

The chances of getting UTI increases with the increased age due to various physiological and anatomical risk factors in women such as, estrogen deficiency in

menopause stage, cystocele, incontinence, incomplete bladder emptying, predisposing to RUTI[6].

RUTS also has a negative effects on women's quality of life, based on the medical, physical, social, psychological, economic, and sexual aspects[7]. Thus providing the patients with a conventional treatment by considering various associated risk factors is important. Antibiotic therapy is the core treatment for UTI, with the main objective being the eradication of bacterial growth in the urinary tract through an efficacious, safe and cost-effective antimicrobial agent [8].

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Use of trimethoprim-sulfamethoxazole or selective fluoroquinolones has always been the preferred choice of antibiotic because of concerns about resistance and costs [9].

Use of estrogen stimulates the proliferation of lactobacillus in the vaginal epithelium, reduces pH and avoids vaginal colonisation by uropathogens, thus found to be an effective treatment for UTI in post menopausal women[10]. Other non-antibiotic prophylaxis that can be used for treatment are cranberry formulations, D-mannose, vitamin C supplements, lactobacilli [11].

Here we intent to study the prescribing pattern of drug for UTI in post menopausal women treated in tertiary care hospital land thereby involving in the path of improving the safety and efficacy of the treatment provided

**Materials and Methods**

A Prospective observational study was conducted in the Urology Department at Karuna Medical College Hospital, Vilayodi, Chittur, and Palakkad. The study was conducted from October 2021 to April 2022(6 months). Total 66 patients who met the inclusion criteria were enrolled in the study.

**Inclusion criteria:**

Post-menopausal women diagnosed with UTI or with a recurrence in UTI.

**Exclusion criteria:**

- Women who did not give consent,
- Severely ill patients admitted to ICU and Psychiatric patients.

• Study Procedure:

Ethical Committee approval (KMC/IHEC/05/2022) was obtained from Karuna Medical College Hospital, Palakkad. Signed informed consent was obtained from all participants enrolled into the study. A data entry form was used to procure patient information which includes, Previous medical and medication history, laboratory data, medications prescribed for the disease and

it’s symptoms and its rationality was analyzed. The collected data were used to identify the prescribing pattern of drugs given to treat the UTI and associated signs and symptoms in the patients. Statistical analysis of the data was performed and documented.

**RESULTS AND DISCUSSION**

A total of 66 cases of patients who meet the inclusion criteria were obtained from the department of gynecology and urology in Karuna Medical College Hospital. the study findings reveal that the most commonly prescribed non pharmacological therapy are cranberry(9.09%) and D - mannose(9.09%) as it prevents the adherence of bacteria on the walls of urinary epithelia and the use of probiotics(9.09%) as it promotes the growth of urogenital flora and thus prevent the recurrence of UTI. Our study findings of prescribing pattern of drugs for UTI in hospital settings was dominated with prescriptions of nitrofurantoin and cephalosporin (63.63%) as most urinary tract pathogens retain susceptibility to nitrofurantoin with resistance being relatively rare and hence the first choice agent for these infection, followed by fluoroquinolones (18.18%), penicillin (13.63%). The most commonly prescribed drugs among fluoroquinolones was found to be norfloxacin (50%), which was followed by ciprofloxacin (33.33%), levofloxacin (16.67%). The drug use pattern of cephalosporin’s shows that the third generation cephalosporin, ceftriaxone is most commonly prescribed (25.75%) followed by second generation cefuroxime (10.60%). The supportive therapy widely prescribed to the patients include painkillers like acetaminophen( 37.87%), and antacids like pantoprazole (86.36%) to avoid gastric irritation associated with administration of antibiotics and painkillers. other commonly prescribed drug is disodium hydrogen citrate (30.30%) which is used as a urinary alkalinizer. 9.09% of patients were on hormone replacement therapy with estrogen besides its high cost and side effects since reduced level of estrogen hormone in the menopause appear to contribute for the occurrence of UTI.

**Table 1. Non-pharmacological approaches in the treatment and prevention of UTI in post-menopausal women**

Agent	Number of patients(n=66)	Percentage (%)
Cranberry	6	9.09
D-Mannose	6	9.09
Uva-Ursi	1	1.51
Probiotic	6	9.09
Barley water	2	3.03

**Table 2. Prescribing pattern of antibiotics for post-menopausal UTI patients in the hospital.**

Antibiotics	Number of patients (n= 66)	Percentage (%)
Nitrofurantoin	42	63.63
Fluoroquinilones	12	18.18
Cephalosporin	42	63.63
Penicillin	9	13.63

Aminoglycosides	2	3.03
Fosfomycin	1	1.51
SMX-TMP	6	9.09

**Table 3. Prescribing pattern of fluoroquinolones antibiotics in postmenopausal UTI.**

Fluoroquinolones Antibiotics	Number of patients (n=66)	Percentage (%)
Ciprofloxacin	4	33.33%
Norfloxacin	6	50%
Levofloxacin	2	16.67%

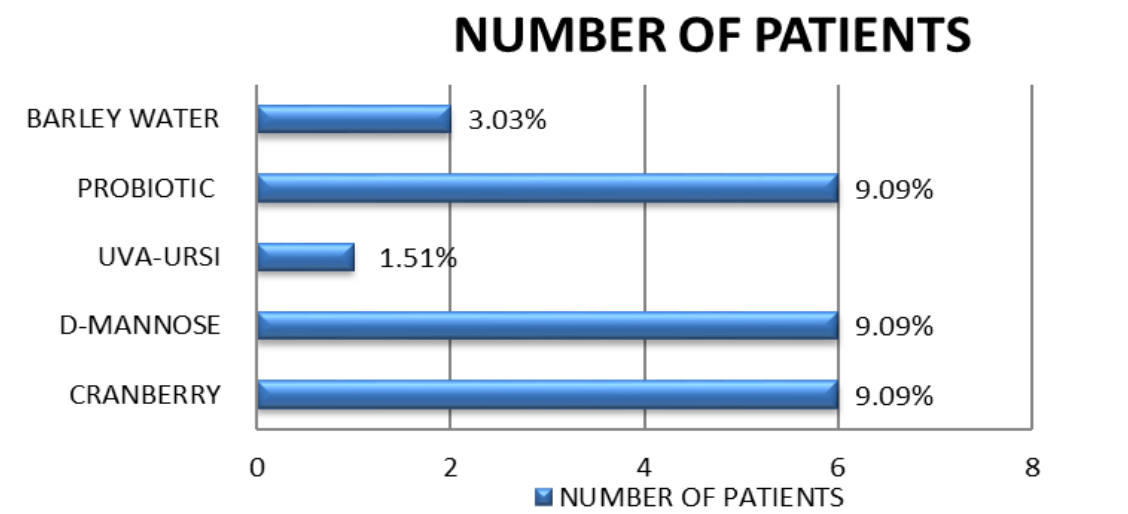
**Table 4. Drug use pattern of cephalosporins antibiotics in postmenopausal women.**

Generation		Number of patients (n=66)	Percentage (%)
Second generation	Cefuroxime	7	10.60%
	Ceftriaxone	17	25.75
Third generation	Cefixime	6	9.09
	Ceftriaxone + Sulbactam	2	3.03

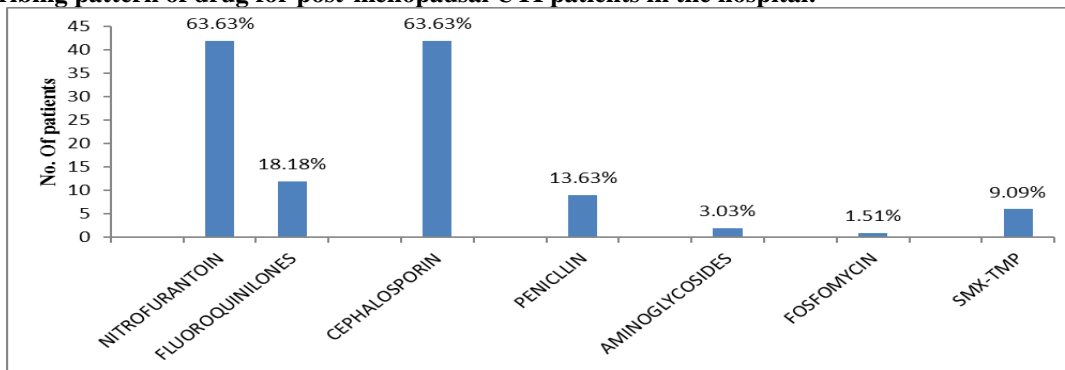
**Table No. 5 SUPPORTIVE THERAPY IN THE TREATMENT OF UTI.**

	Drug	Number of patients (n=66)	Percentage (%)
Painkillers	Acetaminophen	25	37.87
	Diclofenac	3	4.54
	Tramadol	4	6.06
	Mefenamicacid	3	4.54
Urinary Alkanizer	Disodium hydrogencitrate	20	30.30
Muscle Relaxants	Flavoxate	21	31.81
	Hyoscyamine	1	1.51
Anti-Spasmodics	Oxybutinin	0	0
	Tamsulosin	2	3.03
	Mirabegron	2	3.03
Antacids	Pantoprazole	57	86.36
	Rabeprazole	12	18.18
	Ranitidine	15	22.72
Hormone Replacement	Estrogen	6	9.09
Anti-Emetic	Ondansetron	12	18.18

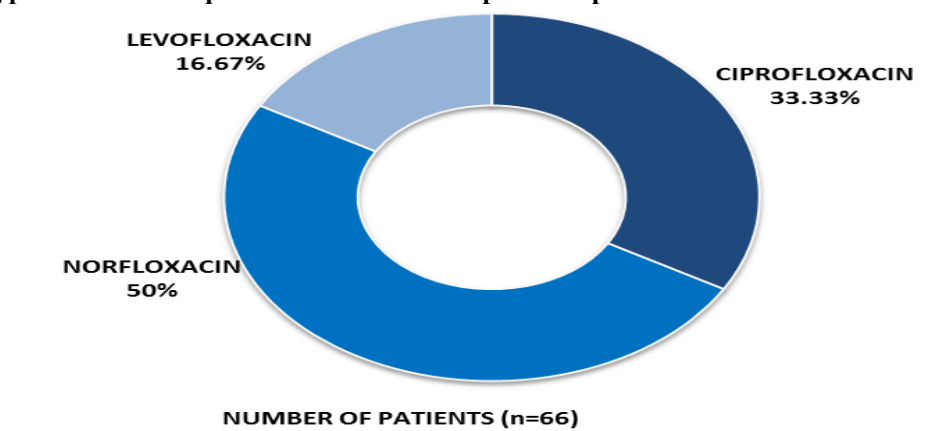
**Fig 1. Non-pharmacological approaches in the treatment and prevention of UTI in post-menopausal women.**



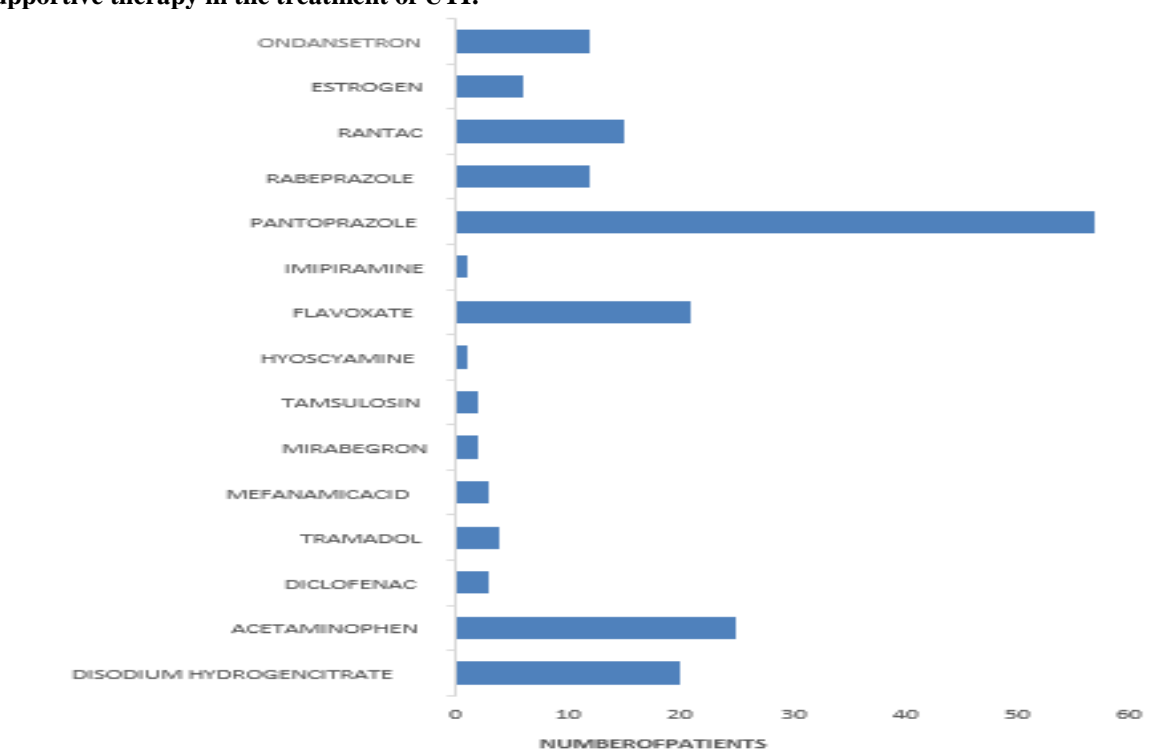
**Fig 2. Prescribing pattern of drug for post-menopausal UTI patients in the hospital.**



**Fig 3. Prescribing pattern of fluoroquinolones antibiotics in postmenopausal UTI.**



**Fig 5. Supportive therapy in the treatment of UTI.**



## CONCLUSION

The current study gives an insight to the prescribing pattern of for UTI in post menopausal women. The most commonly prescribed non pharmacological therapy are cranberry, D-mannose and probiotics, they are found to be relatively safe and prevents the recurrence of UTI. The pharmacological therapy for UTI in our hospital setting was dominated with prescriptions of nitrofurtoin and cephalosporins followed by fluoroquinolones and penicillin. Specifically analysing the class fluoroquinolones, norfloxacin was commonly prescribed. The drug use pattern of cephalosporin shows that the third generation drug ceftriaxone was commonly prescribed. Supportive therapy for symptomatic relief includes painkillers like acetaminophen, antacids like pantoprazole.

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## LIMITATION

In this study, though the provided treatment for UTI in patients was evidently showing an improvement in their quality of life, we couldn't intervene the therapy to provide a vision of best possible individualized therapy with an aim of reduced recurrence of UTI due to short duration and small sample size.

**CONFLICTS OF INTEREST:** No interest