



PATTERN OF ANTIBIOTICS USE FOR TREATMENT OF URINARY TRACT INFECTION IN NON-PREGNANT FEMALE VISITING IN GYNAECOLOGY OPD IN TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT:

Background: Urinary tract infection (UTI) is defined as the presence of microbial pathogens in the urinary tract and female of the age group (12-60 years) are the most vulnerable population. UTIs are one of the most common bacterial infections seen in primary care. This study aims to estimate the prevalence rate of UTI among females and pattern of use the antibiotics in non-pregnant females.

Methods: This is a cross sectional descriptive study carried out in the department of Gynaecology of our tertiary care teaching institution for a period of 6 months. 102 female attending to the Gynaecology OPD with complain of UTI. Pregnant females were excluded. Each patient was interviewed using a structured interview schedule followed by collection of urine for microscopic examination and culture and the data obtained was evaluated.

The present study has been designed as a cross-sectional study in NCRIMS, Meerut from 1 January 2022 – 31 June 2022. Data was analysed using SPSS 15 software. Prevalence of UTI was calculated using percentages and strength of association was tested between socio-demographic characteristics and prevalence of UTI.

Results: A total number of 102 patients of UTI aged between 12- 60 years were identified during the course of this study. UTI was most commonly (102 patients) seen in the menopausal age group (42-51 years)

Conclusions: UTI is a serious public health problem if untreated. Early diagnosis and prompt treatment will prevent the chances of developing further complication of UTI and will help to reduce the sufferings of the patient, hospital stay and economic loss.

Keywords: Urinary tract infection, Bacteriuria, Urinary pathogens

INTRODUCTION:

Urinary tract infection (UTI) is defined as the presence of microbial pathogens in the urinary tract.^[1,2] The infection of the bladder and urethra are referred the infection of the lower urinary tract whereas the kidney and ureter infection is an indication of upper urinary tract infection. UTIs can be classified as uncomplicated or complicated (based on the factor that triggers the infection) or primary or recurrent (depending on the nature of occurrence).^[3]

Women are particularly at risk of developing UTIs because of their short urethra, and certain behavioural factors which include delay in micturition sexual activity and the use of contraceptives which promote colonization of the periurethral area with coliform bacteria.^[4] UTI is a contagion among men and women but the incidence is found high among women due to their biological conditions.^[5] In the urino-genital system, the output from kidneys is eliminated and wastes are filtered in urinary tracts. The urinary tract has an upper and lower part. This filter tube of human system often gets affected by bacterial, fungal and viral infections. However, the bacterial infection is predominant than the other two microbes.^[6]

UTI infection exhibits a variety of symptoms including mild burning micturition, bacteremia, sepsis and even death.^[7] It is reported that UTI is affecting both genders but women are more prone to this infection.^[8] About 40% women and 12% of men suffer with UTI infection at least one time in their lifetime. In UTI, different etiological agents like bacteria enter the otherwise sterile urine and begin to grow. It usually develops at the opening of urethra and then spreads to the urinary tract. It is reported that *Escheherichia coli* is the most common causative agent.^[9] In women sexual activity is the may cause up to 90% of bladder infection. This is common in the initial period of marriage and so is called “honeymoon cystitis”. Further improper wiping, suppressed immune system, Urinary catheter diabetes, unhygienic public toilets, birth control devices and family history may be other reasons (WWW. kidney.org/store).

About 80-90% of UTI is caused by a single type of bacteria. In lower urinary tract infection, the common symptoms include inflammation and irritation in the lining of urethra and bladder, burning sensation or pain while urinating. More frequent urination and often with only a small amount of urine, sensation of having to urinate urgently, cloudy, bad smelling, or bloody urine, lower abdominal pain and mild fever. For upper urinary tract infections, the frequent symptoms include high fever, nausea and vomiting, shaking chills, pain in back or one side of waist. In the children fever, vomiting, loss of bladder control sleeping mode is common symptoms. In the elderly fatigue is common due to UTI.

The aim of the study is to determine the age wise prevalence of UTI, different pathogens and antibiotic drug utilization for treatment of UTI in tertiary care teaching hospital amongst non-pregnant females visiting OBG OPD with symptoms of UTI.

Material and methods

This cross-sectional observational study was conducted in the department of Obstetrics and Gynaecology of our tertiary care teaching institution for a period of six months 1 January 2022 – 31 June 2022.

Sampling

For the study 102 cases of suspected UTI visiting OBG OPD in the Santosh Medical College & hospital, Ghaziabad collaborate with NCR Institute of Medical Sciences Meerut, during 1 January 2022 to 31 June 2022 were screened for further analysis. Clinical analyses of their urine, urino-genital system were carried out as per standard protocol. The urine culture confirming urinary tract infection positive cases were taken as infected population for further analysis. The case history age group and other demographic factors of the positive cases were recorded.

Collection of urine specimen from people

Mid-stream urine was collected in a sterile dry wide necked and leak proof container. Then the containers were labelled with the date, the name, time and serial number of the patient. The collected urine specimens were transported to microbiology department for further culture and sensitivity antibiotic screening with the temperature of 40C with coolant pack to the laboratory.

Inclusion criteria

Non Pregnant females, the inclusion criteria for the study were females of age group (12–60 years) residing in the study area, who were apparently infected by Urinary Tract Infection.

Exclusion criteria

The exclusion criteria for the study were females on any anti-biotic therapy, females on menstruation phase of the menstrual cycle, females with known urinary tract anomalies and females who were pregnant.

Study population

102 non-pregnant females attending Gynaecology OPD and diagnosed with Urinary Tract Infection were included in this study.

Approval was obtained from the Institutional Ethics Committee prior to the commencement of the study. Each participant was explained in detail about the study and written informed consent was obtained prior to the data collection. Each patient was interviewed using a structured interview schedule to obtain information regarding the age, parity, educational and socio-economic status. The severity of UTI was estimated and the intake proper treatment by the patient was also studied.

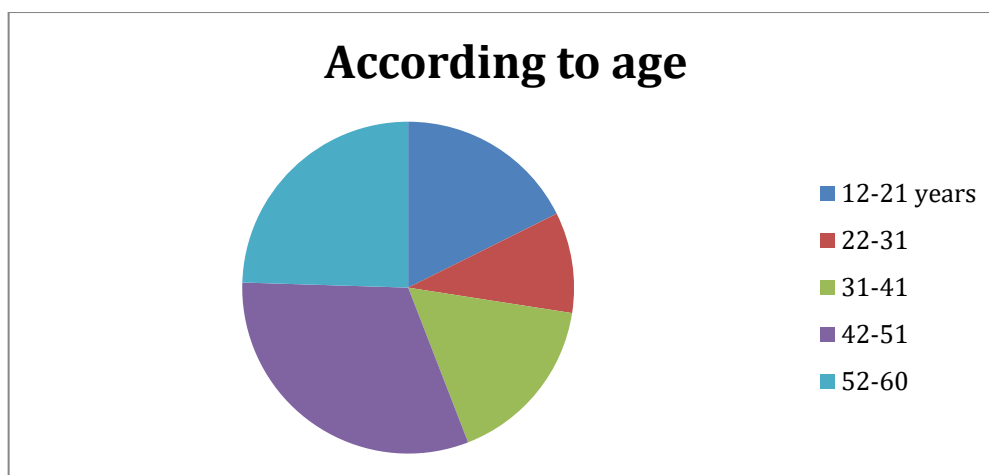
Statistical analysis:

Statistical analysis is done by simple proportions using Microsoft excel & SPSS. Data was entered and analysed using Microsoft Excel spread sheet.

Results:

1. Distribution of patients according to age group. (Table 1; Fig.1)

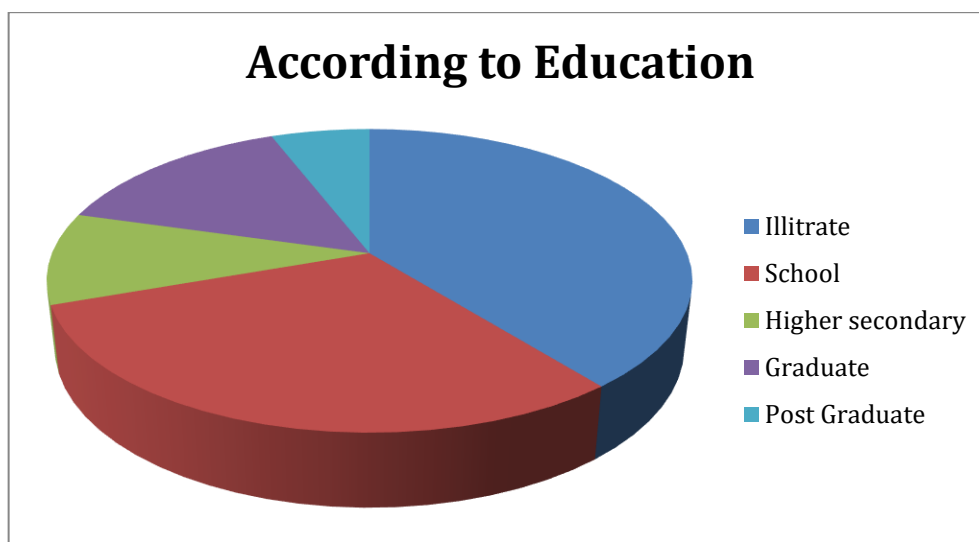
Age	Patients	Percentage
12-21	18	17.64%
22-31	10	9.80%
32-41	17	16.66%
42-51	32	31.37%
52-60	25	24.50%
Total	102	99.97%



A total number of 102 patients aged 12-60 years were included in this study. Total 102 patients of UTIs attending the Gynaecology OPD. In the age group 42-51 most of patients found 32 patients (31.37%) were found in this age group. Second largest number found in the age group 52-60 years 25 patients (24.50%) were found with the complain of painful micturition, burning micturition and increase frequency of micturition. In the 32-41 age group 17 (16.66%) patients were found. In the 22-31 age group 10 (9.80%) and 12-21 age group 18 (17.64%) patients were found of UTI.

2. Distribution of patients according to education. (Table 2; Fig. 2)

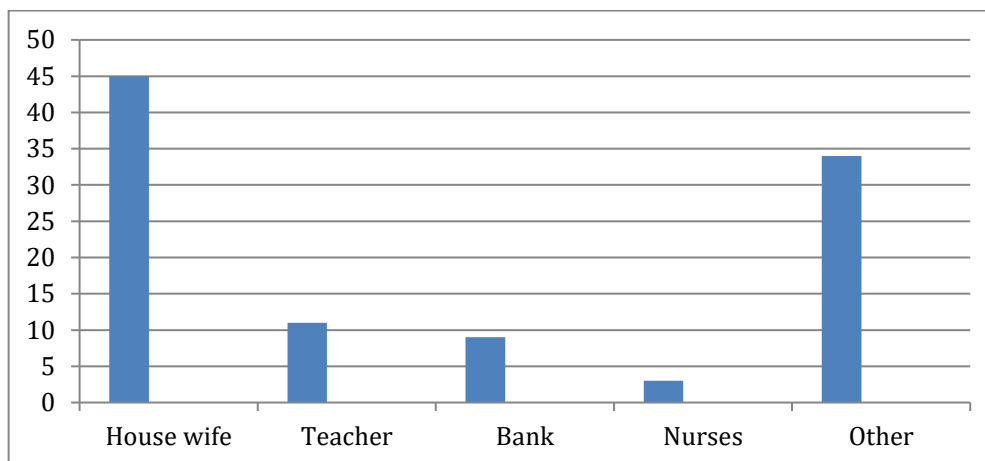
Education	Number of Patients	Percentage
Illiterate	40	39.21%
School	31	30.39%
Higher Secondary	10	9.80%
Graduate	15	14.70%
Post Graduate	6	5.88%
Total	102	99.98 %



According the table 2 the total 102 patients were divided basis the education. Most of the 40 (39.21%) patients were illiterate and 31 (30.39%) patients were pursuing school. 10 (9.80%) patients were higher secondary, 15 (14.70%) were graduate and only 6 (5.88%) patients were post graduate.

3. Distribution of patients according to job category (table 3; Fig. 3)

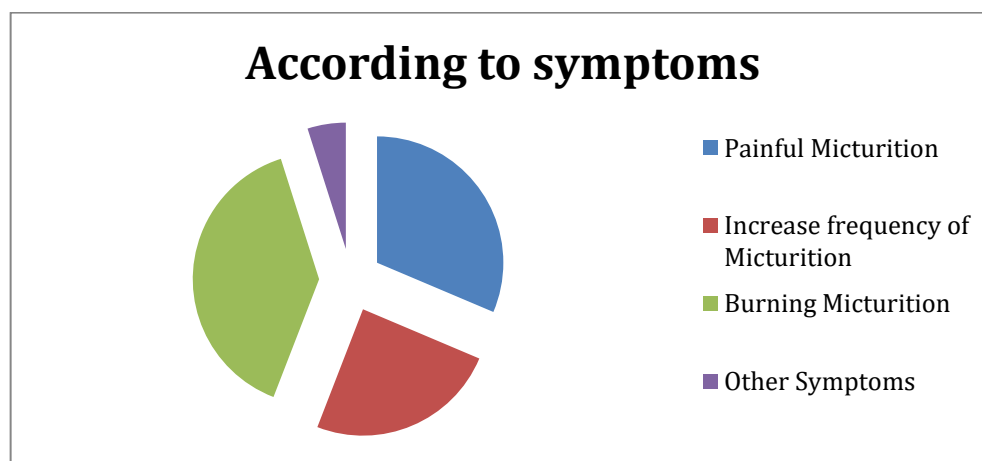
Job Category	Number of Patients	Percentage
House wife	45	44.11%
Teacher	11	10.78%
Bank	9	8.82%
Nurses	3	2.94%
Other	34	33.33%
Total	102	99.98%



According to the table 3 the total 102 patients were divided basis the job category. Most of the 45 (44.11%) patients were unemployed. 11 (10.78%) patients were teachers. 9 (8.82%) patients have bank job, 3 (2.94%) were nurses and 35 (33.33%) patients were other job.

4. Distribution of patients according to Symptoms. (Table 4; Fig. 4)

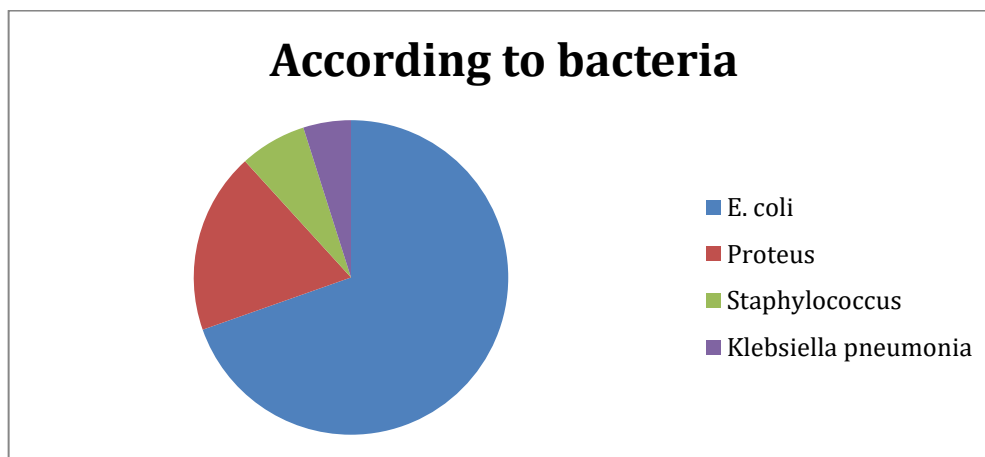
Symptoms	Number of Patients	Percentage
Painful Micturition	32	31.37%
Increase frequency of Micturition	25	24.50%
Burning Micturition	40	39.21%
Other Symptoms	5	4.90%
Total	102	99.98%



According to the table 4 the total 102 patients were divided basis the symptoms. Most of the 40 (39.21%) patients were found with complain of burning micturition. 32 (31.37%) patients complain of painful micturition. 25 (24.50%) patients were found with complain increase frequency of micturition, and 5 (4.90%) were with other symptoms.

5. Distribution of patients according to bacteria. (Table 5; Fig. 5)

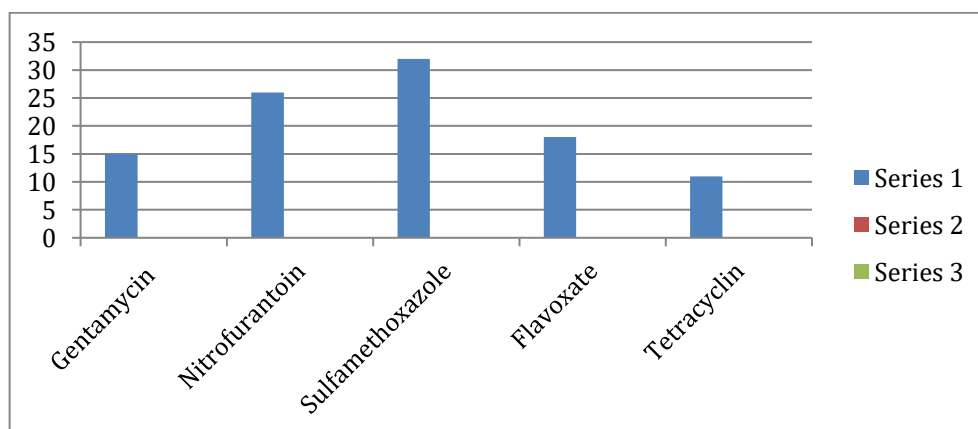
Bacteria	Number of Patients	Percentage
E. Coli	71	69.60%
Proteus	19	18.62%
Staphylococcus	7	6.86%
Klebsiella pneumonia	5	4.90%
Total	102	99.98%



According to the table 5 the total 102 patients were divided on the basis of bacterial infection. After the cultures of urine sample 71 (69.60%) patients were infected with E. coli bacteria. 19 (18.62%) patients were infected with Proteus. 7 (6.86%) patients were infected with Staphylococcus, 5 (4.90%) were infected by Klebsiella pneumonia bacteria.

6. Distribution of patients according to treatment. (Table 6; Fig. 6)

Drug	Number of Patients	Percentage
Gentamycin	15	14.70%
Nitrofurantoin	26	25.49%
Sulfamethoxazole	32	31.37%
Flavoxate	18	17.64%
Tetracyclin	11	10.78%
Total	102	99.98%



According to the table 6 the total 102 patients were treated with the different drugs. Most of the patients 32 (31.37%) were treated with the Sulfamethoxazole. Nitrofurantoin prescribed in 26 (25.49%) patients. Flavoxate prescribed in 18 (17.64%) patients. Gentamycin prescribed in 15 (14.70%) patients and 11 (10.78%) patients treated with Tetracyclin.

Discussion:

UTI is one of the most common diseases diagnosed worldwide. Availability of new antimicrobials has improved the management of UTIs. Our study showed the higher prevalence of UTI in females is due to the close proximity of the urethral meatus to the anus, shorter urethra, sexual intercourse, incontinence, and bad toilet hygiene. Higher incidence was observed in the middle age group 42-51 years age group similar observation being reported by Smita S et al and Devanand et al. [10]

In the present study 39.21% patients were with the symptoms of burning micturition was the largest percentage of the patients, 31.37% patients were the painful voiding, 24.50% were with the complaint of increase frequency of the micturition and 4.90% were the other symptoms. In *Muthulakshmi M et al* study 21.6% had burning micturition, 7.6% had painful micturition, 15.6% had increase frequency of micturition and 25.5% had any of the symptoms. [11]

In the present study the overall occurrence of UTI recorded was highest among the elderly (42-51-years, 31.37%) compared to young and middle age patients (12-21 years 17.64%; 22-31 years 9.80%, 32-41 years 16.66%). Second most highest in the old age 52-60 years 24.50%. This present study shows overall occurrence of bacteria contribute 99.98%. *Escherichia coli* (69.60%) was found the most common gram negative bacteria causing UTI. This result is consistent with reports from other studies by Devanand et al, [10] Sood S et al, [12] Agbawa et al [13] Mulugeta et al, [14] Asrat Aglu et al, [15] Arghya Das et al, [16] Ahmed Naeem et al [16] where 42.58%, 61.84%, 63.3%, 60.29%, 53.69%, 34.1% cultures grew *E. coli* respectively; and it was most frequent pathogen causing UTI in all these studies. Other isolated bacteria from UTI cases in this study were *Proteus* (18.62%), *Staphylococcus* (6.86%) and *Klebsiella* (4.90%). These results different with other studies in which *Klebsiella* was reported the second most frequent isolated organism in UTI but in this study the *Proteus* is the second most causative organism. [10,13,17]

In this study 69.60% of the females with UTI suffered from *E. coli* infection, 18.62% suffered from *Proteus*, 6.86% suffered from *Staphylococcus sp.* and 4.90% suffered from *Klebsiella sp.* Shaifali et al's study showed a different result, 33.1% had *E. coli* infection, followed by 7.9% with *Klebsiella pneumoniae*, 2.2% *Staphylococcus aureus*, 1.4% *Streptococcus pneumoniae*, and 0.7% with *Proteus mirabilis*. [18]

The most effective antimicrobial agents in this study were Sulfamethoxazole, Nitrofurantoin, Flavoxate, Gentamycin and Tetracyclin showing percentage susceptibility 31.37%, 25.49%, 17.64%, 14.70% and 10.78% (Table 6).

In this study was observed that the susceptibility of the antibiotic was differed with the differ species. *E. coli* (69.60%) showed resistance to the commonly used antibiotics. The highest sensitivity was shown by Sulfamethoxazole (31.37%), Nitrofurantoin (25.49%), Flavoxate (17.64%), Gentamycin (14.70%) and Tetracyclin (10.78%).

Conclusion:

UTI is a serious public health problem, if untreated. The burden of UTI among females of early menopausal age group was 31.37% more among those who presented with the symptoms of UTI. The symptoms of UTI can bring about a great discomfort to the patients resulting in a compromised quality of life. Early diagnosis and treatment of UTIs can prevent complications. Early diagnosis and prompt treatment will prevent the chances of developing further complication of UTI and will help reduce the sufferings of the patient, hospital stay and economic loss. Managing UTIs among affected women efficiently will help them to lead a healthy and economically productive life in the future. In the present study the incidence UTI decreased during 22-31 age group but rises in above 40 years. It is reported that women UTI incidence increases in menopausal age because decrease the level of the acid and hormonal changes.

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