International Journal of Pharmacy
Journal Homepage: http://www.pharmascholars.com

**Research Article** **CODEN: IJPNL6**

# BACTERIAL PROFILE AND SUSCEPTIBILITY PATTERN OF URINARY TRACT INFECTION OF PREGNANT WOMEN IN GYNAECOLOGY DEPARTMENT OF A PRIVATE HOSPITAL

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**ABSTRACT**

Urinary tract infections are the most common bacterial infection in pregnancy. An untreated Urinary tract infection can lead to increased risk of maternal and neonatal morbidity and mortality. Objective of the study was to determine the prevalence of Urinary tract infection in pregnant women, causative organism and antibiotic sensitivity pattern of isolated uropathogens. The study was conducted in the Gynaecology department of a single speciality private hospital for a study period of 6 months and sample size of 160 patients. Urine samples of the sample population were undergone for microscopic and culture and sensitivity tests. Majority of sample population affected Urinary tract infection were between an age group of 20-29 years (58%) and the incidence of infection was common in third (51%) and second (32%) trimesters. *Escherichia coli* [102(64%)] was the commonest bacterial pathogen isolated and others were *Klebsiella pneumonia* [29(18%)], *Pseudomonas* aeruginosa [13(8%)], *Staphylococcus aureus* [9(6%)] and *Proteus mirabilis* [7(4%)] . Levofloxacin had the highest overall antibiotic sensitivity of 83% followed by Ofloxacin (80%) ,Ceftriaxone (77%),Ciprofloxacin(74%), Amikacin (67.5%), Gentamycin (46%), Nitrofurantoin (38%), Amoxicillin- clavulanate (26%), Amoxicillin (15%), Doxycyclin (7%), Clotrimoxazole (7%).

**Keywords:** Urinary tract infections, Gynaecology, Prevalence

## INTRODUCTION

Urinary tract infection (UTI) is the most common bacterial infection in pregnancy and can complicate the pregnancy.[1] UTI is defined as the establishment and multiplication of micro organisms within the urinary tract. Significant bacteriuria is defined as greater than $1\times10^6$ of the same organism per millilitre of urine.[2] UTI are 12-40% more common in pregnant women than in non pregnant women and are common in developing countries due to variation in the socio-economic levels and standards of living.[3] This is because of the change in chemical composition of urine, with increase in glucose and amino acids, which promotes the bacterial growth in urine. Physiological, anatomical and functional changes occur in the urinary tract because of the pregnancy can also promotes the risk of UTI. Other factors like increasing age, multiparity, sexual behaviour, urinary tract abnormalities, and previous history of UTI, Diabetes, and Immune compromised states like AIDS and Spinal cord injuries can also increase the risk of UTI.[4,5]

Common organisms causing UTI are gram negative pathogens like E.coli, Klebsiella, Proteus and gram negative pathogens like Streptococcus, Staphylococcus species.[6,7] An untreated UTI can lead to increased risk of maternal and neonatal morbidity and mortality. UTI can be symptomatic as well as asymptomatic, complicating the diagnostic process. Asymptomatic bacteriuria has been associated with preterm labour, low birth weight infants, intrauterine growth restriction and fatal death, hypertension and preeclampsia, maternal sepsis, respiratory insufficiency and anaemia.[8,9] Therefore it is very important to screen all pregnant mothers for UTI on their first antenatal visit and patients with

both asymptomatic and symptomatic UTI should be identified and treated properly.

## MATERIALS AND METHODS

It was a prospective study conducted in department of Gynaecology of a private hospital with a sample size of 160 patients and study duration of 6 months. Samples in the study group were selected based on the inclusion and exclusion criteria. The data were collected using a standard data collection questionnaire.

Inclusion criteria

- Pregnant women with the age ranges of <20 - ≥45 years were included
- Urine samples of the sample population who had undergone microscopic and culture and sensitivity tests, were only included in the study.
- Pregnant women with confirmed UTI and without current antibiotic therapy

Exclusion criteria

- Patient with incomplete data
- Pregnant women with antibiotics within the last 2 weeks are excluded
- Pregnant women with recent history of instrumentation are excluded
- Patients with immune compromised conditions or taking any immunosuppressant drugs or other infections were excluded from the study.

## RESULTS

A total of 160 pregnant women were enrolled in the study with the age ranges from (<20 - ≥45) years were included. All the patients in the study group were married and had an education level above secondary level and had an urban area of residence. The socio-demographic details of the study sample were studied. It was found that most patients were between age group of 20-29 (58%). Based on the symptoms associated with urinary tract infections, most of them affected by Dysuria (54%), Fever (51%), and Pain in abdomen (40%).Majority of the study sample were asymptomatic and affected UTI at their second (32%) and third trimester (51%) of pregnancy. The most commonly isolated bacteria was *Escherichia coli* [102(64%)] was the commonest offending bacterial pathogen isolated. Other bacterial pathogens incriminated in this study were *Klebsiella pneumonia* [29(18%)], *Pseudomonas aeruginosa* [13(8%)], *Staphylococcus aureus* [9(6%)] and *Proteus mirabilis* [7(4%)]. Levofloxacin had the highest overall antibiotic sensitivity of (83%) followed by Ofloxacin (80%), Ceftriaxone (77%), Ciprofloxacin (74%), Amikacin(67.5%), Gentamycin (46%),Nitrofurantoin (38%),Amoxicillin- clavulanate (26%), Amoxicillin (15%), Doxycyclin (7%), and Clotrimoxazole (7%).

## DISCUSSION

The prevalence of UTI among pregnant women were analyzed .The occurrence of UTI may be due the environmental factors, social habits, personal hygiene and education. The study finds that most of patients were between 20-29 age groups. Gram negative bacteria isolates were more prevalent than gram positive isolates. This may be due to the unique structure of gram negative organism which may facilitate their attachment to the uroepithelial cells, multiplication and tissue invasion, resulting in invasive infection. E.coli was the most predominant organism and lack of personal hygiene during pregnancy can increase the risk of UTI. Based on culture and susceptibility test most of the organism were sensitive to Levofloxacin followed by Ofloxacin, Ceftriaxone, Ciprofloxacin, Amikacin, Gentamycin,Nitrofurantoin,Amoxicillin- clavulanate, Amoxicillin, Doxycyclin, Clotrimoxazole.

## CONCLUSION

In our study we found that E.coli was the most predominant organism causing UTI in pregnant women followed by others. Most of the bacterial isolates were sensitive to Levofloxacin. Complications associated with UTI may endanger the life of both pregnant women and fetus, therefore periodic and continuous follow up are mandatory to reduce the consequences of urinary tract infections in pregnant women.[7,10,11]

Table 1: Socio-demographic details of the study population

| Characteristics | N (%) |
|---|---|
| Age | |
| <20 | 7(4) |
| 20-29 | 93(58) |
| 30-39 | 57(36) |
| ≥45 | 3(2) |
| Marital Status | |
| Married | 160(100) |
| Unmarried | 0(0) |
| Area of Residence | |
| Urban | 92(57.5) |
| Rural | 68(42.5) |
| Education | |
| Literate | 119(74) |
| Illiterate | 41(26) |
| Employment | |
| Employed | 81(51) |
| Unemployed | 79(49) |
| Socio-economic status | |
| Upper | 45(28) |
| Middle | 72(45) |
| Lower | 43(27) |
| Religion | |
| Hindu | 46(29) |
| Christian | 63(39) |
| Muslim | 51(32) |

Table 2: Overall antibiotic sensitivity pattern of the isolated organisms

| Antibiotic | Frequency | Percentage | |
|---|---|---|---|
| | | Sensitive | Resistant |
| Levofloxacin | 133 | 83 | 27 |
| Ofloxacin | 128 | 80 | 20 |
| Ciprofloxacin | 119 | 74 | 26 |
| Amikacin | 108 | 67.5 | 27.5 |
| Ceftriazone | 123 | 77 | 23 |
| Gentamycin | 74 | 46 | 54 |
| Nitrofurantoin | 61 | 38 | 62 |
| Doxycyclin | 11 | 7 | 93 |
| Amoxicillin | 24 | 15 | 85 |
| Amoxcillin-clavulanate | 42 | 26 | 74 |
| Clotrimoxazole | 11 | 7 | 93 |

Figure 1: Incidence of UTI in study sample for the three trimesters

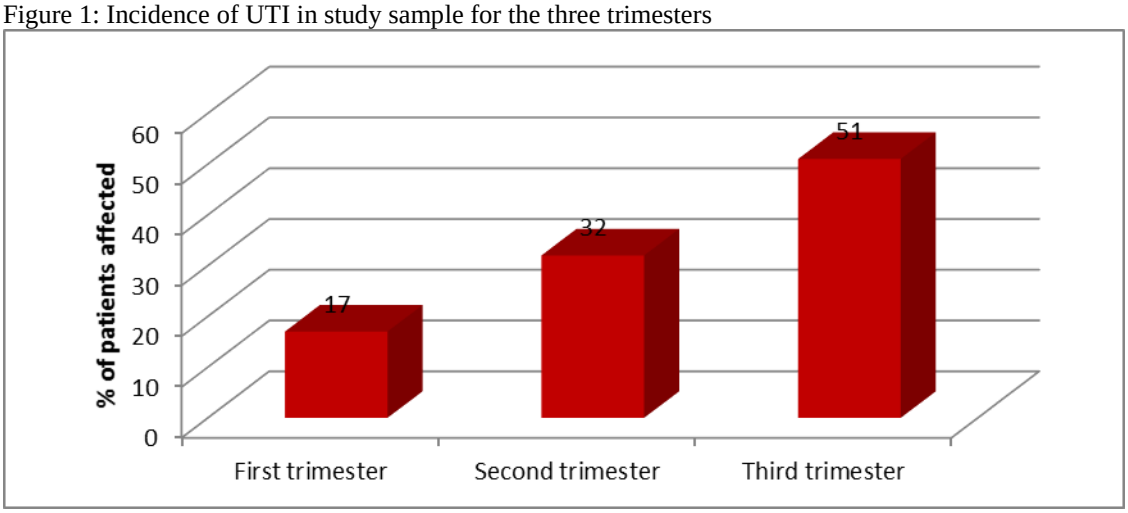



Figure 2: Symptoms associated with the urinary tract infections

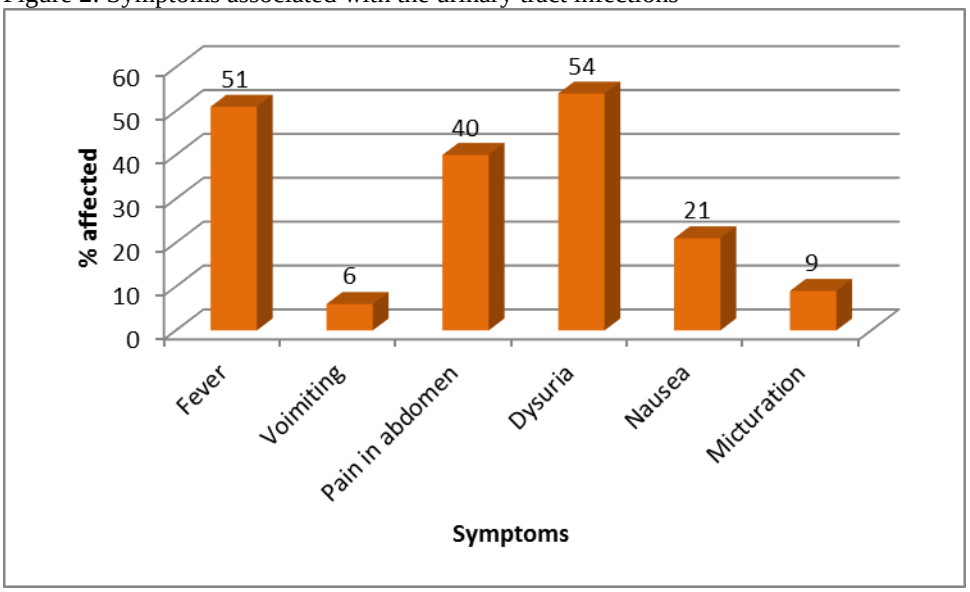
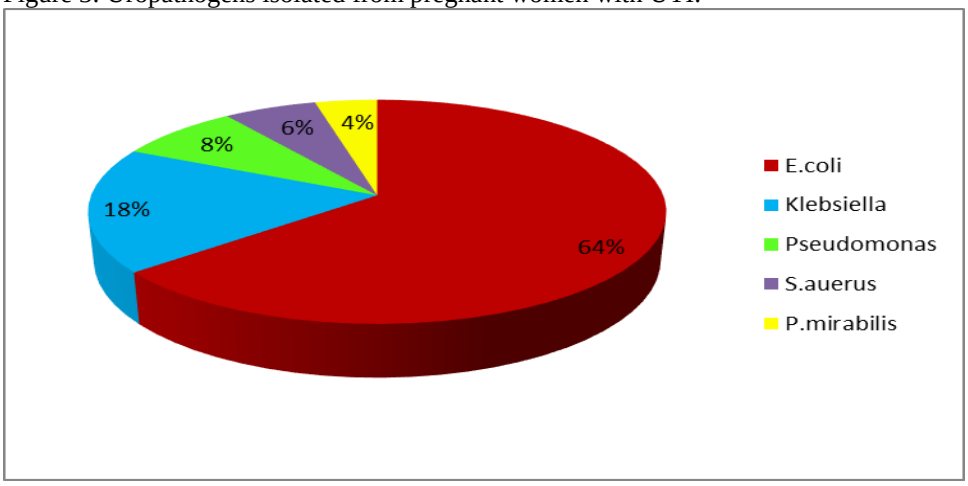



Figure 3: Uropathogens isolated from pregnant women with UTI.



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