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### Demographic profile in urinary tract infection

Rushika S. Modi<sup>1</sup>, Sagun V. Desai<sup>2</sup>

<sup>1</sup>Assistant Professor, Department Of Pharmacology,

<sup>2</sup>Professor, Department of Pharmacology,

Banas Medical College & Research Institute, Palanpur, Gujarat

SBKS Medical Institute & Research Centre, Piparia, Vadodara, Gujarat

\*Corresponding author: Rushika S. Modi

Email: [rushika\\_modi@yahoo.com](mailto:rushika_modi@yahoo.com)

#### ABSTRACT

##### Introduction

Urinary tract infection (UTI) is the most frequent community-acquired infection worldwide between 1 year and 50 years of age. UTI and recurrent UTI are predominantly disease of females. In uncomplicated UTIs, E. coli is the leading organism, though other bacteria, viruses or fungi may be the cause.

##### Methodology

In present study 212 patients included from Medicine, Surgery and Obstetrics & Gynaecology Department over one year period.

##### Result

Total 55.18% patients were in age group of more than 18 years up to 35 years. 66.98% were female patients. Average per capita per month income was  $1516.80 \pm 319.31$ . The mean hospital stay was  $3.99 \pm 1.07$  days. 95.28% patients had acute UTI, 83.96% had uncomplicated UTI and 91.03% had lower UTI. 53.77% patients had uncomplicated lower UTI. 19.33% antenatal patients had UTI. Overall Escherichia coli accounted for 80.95% of all isolates.

##### Conclusion

The choice of empirical initial antimicrobial therapy is significantly affected by uropathogen prevalences according to age, gender and socioeconomic status.

**Keywords:** Urinary tract infection, E. coli, Antimicrobial Therapy

#### INTRODUCTION

Urinary tract infection (UTI) is among the most frequent bacterial infections worldwide [1]. Prevalence of UTI varying from 21.8% to 31.3% in

various parts of India [2]. Although women, particularly those aged 16-64 years, are significantly more likely to experience UTIs than men [3], urinary infections frequently occur in both genders and

across all age groups [4,3]; specific populations such as pregnant women, the elderly or patients with spinal cord injuries, catheters or diabetes are also at increased risk [5, 6].

During the neonatal period, the incidence of UTI is slightly among males than among females because male infants more commonly have congenital urinary tract anomalies. After 50 years of age, obstruction from prostatic hypertrophy becomes common in men, and the incidence of UTI is almost as high among men as among women. Between 1 year and 50 years of age, UTI and recurrent UTI are predominantly disease of females [7]. In uncomplicated UTIs, *Escherichia Coli* is the leading organism, though other bacteria, viruses or fungi may be the cause. Useful diagnostic tools include the urinary dipstick test, urine analysis and urine culture. Urine analysis usually provides enough information to start or not treatment. A urine culture can help identify the specific bacteria causing the infection, and determine which type of antibiotics to use [8].

## MATERIAL AND METHODS

The cross sectional, prospective and observational study was carried out during March 2014 to February

2015 including 212 patients diagnosed with urinary tract infection from Medicine, Surgery and Obstetric & Gynecology Department of Dhiraj General Hospital of the Sumandeep Vidyapeeth University (30-40 patients from outpatient and indoor of each department).

The patients with clinical finding consistent with urinary tract infection (fever, abdominal pain or urinary signs and symptoms) were enrolled. All participants signed informed written consent and the study protocol was approved by the Ethics Committee of Sumandeep Vidyapeeth. Patients unable to communicate i.e. patients on ventilators, unconscious patients or suffering from serious diseases were excluded.

## RESULTS

Data from 212 patients were completely extracted and analyzed. The age of patients ranged from 16 years to 80 years with a mean of  $35.68 \pm 12.65$  years. 70 (33.01%) were male patients and 142 (66.98%) were female patients. Male to female ratio was 1:2 (Table 1).

**Table 1: Gender of patients (n=212)**

Gender	Department						Total
	Obstetric & gynecology		Surgery		Medicine		
	OPD	IPD	OPD	IPD	OPD	IPD	
<b>Male (n)</b>	0	0	12	15	23	20	70
<b>%</b>	0.00%	0.00%	5.66%	7.07%	10.84%	9.43%	33.01%
<b>Female (n)</b>	37	40	24	16	11	14	142
<b>%</b>	17.45%	18.86%	11.32%	7.54%	5.18%	6.60%	66.98%
<b>Total (n) %</b>	37	40	36	31	34	34	212
	17.45%	18.86%	16.98%	14.62%	16.03%	16.03%	100%

Per capita per month income ranged from Rs. 1000 to Rs 2400 with the average of Rs.  $1516.80 \pm 319.31$ . Total 180 (84.90%) patients were in the income group of more than Rs. 1000 up to Rs. 2000 per capita per month income. The mean hospital stay was  $3.99 \pm 1.07$  days. Nearly two third patients

(65.7%) were hospitalized for 4 days or 5 days, 34.28% for 24 hours to 3 days in hospital. The mean body weight of studied patients was  $58.67 \pm 10.00$  kg. Of 212 cases, 202 (95.28%) of them had acute UTI, 178 (83.96%) patients had uncomplicated UTI and 193 (91.03%) patients had lower UTI (Table 2).

**Table 2: Types of urinary tract infection in patients (n=212)**

Sr. No	Types of Infection	Frequency (n)	Percent (%)
1	Acute	202	95.28
2	Chronic	10	4.71
3	Complicated	34	16.03
4	Uncomplicated	178	83.96
5	Upper	19	8.96
6	Lower	193	91.03

Uncomplicated lower UTI was in 114 (53.77%) patients. 41 (19.33%) antenatal patients had UTI. UTI was associated with renal calculi [14 (6.60%)], benign prostatic hypertrophy [4 (1.88%)], post natal cases [4 (1.88%)], pelvic inflammatory disease [3 (1.41%)], acute kidney injury [2 (0.94%)], chronic kidney disease [2 (0.94%)], vaginal infection [2 (0.94%)].

Bacterial culture and antibiotic sensitivity test of urine was performed in 68 (32.0%) IPD patients making 64.76% of all admitted patients. Bacterial growth had yielded in 42 (61.76%) out of 68 urine cultures. Of the 42 growth positive culture reports 34 (80.95%) had E. coli and remaining 8 (19.04%) had Klebsiella (Table 3).

**Table 3: Type of bacteria in urine culture report**

Department	Growth positive culture report n (%)	Type of Bacteria		
		E. coli n (%)	Klebsiella n (%)	Any other n(5)
<b>Obstetrics &amp; Gynecology</b>	9 (100%)	9 (100%)	0 (0.00%)	0 (0.00%)
<b>Surgery</b>	12 (100%)	9 (75%)	3 (25%)	0 (0.00%)
<b>Medicine</b>	21 (100%)	16 (76.19%)	5 (23.81%)	0 (0.00%)
<b>Total</b>	42 (100%)	34 (80.95%)	8 (19.05%)	0 (0.00%)

## DISCUSSION

As urinary tract infection is a very common disease, its diagnosis and treatment have important implications for patients' health and health care cost [9, 10, 4, 3, 11]. The present study has shown the prevalence of UTI has increased in female patients with the male: female ratio of 1:2. This is in accordance with the world literature and carolin et al study [7, 2]. This could probably due to the factors like: (i) females have short urethra and is in close proximity of anal opening, (ii) interventions during delivery of baby or caesarian sections, (iii) catheterization, (iv) vaginal changes occurring in pH during various phases of menstrual cycle, (v) in childbearing age group women are sexually more active and (vi) hormonal changes occurring during pregnancy. A little more than 80% of the patients were in the age group of 18 years to 50 years. A study of Nathia et al [12] showed that nearly 70% of

their patients belonged to these age group. Thus our finding is almost similar to that of Nathia et al. [12].

Per capita per month income is an accepted parameter to determine the economic status of a person. In the present study we found that 180 (84.90%) patients had per capita per month income of Rs. 1000 to Rs. 3000, roughly corresponding with SES class III and class IV of Prasad. This reflects that UTI is more common among lower socio economic strata of the society. Poor general hygiene and nutritional status prevalent among lower socio economic strata may be the cause for this observation [13]. We didn't find any study from India which had considered occurrence of UTI and its association with socio economic status.

On an average, each patient spent Rs. 59 to Rs. 100 per day on medicines only. The current cut of line of deciding people living below poverty line in India is Rs. 32 and Rs. 47 per person per day in rural

and urban setting respectively. Considering this, it may be concluded that all these patients lapsed below the poverty line for the duration of illness only on account of the tangible cost of medicines. The intangible cost by way of loss of wages and transportation etc. would add to the cost of treatment of UTI worsening the scenario.

The majority of uncomplicated urinary tract infections can be successfully treated in outpatient department and there is less need of hospital admission unless any other co-morbid condition exists or when the UTI is complicated. In the present study hospital stay of the 105 indoor patients was minimum 2 days and maximum 5 days with the mean of  $3.99 \pm 1.07$  days. Pandey et al [14] reported that their patients were hospitalized for 2 to 10 days with an average of 4.3 days. In this regard of average hospital stay of our patients is similar to that of Pandey et al [14].

95% of patients had acute, nearly 84% had uncomplicated UTI and more than 90% had lower UTI. This scenario is not unexpected in Indian situation [15]. All 107 OPD patients had uncomplicated, lower UTI and therefore could be managed on outpatient basis. Out of 42 growth positive culture reports 34 (80.95%) had E.coli and remaining 8 (19.04%) had Klebsiella. Pandey et al and Chowta M.N. showed that the growth of E. coli was in 80.85% and 83.3% of culture positive reports. Thus our finding is in full agreement with that of

above two studies. The reported growth rate of E. coli in urine culture globally is also reported to be between 75% and 95% of positive urine culture reports [16].

## CONCLUSION

The choice of empirical initial antimicrobial therapy is significantly affected by uropathogen prevalences according to age, gender and socioeconomic status. Acute, uncomplicated lower UTI is more common. E. coli was the most prevalent uropathogen. The daily expenditure on account of procurement of medicines should be reduced for low socio economic patients. So, Empiric treatment should be based on epidemiological data which takes into account patients gender and age. There should be mass education and public awareness programs on environmental sanitation habits mostly during pregnancy. These results highlight the need for an education program for the health care system to improve the adherence toward the standard guidelines for treatment of UTI. The Continuous Medical Education (CME) programs will help more in this regards.

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