

Original Article



Urinary Tract Infection Among Women in Child Bearing age in Rajshahi Region

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Abstract

Background: Urinary Tract Infection (UTI) is the second leading cause of bacterial infection worldwide. More female are affected compared to male, particularly in their reproductive age group. Untreated and repeated UTI cases lead to health complication and antimicrobial resistance. **Objective:** To know the proportion of UTI among women in child bearing age group in Rajshahi and also to know the influence of socio-demographic parameters on UTI incidence in this region. **Methodology:** A cross sectional descriptive study was conducted on women in their reproductive age group (15-45 years) in Institute of Biological Sciences (IBSc), Rajshahi University and Rajshahi Medical College (RMC) from July 2014 to June 2017 where mid-stream urine samples were collected and cultured following all standard procedure. Positive cultures were compared with socio-demographic parameters to know their association with UTI cases. **Result:** Out of Total 450 patients screened for UTI, 151 (33.55%) were culture positive. Married women showed the highest rate of UTI 95 (62.91%) compared to single and widowed/divorced women which was 49 (32.4%) and 7(4.6%) respectively. Pregnancy and diabetes showed greater incidence or association with UTI which was 116 (76.8%) and 93 (61.59%) respectively. In all cases combined, symptomatic UTI was much higher than asymptomatic bacteriuria 54 (35.7%). Good hygiene and cleanliness associated with use of sanitary napkins and latrines have greatly reduced UTI rates among women which was 31 (20.5%) and 27 (17.8%) respectively. **Conclusion:** UTI has a high rate among women in their childbearing age, particularly when associated with pregnancy and diabetes. Good personal hygiene and awareness can greatly reduce its incidence and prevent further complications and most importantly antimicrobial resistance.

Keywords: UTI, Child bearing age of women .

Date of received: 26.07.2018.

KYAMC Journal.2019;10(3):156-159 .

Date of acceptance: 12.05.2019.

DOI: <https://doi.org/10.3329/kyamcj.v10i3.44420>

Introduction

The term "Urinary Tract Infection" (UTI) is used to describe either an infection of part or all parts of the urinary system. UTI are some of the most common bacterial infections, affecting 150 million people each year worldwide.¹ Woman particularly in their reproductive age group are prone to urinary tract infection due to their short urethra and close proximity of urethral opening to anal opening. Furthermore general habit and hygiene during menstruation, greatly influences infection in this age group. UTI is defined as the presence of $>10^5$ cfu/milliliter of urine in an either symptomatic or asymptomatic patients. Positive urine culture with accompanying pyuria (>5 WBC/HPF) is the surest

feature of UTI.² The main organisms are *E.coli*, *Klebsiella*, *proteus*, *Pseudomonas*, *Staphylococcus*, *Enterococcus*.³ These common organisms are showing increase resistance to commonly prescribed antibiotics which is a major concern nowadays. There are isolated reports if UTI from various parts of Bangladesh but comprehensive data in the northern region is lacking particularly in women in childbearing age. The information emerging from the present study is believed to be useful in understanding the proportion and etiological agents of UTIs and their sensitivities to available drugs which in turn would be of immense value to rational selections and use of antimicrobial agents.

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Methodology

This study was a cross sectional type of descriptive study carried out in the Molecular Biology laboratory, Institute of Biological Sciences, University of Rajshahi during the period of July 2014 to June 2017 availing also some of the laboratory facilities of Department of Microbiology, Rajshahi Medical College. A total of 450 women in their child bearing age (15-45 years) were included in this study. Urine samples were screened by microscopic examination to detect significant pyuria (5 pus cell/ HPF) and were further cultured on Mac Conkey agar, Blood agar and Nutrient agar following all standard procedure. Positive growths were confirmed by relevant biochemical tests and subject to antibiotic susceptibility test (Kirby-Bauer disk diffusion method). All clinical information was received in predesigned data sheet and lab reports were recorded and analyzed.

Results

Out of the 450 patients one hundred fifty one (151) patients were diagnosed of having UTI by positive urine culture. The proportion rate of UTI of the present study population was therefore 33.55%.

Among the 151 confirmed diagnosed UTI patients, asymptomatic UTI (Group A) was diagnosed in 54 (35.7%) women whereas symptomatic UTI (Group B) was found in 97 (64.2%) patients. The proportion of symptomatic UTI was therefore higher than asymptomatic UTI.

Table I. Distribution of asymptomatic UTI (Group A) and symptomatic UTI (Group-B) subjects with respect to medico-demographic characteristics (n= 151).

Characteristics	Group A (Asymptomatic UTI)		Group B (Symptomatic UTI)		Total	
	No.	%	No.	%	No.	%
Marital status						
Single	12	7.95	37	24.50	49	32.45
Married	38	25.16	57	37.57	95	62.91
Widow/divorced	04	2.64	03	1.98	07	4.64
Total	54	35.7	97	64.23	151	100
Pregnancy						
Non-pregnant (married)	16	10.60	29	19.20	45	29.80
Pregnant	48	31.79	68	45.03	116	76.82
Total	54	35.76	97	64.24	151	100
Diabetes						
Non-diabetic	22	14.57	36	23.84	58	38.41
Diabetic	32	21.19	61	40.40	93	61.59
Total	54	35.77	97	64.23	151	100

Data presented in Table 1 shows that majority of the UTI incidence was observed in married women 95 (62.91%) and the number of symptomatic cases is 57 (37.75%). Symptomatic UTI is also seen at a higher rate 68 (45.03%) among pregnant women compared to non-pregnant cases 29 (19.20%).

The proportion of symptomatic UTI cases were observed higher in diabetic patients 61 (40.40%) in comparison with

non-diabetic cases 36 (23.84%).

The table III shows the proportion of UTI among sanitary napkin users and non-users. Women's using sanitary napkins regularly had a lower 31 (20.53%) incidence rate of UTI as compared to those not using sanitary napkin 74 (49%).

Table II. Proportion rate of UTI based on use of sanitary napkin (n=151).

Type of User	No of UTI Positive case (%)
Always using Sanitary napkin	31 (20.53)
Occasional User	46 (30.47)
Not using Sanitary napkin but homemade cloth	74 (49.00)
Total	151(100.0)

The prevalence rate of UTI based upon type of toilet used has been depicted in Table III. Results presented in the table clearly demonstrated that the proportion rate of UTI was very high 77 (51.0%) among women not using sanitary latrine at all.

Table III. UTI based upon type of toilet used (n=151).

Type of Toilet Used	UTI Positive case (%)
Sanitary Latrine	27 (17.88)
Semi Pakka / Kancha latrine	47 (31.12)
No latrine used at all (Open space)	77 (51.00)
Total	151(100.0)

Discussion

Against the background of paucity of reports of urinary tract infection in the tertiary level hospitals in the Rajshahi, this study was aimed at determining the proportion of UTI in reproductive age group of female. Among the 450 patients screened for detection of UTI, 151 patients have been diagnosed to be suffering from UTI (both symptomatic and asymptomatic). Thus the proportion rate of UTI of the study population was 33.55%. Among the 151 confirmed diagnosed UTI patients, asymptomatic UTI was diagnosed in 54 (35.77%) women whereas symptomatic UTI in 97 (64.2%) patients. The proportion of symptomatic UTI was therefore higher than asymptomatic UTI (Table I). The increased proportion of UTI cases among female in their reproductive age group is due to their shorter urethra and close proximity of urethral opening to anal opening. Again, the higher rate of symptomatic UTI among women may be due to lack of awareness prior to development of symptom. The distribution of asymptomatic UTI and symptomatic UTI subjects with respect to medico-demographic characteristics i.e. marital status (single, married, widow/divorced), pregnancy (pregnant, non-pregnant), diabetes (diabetic, non-diabetic) were observed in the current study.

In this study, most (62.91%) of the UTI sufferers were married female whereas nearly half percentage (32.45%) suffering

This finding of ours is in good agreement with the findings⁴ in Nigeria, who also reported in their study that the incidence of UTIs was higher in married women (78.51%) than in the singles (59.47%). The reason behind this high rate of UTI among married women may be due to increased sexual activity.⁵ Again incidence of UTIs with respect to marital status revealed higher proportion of both asymptomatic UTI (25.20%) and symptomatic UTI (37.7%) in married subjects as compared to singles where the incidence rate of asymptomatic UTI was (7.9%) and symptomatic UTI was (24.5%). UTI is also a common problem in pregnancy due to the increase in sex hormones and the anatomical and physiological changes during pregnancy. The pregnant women are at high risk of UTI. During pregnancy, the chemical constitution of urine is also affected and results in increased urinary substance e.g. glucose and amino acids which may facilitate bacterial growth in urine.⁶ However, this seemingly benign condition may have serious consequences if left untreated.

In the present study, the predominance of both asymptomatic and symptomatic UTIs among pregnant women (31.7% vs. 45%) was noticed as compared to non-pregnant (29.63% vs. 29.90%). Thus the incidence of UTI was more than twice higher in pregnant women than in non-pregnant women. This finding of this study agrees very well with the earlier study.⁷⁻⁸ Diabetes mellitus (DM) has long been considered to be a predisposing factor for UTI.⁹ In a study¹⁰, the prevalence of UTI in diabetic subjects were found to be higher when compared with non-diabetic subjects (9% vs. 0.78%). The prevalence of symptomatic and asymptomatic UTIs was observed to be higher (nearly twice) in diabetic subjects (40.4% vs. 21.2%) as compared to non-diabetic subjects (23.8% vs. 14.5%) as presented in Table I. This finding of this study is comparable with the findings of Sabahat Saeed in Pakistan.¹¹ Diabetes Mellitus, in general is a predisposing factor to various types of infection as it lowers the body immunity. Furthermore sugar in urine facilitates bacterial growth ultimately leading to UTI. Results of incidence of UTI in relation to use and no use of commercial sanitary napkin during menstrual cycle of women have been found to play a significant role in preventing the incidence of UTI. Women using sanitary napkins regularly had lower incidence rate (20.53%). Use of traditional clothes in place of sanitary napkin leads to unhygienic condition and creates a moist environment which facilitates bacterial growth and colonization.

This finding of ours is similar to the observation of Ahmed and Avasarala¹² in Karimnagar district, AP, India who reported that the prevalence of UTI was significantly more (9.9%) in those girls using unsanitary pads during menstruation. Another study⁴ in Nigeria also reported that the incidence of UTIs was 88.81% and 59.94% among women using tissue paper alone as sanitary napkin and tissue together with hygienic pads,

respectively. Results of UTI based upon type of toilet use in our study clearly demonstrated very high proportion 77 (51.0%) among women not using sanitary latrine at all. In general the hygiene and cleanliness of women without sanitary latrine is very poor. Less use of water and soap leads to fecal contamination of urethra. However, there was no study available to be compared with our findings.

Conclusion

UTI has a high rate among women in their childbearing age, particularly when associated with pregnancy and diabetes. The predisposing factors for very high prevalence of UTI among women of the study area revealed from the present study appeared to be due to illiteracy, ignorance about UTI and its consequence and not practicing health and hygiene factors properly. Again, use of commercial sanitary napkin has been found to play a significant role in preventing incidence of UTI. But its use is still extremely low among the subjects of the study possibly due to the high prices of sanitary napkins, which is not affordable by them. Good personal hygiene and awareness can greatly reduce its incidence and prevent further complications.

Acknowledgement

All praises belong to Almighty Allah for giving me the courage and patience to complete the original research work. I am deeply indebted to my respected teacher and supervisor professor Parvez Hasan, Institute of Biological Science, University of Rajshahi for his experienced and constructive criticism. I express my regards and gratefulness to my teacher professor Dr. Bulbul Hasan, Head of department Microbiology, Rajshahi Medical College and Dr. Sabera Gul-Nahar, Associate Professor, Head of the department Virology, Rajshahi Medical College for continuous encouragement. I convey my sincere thanks and gratitude to Dr. Kh Faisal Alam and Dr. Shah Alam, Professor Microbiology department, Rajshahi Medical College for their inspiration and guidance in preparing this research article. Finally, my heartfelt thanks to my beloved husband Lokman Ali and my dear colleague Dr. Nahreen Rahman for their support and help in preparing the manuscript.

References

1. Stamm WE, Norrby SR. 2001. Urinary tract infections: disease panorama and challenges. *Journal of Infectious Diseases* 183 (1); 1-4.
2. Bloomberg B, Oslen B, Hinderaker S, Langeland N, Gasheka P, Jureen R, et al. Antimicrobial resistance in urinary bacterial isolates from pregnant women in rural Tanzania, implications for public health. *Scand J Infect Dis* 2005; 37; 262- 268.

3. Ana L, Walker JN, Caparon M, Scott J. Hultgren Department of Molecular Microbiology and center for woman's Infectious Disease Research, Washington University School of Medicine. *Nat Rev Microbiol.* 2015; 13(5): 269-284.
4. David OM, Falegan CR, Oluyeye AO. Incidence of symptomatic urinary tract Infections among young women using tissue papers as sanitary pad in rural Nigeria: A cohort study. *Journal of Medicine and Biomedical Sciences* 2010. ISSN: 2078-0273, 25-29.
5. Ikaheimo R, Siitonen A, Heiskanen. Recurrence of urinary tract infection in a primary care setting: analysis of a 1-year follow-up of 179 women. *Clin Infect Dis.* 1996; 22; 91-99.
6. Shaikh N, Morone NE, Bost JE, Farrell MH. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatr Infect Dis J* 2008; 27(4); 302-308.
7. Begum N. Clinical profile of urinary tract infection in pregnancy. *Mymensingh Med J* 1992;1; 6-10.
8. Khatun AK, Rashid H, Chowdhury TA. Prevalence of urinary tract infection in pregnancy. *J Bangladesh Coll Phys Surg* 1985;2; 6-10.
9. Bonadio M, Costarelli S, Morelli G, Tartaglia T. The influence of diabetes mellitus on the spectrum of uropathogens and the antimicrobial resistance in elderly adult patients with urinary tract infection. *BMC Infect Dis* 2006;6; 54.
10. Goswami R, Bal CS, Tejaswi S, Punjabi GV, Kapu A, Kochupillai N. Prevalence of urinary tract infection and renal scars in patients with diabetes mellitus. *Diabetes Research and Clinical Practice* 2001;53; 181-186.
11. Sabahat Saeed. Evaluation of bacterial profile of symptomatic and asymptomatic urinary tract infections in women. Ph. D Thesis. Department of Microbiology. University of Karachi, Pakistan, 2008.
12. Ahmed SM, Avasara AK. Urinary tract infections (UTI) among adolescent girls in Karimnagar District, AP K.A.P STUDY. *Indian J Pre Soc Med* 2008; 39; 12-15.