



RESEARCH ARTICLE

Assessment on Preventive Measures of Urinary Tract Infection (UTI) among Adults of South India

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Abstract:

Introduction: Most common bacterial infection affecting about 150 million people every year around the world is urinary tract infection¹. Urinary tract infection can be defined as a condition, in which bacteria divide and multiply in the urinary tract and infect the organs included (kidney, ureter, urinary bladder and urethra).

Method: an anonymous questionnaire with 15 questions regarding basic precautions for UTI was formulated using Google forms. The questionnaire was articulated in collaboration with an expert in the field. Simple random sampling was thrown out for choosing the participants. The link to the survey was made reach to the intended participants through email and WhatsApp.

Conclusion: In this study we found out that in 412 participants, more than half of the participants (54.6%) were recurrently suffering from urinary tract infection (UTI) and about 82.7% of participants suffering from UTI are married whereas only 47.6% unmarried population is affected by urinary tract infection.

Keywords: UTI, Prevention, Survey, Infectious disease, Public health.

1 | INTRODUCTION

Most common bacterial infection affecting about 150 million people every year

around the world is urinary tract infection (1). Urinary tract infection can be defined as a condition, in which bacteria divide and multiply in the urinary tract and infect the organs included (kidney, ureter, urinary bladder and urethra). (2) A diverse population is being affected by urinary tract infection. Different preventive measure for a variety of patients at risk is indicated. Patients for whom prevention of UTI should be indicated are- sexually active individuals, patients with frequent occurrence of UTI (specifically includes pregnant women, premenopausal and postmenopausal women), structural abnormalities of the urinary tract, patients with neurogenic bladder, patients with spinal cord injury, chronic bacterial prostatitis in men and post-renal transplant patient. (3) The purpose of indications for prevention is twofold- (a) prevention of bacteria colonizing in the periurethral areas, preventing it from entering the bladder, (b) also avoiding to place a catheter into an already infected space. (4)

The aim of prophylaxis in urinary tract comprises of decreasing morbidity attributable to severe infectious events, to prevent acute infectious and non-infectious complications of single or recurrent infections and restraining healthcare expenses essential for the management. (5)

The immune response in the urinary tract is a significant aid for doctors to decrease the frequent occurrence of infections based on pan-resistant and multi-resistant bacteria. The immune system can be viewed exclusively as a defence against the infection, not only for its intricate role in infection control but also a vital role in tissue repair, homeostatic

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communication with microbiome and elimination of neoplastic cells. Therefore, both the adaptive and innate divisions of immunity need a stimulus to create a response. (6)

Some preventive measures for UTI include-

1. Cranberry formulations: Home remedy to prevent UTI includes cranberries. There are two proposed mechanisms, (a) first is the acidification of urine and (b) cranberries contain proanthocyanidins, known to prevent P-fimbriated E Coli from adhering to cells lining the bladder i.e., uroepithelial cells. (7, 8)
2. Vaginal estriol: Postmenopausal women often experience vaginal atrophy, characterized by vaginal itching, dryness and dyspareunia. Vaginal estriol preparation may help reduce the incidence of these symptoms. (9)
3. Methenamine salts: Hydrolyzation of methenamine salts to ammonia and formaldehyde is responsible for its antibacterial action. The antimicrobial activity in urine is correlated to the urinary concentration of formaldehyde. This is directly dependent on the urinary methenamine concentration, pH of urine and the duration of drug remaining in the bladder. (10)
4. Maintaining good hygiene: Practicing good personal hygiene play a pivotal role in preventing UTI. To avoid movement of E Coli bacteria from rectum back in the body, it is always advisable to wipe from front to back after a bowel movement. Changing pads and tampons frequently is also important to prevent UTIs during the menstrual cycle. (11)
5. Plenty of Fluid intakes: Drinking plenty of water and other extra fluids can help flush out extra bacteria from the urinary tract. Recommending 6-8 glasses of water per day. (12)
6. Frequent urination: If there is a history of recurrent UTIs, frequent urination can decrease the risk of infection. Drinking plenty of fluid will boost the urge of urination, also avoiding bladder irritating foods and fluids (alcohol,

caffeinated drinks, spicy food etc). Urinating after and before sex helps to flush out bacteria that might have entered the body during intercourse. (12)

7. Use of water-based lubricants: In case vaginal dryness, water-based lubricants must be used. Also avoiding spermicide to prevent frequent UTIs. (13)
8. Changing clothes regularly: To prevent UTIs, avoid wearing tight-fitting clothes, thus helping to keep us dry. Also switching to cotton underwear, which inhibits trapping of extra moisture around the urethra. (13)

2 | MATERIAL & METHODS

Development and content of the Questionnaire

To assess the preventive measures of adults (above the age of 18 years) on urinary tract infection, an anonymous questionnaire with 15 questions regarding basic precautions for UTI was formulated using Google forms. The questionnaire was articulated in collaboration with an expert in the field. Simple random sampling was thrown out for choosing the participants. The link to the survey was made reach to the intended participants through email and WhatsApp. The questionnaire was mainly focusing on the participant's attitude towards UTI preventive measures. Lastly, it was asked if the participant had any query on the UTI. The questionnaire was kept live for four weeks, and the individuals were reminded to fill it up.

Study Design: Observational cohort prospective study.

Sample size

The minimum of 412 sample size was considered using Raosoft software at a 95% confidence interval with a 5% margin of error and with the response rate of 70%.

Inclusion Criteria

Adults of South India (above the age of 18)

Exclusion criteria

People who were not interested to enrol in the study

Study duration: December 2020 to January 2021.

Statistical analysis

Data were moved into Microsoft Excel spreadsheets and validated for its accuracy. Gained data were analysed using the IBM SPSS statistics software for windows, version 22 (Armonk, NY, USA). Numbers and percentages were shaped to assessment categorical and nominal data. Variables used in the study included age, sex, education level and marital status. Besides, the Chi-square (χ^2) test was used for the comparison between marital status and the prevalence of urinary tract infection. $P < 0.05$ was set as the level of significance.

3 | RESULTS

Socio-demographic characteristics

A total of 412 respondents enrolled in the study. Of this, 279 (67.7%) were females and 133 (32.3%) were males. The mean age of the respondents was 24.05 ± 8.1 years, where more than half of the participants (66.7%) belongs to the age group 18-25 years and more than half of the participants (66.3%) were a bachelor. Undergraduate (52.7%) and graduated (31.6%) were the majority of participants. All the socio-demographic characteristics are summarized in Table 1.

The attitude of the participants for the preventive measures of UTI

The response of the participants for the precaution methods to avoid the chances of UTI was very satisfactory. A good number of participants that is about 82.5% drink plenty of water, which is the foremost step to avoid UTI. Most of the South Indian population urinate at least once in 4 hours to avoid the chances of UTI. 78.4% of participants knew the proper way of cleaning the genital area. Surprisingly 82% of population use cotton underwear to avoid the chances of UTI. The complete information about the attitude of the participants for the preventive measures is detailed in Table 2.

TABLE 1: Sociodemographic characteristics of the participants (N=412).

Variables	Participants (N)	Percentage (%)
Age in years		
18-25	275	66.7
26-35	85	20.6
36-45	38	9.2
46-55	12	2.9
56-65	02	0.5
Gender		
Female	279	67.7
Male	133	32.3
Marital status		
Married	139	33.7
Unmarried	273	66.3
Education		
Illiterate	28	6.8
Primary education	12	2.9
Secondary education	25	6.1
Degree	217	52.7
Any higher education	130	31.6

TABLE 2: Attitude of the participants towards the preventive measures of UTI (N=412)

Questions	Yes	No
1. Do you drink plenty of water?	340 (82.5%)	72 (17.5%)
2. Do you urinate at least once in 4 hours?	333 (80.8%)	79 (19.2%)
3. Did you know, wiping from front to back after urinating is the right way to clean the genital area to avoid urinary tract infection?	323 (78.4%)	89 (21.6%)
4. Did you know that urinating shortly after sex is an important method to avoid the chances of UTI?	298 (72.3%)	114 (27.7%)
5. Did you know, using cotton underwear are the best way to avoid UTI?	338 (82%)	74 (18%)
6. Did you know that using spermicide condoms is at high risk for UTI?	282 (68.4%)	130 (31.6%)
7. Did you aware that alcohol and caffeine are the bladder irritating fluids?	320 (77.7%)	92 (22.3%)

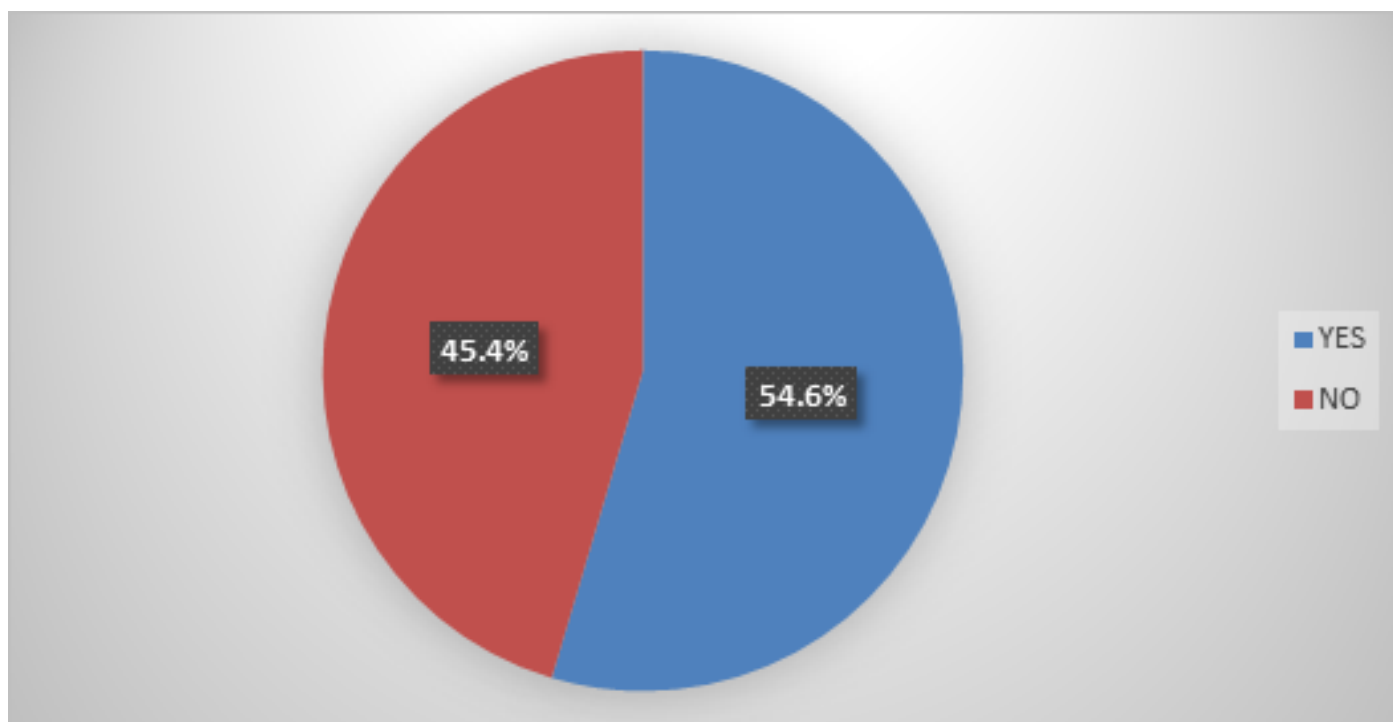


FIGURE 1: Are you frequently experiencing urinary tractinfection?

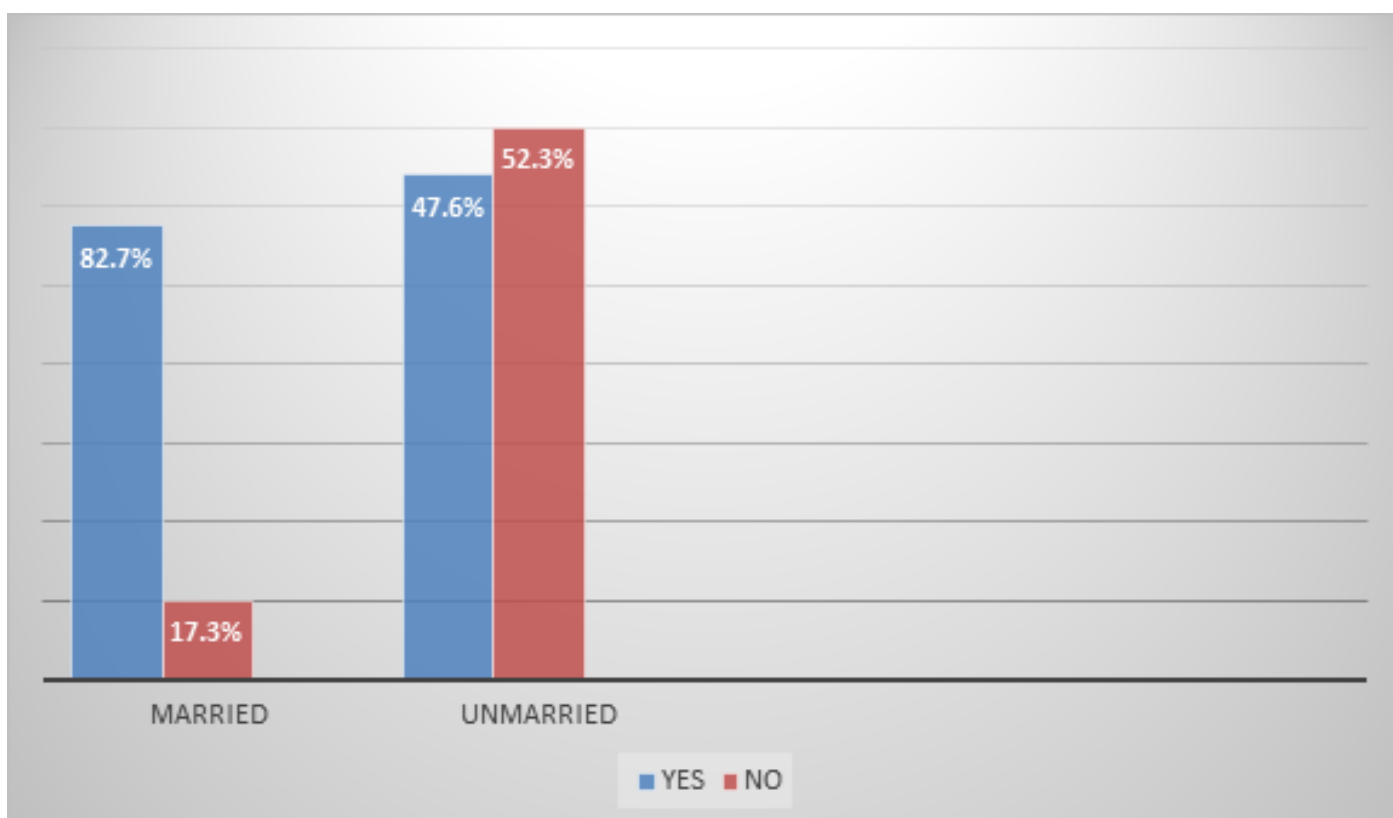


FIGURE 2: About 82.7% of participants suffering from UTI are married whereas only 47.6% unmarried population is affected by urinary tract infection.

ASSESSMENT ON PREVENTIVE MEASURES OF URINARY TRACT INFECTION (UTI) AMONG ADULTS OF SOUTH INDIA

More than half of the participants (54.6%) are recurrently suffering from urinary tract infection (UTI)

4 | DISCUSSION

Urinary tract infections (UTIs) are common in both in the community and hospital setting. Primary suitable empirical treatment necessitates a good knowledge of epidemiological data. Producing awareness on preventive measures of UTI is an essential step to lessen the burden of UTI in the country. Our study reveals that even though the response to the preventive measures of UTI is satisfactory, more than half of the population that is 54.6% are frequently suffering from urinary tract infection Figure 1.

Our curiosity for the association of marital status with the urinary tract infection, end up with a high percentage of the population who were suffering from recurrent UTI are married and less percentage of unmarried participants are affected by the UTI Figure 2

Ann Stapleton MD and Walter E. Stamm MD conducted a study in which they concluded, recurrent UTI residues as a common clinical issue among women as well as men of all ages. Increased risk to healthy premenopausal and postmenopausal women, seems to be the factors such as estrogen status, and by exogenous exposures or behaviours, such as the continuous use of a diaphragm with spermicide, antimicrobial use, and sexual attitude (14).

The study conducted by Ariana L Smith, Jason Brown, Jean F Wyman et.al, recommend an algorithmic method to care that contains education on lifestyle and behavioural alterations and state-ments definite populations of women with antimicrobial based and nonantibiotic replacements. This methodology comprises the use of vaginal estrogen with or without lactobacillus containing probiotics in postmenopausal women, low dose post-coital antibiotics for persistent urinary tract infection related with sexual activity in premenopausal women, low dose daily antibiotic prophylaxis in premenopausal women with infections not linked to sexual activity, and methenamine hippurate and/or lactobacillus comprising probiotics as nonantibiotic alternatives (15).

Limitations

Age of the participants was not equally distributed among all the age categories.

Participants involved were from the same education level.

The unequal number of female and male, married and unmarried participants were enrolled.

5 | CONCLUSION

Urinary tract infection is one of the serious upcoming burdens of the country. Since treating urinary tract infection is challenging for doctors, most of the physicians suggest the preventive measures to avoid the chances of the UTI, which our society should accept and follow in daily life. In this study we found out that in 412 participants, more than half of the participants (54.6%) were recurrently suffering from urinary tract infection (UTI) and about 82.7% of participants suffering from UTI are married whereas only 47.6% unmarried population is affected by urinary tract infection.

This study confirms, society's good attitude towards the precautions of UTI has reduced the disease prevalence but more stress on preventive methods are needed to develop a healthy society. Increased urinary tract infection in the married participants advise married population to stick to the preventive measures to decrease the prevalence.

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