

# Frequency of Urinary Tract Infection in Postmenopausal Women

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Urinary Tract Infection in Postmenopausal Women

## ABSTRACT

**Objective:** To determine the frequency of urinary tract infection in postmenopausal women visiting Bakhtawar Amin Hospital Multan.

**Study Design:** Descriptive / cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Gynecology, Bakhtawar Amin Hospital Multan from August, 2016 to July 2017.

**Materials and Methods:** A sample of 142 consecutive patient fulfilling the inclusion and exclusion criteria were included in the study. Informed written consent was taken from all patients. The demographic information like name, age, gender and address was noted. A detailed history and physical examination was carried out especially about symptoms of urinary tract infection. Complete urine examination was done in all the patients and 8 or more pus cells on urinary examination were considered as diagnostic of urinary tract infection. All the collected data was entered in a specially designed proforma.

**Results:** There were 142 patients in total. Mean age of the patients was  $55.92 \pm 2.88$  years. Mean for parity was  $3.37 \pm 1.98$ . There were 136/142 (95.8%) married while 6/142 (4.2%) were unmarried. Urinary tract infection was found to be present in 39/142 (27.5%). When the effect of age was noted on the frequency of urinary tract infection it was found that among patients in age group  $\leq 55$  years urinary tract infection was found to be present in 17/57 (29.8%) while in age group  $> 55$  years there were 22/85 (25.9%) patients with urinary tract infection (p-value = 0.702). When the effect of parity was seen on the frequency of urinary tract infection it was found that there were 6/16 (37.5%) in nulliparous group with urinary tract infection as compared to 19/58 (32.8%) in those with parity 1-3 and 14/68 (20.6%) in those with parity  $> 3$  (p-value = 0.198) When the effect of marital status was seen it was found that among unmarried women 2/6 (33.34%) had urinary tract infection while among married women 37/136 (27.21%) had urinary tract infection (p-value = 0.742).

**Conclusion:** Urinary tract infection has a high frequency among postmenopausal women with lower urinary tract symptoms and should be closely looked for and managed meticulously with proper antibiotics as well as by the proper implementation and utilization of preventive measures.

**Key Words:** Postmenopause, Urinary tract infection

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## INTRODUCTION

Urinary tract infection causes millions of women to suffer pain ful urination, suprapubic pressure and urgent desire to micturate<sup>1</sup>.

The anatomy of periurethral area provides more places for growth of bacteria vaginal cavity provides additional source for bacteria to grow which can easily move to urethral opening. Due to shorter urethra these pathogens can ascend to bladder multiply and invade its walls..

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Although menopause is a physiological process, but many women experience many uncomfortable urogenital problems such as vaginal dryness, dyspareunia and urinary tract infection.<sup>2</sup> Bladder and surrounding structures are rich in estrogen and progesterone receptors, physiological and anatomical changes occur after menopause.<sup>3</sup>

Postmenopausal deprivation is the major risk factor for urinary tract infection.<sup>4</sup> Before menopause 90% of vaginal flora are Lactobacilli which protects against uropathogens such as Ecoli. Due to estrogen deficiency in menopause, there is thinning of vaginal epithelium and glycogen loss which results in hostile environment for lactobacilli and colonization of uropathogens.<sup>5</sup>

According to Ther D, et al.<sup>5</sup> about 10-47% women experience postmenopausal symptoms such as valvovaginal dryness and urinary tract infections.<sup>6,7</sup> In a study conducted in Agha Khan University Karachi the annual incidence of urinary tract infection was found out to be 10%.<sup>8</sup> In another study conducted in Malysia on 326 menopausal women 19.3% experienced urinary

tract infection.<sup>9</sup> According to a study<sup>10</sup> frequency of urinary tract infection was found out to be 11%.

**MATERIALS AND METHODS**

This descriptive cross sectional study was carried out in outpatient department of gynaecology Bakhtawar Amin Hospital Multan after taking permission from ethical committee of the hospital the duration of study was one year starting from 1<sup>st</sup> August 2016 to 31<sup>st</sup> July 2017, 142 consecutive patients (using non probability consecutive technique) fulfilling the inclusion and exclusion criteria were included in the study.

**Inclusion Criteria:**

- Women having anemmohea of 1 year.
- Women aged over 51 years to 60 years.
- All married and unmarried women will be included

**Exclusion Criteria:**

- Introgenic menopause
- Patients on any type of anticancer therapy
- Unwillingness
- Any medical disorder involving diabetes, hypertension, autoimmune disease etc.
- Surgical menopause.

Informed written consent was taken from all patients. The demographic information like name, age, gender and address was noted. A detailed history and physical examination was carried out especially about symptoms of urinary tract infection like frequency, burning micturation and lower abdominal pain. Complete urine examination was done in all the patient from the central laboratory of the hospital for confirmation of diagnosis of urinary tract infection and 8 or more pus cells on urinary examination were considered as diagnostic of urinary tract infection. All the collected data was entered in specially designed proforma.

**RESULTS**

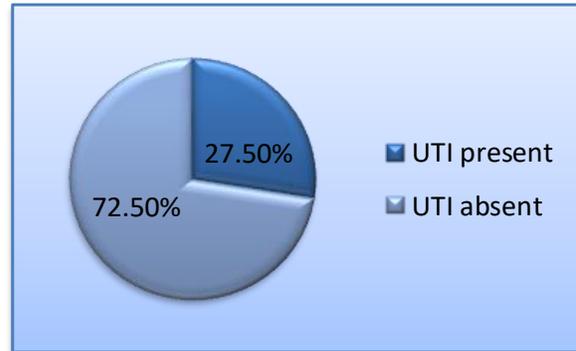
There were 142 patients in total. Mean age of the patients was 55.92 ± 2.88 years. Mean for parity was 3.37 ± 1.98. There were 136/142 (95.8%) were married while 6/142 (4.2%) were unmarried. Urinary tract infection was found to be present in 39/142 (27.5%) (Table 1, Graph 1).

**Table No.1: Characteristics of the study population.**

<b>Total patients</b>	<b>124</b>
<b>Mean age</b>	55.92 ± 2.88
<b>Mean for parity</b>	3.37 ± 1.98
<b>Married</b>	136/142 (95.8%)
<b>Unmarried</b>	6/142 (4.2%)
<b>Urinary tract infection</b>	39/142 (27.5%)

When the effect of age was seen on the frequency of urinary tract infection in the patient population it was

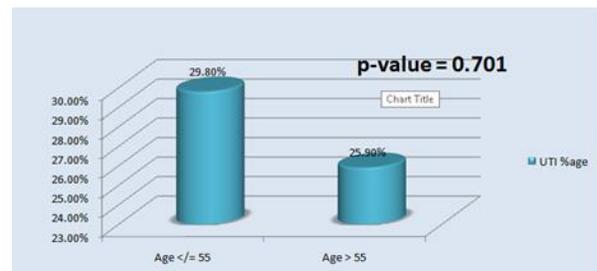
found that among 57 patient in age group ≤ 55 years urinary tract infection was found to be present in 17/57 (29.8%) of the patients while in age group > 55 years there were 85 patients in total and urinary tract infection was found to be present in 22/85 (25.9%) of the patients. When chi-square test was applied to see the effect of age on the frequency of urinary tract infection, the p-value turned out to be 0.701 (Table 2, Graph 2).



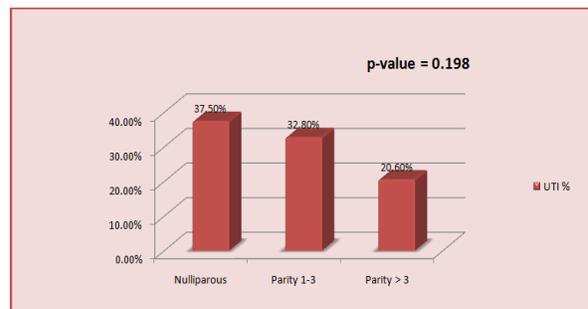
**Graph No.1: Frequency of urinary tract infection in the patient population.**

**Table No.2: Effect of age on frequency of Urinary tract infection in postmenopausal women.**

	Age ≤ 55 years (n=55)	Age > 55 years (n=85)	p-value
Frequency of UTI	17/57 (29.8%)	22/85 (25.9%)	0.702



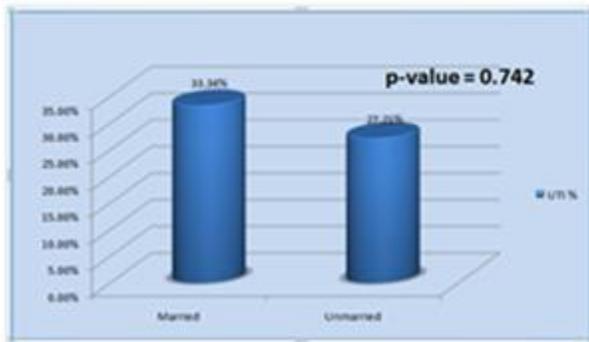
**Graph No.2: Effect of age on the frequency of urinary tract infection.**



**Graph No.3: Effect of parity on the frequency of urinary tract infection in the postmenopausal women.**

When the effect of parity was seen on the frequency of urinary tract infection it was found that there were 16 patients in total and urinary tract infection was found to be present in 6/16 (37.5%). Among those with number of children 1-3, there were 58 patient in total and urinary tract infection was diagnosed in 19/58 (32.8%). Among those with number of children > 3 there were 68 patients in total and urinary tract infection was found to be present in 14/68 (20.6%). When the effect of parity was seen on the frequency of urinary tract infection the p-value was found out to be 0.198 (Graph 3).

When the effect of marital status was seen it was found that among 6 unmarried women 2/6 (33.34%) has urinary tract infection while among 136 married women 37/136 (27.21%) had urinary tract infection. When chi-square test was applied to see the effect of marital status on the frequency of urinary tract infection the p-value was found out to be 0.742(Graph 4).



**Graph No.4: Effect of marital status on the frequency of urinary tract infection in postmenopausal women.**

## DISCUSSION

More than 8 million women in the United States seek medical attention for urinary tract infections (UTI) each year. The annual incidence among women older than 50 years is 9% and these infections account for substantial morbidity. Risk factors for UTI have been well characterized among young healthy women and among older, debilitated women living in institutional settings. However, the risk factors for healthy community-dwelling postmenopausal women have not been well described. The major characteristics predisposing young women to UTI are sexual activity, use of spermicidal agents and contraceptive diaphragm, and a prior history of UTI. The major characteristics predisposing older, institutionalized women to UTI are advancing age, urologic abnormalities, and debilitating comorbid conditions.<sup>11</sup>

The role of estrogen replacement therapy remains controversial. After menopause, the change in the urinary tract due to lower levels of estrogen are believed to contribute to recurrent UTI. Two controlled

trials of intravaginal estrogen creams found a significant risk reduction in recurrent UTI in women who use them.<sup>12,13</sup> However, the effect of oral estrogen is less clear. Randomized trials and observational studies of oral estrogen have yielded conflicting results.<sup>13</sup>

In our study, there were 142 postmenopausal female patients in total. Mean age of the patients was  $55.92 \pm 2.88$  years. Mean for parity was  $3.37 \pm 1.98$ . There were 136/142 (95.8%) were married while 6.142 (4.2%) were unmarried. Urinary tract infection was found to be present in 39/142 (27.5%). The observed frequency is slightly lower than that observed in an American review by Olasehinde GI et al,<sup>14</sup> who conducted cross-sectional studies of UTI among post menopausal women between January and June, 2009 using standard microbiological techniques. The result obtained showed that 42 (39.6%) out of 106 postmenopausal women had urinary tract infections with highest prevalence among women aged 56-60 and lowest among those aged more than 61. Microscopic examination of forty-two (42) mid-stream urine sample revealed the presence of 13(30.9%). Epithelial cells, 5 (11.9%) phosphate crystals, 16 (38.1%) pus cell, 9 (21.4%) yeast cells, 7(16.7%) red blood cells and eggs of *Schistoma haematobium* 2(4.8%). Bacteria isolated were: *Escherichia coil* 20(25.3%), followed by *Staphylococcus aureus* 16(20.3%), *Pseudomonas aureginosa* 10(12.7%), *Coagulase negative Staphylococcus spp* 9(11.4%), *Streptococcus pyogenes* 6(7.6%), *Serratia marcescens* 6(7.6%), *Enterobacter spp* 5(6.3%). *Klebsiella spp.* 4(5.1%) and *Enterococcus faecalis* 3(3.8%). *E. coli* showed low percentage resistance to ciprofloxacin, ceftazidime and ceftriaxone. *Enterobacter spp.* Were susceptible to ciprofloxacin and cotrimoxazole in 80%, respectively. Between 60-80% of *Pseudomonas aeruginosa* and *Enterobacter spp* were susceptible to all the tested antibiotics, while 4(66.7%) *Streptococcus pyogenes*, 6(66.7%), *Staphylococcus spp* and 4(66.7%) *Serratia marcescens* were sensitive to ceftazidime. All the *Enterococcus faecalis* and *Klebsiella spp* isolated were sensitive to ciprofloxacin. The result also showed that 18.9% of the bacteria were resistant to at least 3 antibiotics with (MAR) index ranging from 0.2 to 0.8. the results obtained in this study were statistically significant.

In our study when the effect of age was seen on the frequency of urinary tract infection in the patient population it was found that UTI was more common among patients in younger age group as in age group  $\leq 55$  years urinary tract infection was found to be present in 17/57 (29.8%) while in age group  $> 55$  years, urinary tract infection was found to be present in 22/85 (25.9%) of the patients. However, this effect was found to be statistically insignificant as the p-value turned out to be 0.702. in the literature, the younger age group has been

reported as a risk factor for development of recurrent urinary tract infections in perimenopausal women.<sup>14,15</sup> When the effect of parity was seen on the frequency of urinary tract infection it was found that the frequency of urinary tract infection was highest in nulliparous women as 6/16 (37.5%) had UTI, followed by 19/58 (32.8%) among those with number of children 1-3 and Among those with number of children > 3 UTI was found to be present in 14/68 (20.6%). Although there was a constant trend towards a decrease in frequency of UTI among women with increasing number of children, this difference was found out to be statistically non-significant with a p-value 0.198. Similarly, when we studied the effect of marital status was noted on the frequency of UTI it was found that it was more frequent among unmarried women as compared to married. However, this difference was again statistically non-significant with a p-value 0.742. in the literature, nulliparity has been reported to have increase the risk of recurrent urinary tract infections.<sup>13,16</sup> We will need a larger study to see this effect of number of children on the frequency of urinary tract infection.

## CONCLUSION

Urinary tract infection has a high frequency among postmenopausal women with lower urinary tract symptoms and should be closely looked for and managed meticulously with proper antibiotics as well as by the proper implementation and utilization of preventive measure.

### Author's Contribution:

Concept & Design of Study:	Humaira Imran
Drafting:	Farah Deba
Data Analysis:	Taqwa Abdur Rehman
Revisiting Critically:	Humaira Imran, Farah Deba
Final Approval of version:	Humaira Imran

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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