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Urinary Tract Infections and Vulnerability of Women: A Socio-Medical Review using Gender Lens

Abstract

The current research studies public health concerns about Urinary Tract Infections (UTI) in Islamabad. The study's main objective was to assess the frequency of UTIs, the bacteria responsible, and their patterns of Antibiotic resistance among UTI patients. The design for the research on antimicrobial resistance in UTI patients is correlational and comparative, where 1000 lab reports were obtained from 5 renowned verified and registered Laboratories located in Islamabad by visiting them in person. Two hundred fifteen lab reports (out of 1000) showed positive microbial growth on culture indicative of Urinary Tract Infection. Furthermore, this paper presents a gendered review of the trend analysis of antibiotic resistance in UTI patients in the capital city of Pakistan (Islamabad). The research paper extensively analyzes UTI trends in male and female patients. It offers a gendered analysis of women's greater vulnerability to develop UTIs compared to men, beyond bio-medical reasons.
***Keywords*:** Gender Lens, Medical & Social Analysis, Urinary Tract Infection

INTRODUCTION

A Urinary Tract Infection (UTI) is a common bacterial infection affecting the urinary system, including the bladder, urethra, ureters, and kidneys. It typically causes symptoms such as frequent urination, burning sensation, and cloudy urine, which are mainly associated with cystitis or bladder infection. The UTI, if not treated well, can lead to more severe issues like pyelonephritis, kidney infection, etc., and its consequences can be more dangerous, such as significant morbidity and increased healthcare costs. Therefore, prompt diagnosis and appropriate antibiotic treatment are essential to prevent complications and ensure the patient's recovery (Wagenlehner et al., 2020). Most recently, antimicrobial resistance (AMR) in UTI-causing bacteria has become a significant public health concern worldwide. The increasing resistance of Uropathogens to frequently prescribed medicines has made conventional treatment increasingly ineffective, requiring a shift in UTI management approaches (Zavala-Cerna et al., 2020). Therefore, the current study focuses on antimicrobial resistance (AMR) patterns among UTI patients, especially in Pakistan, to understand the pervasiveness of multi-drug resistant (MDR) stresses and related risk factors.

A significant body of literature has revealed that Escherichia coli (E. coli) and Klebsiella bacteria are predominantly responsible for Urinary tract infections (UTIs). Unfortunately, the emergence and rapid dissemination of multidrug-resistant (MDR) strains have become a

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growing concern, posing a significant threat to human health worldwide. The emergence of antibacterial resistance among UTI-causing bacteria has complicated treatment options and led to increased morbidity and healthcare costs. The rise in antibacterial resistance has also necessitated a shift in UTI management strategies (Zavala-Cerna et al., 2020). Although urinary tract infections (UTIs) can occur in both men and women, they are more frequently observed in women. Much of the research on UTIs has primarily concentrated on young, sexually active women with a heightened risk of developing such infections. UTIs risk factors include frequent sexual activity, urinary tract abnormalities, hormonal changes, and weakened immune systems (Harrington & Hooton, 2000). UTIs are a significant public health concern, particularly in developing countries like Pakistan, where healthcare services and access to effective antibiotics are very limited. Therefore, public health interventions like antibiotic monitoring, improved diagnostic strategies, and patient awareness of preventive measures are vital to addressing this growing issue (Zavala-Cerna et al., 2020). Thus, the literature on UTI points out the urgent need for monitoring and mitigating the increase of antimicrobial resistance in UTI-causing pathogens. By measuring the susceptibility of UTI pathogens to different antibiotics, researchers and healthcare professionals can understand the resistance patterns and develop effective treatment techniques. Therefore, the current study aims to contribute to this growing body of knowledge by examining the antimicrobial resistance trends in Pakistan's UTI patients, providing insights to inform future clinical and public health practices.

RESEARCH METHODOLOGY

The study design for the research on antimicrobial resistance in UTI patients is correlational and comparative, where 1000 lab reports were obtained from 5 renowned verified and registered Laboratories located in Islamabad, named Islamabad Diagnostic Centre (IDC), Hearts International, Excel, Bangash, and D. Watson, by visiting them in person. 215 lab reports (out of 1000) showed positive microbial growth on culture indicative of Urinary Tract Infection. The reports helped in setting variables for statistical analysis. A total of six variables were included in the analysis, namely: the "date" on which the test was conducted, the "age" and "gender" of the patient, the "laboratory" from which the report was collected, the "type of microorganism" that exhibited growth in the culture (comprising 12 types—9 bacteria and three fungi), and the variable representing "drugs" that indicated susceptibility and resistance against the specific microbe. Among these drugs, 46 were considered, including 40 antibiotics and six antifungals. The data collected for this research was a secondary type of data. This implies that the type of data collected was in either documented or recorded form. Patient data was collected, and already compiled data and reports were utilized to reach qualitative research. The Ethical Committee of UOL (University of Lahore) was approached for the sake of approval and authorization of gathering data from private labs with the consent of protecting the sensitivity of the reports collected, as well as the perseverance of credibility and integrity of the labs and data of all labs involved. The data analysis was done using a T-test. All values above 0.05 are considered insignificant, and all values below 0.05 are considered significant, with results for males and females drawn separately.

RESULTS & DISCUSSION

Table 1:
Frequency and percentages of chemicals on UTI

Organism	N	%
E. coli	139	64.65
Citrobacter_ Koseri	1	0.47
Pseudomonas's	11	5.11
Burkholderia Cepacia	1	0.47
Klebsiella	22	10.23
Enterococcus	8	3.72
Coliforms	4	1.86
Candida	12	5.58
Serratia	1	0.47
Morganella	1	0.47
Streptococcus Pyogenes	8	3.72
Total	215	100%

Table 1 reveals the frequency and percentages of bacteria/microorganisms of UTI. The results also show the three most prevalent organisms, i.e., **E. coli** (64.65% of the total 215 reports) was the most prevalent organism. **Klebsiella,** the second most abundant organism, appeared in 22 reports, 10.23% of total cases. **Candida** was found in 12 reports in 5.58% of the patients. The presence of other bacterial species, including pseudomonas (5.11%), Enterococcus (3.72%), and streptococcus pyogenes (3.72%), points out that there is a diverse microbiological spectrum of UTIs in the studied population.

Table 2:
Gender analysis of UTI disparities considering the prevalence in men and the rate of positive cases in women

Organism	N		%	
	Female	Male	Female	Male
E. coli	113	26	81.3%	18.7%
Pseudomonas's	7	4	63.6%	36.4%
Klebsiella	16	6	72.7%	27.3%
Enterococcus	6	2	75%	25%

Table 2 presents a gender-based analysis of UTI cases and reveals a significantly higher percentage of infections among women as compared to men. Of all the reports showing positive microbial growth of **Klebsiella** organism, 72.7% were females, and the rest of 27.3% were males. Female susceptibility to infections was also found in most females, more so than

men, because of positive microbial growth of **Enterococcus,** i.e., 75%. Similarly, 63.6 % of female and 36.4% of male patients represented positive microbial growth of Pseudomonas organisms. A similar pattern was observed in positive microbial growth of **Enterococcus** organisms; 75% were females, while the rest of 25% were males. **Pseudomonas** organisms were represented by 63.6 % female and 36.4% male patients, reported having almost 50% more susceptibility for female UTI patients. Likewise, other positive reports of **Escherichia coli** organism constituted 81.3% females and 18.7% males and again showed a significant %age of female UTI patients.

The current study's findings align with the existing literature, which consistently suggests that women have a higher susceptibility to UTIs due to biological and physical factors (Foxman, 2010). The short length of women's urethra and its proximity to the rectum enable bacterial transmission, especially of E.Coli, the primary agent that causes UTIs (Hooton, 2012). The study's findings further explain that females accounted for most UTI cases, especially those caused by E.Coli (81.3%). It is also aligned with previous research, which explains that both biological and socio-cultural factors make women more vulnerable to UTIs. The reproductive life cycle plays an important role in making women more vulnerable to UTIs. Hormonal instability during pregnancy, period of postpartum recovery, and menopause can be the cause of increasing infection risks (Raz & Rozenberg, 2012). Previous research also suggests that estrogen insufficiency in post-menopausal women leads to changes in vaginal flora, which reduces the protective lactobacilli and increases colonization by uro-pathogens (Gupta et al., 2013).

From a socio-cultural perspective, gender disparities in access to healthcare, nutritional deficiencies, and unhygienic practices further contribute to higher UTI prevalence among women. In patriarchal societies like Pakistan, women's health is often not prioritized, especially in communities with low-income and scarce healthcare resources (Ahmed et al., 2019). Research also highlights that girls who marry at a very young age and experience multiple and frequent pregnancies without adequate health care are at high risk of recurrent UTIs because of repeated exposure to pathogens and compromised immunity (Brog & Schmidt, 2016). The rise in antibacterial resistance has also necessitated a shift in UTI management strategies, and a general preventive line of action for women to protect them from UTIs can help women and girls minimize their vulnerability to these urinary infections. It is a known fact that after urinating, wipes from back to front can cause a UTI infection from bacteria like E. coli, and wiping from front to back can cause bacteria to spread. One can use the blotting technique by using clean, folded toilet paper and gently blotting the exterior portion of the vagina. Blotting instead of wiping can prevent bacteria from entering the urethra.

Avoiding and using scented feminine hygiene products is another way of preventing infections. Daily, one can wash in front and back with soap and water. Drinking a lot of water daily may help urinate frequently and continue to flush out bacteria (Nicolle, 2008). It is also suggested to urinate frequently and empty the bladder to reduce bacterial build-up. Women should be encouraged to be aware of UTI symptoms and risk factors to empower them to take proactive measures to safeguard their health.

CONCLUSION

This study goes deep into the issue of urinary tract infections (UTIs), notably focusing on the growing problem of drug resistance. Based on 1000 test reports from well-known laboratories in Islamabad, the study shows how drug-resistant bacteria, especially Klebsiella and E. Coli, are becoming more common. The gender disparity in UTI susceptibility is noteworthy, with women being more susceptible than men. One of the leading causes of female cases is E. Coli, and the reasons behind serval factors like physical variations, hormone fluctuations, and social factors, including young marriages and a lack of knowledge about reproductive health, increase women's susceptibility. The study provides practical solutions and highlights the issue. It emphasizes how crucial it is to take preventative action to lower the incidence of UTIs, particularly in women. Even small changes like using good hygiene, avoiding particular products, and drinking plenty of water can have a big impact. One noteworthy feature is the emphasis on consciousness, which encourages many young women to be aware of UTIs and seek medical attention.

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