

## AN ASSESSMENT OF CLINICAL PRESENTATION PATTERN AMONG ELDERLY WITH URINARY TRACT INFECTION

<sup>1,\*</sup> Ferguson Ayemere Ehimen and <sup>2</sup>Ibora Samuel Akpan

<sup>1</sup>Department of Preventive Health Care and Community Medicine, Lily Hospital, Benin City, Edo State, Nigeria

<sup>2</sup>Department of Family Medicine, Lily Hospital, Benin City, Edo State, Nigeria

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### Abstract

**Background:** The population of the elderly is rapidly growing globally, recently, it has been projected that by 2025 an estimate of 850 million elderly persons would be living in developing countries thus accounting for 12% of the overall population of these countries. Because of several predisposing factors such as reduced immunity, presence of co-morbidities, catheter use, and so on, the frequency of chronic diseases associated with the elderly has increased, most notably cases like UTI, which have been proven to be common among them. **Objectives:** The study aims to find out the common presentation pattern and common predisposing factors for UTI among elder visiting a private health facility in Edo State, Nigeria. **Methods:** Secondary data will be collected from the electronic medical records of the hospital with focus on adult who had UTI based on diagnostic evaluation. **Conclusion:** Fever, vomiting, and abdominal discomfort were the most prevalent UTI symptoms. Females had a higher rate of UTI than males. The most prevalent organism found in urine samples is *E. coli*. Because clinical presentation is so important in UTI identification, all health-care facilities should have a clear policy on UTI management, with a focus on clinical presentation for diagnosis, especially in low-income settings and communities.

**Keywords:** Assessment, Clinical-presentation, Pattern, Elderly, Urinary- tract -infection.

### INTRODUCTION

An infection of the upper or lower urinary tract (or both), which contains the kidneys, bladder, or urethra, is known as a urinary tract infection.<sup>1</sup> Urinary tract infection (UTI) is one of the most prevalent bacterial illnesses in the elderly population, accounting for around 25% of all infections in this age group.<sup>2</sup> UTIs are diagnosed by detecting the presence of microorganisms in infected persons' urine samples using urine cultures or microscopy.<sup>3</sup> Nevertheless, Non-definitive clinical features have been employed for UTI diagnoses in low-resource countries with ill-equipped diagnostic instruments for determining bacteriuria, resulting in over diagnosis of UTI and antibiotic abuse and resistance.<sup>3-5</sup> The elderly, according to the United Nations, are persons who are 60 years old or older.<sup>6</sup> The aforementioned age range has been linked to an increased risk of UTIs, which has been associated to risk factors that may be inherent or extrinsic in origin. Age-related immunological senescence, as well as the existence of underlying immunosuppressive diseases, are intrinsic risk factors (e.g. type 2 diabetes, malignancy, benign prostate hyperplasia, malnutrition and immobility) while hospitalization, chemotherapy, and urethral catheterization are examples of extrinsic risk factors.<sup>2,7</sup> Furthermore, in women, pelvic prolapse, cystocele, rectocele, lack of perineal cleanliness, vaginal atrophy, and oestrogen insufficiency can all increase their vulnerability to UTI.<sup>8</sup> The majority of older people with UTI present in an unusual way. Early detection of changes in their urine habits, combined with a high index of suspicion, is therefore critical in reaching a diagnosis.<sup>5,6</sup> As a result, among the elderly, classic UTI symptoms (dysuria, polyuria, and urgency) may not always be apparent.

Other uncommon symptoms include nausea, vomiting, abdominal discomfort, respiratory distress, and changes in consciousness, which could indicate a UTI in these people.<sup>5</sup> Furthermore, the clinical symptoms appear to be the same regardless of the causative organism. In community dwellers aged 60 and up, however, *Escherichia coli* is the most commonly isolated uropathogen.<sup>8</sup> Coliforms (Gram-negative organisms found in the intestine, *Klebsiella*, *Proteus*, and *Enterobacter*) are also frequently observed in the elderly and have been linked to UTI. In addition, in older adults, gram-positive (e.g. enterococci) and atypical organisms (e.g. *Pseudomonas*) account for a higher proportion of UTIs.<sup>9</sup> This is significant because these bacteria are less susceptible to antibiotics and do not convert urine nitrates to nitrites. According to Centers for Disease control, UTIs are characterized by pain or burning while urinating, frequent urination, bloody urine, pressure or cramping in the groin or lower abdomen, fever, nausea, and vomiting.<sup>10</sup> In a systematic evaluation of 70 studies, it was discovered that urinary tract infection in the elderly was widespread due to cognitive impairment, diabetes mellitus, structural urinary tract abnormalities, and indwelling catheters.<sup>11</sup> Other studies in Nigeria and other regions of the world have also confirmed the aforesaid conclusion.<sup>13, 14, 15</sup> Moreover, as established in earlier investigations, frequent organisms recovered in the urine culture of the elderly included: *E. coli*, *Staphylococcus aureus*, *Klebsiella* spp etc.<sup>9, 11-21</sup> The clinical presenting pattern of UTI in the elderly has been studied in just a few research. Some of the limited studies conducted in South-South Nigeria focused on patients attending public health facilities, with little (to the author's knowledge) on those assessing care in private facilities. As a result, this study is being conducted to fill in the gaps by giving basic information on clinical presentation, risk factors, and common bacterial growth in private healthcare facilities.

\*Corresponding Author: Ferguson Ayemere Ehimen

Department of Preventive Health Care and Community Medicine, Lily Hospital, Benin City, Edo State, Nigeria

**METHODOLOGY**

**Study area**

The private tertiary health care facility is located in Benin and Warri the capitals of Edo state and Delta state. The tertiary health care offer clinical care, laboratory services, radiological services (MRI, CT scan, Xrayetc) and preventive services. These services are rendered either on outpatient or inpatient basis. The Tertiary health care is a referral facility for the diagnosis and management of infertility (IVF excellence), eye diseases, bone and spine abnormality.

**Study Design**

The study was a retrospective cross-sectional study

**Study Population**

The participants in the study were elderly adults who had positive urine culture tests and had visited the hospital throughout the retrospective study period.

**Study duration**

The study exercise was conducted over a period of three months.

**Data collection and management**

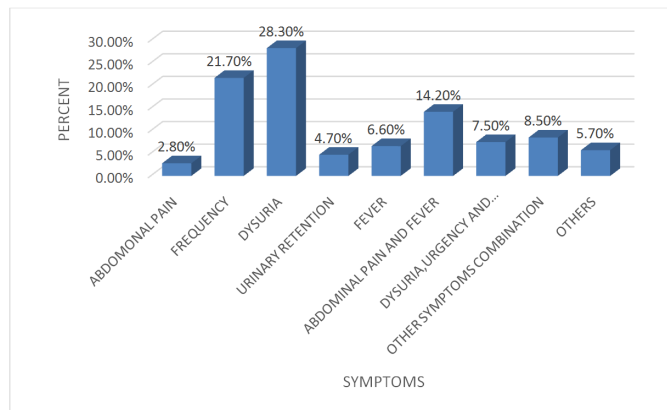
Data were synthesized from the hospital electronic medical records. It included elderly who visited the hospital outpatients' clinic from 2018-2020. Data were collected and analyzed using the Excel statistical package.

**RESULTS**

**Table 1. Age and sex distribution of the elderly**

Age (years)	Sex of the elderly			
	Male		Female	
	Frequency	Percent	Frequency	Percent
60-65	29	27.4%	19	17.9%
66-70	1	0.9%	21	19.8%
70-75	0	0.0%	10	9.4%
76-80	1	0.9%	7	6.6%
>80	1	0.9%	17	16.0%

The majority (27.4% and 19.8%) of the male and female participants, respectively, were between the ages of 60 and 65 and 66 and 70. Almost 1% (0.9%) of the males and 16% of the females were over the age of 80 (Table 1). The most prevalent clinical presentation described by the elderly in our study was dysuria and frequency of micturition (28.3 percent and 21.7 percent, respectively). In addition, 14.2 percent and 7.5 percent of the symptoms exhibited by the aged patients are abdominal pain/fever and dysuria/urgency and frequency, respectively. Other symptoms (fever, vaginal itching, and discharge) accounted for 8.5 percent of the total number of symptoms (Figure 1). Diabetes mellitus was a common predisposing factor linked to an increased risk of urinary tract infection in the elderly people studied. Cerebrovascular accident (16%) and catheter use (14.2%) were also linked to an increased incidence of UTI in elderly people who were assessed retrospectively. Multiple risk factors for UTI were found in 17% of the elderly (Table 2).



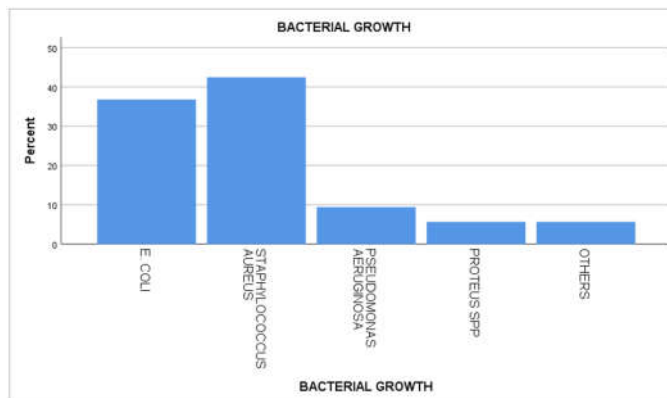
\*Others-pyuria and hematuria

**Figure 1. Symptomatic presentation of UTI among the elderly (n=106)**

**Table 2. Predisposing factors for UTI among the participants**

Predisposing factors	Frequency	Percentage (%)
Catheter use	15	14.2
Cerebrovascular accident	17	16.0
Diabetes mellitus	32	30.2
Blockage in the urinary tract (bph, stricture etc)	7	6.6
Renal calculi	8	7.5
Multiple risk factors (htn, dm, catheter use etc)	18	17.0
No pred factor	5	4.7
*others	4	3.8

\*Others-cystocele, dementia



**Figure 2. Bacteria growth pattern reported among the elderly**

Majority (42.5%) of the elderly urine collected yielded growth of staphylococcus aureus while 36.8% of the bacteria growth was accounted by E. coli. Almost 10 percent of the bacteria growth was due to pseudomonas aeruginosa while 5.7% of the bacteria growth was accounted proteus and other growth (Klebsiella and candida species). Figure 2.

**DISCUSSION**

One of the most prevalent bacterial infections affecting the elderly is urinary tract infections (UTI).<sup>22,23</sup> Infections in this age group have unique characteristics that must be identified early in order to avoid complications, with the sole goal of providing high-quality care despite unusual clinical presentation patterns, co-morbidity, dwindling organ and system function, and antimicrobial interactions and resistance.<sup>23-25</sup> The majority of the people studied in our survey were young elderly, while another survey in Bangalore found that most of the elderly researched were in the same age range

as in our survey, however the most prevalent age group was different.<sup>26,27</sup> It's worth noting that the Bangalore study had more male participants than ours.<sup>27</sup> The majority of the older people we evaluated experienced lower urinary tract symptoms, with dysuria, frequency, and a combination of symptoms including abdominal pain and fever being the most prevalent. Although fever was the most prevalent reported symptom among the elderly in these studies,<sup>27,28</sup> our findings were similar to those found in other research where symptoms of the lower urinary tract were seen among the elderly.<sup>29</sup> The disparity in results could be linked to differences in research regions, the status of the aged population, consciousness level, and the clinician's ability to recognize early UTI symptoms. In this investigation, diabetes mellitus (DM) was the most common predisposing factor. This finding was consistent with findings from other studies in which diabetes mellitus was identified as a substantial risk factor for UTI.<sup>27,29</sup> Diabetes mellitus was the most common cause of UTI, which is not surprising given that bacteriuria is more common in diabetics than in non-diabetics due to a combination of host and local variables.<sup>26,30</sup> In other research, however, urogenital procedures and dementia were identified as the leading causes of UTI in the elderly.<sup>31,32</sup> Staphylococcus aureus was the most prevalent causal agent in our investigation, which was not unlikely given that the organism is a common pathogen in both the community and hospitals.<sup>33</sup> The finding was similar to the observation in another study in southern, Nigeria.<sup>16</sup> Although *S. aureus* causes significant mortality and morbidity but is an infrequent cause of urinary tract infection.<sup>34</sup> The existence of high staphylococcus UTI in our study necessitates further examination, and the reason for the high prevalence of staphylococcus in our study may be related to increased urogenital procedures, diabetes mellitus, and sample collection methods. However, other research have indicated *E. coli* as the most common cause of UTI, which was not entirely contradicted by our findings, as *E. coli* was shown to grow in a substantial percentage of the senior urine samples.<sup>8,9,19</sup> Our research has a few limitations. Because the number of patients in the study was small and they were all treated at a single facility, it may be difficult to extrapolate our findings to other institutions.

### Conclusion and recommendations

Our findings highlight the difficulties of making a clinical diagnosis of UTI in the elderly, when unusual symptoms may be present instead of the conventional ones. As a result, empirical treatment based on clinical evaluation and screening tests should be encouraged in order to limit the risk of significant consequences and mortality. Diabetes mellitus, cerebrovascular accidents, and catheter use are still significant risk factors for UTI. With the foregoing in mind, ongoing health education and the creation of standard operating procedures are required to ensure an aseptic environment during any urogenital procedure. Furthermore, based on the common organism identified in our investigation, broad-spectrum antimicrobials should be chosen for empirical antibiotic therapy before culture results are available to limit the risk of catastrophic consequences.

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**Potential for conflict of interest:** The authors disclose that they have no competing interests.

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