



مدى انتشار مرض المسالك البولية عند كبار السن

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The prevalence of urinary tract disease in the elderly, Bani waleed, Libya

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الملخص:

يعتبر التهاب المسالك البولية من أكثر الأمراض المعدية عند كبار السن ، هذه الدراسة تهدف الي تقدير مدى حدوث الالتهاب لدى الكبار في العمر واهم عوامل الخطورة والمضاعفات الناتجة عنه. منهجية البحث: البيانات لدراسة وصفية تم جمعها من مستشفى بني وليد المركزي ، عدد 106 مريض من الفئة العمرية فوق 60 عاما تم تضمينهم في الدراسة.

النتائج: أكثر الفئات العمرية المتضررة بالتهاب المسالك البولية كانت من 70 الى 79 عاما (35.8%) و تليها من 60 الي 69 عاما (31.1%) ، كانوا الرجال أكثر عرضة من النساء بنسبة (51.8) و (48.1%) علي التوالي . ايضا كانوا كبار العمر المصابين بالسكر أكثر عرضة من الغير مصابين (58.4%) و (41.5%) علي التوالي . كانت بكتيرية الاشريشية القولونية المسبب الاكبر لالتهاب المسالك البولية . التهاب المثانة كان النسبة الاكبر من (71.4%) . التهاب المثانة كان انتشارا (65.09%) من التهاب الحويضة والكلية (34.91%) لدى الكبار في العمر.

الكلمات الدالة: عدوى الجهاز البولي، عوامل الخطورة ،كبار السن، الأمراض المعدية، التهاب المثانة.

Abstract

Urinary tract infection (UTI) is common infections occurred in elderly. The study aimed to evaluate the prevalence of the UTI in elderly people and to determine the most risk factors for serious clinical complications of UTI.

Methodology: Data of a descriptive cross sectional study were collected from Central Bani Waleed Hospital, 106 UTI patients over 60 year old were involved in this study.

Results: The most age group effected with UTI was 70-79 y (35.8%), followed by age group 60-69 y (31.1%). The men old people were more susceptible to UTI than women one (51.8% and 48.1% respectively), as well as elderly diabetic patients were susceptible to UTI more than non-diabetic (58.4% and 41.5% respectively). *E.coli*

represented the most causative agent of UTI (71.7%). Cystitis (65.09 %) was the most prevalent UTI among elderly than pyelonephritis (34.91%).

Conclusion: As the human age progress , the resistance of immune system deficiencies gradually become more susceptible to infectious diseases. The UTI one of these infections that can lead to serious complications in elderly immunocompromised. In addition, the comorbidities factors increase the directly affected of old people to UTI.

Keywords: Urinary tract infections, risk factors, the elderly, infectious diseases, cystitis.

1. Introduction.

Bacterial infections can result in serious morbidity and mortality in the elderly population. Urinary tract infections (UTIs) are the most prevalent kind of bacterial infection among older individuals (1). An infection in the urinary tract, which can affect the upper and lower urinary tracts, is generally referred to as a urinary tract infection (2). In the urinary tract the most frequent organism causing an infection is *Escherichia coli* (*E. coli*) bacteria. This is true for the elderly population as well. Other causes, such as *Proteus*, *Klebsiella*, *Enterobacter*, *Serratia*, *Pseudomonas*, and *Enterococci*, become more prevalent in this age group (3). The symptoms connected with the bladder and kidney infections are contrasting which includes painful and frequent urination in case of cystitis as a result of bladder infection whereas conditions like high fever and flank pain are commonly experienced in case of kidney infection which is referred to as pyelonephritis (4, 5) Elderly adults are more likely than younger adults to get a UTI. Actually, the prevalence of urinary tract infections in older males is almost identical to that of older women. One infection every 14–20 person–years is roughly the total incidence of UTIs in elderly men and women (6). In addition, UTI rates vary from 5 to 30%, with increasing rates observed with advancing age (7). Because germs are often found in the urine of the elderly, urinary tract infections in this population increased and it should only be treated when symptoms and complications arise. Elderly individuals often have a history of urinary tract infections and asymptomatic bacteria (8).

The older people who are fragile and have cognitive impairment along with age–related serious diseases, compared to younger people, the treatment and diagnosis of urinary tract infections (UTIs) are more challenging in the older population due to a number of underlying risk factors, including advanced age, spinal cord injuries, diabetes mellitus, weakened immune systems, and catheterization which is crucial (1,6). Furthermore, the widespread and improper use of antimicrobial drugs has inevitably led to the emergence of antibiotic resistance, which has recently grown to be a serious global issue (9). The diagnosis and practical treatment of UTI in the elderly is challenging and a sound knowledge of the prevalent epidemiology of bacteria and their resistance pattern is necessary for the same, as well as early recognition of bacteraemic UTI and prompt, appropriate treatment are critical in reducing the mortality (1). Also , the UTI among elderly people is not clearly understood and is currently under study,

This study aimed to determine the occurrence of UTI in elderly and the associated risk factors to make early diagnosis and prevent serious clinical secondary complications of UTI.

2. Methodology:

A descriptive cross sectional study of the incidence of the UTI in Bani Waleed city. Medical records were obtained by a structural questionnaire for 106 UTI patients above 60 years of age were admitted to the Central Bani Waleed Hospital which diagnosed as UTI during a period from December (2017) to April (2018).

The questionnaire data include age and sex of patient, causative agent of UTI, types of Hospital, 106 patients were elderly above 60 year old. The data analyzed by SPSS

Table (1) shows the UTI patients distribution in relation to the risk factors for UTI in elderly adults. Men were slightly more affected than women (51.8% versus 48.1%, respectively). This is agreed with a study by Oliveira AC et al (2010), where the UTI (cystitis or pyelonephritis) and risk factors such as Diabetes (diabetic or non-diabetic) and socioeconomic status (employment or unemployment).

The statistical analyses were done using SPSS (Statistical Package Social Sciences).

3. Result and Discussion:

This study was carried out during a 5 months period from December (2017) to April (2018). Out of 412 medical records of UTI patients in the Central Bani Waleed , male frequency was 53.0% while the female rate was 47.0% (10). In all age groups several studies showed that the occurrence of UTI in women were more than in men. A high prevalence of UTIs in women (60.7%) as compared with men (39.3%) was found in study by Ali Akhtar et al (2021) (11). Also another study found that the incidence of UTI among women was 12.8 per 100 person-years, and 7.8 per 100 person-years among men (12). In general, the incidence of UTI significantly increases in both men and women aged more than 65 years. In the present study the overall incidence of UTI in all age groups ranged from 9.4% and 35.8% (table 1), elderly in age group 70–79 y and 60–69y showed highest incidence (35.8%) and (31.1%) respectively. However we surprising in our study, the rate of UTI incidence declined in age group 80–89y and elderly over than 90 years were 23.6% and 9.4% respectively.

The elderly are more likely to susceptible to an infection due to changes in immune function , exposure to microorganisms, and an increase in comorbidities (13). A studies found that approximately 5–10% occurrence of bacteriuria in 70 years old women and supposed to increases to 20% at 80 years of age (14). In 60 years men , the rate of bacteriuria were around 1–3%. But more than 10% for men older than 80 years (15, 16). For both men and women the incidence of bacteriuria increased above 20% in the institutionalized non-ambulatory people (15). Our study showed that, the cystitis is more prevalence

UTI type in elderly patients (65.09%) than pyelonephritis (34.9%). This is similar to two other previous studies by Akhtar et al (2021) and L M A J Muller et al (2005) were showed high frequency of cystitis in old people than any other types of UTI (11, 17). The bladder stores urine, and uropathogens can pass in and colonize in the bladder more than any areas of the urinary tract system, which can lead to cystitis (18).

Since the immune system in diabetes mellitus older adults depressed due to autonomic neuropathy that cause imperfect discharging of the bladder and reduced metabolic control, which all lead to increasing the risk of UTIs in diabetic elderly patients (19) . In the present study , in regards to diabetes as a risk factor associated to UTI., the diabetic elderly who had UTI more than non-diabetic 58.4% and 48.1% respectively. A similar prevalence of UTIs among diabetic individuals was reported by Ali Akhtar et al (43.1%) and hypertension (33.9%) are the most common comorbidities present among the study population (11). In addition , other studies found that the diabetic persons more susceptible to UTI , reported by Pargavi et al. (37%) (20) and Sewify et al. (35%) (21). As well as , in a study on postmenopausal women, the incidence of UTI has been reported as 0.07 per person-year and 0.12 per person-year in women with uncontrolled diabetes mellitus (6).

Table 1: The distribution of elderly UTI patients according to risk factors parameters (Age , gender , UTI type and diabetes).

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Male	51	48.1	48.1	48.1
Female	55	51.9	51.9	100.0
Total	106	100.0	100.0	
Age				
60-69	33	31.1	31.1	31.1
70-79	38	35.8	35.8	67.0
80-89	25	23.6	23.6	90.6
Above 90	10	9.4	9.4	100.0
Total	106	100.0	100.0	

Types of UTI				
Cystitis	69	65.1	65.1	65.1
	37	34.9	34.9	100.0
Pyelonephritis				
Total	106	100.0	100.0	
Diabetes				
Diabetic	48	45.3	45.3	45.3
Non diabetic	58	54.7	54.7	100.0
Total	106	100.0	100.0	

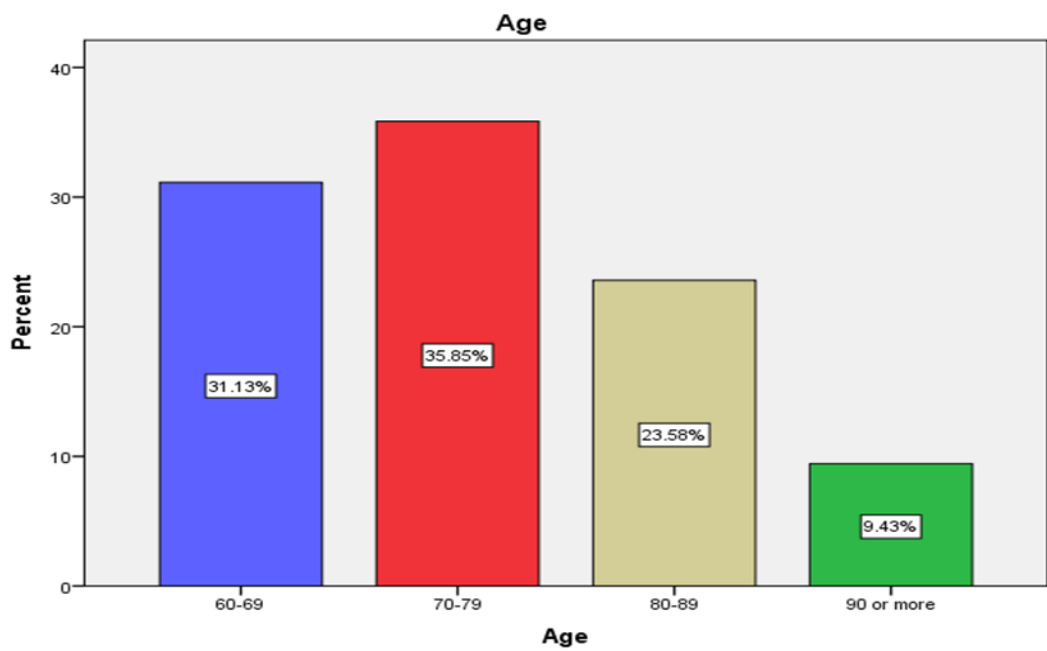


Figure (1): The age depending dissemination of the UTI patients .

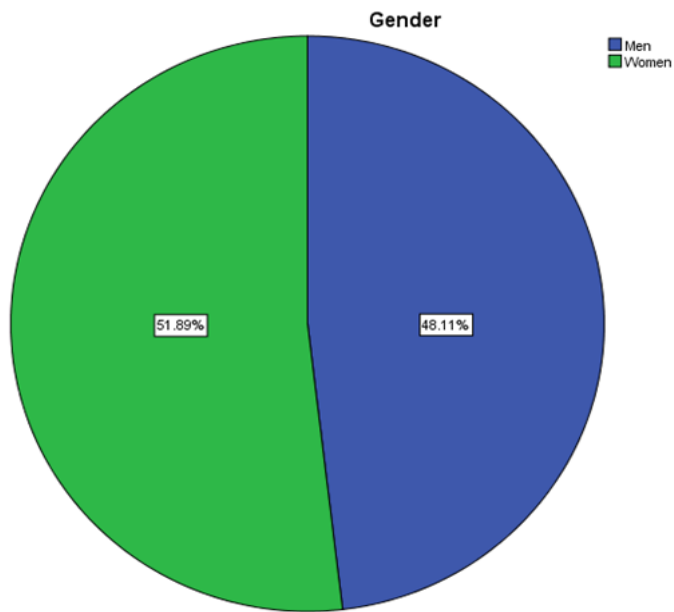


Figure (2): The distribution of the UTI patients depending on gender.

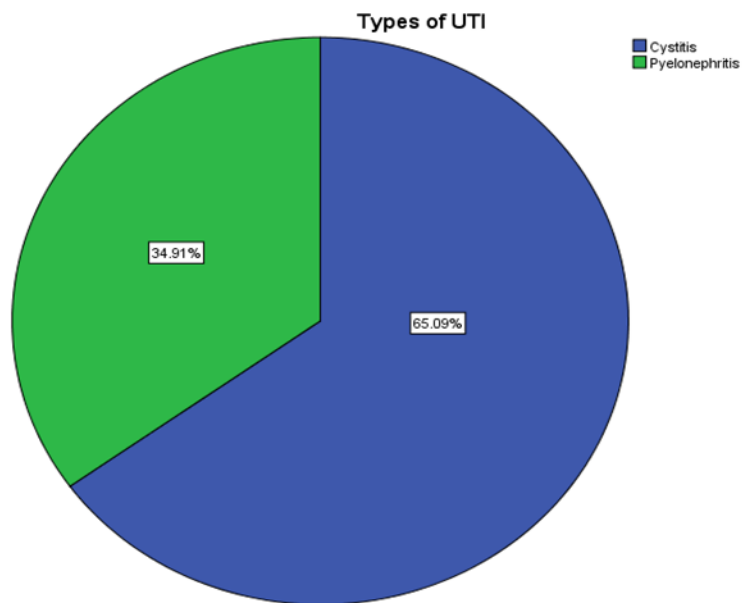


Figure (3): Shows the cystitis and pyelonephritis of the UTI patients

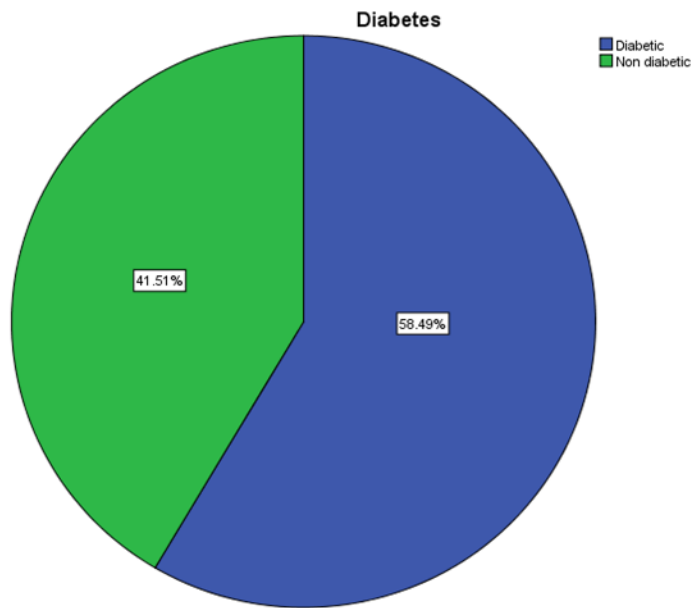


Figure (4): Shows the UTI in diabetic and nondiabetic patients

Bacteria considered as the main causative agent of infection and disease , for example *E. coli* is considered to be the predominating pathogen followed by *Staphylococcus saprophyticus* and other pathogens like *Proteus* species, *Klebsiella* species and *Enterococcus* species have a minor role in conferring the disease.(22)

Table (2) Shows the dissemination of the UTI patients according to causative agent of UTI. *E.coli* represented the highest causative agent (71.7%) . other organisms ; *Klebsiella* spp , *Staph* spp and *Protues* spp caused UTI in elderly of 13.21% , 11.32% and 3.7% respectively. Also a study by Laupland K et al showed the major prevalence pathogen was *E coli* in all settings, for all conditions and age groups: 74.4% among outpatients regardless , 65% of hospital acquired infections, and 47% of health care–associated infections(23).

Table (2): Caustive agents of UTI in elderly

Causative agent		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<i>E.coli</i>	76	71.7	71.7	71.7
	<i>Staph</i> spp	12	11.3	11.3	83.0
	<i>Proteus</i> spp	4	3.8	3.8	86.8
	<i>Klebsiella</i> spp.	14	13.2	13.2	100.0
	Total	106	100.0	100.0	

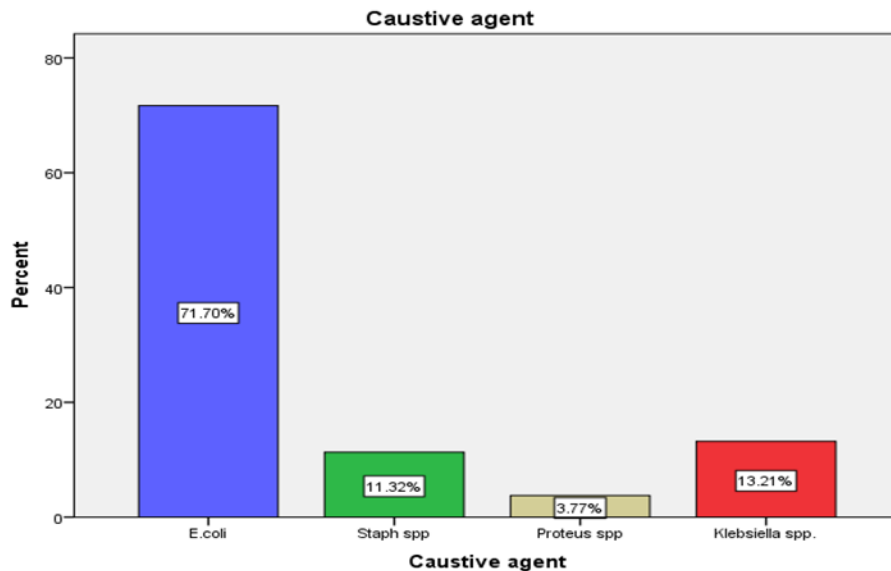


Figure (5) :The distribution of the UTI patients according to causative agent of UTI

4. Conclusion:

UTI is one of most contagious infections frequently in the both elderly people men and women which are immunocompromised . As the human ages progress , the resistant to pathogens decline and become more vulnerable to infections . Bacterial pathogen is most causes of UTI and *E.coli* is the commonest organism responsible for UTI. In addition to age risk factor, the diabetes mellitus plays a role in weakening the immune system so diabetic people more likely to experience UTIs than non-diabetic patients.

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