http://www.inosr.net/inosr-scientific-research/
Mutonyi
INOSR Scientific Research 9(2):27-39, 2023.

International Network Organization for Scientific Research ISSN: 2705-1706

Urinary Tract Infections and Associated Factors among Youth: A Case Study at KIUTH, Bushenyi

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ABSTRACT

Nationally, urinary tract infection is more common among childbearing age groups of both males and females and it poses a dangerous health risk if left untreated. The study aimed at assessing the occurrence of urinary tract infections among the youths attending Kampala International University Teaching Hospital. A descriptive cross-sectional study design quantitative in nature was used. A convenient sampling method was used to recruit 156 respondents for the study. A questionnaire was used for data collection and was analyzed using SPSS 16.0 software. 94% of the respondents stated that they were sexually active where 80% stated having one partner and 14% having two partners. 52% stated that they had been hospitalized with indwelling urethral catheters. 6% stated they were not sexually active. The researcher concluded that most of the youths had exposure to UTI in many different ways at some point in their life. We recommend health workers properly treat UTIs and give preventive measures to those at risk of getting infected.
Keywords: UTI, health risk, youths, bacterial infection.

INTRODUCTION

Urinary tract infection is an ancient infection that was first described and documented in the Bears Papyrus dated to circa 1550 B.C. [1-5]. It was described by the Egyptians as sending forth heat from the bladder [6-10]. Then there was no effective treatment until the development and availability of antibiotics in the the1930s before which time herbs and bloodletting were the only treatment in use [11-14]. During the twentieth century, the infection was found to be having a diverse group of clinical syndromes and diseases that differ in epidemiology, etiology, location, and severity of the condition [15-20].

UTIs include cystitis, urethritis, prostatitis, and pyelonephritis. Besides filtering and eliminating wastes from the body, the urinary system also maintains the homeostasis of water, ions, pH, blood pressure, and calcium [4-6]. Research studies have defined urinary tract infection as the most common form of bacterial infection [21-25]. It is the second most common type of infection accounting for about 8.1 million visits to health care providers each year being the commonest cause of morbidity (especially renal disorder) and mortality in adults specifically among those of the lowest socioeconomic status [11-13]. This infection usually affects one or more components of the urinary system and is particularly common among the female population with an incidence of about 1% of school-aged girls and 4% of women through childbearing age [26-30]. Reports from other studies reveal that most uropathogenic causes UTIs to colonize the colon, per anal region, and in females the per urethral region forms a biofilm that usually resists the body's immune response [31-35].

Global records on the disease show that among youth, the infection is more common in girls, except in the neonatal age group where boys predominate [16-18]. It is also estimated that about 20% of women develop a UTI during their lifetime; the incidence increases at puberty and remains high throughout adult life [36-40]. However, UTI's account for approximately

23% of all hospital-acquired infections [41-45].

In India, research studies show that pregnant women with asymptomatic bacteria in urine are at a great risk of developing pyelonephritis in their second or third trimester [46-47]. According to WHO, one in five women will encounter this infection.

In sub-Saharan Africa, studies show that 7.3% of pregnant women attending antenatal care have been identified to have significant bacteriuria (presence of bacteria in urine) with *E. coli* as the dominant bacteria isolate which accounts for about 37% of all cases [22]. A study carried out in Bamenda-Cameroon shows that bacteriuria is more common among women though in males it manifests at their late ages of life above 50 years as a result of an immune compromise with increasing age [23].

Previous studies in Mulago Hospital found a prevalence of significant bacteriuria to range between 6% in asymptomatic patients and 18.7% in diabetic patients attending Mulago Hospital diabetic clinic [24]. In Uganda, it is believed that UTIs are common among public toilet users and prostitutes, also among body unhygienic men and women. Although most UTIs are self-limiting and improve without treatment even when culture is positive, others possess dangerous health risks if left untreated, and may tend to spread up through the ureters, and into the kidneys resulting in pyelonephritis [25].

Problem Statement

Worldwide studies have shown that urinary tract infections are among the major causes of miscarriages in women. About 10% of abortion cases are due to UTI [26]. With increasing age, the prevalence of UTIs increases in both women and men [27, 28]. Urinary tract infections are also regarded as common hospital-acquired infections [29].

In studies that have been done nationally, the prevalence of UTI was found to be 13.3 % in Uganda [30]. Poor hygiene contributes to a rise in infection incidence [31, 32]. There is an increase in occurrence among youth who stay in crowded areas where bathing rooms are not enough for the population and stay dirty most of the time harboring the causative bacteria. Lately, medical doctors in different health centers have reported a rampant increase in UTI-induced abortions.

According to Uganda MOH [33], there is an increase in UTI infection among the childbearing age group of both males and females due to hypersexual activity and unfaithfulness.

Despite the various media health talk shows on how to reduce UTI transmission in society, there is still an increasing prevalence of the infection in Bushenyi. A big number of youth that present with the symptoms of UTI at the KIUTH shows a gap in the way people conceive and understand these health talks on UTI.

Aim of the Study

To assess the occurrence of urinary tract infections among youth between 15 to 35 years attending Kampala International University Teaching Hospital.

Specific Objectives of the Study

- To assess the signs and symptoms of urinary tract infections among the youth between 15 to 35 years attending Kampala International University Teaching Hospital.
- To find out the prevalence of urinary tract infections among the youth between 15 to 35 years attending Kampala International University Teaching Hospital.
- To assess the factors predisposing to urinary tract infections among the youth between 15 to 35 years at Kampala International University Teaching Hospital.

Research Questions

1. What are the signs and symptoms occurring in youth found having urinary tract infections at KIUTH?
2. What is the prevalence of urinary tract infections among youth between 15 to 35 years attending KIUTH?
3. What are some of the factors predisposing youth who attend

KIUTH to urinary tract infections?

Justification of the Study

Inadequate data on local resistance patterns on urinary tract infections at Kampala international university teaching hospital therefore the study is to identify the prevalence, symptoms, and factors predisposing to the occurrence of urinary tract infections among youth who come for treatment in KIUTH.

METHODOLOGY

Study Design

This was a cross-sectional descriptive study design where interviews were conducted using a structured questionnaire developed to meet the aims and objectives of the study.

Study Area

The Study was done at Kampala International University Teaching Hospital by the research investigator.

Study Population

The study population included the males and female youth attending KIUTH who presented with symptoms of UTI in outpatient department where an inclusion and exclusion selection criteria was be used.

Inclusion Criteria

All youth between 15-35 years who presented with signs and symptoms of UTI, had stayed in Bushenyi for more than 5 years and consented.

Exclusion Criteria

All youth patients were mentally unwell and were not considered.

Sample Size Determination

The incidence rate of UTIs is estimated to be 14% (as shown in some studies done in developing countries). The study sample size was determined using the formula for simple random sampling using single proportions given by: (Kish Leslie, 1965).

$$n = \frac{Z^2 p\, q}{d^2}$$

Where n = Sample size
z = z value corresponding to a 95% level of significance = 1.96
p = expected proportion of population 13.3% = 0.133 (13.3 % in Uganda regionally is the UTI prevalence [30].
q = (1 - p) = (1-0.133) = 0.86
d = absolute precision (5%)
Therefore, from the above sample size is:

$$n = \frac{1.96^2 \text{ X } 0.133 \text{X } 0.86}{0.05 \text{ X } 0.05}$$

n = 0.39072208/0.0025 = 156 respondents.

Sampling Method.

The method used here was a random selection of patients who had presented with symptoms of UTI. The random selection was regardless of tribe, religion, sex, or physical appearance and was done during ward rounds for those who were hospitalized.

Data Collection

Patients were recruited by the principal investigator and further check out on files and registers from the ward or hospital store. They were informed of the intended study, consent was acquired and patients were assured of confidentiality.
The data collection sheets were filled in following the patient information and file. Respondents were interviewed in English and the local language with help of an interpreter depending on which language the respondent was conversant with.

Data Analysis

The data obtained was analyzed manually to omit any false information and correct spellings.

Data Management

The questionnaires were stored in a lockable carrier and then later entered into Microsoft Word and accessed database for typing and printing.
The patients' names were omitted in order to keep confidentiality.

Data Presentation

The data is presented in Microsoft office word for any derived tables and graphs.

Ethical Considerations

The proposal was presented to the school administrator for approval prior to beginning the study. Permission was sought from the medical executive director of Kampala International University Teaching Hospital for the study. The study was carried out in accordance with existing ethical guidelines. Informed consent was sought from every patient before the

questionnaire was administered. Confidentiality was held at all costs; no information was divulged to any other person than the researcher. All the information obtained from the study was treated with the utmost confidentiality and used only for the intended purpose.

RESULTS

Bio-demographic Data

Most of the respondents (42.9%) were of age 15-20 while only 9.3% were of the age range 31-35. Majority of the respondents (70%) were females whereas males were only 30%. Majority of the respondents were Anglicans (50%) while the Moslems were only 11.5%. Majority of the respondents were singles (67%) and the widowed/separated were only 11.5%, as shown in the table below.

Table 1 shows the bio-demographic profile of respondents (n=140)

Bio-demographic parameter	Frequency (n)	Percentage (%)
Age in years		
16-20	60	42.9
21-25	47	33.5
26-30	20	14.3
31-35	13	9.3
Total	**140**	**100**
Sex		
Female	98	70
Male	42	30
Total	**140**	**100**
Religion		
Moslems	16	11.5
Roman catholic	30	21.5
Anglicans	70	50
Others	24	17
Total	**140**	**100**
Marital status		
Married	30	21.5
Single	94	67
Widowed/separated	16	11.5
Total	**140**	**100**

Assessment of Symptoms

A majority (82%) of the respondents experienced signs and symptoms of UTI before coming to the hospital only (18%) had no symptoms. Of the 82% of respondents who had signs and symptoms before coming to the hospital, the majority (75%) of them had both painful micturition and supra-pubic pain equally and only (9%) had other symptoms. Majority (49.5%) of them had symptoms for 3days while only (13%) had symptoms for more than 5days as shown in the table below.

Table 2 Shows assessment of symptoms of UTIs.

Variable	Frequency (n)	Percentage (%)
1a) Response on whether the respondents had signs and symptoms before coming to hospital (n=140)		
Yes	115	82
No	25	18
Total	140	100
b) Response on specific symptoms experienced (n=115)		
Painful micturition	43	37.5
Suprapubic pain	43	37.5
Fever	18	16
Others	11	9
Total	**115**	**100**
c) Response on how long they had symptoms before coming to hospital (n=115)		
3days	**57**	**49.5**
5days	**43**	**37.5**
More than 5days	**15**	**13.0**
Total	**115**	**100**

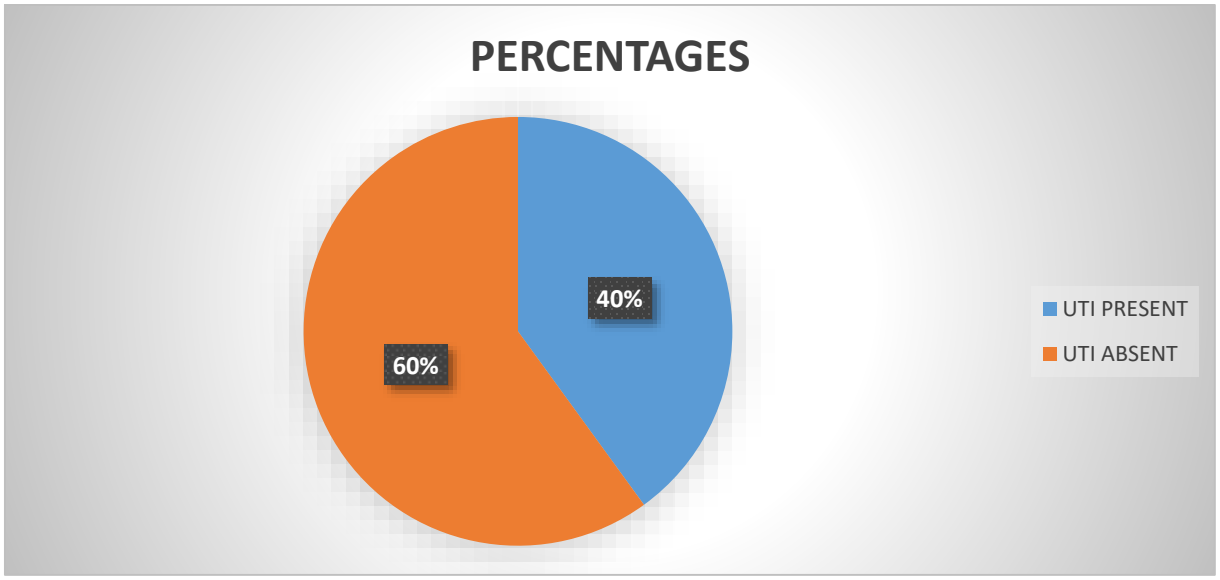

Figure 1: Shows response on whether it was the first time for respondent to be diagnosed UTIs (n=140)

Prevalence of UTIs

Most of the respondents were not diagnosed UTI for the first time (60%) while only (40%) were diagnosed UTI for the first time as shown in the figure above.

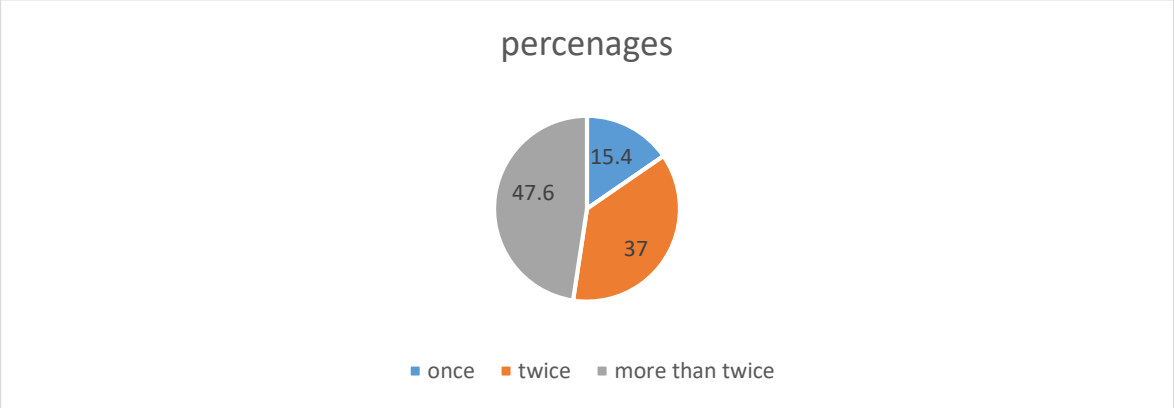

Figure 2: Shows response on how many times the respondents had been diagnosed UTI (n=84)

Out of the (60%) of respondents who had already been diagnosed UTI before the current infection, majority (47.6%) of them had been diagnosed UTI more than two times and a few (15.4%) had been diagnosed only once as shown in the figure above.

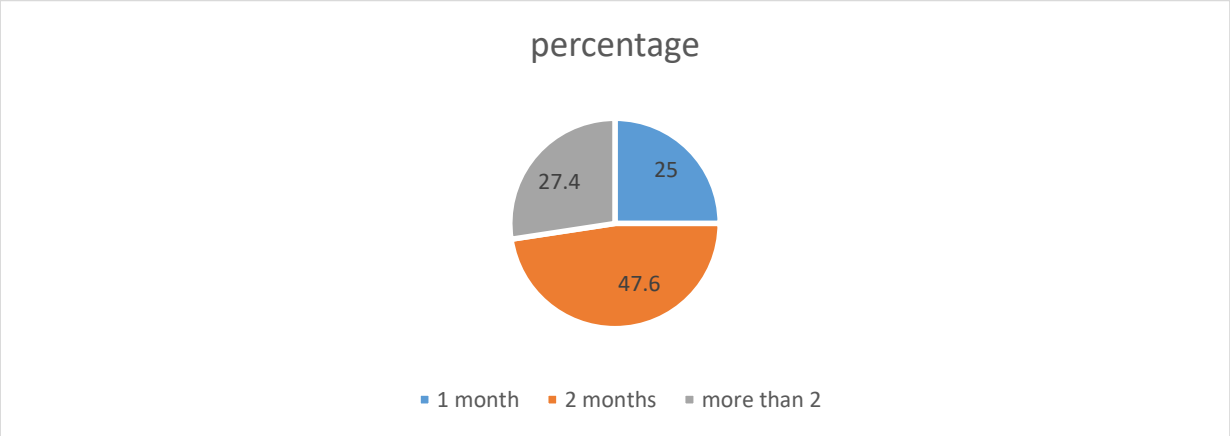

Figure 3: Shows response of respondent on the time of recurrence of UTI (n=84)

Majority (47.6%) of respondents had recurrence in a period of two months while only (25%) had recurrence in a period of one month as shown in the figure above.

Predisposing factors to UTI.

Majority of the respondents (52%) stated that they had ever been catheterized and only 48% had not been catheterized before. 70% of the respondents stated that they had used contraceptives and 30% had not used contraceptives. Of the 70% respondents who stated they had used contraceptives, 66.3% of them used pills, 6.1% used IUD and 27.6% stated they used other types of contraceptives.

Majority of the respondents (80%) stated that they had one sexual partner, 14% stated they had two partners and 6% stated they had no sexual partner. Majority of the respondents (71%) stated they were HIV negative and 29% stated they were HIV positive. Majority of the female respondents (89%) stated they were not pregnant and 11% stated they were pregnant. Majority of the respondents (96%) stated that they did not use soap for cleaning their genitals and only 4% stated that they used soap for cleaning genitals as shown in the table below.

Table 3 Shows response of respondents on the predisposing factors to UTI (n=140).

Variable	Frequency (n)	Percentage (%)
1. Instrumentation		
a) Respondents who had ever been catheterised (n=140)		
Yes	73	52
No	67	48
Total	140	100
b) Response on contraceptive use (n=140)		
Yes	**98**	**70**
No	**42**	**30**
Total	**140**	**100**
c) Response on specific contraceptives used (n=98)		
IUD	**6**	**6.1**
Pills	**65**	**66.3**
Others	**27**	**27.6**
Total	**98**	**100**
2. Sexual behaviour		
Response on number of sexual partners (n=140)		
One	**112**	**80**
Two	**20**	**14**
None	**8**	**6**
Total	**140**	**100**
3. Alteration of host defense mechanism		
a) Response on whether female respondents were pregnant (n=98)		
Yes	**11**	**11**
No	**87**	**89**
Total	**98**	**100**
b) Response on HIV status of respondents (n=140)		
Positive	**40**	**29**
Negative	**100**	**71**
Total	**140**	**100**
c) Response of those who used soap for cleaning their genitals (n=140)		
Yes	**6**	**4**
No	**134**	**96**
Total	**140**	**100**

DISCUSSION

Bio Demographic Data.

Respondents of 15-35 years were enrolled in the study. This was because those respondents fall in the youth age range of Uganda and are the most susceptible to UTIs.

Most of the respondents (42.9%) were in the age range of 15-20 years. This could be because they have little awareness of the causes of UTIs and how they are transmitted. The least 9.3% were those in age range (31-35) years. The majority of

respondents (70%) were females. This implied that women were more prone to UTIs. These findings are similar to the findings of Nicole *et al.* [34] who says that the female urethra appears to be prone to bacterial colonization because of its proximity to the anus. The least 30% were males. Among demographic data, religion was considered. This is because the youths that attend KIUTH have diverse religions. The majority of respondents (50%) were Anglicans, 21.5% were Roman Catholics, 11.5% were Moslems, and 17% were from other religions. The majority of the respondents were single (67%). This is because KIUTH is surrounded by large numbers of youths who are considered single since they are not actually married despite the fact that they have spouses. 21.5% of them were married and the least 11.5% were divorced.

Signs and Symptoms of UTIs

From the study findings, (82%) stated that they experienced signs and symptoms of UTIs at home before they got to the hospital. This implied that UTIs are symptomatic in most people. These findings are in line with the findings of Longmore *et al.* [35], who stated that the underlying pathology of UTIs may have a variety of symptoms. However, (18%) stated that they had not had signs and symptoms of UTIs. These had come to the hospital for a general medical checkup and were asymptomatic. Of the 115 respondents who had stated that they had had symptoms, (75%) stated that they had both painful micturition and suprapubic pain, 16% stated that they had fever and 9% mentioned other symptoms. This implies that UTI is symptomatic in majority of the population that have to get treatment for it.

Majority (49.5%) of those symptomatic respondents stated that they had symptoms for three days before they came to the hospital, 37.5% had symptoms for 5 days and 13% had symptoms for more than 5 days. This shows the bacteria in urine can quickly manifest through the symptoms which calls for medical attention.

Prevalence of UTIs

Majority of respondents (60%) stated that it was not the first time they had been diagnosed with UTIs. This implies that UTIs can be recurrent due to individual or medical factors. The study findings agree with the findings of Hooton *et al.* [36] who stated that the incidence of UTIs increases at puberty and remains high through adulthood. 40% of the respondents stated that it was their first time being diagnosed with UTIs. Of the 84 respondents who had been diagnosed with UTIs previously, 47.5% had been diagnosed more than two times, 37% had been diagnosed twice and 15.4% had been diagnosed only once. This implies that the rate at which infection recurs is high, this may be because of poor patient compliance to treatment and health advice or poor management by a health worker.

The majority of the respondents (47.6%) stated that UTI had recurred in a period of two months, 27.4% had a recurrence of more than two months and the least 25% had a recurrence of one month. This implies that there is poor patient compliance with the treatment given. It's most likely that they got treatment but did not complete the dose as prescribed by health workers hence infection recurrence.

Predisposing Factors to UTIs

More than half of the respondents (52%) stated that they had been catheterized before. It is most likely that the catheterization procedure was not entirely sterile and some bacteria were able to stay in the urinary tract even after removing the catheter, hence causing the UTI. These findings are similar to the findings of Gould *et al.* [37]. During his study, he found out bacteria develop in at least 10-15% of hospitalized patients with indwelling urethral catheters. The least 48% stated that they had not been catheterized at all.

Majority of respondents (70%) stated that they had used contraceptives, these included females and males. The least 30% stated that they did not use contraceptives. Of the 98 respondents who had used contraceptives, 66.3% used pills. This implies that the pills which contain progesterone reduce oestrogen

levels and this predisposes to UTIs. These findings are similar to the findings of Perotta *et al.* [38] who stated that with oestrogen loss, the systems' ability to resist bacterial colonization is reduced making it liable to infection. 6.1% used intrauterine devices. It is most likely that intrauterine device insertion was not sterile enough and since the urethral opening is proximal to the vaginal opening, bacteria were able to harbor and cause UTI. The least 27.6% used other types of contraceptives which include condoms and implants.

94% of the respondents stated that they were sexually active. The majority of them (80%) stated that they had only one sexual partner and 14% had two sexual partners. This implies that the biggest percentage had sexual partners implying that UTI is a sexually transmitted infection. These findings agree with the findings of Feitosa *et al.* [39] who stated that sexual activity facilitates the entry of pathogens which as a consequence results into UTIs and other STIs. The least 6% stated that they did not have any sexual partners. The majority of the female respondents (89%) stated that they were not pregnant. This implies that the UTI was not due to pregnancy-induced immune suppression but rather other factors. The least of the females 11% stated that they were pregnant. These findings are similar to the findings of Kolawole *et al.* [40] who conducted a study in the West African subregion and stated that there was a wide range of prevalence of UTI in pregnant mothers.

The majority of the respondents (71%) stated that they were HIV-negative. This implies that most of the respondents did not have UTI secondary to HIV immune suppression. These findings differ from those of Gould *et al.* [37] who stated that illnesses such as HIV can also alter the host's natural defense mechanism. The least 29% stated that they were HIV positive.

The majority of the respondents (96%) stated that they did not use soap for cleaning their genitals. This implied that the genital normal flora was not altered hence preventing UTI. The least 4% stated that they used soap for cleaning their genitals which alters host's natural flora and predisposes to complicated UTIs.

CONCLUSION

From the study findings, 42.9% were of the age range 15-20 years and majority of the respondents (70%) were females. Most respondents (60%) had been diagnosed with UTI previously. It is concluded that most of the youths were sexually active and this facilitates entry of pathogens.

6% of the youths stated that they did not have any sexual partner. These are therefore considered sexually inactive and are at a low risk of contracting UTIs.

However, more than half of the percentage (52%) had been hospitalized with indwelling urethral catheters. 66.3% stated that they used contraceptive pills, 11% of the female respondents were pregnant, 4% of the respondents stated that they used soap for cleaning their genitals while bathing. All these expose the youth to UTI and its complications due to alterations of the human natural flora defense mechanism.

RECOMMENDATIONS

To the government.

Through the ministry of health, the government should organize and fund health talk programs to carry out community sensitization about UTIs on radios, newspapers and televisions so as to improve the knowledge of youth about UTIs.

To Kampala International University Teaching Hospital (KIUTH).

The health workers at KIUTH should be able to manage appropriately the UTI condition and give health advice to the patients on how to prevent UTIs.

Stalking of all antimicrobial drugs should always be prioritized.

To the community.

The community is called upon to complete all the given treatments and follow the health worker's advice on preventive measures.

The community should report any symptoms that do not seize after

medication to prevent further complications.

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