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FACTORS CONTRIBUTING TO SUSCEPTIBILITY OF URINARY TRACT INFECTION AMONG PREGNANT WOMEN ATTENDING ANTENATAL AT ENTEBBE REGIONAL REFERRAL HOSPITAL WAKISO DISTRICT. A CROSS-SECTIONAL STUDY

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Abstract

Background

The aim of the study is to determine the factors contributing to susceptibility of urinary tract infection among pregnant women attending antenatal at Entebbe regional referral hospital Wakiso district.

Methodology

The study employed a descriptive cross-sectional study design that used quantitative methods of data collection from 36 pregnant women who attended antenatal care at Entebbe Regional Referral Hospital. The study employed a simple random sampling technique to select the sample. The collected data were summarized on paper using a pen, tallied, analyzed using Microsoft Excel, and then presented in the form of tables, pie charts, and graphs.

Results

The majority, 30 (83.3%), of the respondents were married, and the least, 6 (16.7%), were single. Most, 25 (69.4%) of the respondents reported having one sexual partner, Most, 23 (63.9%) of the respondents did not change their undergarments, most, 20 (55.6%) of the respondents said Yes when asked whether they had ever had about UTI, majority, 31 (86.1%) shared toilets with their neighbors, 18 (50%) bathed twice in a day, 18 (50%) of the respondents urinated four times and above, majority, 23 (63.9%) of the respondents had no history of any chronic illness. Most, 12 (33.3%) of the respondents were attending their fourth antenatal visit. The Majority, 25 (69.4%) of the respondents had never inserted a catheter. Most of the respondents, 21 (58.3%), were multigravida mothers.

Conclusions

The susceptibility of urinary tract infections among pregnant women in Entebbe was 20.3% and was associated with Occupation, marital status, gravidity, and education level.

Recommendations

Ministry of health and other responsible bodies including the health workers should strive to increase the knowledge of patients about the importance of reporting and obtaining medical consultation.

Keywords: Susceptibility of urinary tract infection, pregnant women antenatal care, Entebbe Regional Referral Hospital.
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Background

An infection of the kidneys, ureters, bladder, and urethra is known as a urinary tract infection (UTI). Due to a variety of aetiological reasons, UTI is one the most common infections, affecting 250 million people annually and killing 150 million people. (Eaid, 2018). Because of the anatomical changes during pregnancy, such as dilation of the ureters, decreased urethral tone and increased bladder volume contribute to urinary stasis and ureterovesical reflux, increasing the risk of urinary tract infections (Dominique Esmee Werter, 2022). Globally, the prevalence of UTI in pregnancy ranges between 13% and 33%, with symptomatic bacteriuria occurring in 1% to 18%, while asymptomatic cases are noted in 2% to 10% of women. Both symptomatic and asymptomatic UTIs are prevalent among pregnant women and are linked with adverse effects on the mother, the fetus, and the newborn. Available evidence shows that pregnant women in developing countries have higher rates of UTI and its burden than those in developed nations (Kalinderi, 2018). If UTI is left untreated, it results in serious consequences such as low birth weight, preterm labor, hypertension, preeclampsia, anemia, pyelonephritis, amnionitis, stillbirths, neonatal deaths, Bacteremia, and toxic septicemia (El-Kashif, 2019). In a study conducted in

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Bangladesh, it was found that screening and treatment of UTIs are challenging due to the costs and logistics of performing urine culture, despite that the Recent World Health Organization (WHO) made context-specific antenatal care recommendations for screening and treatment of ASB in LMIC (Lee, 2020). The growing uterus can compress the bladder, leading to incomplete emptying and increased risk of infection**.** In a study conducted in Nigeria, the combination of the mechanical, hormonal, and physiological changes during pregnancy contributes to significant changes in the urinary tract, which has a profound impact on the acquisition and natural history of bacteriuria during pregnancy (Baba, 2022). A study conducted in Cameroon revealed that pregnant women are at increased risk for UTIs between weeks 6-24 of pregnancy because, in this period, the uterus sits directly on top of the bladder thus growing and blocking the drainage of urine from the bladder which can cause infection especially when pathogen ascends into the urinary bladder (Tchatchouang, 2019). The risk factors associated with UTI are being single, being a housewife residing in urban areas, being a Muslim pregnant woman, and having a higher income (>100,000/=) (Hussein, 2021). In a study conducted in Rwanda, having multiple partners, changing undergarments once a day, knowledge about UTI, using contaminated toilets, cleaning direction, and frequency of weekly sexual intercourse, being in 2nd trimester (84.8%), higher parity history of UTI history of catheterization were the major factors that were associated with the prevalence of

UTIs among pregnant women (Pierre, 2018). UTIs are caused by bacteria entering the urinary tract, leading to inflammation and infection of the bladder, ureters, and kidneys. In pregnant women, it may result in preterm labor, low birth weight, and maternal and neonatal morbidity and mortality. However, UTIs affect both males and females, although females are at high risk of the infections (Ali, 2022). In Uganda, the prevalence of urinary tract infections among pregnant women following a study that was carried out in southwestern Uganda was 35%. The hormonal changes during pregnancy as well as physical changes to the urinary tract can increase the risk of developing a UTI (Bahati Johnson, 2021). The prevalence of bacteriuria in pregnancy varies worldwide. Asymptomatic bacteriuria occurs in 2 to 7% of pregnant women. This prevalence can be up to 30% in studies conducted in developing countries (Odoki, 2019). The study aims to determine the factors contributing to susceptibility to urinary tract infection among pregnant women attending antenatal at Entebbe Regional Referral Hospital in Wakiso district.

METHODOLOGY

Study design and rationale.

The study employed a descriptive cross-sectional study design that used quantitative methods of data collection. The study design was chosen because it gave the researcher the ability to easily gather information without bias. The design was also chosen because it offered the researcher the opportunity to probe for more information through explanations of otherwise unclear responses from respondents.

Study setting and rationale

The study was conducted at Entebbe Regional Referral Hospital located 35km from Kampala's capital city along the shores of Lake Victoria Entebbe Municipality in Wakiso district in the Central region of Uganda. The hospital is a public regional referral hospital with a 200-bed capacity and 181 staff, it has different wards like surgical, medical, pediatrics with neonatal section, obstetrics, and Gynecology, psychiatric, and other different specialist department units offering different services and other diagnostic services including HIV/AIDs counseling services, maternal and child health.

The majority of the population is Buganda and mostly speaks Luganda. Entebbe Regional Referral Hospital was used for this study because it was the most active Health unit in Entebbe municipality and therefore receives a great number of patients, particularly mothers seeking to deliver. It also enabled the researcher to get the required number of respondents without bias. The research also helped draw measures for any shortcomings in factors contributing to susceptibility to urinary tract infections.

Study population

The study population was pregnant women who attended antenatal care at Entebbe Regional Referral Hospital.

Sample size determination

The sample size was 36 and determined using the Yamane formula by Taro Yamane 1967 as follows: n = N/ (1+Ne^2)
Where n = sample size
N = population size (40) patients in one week
e = Desired level of precision (0.05) n = 40/1+40*0.05^2 n = 40/1.1
n = 36
Therefore, the study employed 36 participants.

Sampling procedure

The study employed a simple random sampling technique to select the sample. It was preferred to other techniques because it ensured that each member of the target population had an equal and independent chance of being included.

Inclusion criteria

All pregnant women who consented and accepted to participate in the study. Those who were available at the time of study and those who were fine.

Exclusion criteria

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Pregnant women who did not accept to participate in the study, those who were busy, and those who were in labor.

Study variables

The dependent variable was urinary tract infection among pregnant women.

Urinary tract infection: Infection involving any part of the urinary system; including the kidneys, ureters, urinary bladder, and urethra.

Patient/ pregnant woman: A person who is receiving medical care or who is cared for by a particular person.

Independent variables were social-demographic, individual, medical, and obstetric-related factors.

Research instruments

A well-structured, self-administered questionnaire consisting of closed-ended questions was used as a tool for gathering information. Pens and rulers were also used.

Data collection procedure

After the approval of the research proposal, a researcher obtained an introductory letter from the school seeking permission for data collection and presented it to the Medical Superintendent of Entebbe Regional Referral Hospital for authorization. After this, the authorized letter was presented to the relevant department in charge, where data was collected. The consent form was then presented to the participants. She was assisted by two trained research assistants who were pharmacy technicians and were knowledgeable in the local language to help translate the information. Questionnaires were provided to the participants, who filled in the information. The researcher ensured that the data filled in by participants was correct before leaving the study site.

Data management

The questionnaires collected from every participant were kept under lock and key, and only the researcher and the assistant were able to get access to them.

Data analysis

The collected data were summarized on paper using a pen, tallied, analyzed using Microsoft Excel program, and then presented in the form of tables, pie-charts, and graphs.

Ethical considerations

The permission to carry out the research was obtained from the institution and then authorized by the Hospital administration. The researcher got a signed written informed consent from the respondents and also assured them of the confidentiality of the information given by the respondents. The researcher made sure that no participant's name appeared on the questionnaires, and every questionnaire was assigned a unique coded serial number.

Informed consent

To enable participants to make an informed, voluntary, and logical decision to participate in a study, informed consent provides thorough information. The elements of informed consent that will be scrutinized in this study include knowing the study's goals, duration, methods, and who to contact with inquiries. To obtain informed consent, the research was open to the respondents about the purpose of the study as purely for academic use and requested participants' consent. This involved signing a consent form to prove that the participants had agreed to engage in the study without coercion.

RESULTS

Socio-Demographic Data of the Respondents

Table 1: Distribution of the socio-demographic characteristics of the respondents n=36.

	Item		Frequency n=36	Percentage (%)
Marital status		Single	6	16.7
		Married	30	83.3
Occupation		House wife	22	61.1
		Civil servant	5	13.9
		Self employed	9	25
Religion		Christian	17	47.2
		Muslim	10	27.8
		Others	9	25

Table 1, the majority 30 (83.3%) of the respondents were married, and the least 6 (16.7%) were single, majority of the respondents, 22 (61.1%) were house wives whereas the least of the participants,5 (13.9%) were civil servants, and findings also show most of the respondents, 17 (47.2%) being Christians and the smallest population of participants, 9 (25%) belonged to other religious groups.

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Figure 1: Distribution of respondents according to daily expected income n=36.

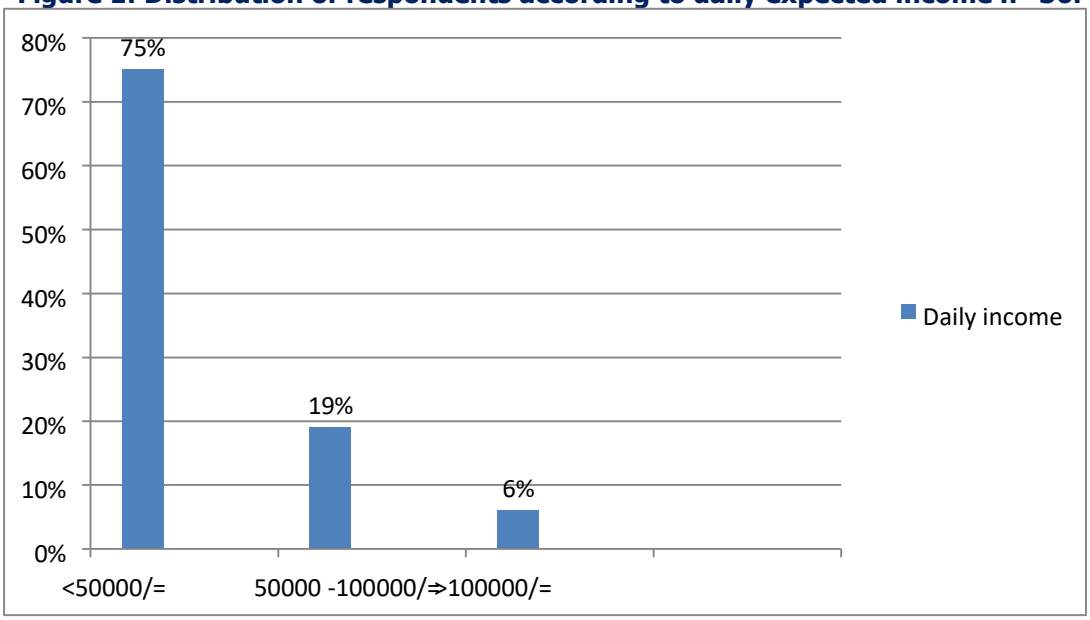

Figure 1, most, 27 (75%) of the respondents reported earning less than 50,000 shillings as their daily expected income, and only 2 (6%) of the respondents reported earning more than 100,000 shillings as their daily expected income.

Figure 2: Distribution of respondents according to level of education n=36

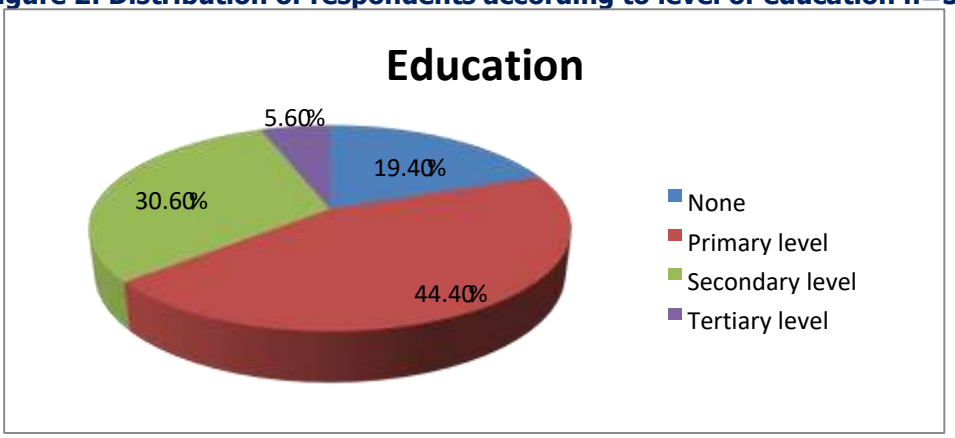

Figure 2. On the question of level of education, the majority 16 (44.4%) of the respondents attained primary education and the least 2 (5.6%) had attained tertiary education.

Individual related factors contributing to susceptibility of urinary tract infections among pregnant mothers.

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Figure 3: Distribution of respondents according to the number of sexual partners they had (n=36)

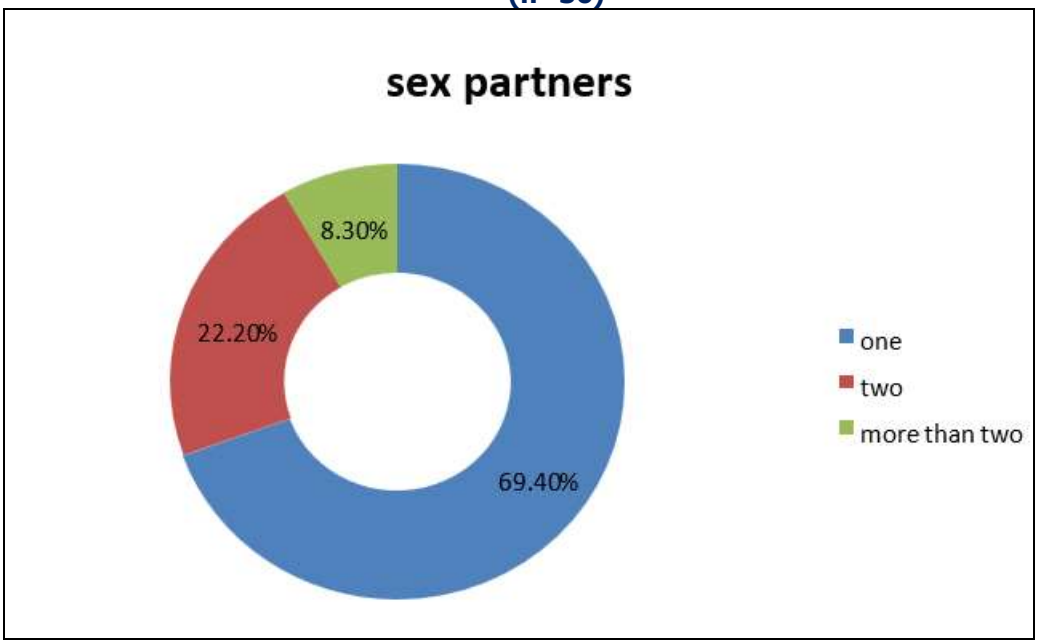

Figure 3, Most, 25 (69.4%) of the respondents reported having one sexual partner while the least 3 (8.3%) said they had more than two sexual partners.

Figure 4: Distribution of respondents according to how often they changed their undergarments in a day

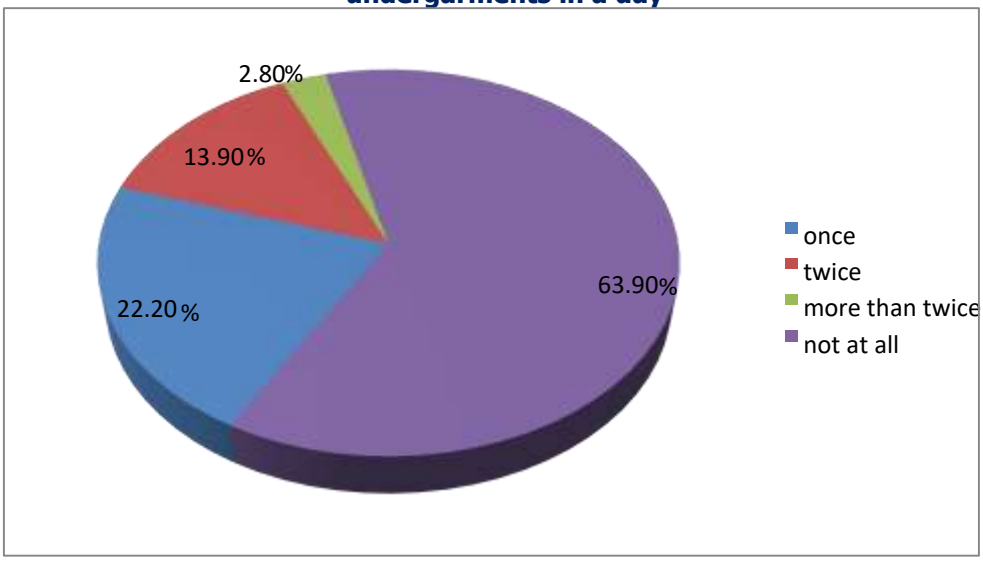

Figure 4, Most, 23 (63.9%) of the respondents did not change their undergarments in a day at all and only the least 1 (2.8%) changed their undergarments only more than twice.

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Table 2: Distribution of respondents n= 36

Item	Frequency n=36	Percentage (%)
No. of patients who knew UTI	20	55.6
No. of patients who did not know about UTI	16	44.4
Patients who knew about relationships between sex and UTI	10	27.8
Patients who did not know about relationships between sex and UTI	26	72.2
Respondents who shared toilets with their neighbours.	31	86.1
Respondents who did not share toilets with their neighbours	5	13.9
No. of respondents that bathed once in a day.	14	38.9
No. of respondents that bathed more than once in a day.	22	61.1
No. of respondents with good toilet habits.	21	58.3
No. of respondents with poor toilet habits.	15	41.7

Table 2, most, 20 (55.6%) of the respondents said Yes when asked whether they had ever had about UTI and 16 (44.4%) said No, majority, 26 (72.2%) of the respondents said No when asked whether they were aware that sex could cause UTI while 10 (27.8%) said Yes, majority, 31 (86.1%) shared toilets with their neighbors whereas 5 (13.9%) did not share toilets with their neighbors, most, 18 (50%) bathed twice in a day, 14 (38.9%) bathed once in a day and only 4 (11.1%) bathed more than two times and majority, 21 (58.3%) of respondents cleaned their anus in the in front backward direction, 5 (13.9%) in the backward in the front direction and 10 (27.8%) in any direction.

Obstetric-related factors contributing to susceptibility of urinary tract infections among pregnant mothers.

Table 3: Distribution of respondents n= 36

Item	Frequency (n=36)	Percentage (%)
No. of respondents who urinated once in a day.	3	8.3
No. of respondents who urinated more than once in a day.	33	91.7
No. respondents who had a history of chronic illness	13	36.1
No. respondents who had no history of chronic illness	23	63.9
Number of respondents who were on their 1st and 2nd antenatal visit.	15	41.6
Number of respondents who were on their 3rd and 4th antenatal visit	9	25

Table 3, half, 18 (50%) of the respondents urinated four times and above and the least 3 (8.3%) of the respondents urinated once, majority, 23 (63.9%) of the respondents had no history of any chronic illness while only 13 (36.1%) had a history of chronic illness, most, 12 (33.3%) of the respondents were attending their fourth antenatal visit and

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the least of respondents, 7 (19.4%) were attending their second antenatal visit.

Figure 5: Distribution of respondents according to whether they have ever been inserted a catheter?

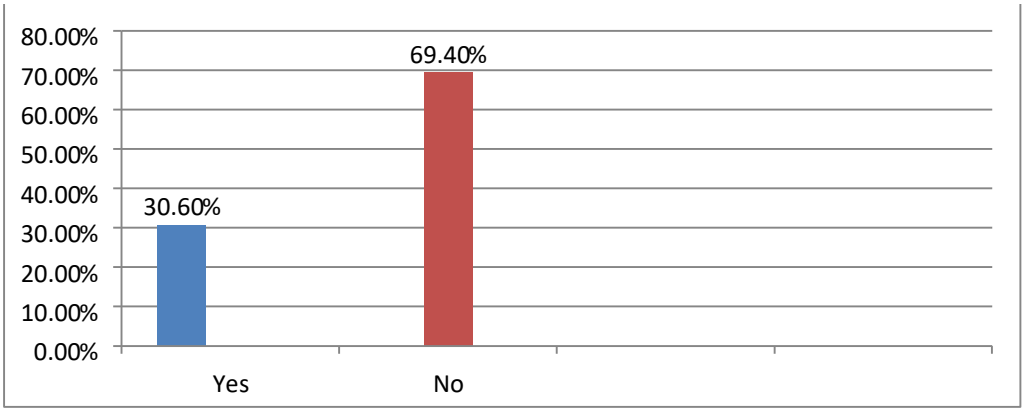

Figure 5, Majority, 25 (69.4%) of the respondents had never been inserted a catheter and only11 (30.6%) said yes.

Figure 6: Distribution of respondents according to the number of children they had.

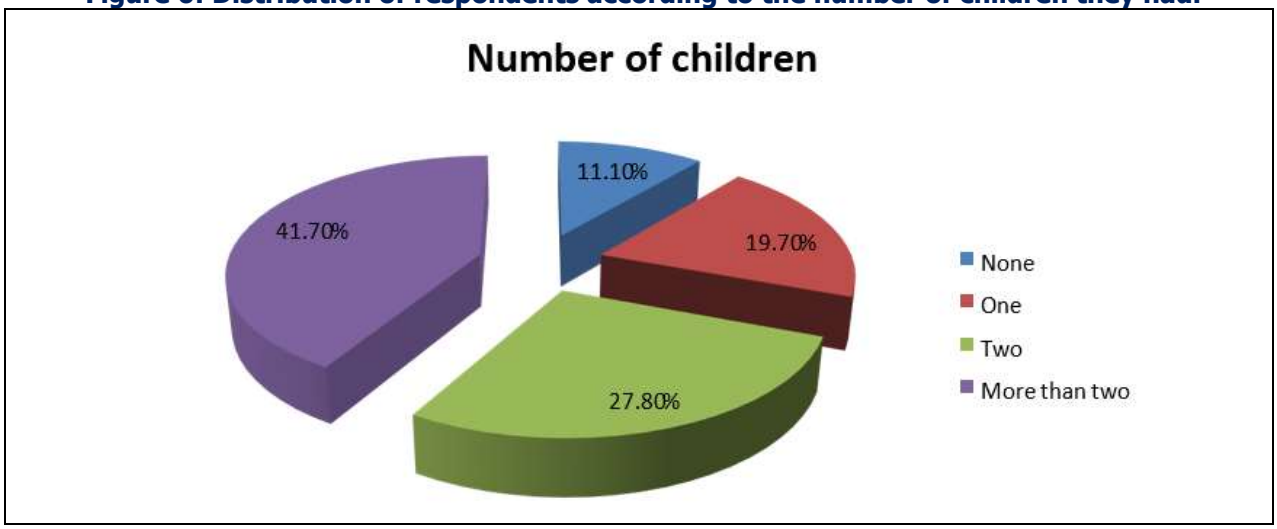

Figure 6, 15 (41.7%) of the respondents had more than two children whereas the least 4 (11.1%) of the respondents had no children.

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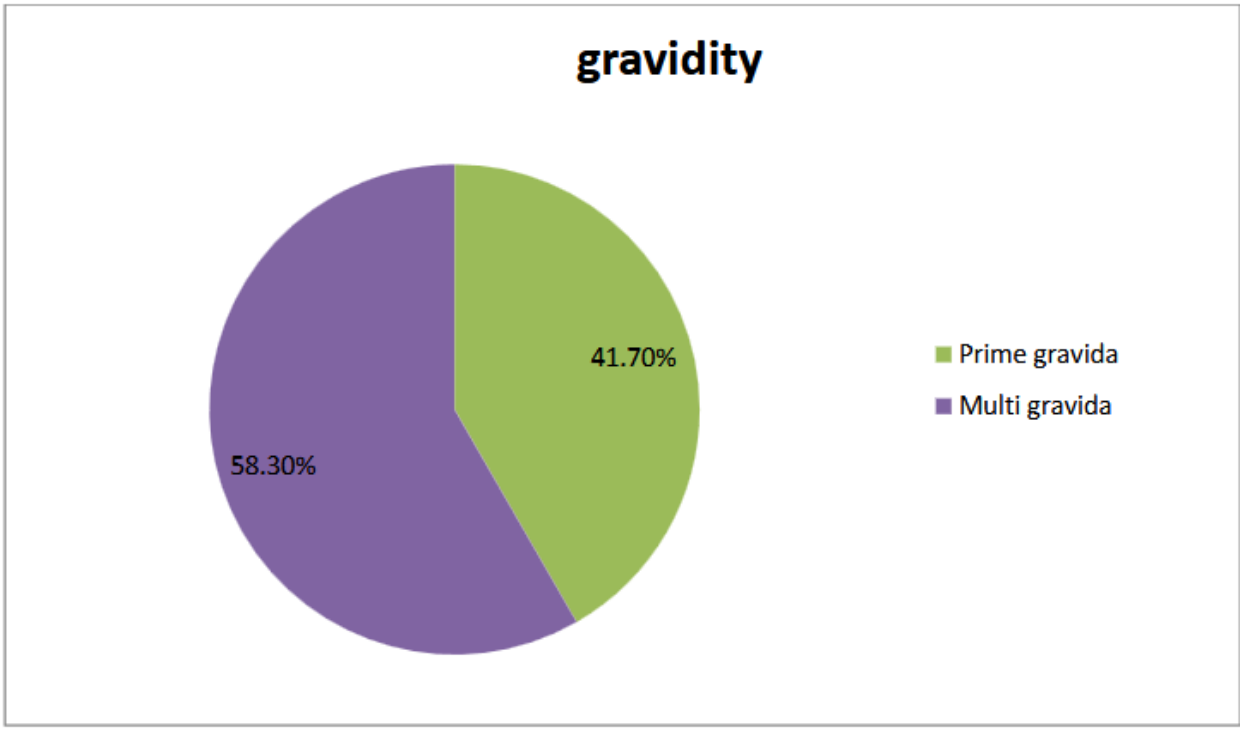

Figure 7: Distribution of respondents according to gravidity n=36

Figure 7, most of the respondents, 21 (58.3%) were multi-gravida mothers whereas 15(41.7%) were prime gravida.

DISCUSSION

Socio-Demographic Data of the Respondents

The majority of the respondents, 30(83.3%), were married, implying that the likelihood of regular sexual activity was higher compared to their counterparts who are the minority and single. Notably during sexual intercourse, the movement of the penis against and within the vulva area can increase the risk of UTIs in women due to the potential transfer of bacteria to the urethra. The increased risk of UTI is exacerbated by the proximity of the urethra, vagina, and anus in the female anatomy. This was perhaps believed to be related to having multiple sexual partners and increased risk-taking behaviors like unprotected sex. This study revealed that most of the respondents, 22 (61.1%), were housewives. This was because of their likelihood to have come in contact with bacteria from household chores and childcare. Also, this could be due to inadequate self-care since they prioritize their husbands and children, leading to improper diet as well. The study revealed that the respondent's residential area was reported to be among the risk factors associated with urinary tract infections. For pregnant women who lived in urban areas, the majority 25% had UTIs, and this was thought to be attributed to the overcrowded areas, which led to limited hygienic resources like water, bathrooms, and toilets (Bonkat, 2023). 43% of the respondents didn't have UTI, and those were the rural dwellers who didn't live in crowded areas and had resources to practice good hygiene.

The majority of the respondents, 27(75%), earned less than 50,000/= in a day. This showed that the majority of the mothers were financially unstable and therefore could have problems paying for services like getting treatment and any other things that could be needed during the treatment. The majority of the respondents, 16 (44.4%), were primary school dropouts who had limited knowledge about UTIs.

Individual-related factors contributing to susceptibility of urinary tract infections among pregnant mothers.

The study showed that most of the respondents 25, 69.4%) had one sexual partner. This could be because the majority were legally married and faithful to their partners. The few who had two or more partners in their relationships were unfaithful, and this had an increment in the transmission of

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the infection. The study revealed that women who practiced douching were associated with urinary tract infections because there was disruption of vaginal flora that altered the natural balance of bacteria due to increased vaginal PH. This also increased the number of bacteria that ascended from the vagina into the urinary tract and this was associated with complications like preterm labor, low birth weight, and others.

The study revealed that the biggest number of respondents (55.6%) had knowledge about the infection and how it was transmitted. This was because the majority of the women attended regular health education talks at the facility, which equipped them with adequate knowledge. This showed that consulting and attending antenatal visits were vital as they were sources of information for mothers. A few of the respondents (44%) had limited knowledge about the infection, which increased the risk of infections due to poor hygienic practices, poor dietary intake, and other individual-related practices. The study revealed that most of the respondents 31(86.1%) were sharing toilets with neighbors, which caused bacterial transmission since they were in contact with contaminated toilet surfaces, handles, and seats and a few, 5 (13.9%) did not share toilets with their neighbors this was majorly due to their status of being housewives who stayed home and accessed personal toilets. This is in agreement with Viorel's (2023) findings on shared facilities and UTI risk and contradicts Ahmed's (2023) findings in diabetic mothers. This indicates potential infrastructure limitations and suggests the need for improved sanitation facilities. This was revealed in a study that found 15% - 20% of women who shared toilets experienced UTIs. The study revealed that the majority of respondents, 21 (58.3%), cleaned themselves from back to front; this action was proven to have introduced bacteria to the female genitals. This could be due to ignorance among most of the respondents, so they lacked appropriate knowledge on basic personal hygiene techniques. The rest of the respondents, 5(13.9%), had some knowledge about the cleaning techniques that limited the transmission of infections to the female genitals.

Obstetric-related factors contributing to susceptibility of urinary tract infections among pregnant mothers.

The study showed that the majority of respondents, 18 (50%), urinated four times and above. This was because UTIs increased diuresis due to the bacterial irritation of the urinary tract that made them feel the increased urge to urinate. In addition, pregnant women were prone to UTIS due to physiological changes such as urinary tract dilation and decreased muscle tone, which led to bacterial growth. The study suggested that the majority of the respondents 65.5% had a history of catheterization, which made them more susceptible to urinary tract infections. This was because catheters caused trauma and inflammation to the urinary tract, which provided a surface for bacterial growth through urine stagnation (Ahmed, 2023). The majority of respondents, 12 (33.3%), attended their second visit, which majorly helped them improve their knowledge about UTIs and also improved their awareness of the infections during the health education sessions, and the least of respondents, 7 (19.4%), attended their fourth antenatal visit. This was because mothers were financially challenged and others lived far away from health facilities, which increased inadequate health education and awareness and poor hygiene practices that resulted in late detection and treatment of UTIs. This was similar to a conducted study by Manda-Taylor, Sealy, & Roberts (2017) about the factors associated with delayed Attendance for ANC in Malawi: About the number of children respondents had, the majority, 15 (41.7%) reported more than two and the least 4 (11.1%) reported none. This was because most mothers had never delivered before and were probably not familiar with what happens during pregnancy. The study showed that most of the respondents, 21 (58.3%), were multi-gravida mothers due to related traumas during childbirth and changes in urinary tract anatomy, which resulted in increased UTI infections, whereas 15 (41.7%) were prime gravida.

Conclusions

The study's focus was to determine the factors contributing to susceptibility of urinary tract infection among pregnant women attending antenatal clinics at Entebbe regional referral hospital. This information provided some of the evidence that will inform interventions aimed at addressing susceptibility of urinary tract infections by public health workers in Wakiso District Local government.

In conclusion, the study highlighted the susceptibility of urinary tract infections among pregnant women in Entebbe as 20.3%. This meant that UTI was a common health problem among women in Entebbe. The study also found out that UTI is associated with Occupation, marital status, gravidity and education level. This emphasized the need for improved prevention and management strategies where health providers should priorities UTI screening, education and treatment to reduce the risk of complications and promote health outcomes for mothers and the newborns.

Recommendations

Ministry of health and other responsible bodies including the health workers should strive to increase the knowledge of patients about the importance of reporting and obtaining medical consultation.

Midwives, nurses and doctors in charge of health need to equip themselves with good customer care service skills, so that they can positively influence and change patient's attitudes towards health professionals and service delivery.

The Ministry of Health should plan and implement routine campaigns for health education of the patients about issues

related to maternal health using all the available avenues for dissemination of information.

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My family members, Mum, sisters for the advice offered during the research period. May the Almighty God reward you abundantly.

List of acronyms

AIDS: Acquired immune deficiency syndrome
HIV: Human immunodeficiency virus
UTI: Urinary tract infection
WHO: World Health Organization

Source of funding

The study was not funded

Conflict of interest

The author did not declare any conflict of interest

Author contribution

Nassuuna Bridget collected data and drafted the manuscript of the study.

Namubiru Rebecca supervised the study, including manuscript writing

Author Biography

Nassuuna Bridget is a student of a diploma in Nursing at Mildmay Institute of Health Sciences.

Namubiru Rebecca is a lecturer at the Mildmay Institute of Health Sciences.

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