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Original Article

FACTORS CONTRIBUTING TO INCREASED CASES OF URINARY TRACT INFECTION AMONG PREGNANT WOMEN ATTENDING DR. RONALD BATTA MEMORIAL HOSPITAL, WAKISO DISTRICT. A CROSS-SECIONAL STUDY.

Ninsiima Privas Nyakato, Nakasolo Sania*
Kampala School of Health Sciences, P.O.BOX 14263, Kampala-Uganda.

ABSTRACT

Purpose of the study.

The study was to determine the factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district.

Study methods/design.

The study employed a cross-sectional design; a simple random sampling technique was used. Data was collected on a sample size of 50 respondents using a semi-structured questionnaire with closed and open-ended questions. Data was analyzed manually and entered in a computer using Microsoft Excel computer program to generate tables, pie charts, and bar graphs.

Results.

The study findings on factors contributing to increased cases of urinary tract infection among pregnant women showed that (76%) of the respondents wore non-cotton garments, (84%) cleaned forward to backward based on anal cleaning direction,(64%) douched with soap while bathing, (78%) did not flash the toilet before use, (84%) used public toilets/ latrines, (66%) had no knowledge about the cause of urinary tract infection, (56%) bathed once a day, (72%) douched after having sex, (78%) were prime gravida mothers, (62%) were in their second trimester of pregnancy, (88%) had a history of urinary tract infection, (78%) had no children.

Conclusion.

Generally, the researcher concluded that the findings of the study were attributed to a lack of knowledge about UTI, risk factors and their prevention, late diagnosis of the infection, anti-microbial resistance to drugs, changes in the urinary tract, and immunological changes of pregnancy.

Recommendations.

The researcher recommends that: there should be an introduction of culture and sensitivity of every pregnant woman especially those with a history of urinary tract infection to get the appropriate treatment and hence reduce antimicrobial resistance. More so, pregnant women should be educated about the causes and preventive measures of urinary tract infections during antenatal visits.

Keywords: *Urinary Tract Infections, Pregnant women, Dr.Ronald Batta Memorial Hospital.*
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Corresponding Author: *Ninsiima Privas Nyakato*,*
Email: *ninsiimaprivas26@gmail.com*
Kampala School of Health Sciences, P.O.BOX 14263, Kampala-Uganda.

Background of the Study.

Urinary tract infections are common infections that happen when bacteria often from the skin or rectum, enter and infect the urinary tract (WHO, 2021). The urinary tract includes the urethra, urinary bladder, ureter, and kidney (Jacob Loonin Laari M. A., 2022).

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).

Gram-negative bacteria were the most common uropathogens responsible for urinary tract infections with a [68.1%, 32\47] in comparison to [25.5%, 12\47] for gram-positive bacteria (Mawanda A, 2022). However, E. coli is the major etiological agent causing urinary tract infections which accounts for 90% of the cases. Proteus mirabilis, klebsiella species, pseudomonas aeuginosa, and Enterobacter species are less frequent offenders and less commonly. 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 R. M., 2023).

In pregnant women, risk factors for urinary tract infections include Anemia, sexual activity, lower socioeconomic classes, and a history of UTI (Charlotte Tchente Nguefack C. O., 2019).

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 (Charlotte Tchente Nguefack C. O., 2019).

A study done in Nigeria shows that the prevalence of urinary tract infections among pregnant women was 14.5% (Baba R. T., 2023)

In Uganda, the prevalence of urinary tract infections among pregnant women following a study which was carried out in southwestern Uganda was 35% (Bahati Johnson, 2022).

This study determined the factors contributing to increased cases of UTI among pregnant women and it would be useful in generating a standard protocol for early detection of both symptomatic and asymptomatic UTIs in this hospital. It would also serve as a source of information for subsequent research in this area.

General objective.

To determine the factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district

Specific objectives.

To find out the individual factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district.

To assess the medical and obstetric-related factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district.

RESEARCH METHODOLOGY.

Study Design.

The study was cross-sectional study and quantifiable. The study was conducted across participants over a short period and the researcher did not make follow-ups of the participants.

Study area.

The study was conducted in DR. Ronald Batta Memorial Hospital, Entebbe Municipality, and Wakiso District.

DR. Ronald Batta Memorial Hospital is a government hospital providing general psychiatric, Medicine, out-patient, and in-patient services to mention but a few.

The hospital is located in Nsamizi, Entebbe Municipality, and Wakiso District and treats people from majorly the central part of the country.

Study population.

The study population was pregnant women who attended antenatal care at DR. Ronald Batta Memorial Hospital.

Sample size determination.

A sample size of pregnant women with UTI was determined using Burton's formula given below (Burton's 1965).

S=2(QR) O:

Where:

S=required sample size

Q=number of days the researcher spent while collecting data
R=maximum number of pregnant women per day
O=maximum time the researcher spent on each participant.
2×5×10×0.5hr

=50

Therefore, the researcher used 50 respondents.

Sampling technique.

The study employed a simple random sampling technique to select the sample.

It's preferred to other techniques because it ensures that each member of the target population has an equal and independent chance of being included. It also

Sampling procedure.

The sample of participants was randomly selected among many pregnant women attending antenatal care at DR. Ronald Batta Memorial Hospital, Wakiso district. I got 50 small pieces of paper per day, 10 of them numbered 1-10, I called one of the pregnant women and she rolled and mixed in a tin. Then, pregnant women picked one paper at random one by one. They unwrapped their papers and those who got numbered papers qualified to participate in the study

Data collection method.

The study employed a quantitative data collection method because it related to evaluating a numerical result and was straightforward. Using this method, the researcher asked

questions to collect sets of facts and figures. Additionally, data obtained with the quantitative data collection method was more measurable and expressed in numerical form.

Data collection tool.

A questionnaire was used as a research instrument to collect the primary data. It involved several questions cutting through individual, medical, and obstetric-related factors. The questionnaire had open-ended and closed-ended questions that the respondents were asked to fill in upon being informed about the study.

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 DR. Ronald Batta Memorial Hospital for authorization. After this, a consent form was presented to the participants. She was assisted by two trained research assistants who are pharmacy technicians and they were knowledgeable in the local language and translated 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.

Study variables.

The dependent variable was increased cases of urinary tract infection among pregnant women.

An Independent variable was individual, medical, and obstetric-related factors.

Quality control.

Pre-testing the research tool.

The researcher pre-tested the questionnaire before giving it to participants. The pretest was done at Katabi Health Centre III using 10 respondents.

Training of research assistants.

Two research assistants were trained on how to fill out the questionnaires by the researcher herself.

Inclusion criteria.

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

Exclusion criteria.

Pregnant women who did not accept to participate in the study. Those who were busy and those who were very sick and were seeking treatment

Data analysis and presentation.

The collected data was summarized on paper using a pen, tallied, analyzed using the Microsoft excel program, and then presented in the form of tables, pie charts, and graphs to address each study objective

Ethical considerations.

Ethics are moral principles that guide researchers to conduct and report research without deception or intention to harm the participants of the study. The permission to carry out research was given by the Kampala school of Health Sciences. The researcher ensured to get signed written informed consent from the respondents and also assured and ensured confidentiality of the information given by the respondents

STUDY FINDINGS.

Bio-data.

From the table 1, most (40%) of the respondents were within the age bracket of 24-30 years where as the least (12%) were within the age bracket of 12-18 years, most (44%) had attained secondary level of education whereas the least (14%) never went to school. Interestingly, most (56%) of the respondents were house wives whereas the least (14%) were self-employed.

The results from the table 1 also show that, most (38%) of the respondents were Anglican by religion while the least (06%) were SDA. However, majority (76%) of the respondents lived in urban areas whereas the minority (24%) lived in rural areas.

Furthermore, majority (64%) of the respondents were married whereas the minority (06%) were widowed.

And finally, most (44%) of the respondents were Banyankole by tribe whereas the least (04%) were Basoga by tribe.

Table 1: Shows distribution of respondents according to their bio data.

Variable	Frequency (f)	Percentage (%)
Age		
12-18	06	12
18-24	14	28
24-30	20	40
Others	10	20
Total	**50**	**100**
Education		
Never went to school	07	14
Primary	11	22
Secondary	22	44
University/Tertiary	10	20
Total	**50**	**100**
Occupation		
House wife	28	56
Civil servant	15	30
Self employed	7	14
Total	**50**	**100**
Religion		
Anglican	19	38
Catholic	12	24
Muslim	06	12
SDA	03	06
Born again	10	20
Total	**50**	**100**
Address		
Urban areas	38	76
Rural areas	12	24
Total	**50**	**100**
Marital status		
Married	32	64
Single	09	18
Divorced	06	12
Widowed	03	06
Total	**50**	**100**
Tribe		
Muganda	08	16
Munyankole	22	44
Musoga	02	04
Mutoro	12	24
Others	06	12
Total	**50**	**100**

Table 2: Shows distribution of respondents according to which material of undergarment they wear.
(N=50)

Response	Frequency (f)	Percentage (%)
Cotton	12	24
Non-cotton	38	76
Total	**50**	**100**

Figure 1: Shows distribution of respondents according to how many times they change undergarments in a day.

(N=50)

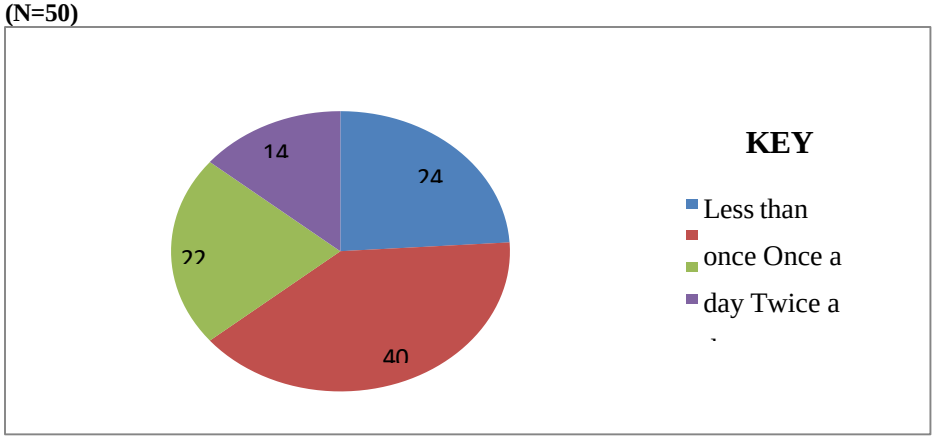


Figure 2: Shows distribution of respondents according to how many times they had sex a week.

(N=50)

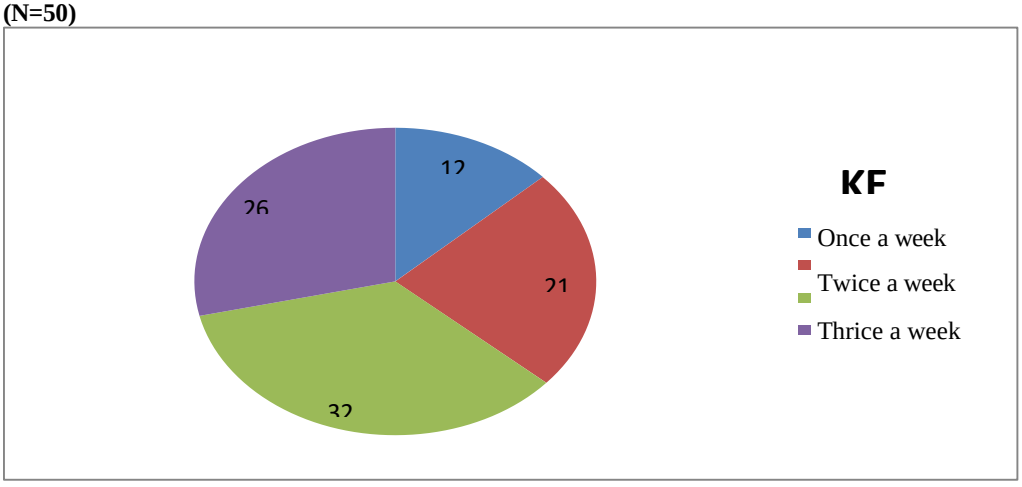
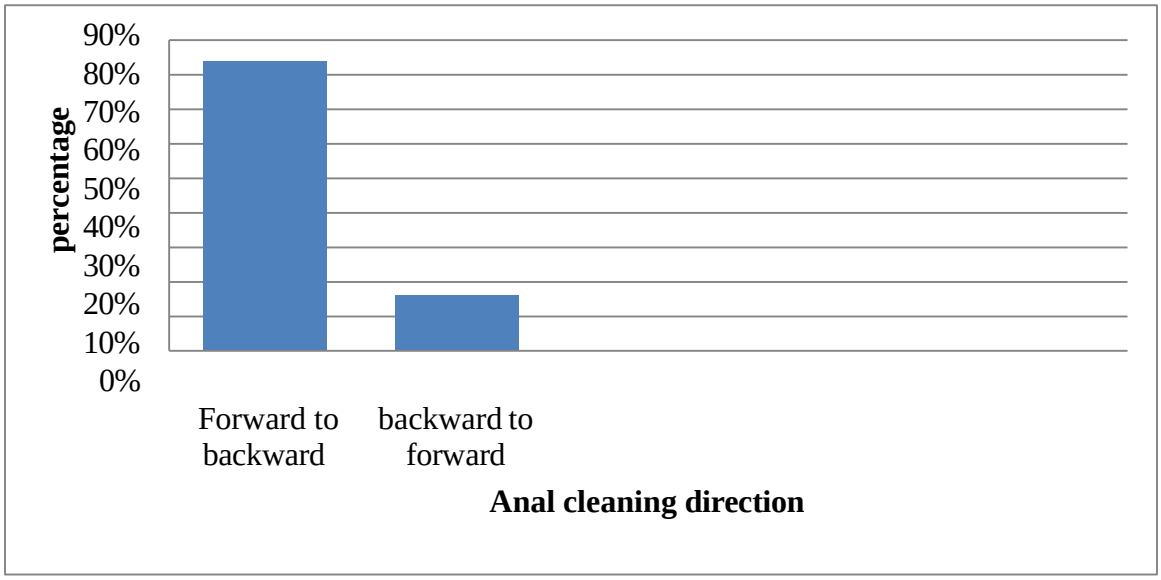


Figure 3: Shows distribution of the respondents according to anal cleaning direction.

(N=50)



Individual factors contributing to increased cases of urinary tract infection among pregnant women attending Dr. Ronald Batta Memorial Hospital, Wakiso district.

From table 2, majority (76%) of the respondents reported wearing non-cotton undergarment whereas the minority (24%) reported wearing cotton undergarment.

From the figure 1, most (40%) of the respondents reported changing undergarments once a day whereas the least (14%) reported changing undergarments more than twice a day.

From the figure 2, most (32%) of the respondents reported having sex thrice a week while the least (12%) of the respondents reported having sex once a week.

According to the figure 3, majority (84%) of the respondents reported cleaning forward to backward whereas the minority (16%) of the respondents reported cleaning backward to forward.

From the table 3, majority (64%) of the respondents reported practicing douching using soap while bathing whereas minority (36%) of the respondents reported not practicing douching using soap while bathing.

According to the figure 4, majority (78%) of the respondents reported not flashing the toilets before use while the minority (22%) of the respondents reported flashing the toilet before use.

From the above 4, majority (84%) of the respondents reported using public toilets/latrines whereas the minority (16%) of the respondents reported not using public toilets/latrines.

According to the figure 5, the majority (66%) of the respondents reported not having knowledge about the cause of UTI while the minority (34%) of the respondents reported having knowledge about the cause of UTI.

According to the table 5, most (56%) of the respondents reported bathing once a day, while the least (12%) of the respondents reported bathing more than twice a day.

From the table 6, majority (72%) of the respondents reported practicing douching after having sex while the minority (28%) reported not practicing douching after having sex.

Medical and obstetric related factors contributing to increased cases of Urinary tract infection among pregnant women attending DR. Ronald Batta Memorial hospital, Wakiso district.

According to the figure 6, majority (78%) of the respondents reported being prime gravida mothers while the minority (22%) of the respondents reported being multi gravida mothers.

From the figure 7, majority (62%) of the respondents reported being in second trimester whereas the minority (14%) of the respondents reported being in third trimester of pregnancy.

According to the table 7, majority (88%) of the respondents reported having a history of UTI whereas the minority (12%) of the respondents reported not having a history of UTI.

From the figure 8, majority (76%) of the respondents reported not having a history of catheterization while the minority (24%) of the respondents reported having a history of catheterization.

From the table 8, majority (96%) of the respondents reported not having delivered before the 37^{th} week of pregnancy whereas the minority (04%) of the respondents reported having delivered before the 37^{th} week of pregnancy.

From the figure 9, majority (78%) of the respondents reported not having children whereas the minority (22%) of the respondents reported having children.

Table 3: Shows distribution of respondents according to whether they practice douching using soap while bathing.
(N=50)

Response	Frequency (f)	Percentage (%)
Yes	32	64
No	18	36
Total	**50**	**100**

Figure 4: Shows distribution of respondents according to whether they flash the toilet before use.

(N=50)

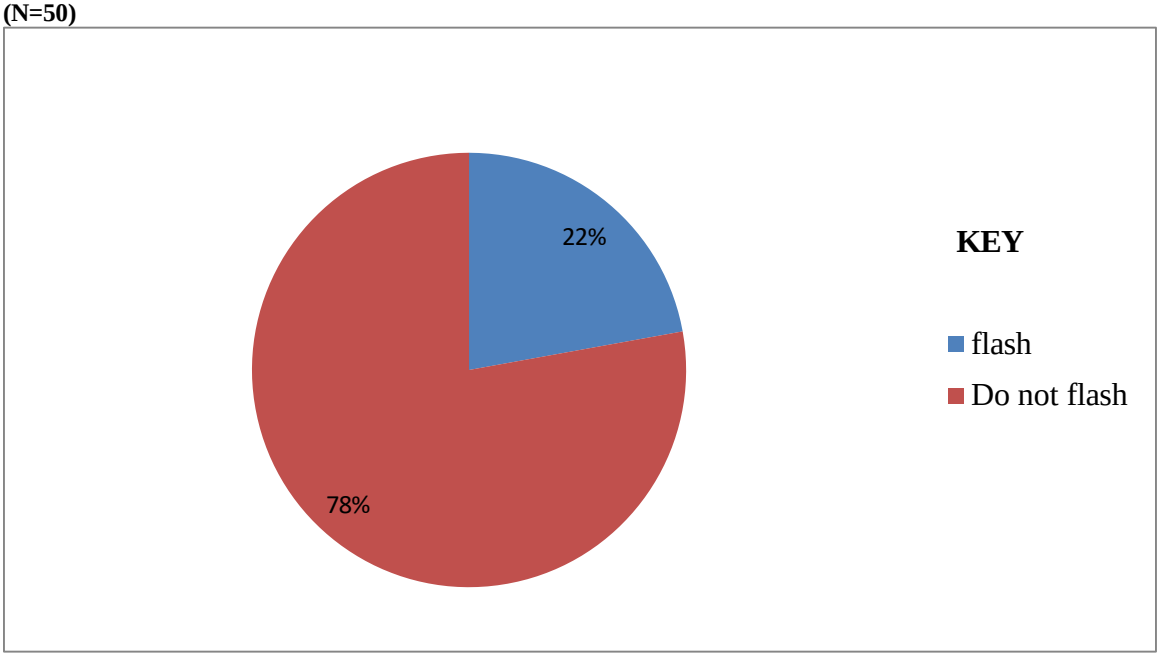


Table 4: Shows distribution of respondents according to whether they use public toilets/latrines.

(N=50)

Response	Frequency (f)	Percentage (%)
Yes	42	84
No	08	16
Total	**50**	**100**

Figure 5: Shows distribution of respondents according to whether they have knowledge about the cause of UTI.

(N=50)

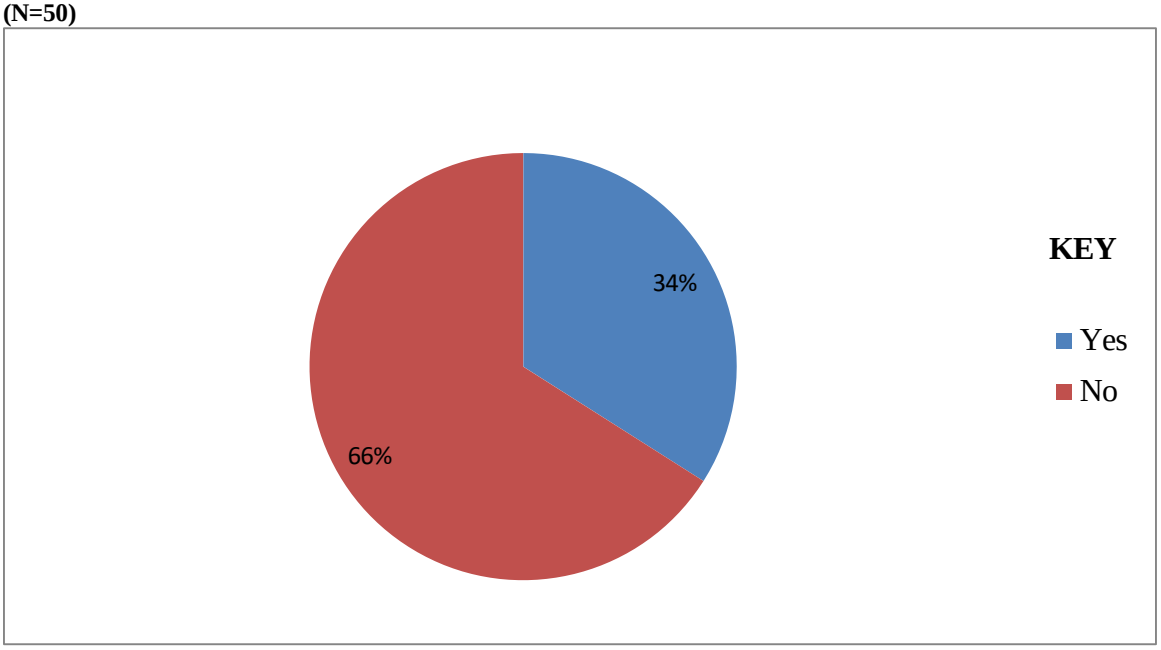


Table 5: Shows distribution of respondents according to how many times they bathe a day.

(N=50)

Response	**Frequency (f)**	**Percentage (%)**
Once a day	28	56
Twice a day	16	32
More than twice a day	06	12
Total	**50**	**100**

Table 6: Shows distribution of respondents according to whether they practice douching after having sex.

(N=50)

Response	**Frequency (f)**	**Percentage (%)**
Yes	36	72
No	14	28
Total	**50**	**100**

Figure 6: Shows distribution of respondents according to gravidity.

(N=50)

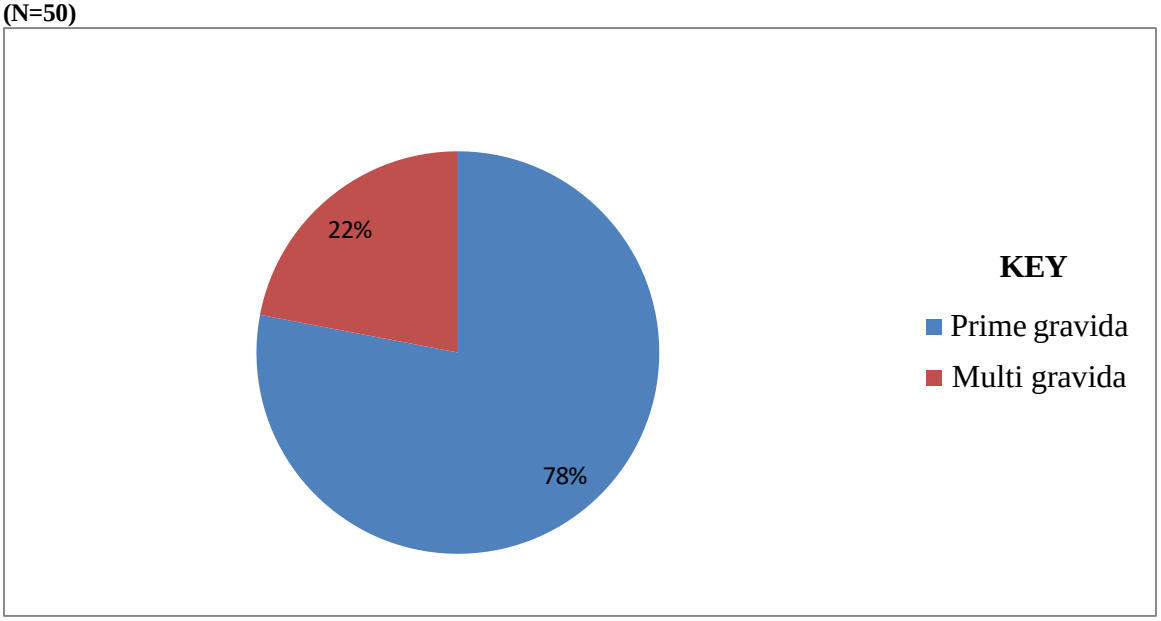


Figure 7: Shows distribution of respondents according to the trimester of the pregnancy.

(N=50)

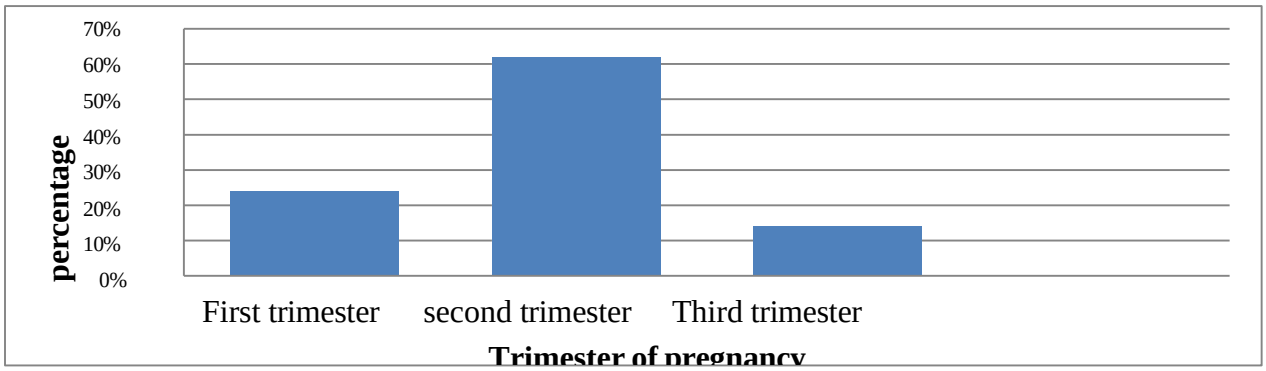


Table 7: Shows distribution of respondents according to whether they have been diagnosed of UTI before.

(N=50)

Response	**Frequency (f)**	**Percentage (%)**
Yes	44	88
No	06	12
Total	**50**	**100**

Figure 8: Shows distribution of respondents according to whether they have been catheterized before. (N=50)

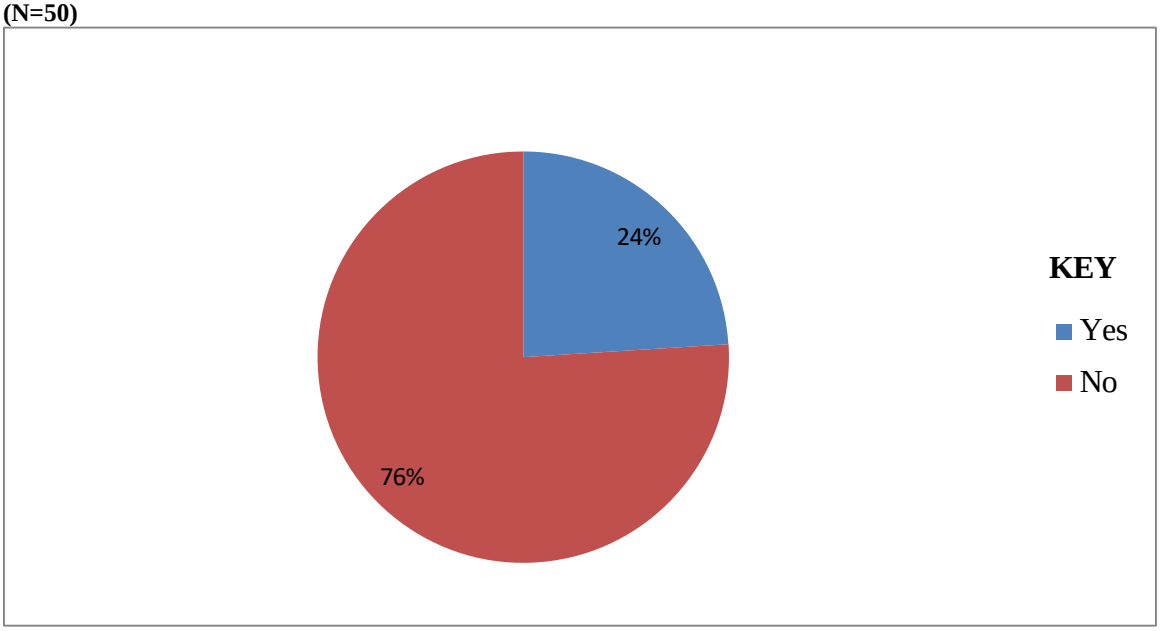


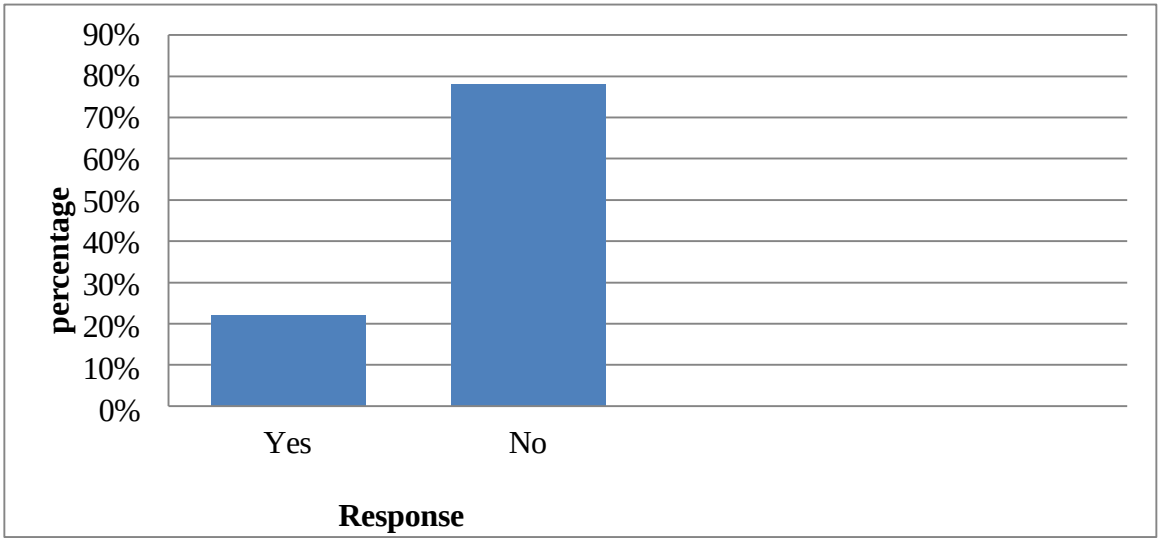
Table 8: Shows distribution of respondents according to whether they have delivered before the 37th week of pregnancy.

(N=50)

Response	**Frequency (f)**	**Percentage (%)**
Yes	02	04
No	48	96
Total	**50**	**100**

Figure 9: Shows distribution of respondents according to whether they had children.

(N=50)



Discussion of findings

Individual factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district.

According to the study findings, the majority (76%) of the respondents reported wearing non-cotton undergarments, (40%) of the respondents reported changing undergarments once a day, (84%) of the respondents reported cleaning forward to backward based on anal cleaning directions, (64%) reported practicing douching using soap while bathing, (72%) reported practicing douching after having sex, (84%) reported using public toilets/latrines. This is in line with a study done on the prevalence of UTI among pregnant women in Kasangati Health Center IV by Kinene, et al (2023) which showed that 75% of the pregnant women with UTI wore non-cotton undergarments, 73.1% changed undergarments once a day, 80.7% cleaned from forward to backward basing on anal cleaning direction, 66.7% douched using soap while bathing, 70.9% douched after having sex, 68% shared toilets and 80.6% used contaminated toilets.

In addition to that, most (40%) of the respondents were in the age bracket of 24-30 years which is in line with a study done on the prevalence of UTI among pregnant women by Fos Hassan Osman, et al (2022) showed that the prevalence of UTI among pregnant women was high in the age group of 21-35 years 91(75.2%). This is because age increases the risk of UTI, as they age, the muscles of the bladder and pelvic floor weaken thus causing urine retention. Whenever the urine stays in the urinary tract, there is a potential for bacteria such as E. coli.

Also, most of the respondents (56%) reported being housewives which is in line with a study done on KAP and health beliefs of pregnant women about UTI and its associated risk factors by Annalyn Navarro, et al (2019) which revealed that the majorities (83.90%) were housewives.

This is due to variances in the environmental background, in addition to the economic situation, awareness, and knowledge of their hygiene standards.

Furthermore, the majority (76%) of the respondents lived in urban areas which is in line with a study done on the knowledge of pregnant women towards prevention of UTI by Shakoor, et al (2023) which showed that the highest percentage (98.9%) of the pregnant women were living in urban areas. This is attributed to the nature of urban sanitation as well as lower concern with personal hygiene.

In addition to that, most (44%) of the respondents attained secondary-level education, (64%) were married. This is in line with the study done on pregnant women's perception regarding UTI by Sayed H A, et al (2019) which revealed that more than half of the studied women (61.0%) had attained secondary education level and the majority of them were married. The physiological, functional, and structural changes that pregnant women undergo make them more susceptible to various germs.

Finally, the study showed that the majority (66%) of the respondents reported not knowing the cause of UTI. This is in line with a study done to assess the knowledge of UTI among prime gravid vs multigravid mothers by P Meena, et al (2022) which showed that out of the 30 samples, 76% had inadequate knowledge of UTI among prime gravid mothers whereas among multi gravid mothers 63% had inadequate knowledge on UTI. This is because pregnant women are not provided with proper health education concerning hygiene standards during pregnancy during antenatal visits.

Medical and obstetric-related factors contributing to increased cases of urinary tract infection among pregnant women attending DR. Ronald Batta Memorial Hospital, Wakiso district.

Given the study findings, the majority of the respondents (78%) reported being prime gravida mothers. This is because of the changes in the urinary tract and immunological changes of pregnancy which predispose them to UTI. Pregnant women have weak defense mechanisms throughout their pregnancy which make them more susceptible to pathogens.

According to the study findings, the majority of the respondents (62%) reported being in the second trimester of pregnancy whereas the minority (14%) reported being in the third trimester of pregnancy which is in line with a study done on UTI during pregnancy at Tertiary Care Hospital by SD, et al (2019) which revealed that most commonly UTI is noted in the second trimester and the least UTI cases are noted in the third trimester. This is attributed to several anatomical and hormonal changes in pregnant women which lead to urethral dilation and urinary stasis thus increasing risks of developing UTI.

In addition, the majority (76%) of the respondents reported having no history of catheterization since most of them reported being prime gravida mothers and carrying their first pregnancy. This was in disagreement with a study done on the prevalence of UTI among pregnant women by Kinene, et al (2023) which revealed that 71.9% of the pregnant women with UTI had a history of catheterization.

Lastly, the majority (96%) of the respondents reported not having delivered before the 37th week of pregnancy, (78%) of the respondents reported having no children and (88%) reported having a history of UTI. This was in agreement with a study carried out by Kinene, et al (2023) on the prevalence of UTI among pregnant women which showed

that 33.3% of the pregnant women with UTI had a history of premature birth, 86.4% of the pregnant women without children had UTI and (71.9%) had a history of UTI. Untreated urinary tract infection, late diagnosis of the infection, and resistance to some antimicrobial drugs are attributed to cases of recurrent UTI.

Conclusions.

Based on the above findings, the study concluded that UTI remains a prevalent problem during pregnancy, especially in developing countries. The factors contributing to increased cases of UTI were residing in urban areas, wearing non-cotton undergarments, changing undergarments once a day, forward to backward anal cleaning direction, douching with soap while bathing, using contaminated toilets, using public toilets/ latrines and douching after having sex.

As well as pregnant women in the second trimester of pregnancy, prime gravidity, having a history of UTI, and having no children. These findings could be attributed to a lack of knowledge about UTI, risk factors and its prevention during pregnancy, late diagnosis of the infection, failure to seek treatment earlier, antimicrobial drug resistance, changes in the urinary tract, and immunological changes of pregnancy.

Recommendations.

About the findings of the current study, the researcher recommends:

The Ministry of health should introduce the culture and sensitivity of every pregnant woman at every health facility especially those with a history of UTI to get the appropriate treatment and hence reduce antimicrobial resistance.

The MCH department of DR. Ronald Batta Memorial Hospital should provide pregnant women with health education about the causes and preventive measures of UTI during antenatal visits.

Although the study was conducted in one health facility on a small sample, the researcher therefore recommends further studies in different areas to close the research gaps.

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LIST OF ABBREVIATIONS AND ACRONMYS.

E. COLI: Escherichia Coli
DR: Doctor
JRRH: Jinja Regional Referral Hospital
KAP: Knowledge Attitude Practices
KSHS: Kampala School of Health Sciences
MCH: Maternal and child health
MoH: Ministry of Health
SD: Standard deviation
SDA: Seventh Day Adventists
UAHEB: Uganda Allied Health Examination Board.
UTI: Urinary Tract Infection
WHO: World Health Organization

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