



FACTORS ASSOCIATED WITH URINARY TRACT INFECTIONS AMONG PREGNANT WOMEN ATTENDING KALAGALA HEALTH CENTRE IV, LUWERO DISTRICT, UGANDA

Mawejje Akaya, Mutekanga David, Ddamulira Christopher

School of Graduate Studies, Bugema University, Kampala, Uganda

ABSTRACT

Background: Urinary Tract Infections (UTIs) are among the most widespread and costly medical issues experienced during pregnancy globally. They occur in about 20% of all pregnancies. This study aimed to investigate the factors associated with urinary tract infections among pregnant women attending Kalagala Health Centre IV, Luwero District, in order to make recommendations to improve obstetric practice in the district and the country at large.

Methods: The study used a cross-sectional design with quantitative approaches. The study sample size was 190 respondents, and the consecutive sampling technique was used to select the study participants. A questionnaire was used to collect the data.

Results: The study found that the prevalence of UTIs among pregnant women was high (74.7%). The multivariate analysis showed the following characteristics: higher education levels, using underwear made of synthetic material, having a history of catheterisation and being diagnosed with diabetes mellitus significantly increased the likelihood of occurrence of UTIs among the pregnant women. However, practising good genital hygiene significantly decreased the likelihood of occurrence of UTIs among pregnant women. In conclusion, the importance of targeted educational and preventive measures in antenatal care settings to reduce the risk of UTIs among pregnant women. It is therefore strongly recommended that policy and practice interventions should focus on improving genital hygiene practices, using appropriate underwear materials, and providing special care for women with a history of catheterisation or diabetes.

KEY WORDS: Urinary Tract Infections, Pregnant women infections, Genital hygiene.

1. BACKGROUND

A urinary tract infection (UTI) is an inflammation caused by the presence and growth of microorganisms anywhere in the urinary tract. Across the world, UTIs are among the most widely spread and costly medical issues experienced during pregnancy, as these occur in about 20% of all pregnancies (Barnawi et.al., 2024). UTIs among pregnant women contribute about a quarter of all infections. They are among the most frequent clinical bacterial infections among this group, accounting for approximately 10% of hospital visits by women (Bacak et al., 2017).

The global prevalence of UTIs among pregnant women ranges from 3 to 35% (Obeagu et al., 2023). However, symptomatic and asymptomatic bacteriuria have been reported among 17.9% and 13.0% pregnant women, respectively, globally (Mukosha et al., 2020). It is estimated that 150 million women suffer from

UTIs every year on a global basis (Barnawi et.al., 2024). It is estimated that about 70% of pregnant women develop glycosuria during pregnancy, and this exposes them to contracting UTIs, as it encourages bacterial growth in the urine (Ranjan et al., 2017). Complications of UTIs during pregnancy have been well reported in developed countries and have been attached to occurrence of high rates of maternal and perinatal morbidities (Barnawi et.al., 2024).

In Africa, from a study done in 2021, the prevalence of UTIs was recorded at 11.1% (Awoke et al., 2021). The overall prevalence of UTIs during pregnancy varies across different African countries, for example, in Libya, the prevalence is 30%, in Tanzania, it is 15.5%, 14% in Khartoum - Sudan, 75% in Niger, 11.6% in Addis Ababa - Ethiopia, 12% in Gondar – Ethiopia, and 38% in Nigeria (Diorgu et al., 2021). While in sub-Saharan Africa and other developing countries, evidence shows that pregnant women have higher rates of UTI and its burden than in developed nations (Shaheen et al., 2023). The prevalence of UTIs among pregnant women in Sub-Saharan Africa is on the rise. However, the testing for these UTIs during pregnancy is, in most cases, neglected among the essential antenatal care service package provided to pregnant women. Inevitably, there is little understanding of the prevalence of UTIs (Younis et al., 2019).

Similarly, in East Africa, for example in Tanzania, it was reported (Masinde et.al., 2009) that UTIs prevalence rose from 15.5% in 2009 to 21%, in 2017 (Masinde et al., 2009). Moreover, in Nairobi County in Kenya, the UTI prevalence rate was also found to be as high as 21.5% in 2019, having risen from 13.75% (Wambogo, 2022). This same report indicated that *E. coli* was highlighted as the major/ primary cause of the UTIs, accounting for approximately 80% to 90%.

In Uganda, similar reports have been recorded where the prevalence of UTIs among pregnant women was at 35% by 2020 (Bahati et. al., 2020). This is despite the fact that testing for UTIs is, in most cases, neglected during antenatal care visits (Candia, 2018). In Luwero district, the district health records show that a big proportion (78%) of pregnant women accessing ANC services in the district public health facilities were found to experience at least one of the complications related to pyelonephritis, amonites, still births, pre-eclampsia; all of which are assumed to occur as a result of UTIs (DHIS-2, 2023).

At Luwero District Hospital, the highest number of UTI cases among pregnant women (37%) was reported in the third quarter of the year. At Nyimbwa, one of the two Health Centre IVs in this district, the highest number of UTI cases (31%) was recorded in the first quarter of the year (DHIS-2, 2023). However, at Kalagala Health Centre IV, during the financial



year 2022-2023, 61.25% pregnant women were diagnosed with UTIs, giving a high prevalence of UTI in this area (Kalagala HCIV maternity ward records, 2023). However, individual and obstetric factors have been reported elsewhere to be associated with urinary tract infection among pregnant women (Masinde et al., 2018), and this could be the case in Luwero district, which needs investigation. However, there is relatively limited data on the factors associated with the prevalence of UTIs among pregnant women in the Luwero district.

This study, therefore, aimed at determining the prevalence of UTI and identifying some of the major associated factors among pregnant women attending antenatal care at Kalagala Health Centre IV in Luwero district.

2. METHODS

The study was institution-based and was conducted at Kalagala Health Centre IV. It adopted a cross-sectional research design with quantitative research approaches, whereby the study was conducted at a single point in time, as this allowed describing situations in the way they exist, and this favoured the limited time and resources for the study (Setia, 2016).

The study adopted a quantitative approach to test the variables, quantified them, measured, numbered and analysed with statistical procedures in order to determine whether the predictive generalisations can address the objectives. The information would be used to articulate facts and reveal patterns responding to the objectives of the study (Daniel, 2016).

The study adopted a consecutive sampling technique to select the participants on the days data collection was conducted (Doyle et al, 2009). This technique involved selecting every single participant who met the study inclusion criteria until the desired sample size was achieved. In the current study, since pregnant women report at different times during the day to receive ANC services at the facility, every pregnant woman who met the eligibility criteria was selected and included in the study. This was done until the required sample size of the study was achieved.

Data collection was done three days a week, which were selected by simple random sampling using the lottery method. All five ANC days of the week were written on pieces of paper, which were folded and placed in a small tin. Out of these, three papers were randomly picked, and these represented the three days of conducting the study. Only three days were considered in a week so as to reduce the disruptions created at the facility as a result of the data collection process. Also, with respect to the same justification above, on each of the days of data collection, each of the selected respondents was only to be engaged after receiving her ANC services from the health care workers. However, selection for eligibility was done before the pregnant woman received her ANC services.

To determine the UTI status of the respondent, health records of each of the selected pregnant women who had come for her 2nd or above antenatal care visit were retrieved from the records in the maternity ward, and the results of the respondent's laboratory tests for UTIs that were taken during her 1st ANC visit were recorded. Whereas for the pregnant women who were reporting for their 1st ANC visit, the researcher collected the

results of their laboratory tests from the health facility laboratory, since it is mandatory for every first-time pregnant woman to do a UTI test.

The analysis was done using both descriptive and inferential statistical methods. For objective one, descriptive statistics were used to describe categorical data and were presented in frequencies and percentages. To address objectives two and three, data were analysed using Pearson's chi-square test to determine whether there was an association between individual factors, obstetric factors and UTIs at the bivariate level. The computed Chi-Square test results were compared to the critical value 0.05 level of significance (at 95% confidence interval). At the multivariate level, all the variables that were significant at the bivariate level were included in a logistic regression model to further determine the association between the independent variables and the dependent variable by generating both the crude and adjusted ratios.

3. RESULTS AND DISCUSSION

Data was analysed from 190 questionnaires representing a response rate of 100%.

The first objective sought to determine the prevalence of urinary tract infections among pregnant women attending antenatal care at Kalagala Health Centre IV, Luwero District. The results show that most (74.7 %) of the respondents were positive to UTI tests. This is an extremely high prevalence

The second objective was to identify some of the individual factors associated with UTIs among pregnant women attending ANC at this health facility. These results are given in Table 1 below.

The individual factors of pregnant mothers attending antenatal care (ANC) at Kalagala Health Centre IV in Luwero District are presented (Table 1).

Table 1 shows that most pregnant mothers were aged 25–34 years, married, and had at most primary education. It also indicates that the majority had low knowledge of UTIs, good genital hygiene practices, and predominantly used cotton underwear, suggesting a generally mixed profile of risk and protective individual characteristics.

Age

A very large (92.1%) percentage of the women in this study are youth in the range of 18 to 34 years, and only 7.9% are above 34 years. The above results are in line with those previously reported in Ethiopia, where Emiru et al. (2013) reported that in northwestern Ethiopia, the highest proportion of pregnant women in the study were younger, aged 15 – 24 years, followed by those in the middle ages of 25 – 34 years. In the same way,

Dube et al. (2023) in the United Arab Emirates discovered that the majority of the pregnant women in a similar study were aged 30 years or below.

**Table 1: Individual Factors of Pregnant Mothers Attending ANC at Kalagala Health Centre IV, Luwero District**

Variable	Categories	Frequency	%
Age	18-24years	76	40.0
26.4 ± 5.1	25-34years	99	52.1
	>34years	15	7.9
Education level	At most Primary	136	71.6
	Post Primary	54	28.4
Marital Status	Unmarried	23	12.1
	Married	167	87.9
Knowledge Level	Low knowledge	165	86.8
	High knowledge	25	13.2
Number of partners	One Partner	180	94.7
1.1 ± 0.2	Two Partners	10	5.3
Genital Hygiene	Poor Hygiene	49	25.8
	Good Hygiene	141	74.2
Material of underwear	Cotton	164	86.3
	Synthetic material	26	13.7

Source:

Primary Data 2024

Education Level

On the education level, the results show that the majority (71.9%) have a primary school level education. This high level of low education may indicate that these women's appreciation and understanding do not enable them to effectively protect themselves against getting UTIs. These results are similar to those recently reported in Bangladesh (Lee et al., 2020), where pregnant women with primary level education and below were

the majority. However, in a similar study in Indonesia (Laily et al., 2018), the majority of pregnant women had senior (high) school as their average education level.

Marital Status

The results also show that a large number of participants (87.9%) were married. Since the study was conducted among pregnant mothers, this finding is likely, as most or all of them are assumed to have their male companions. These results are similar in other parts of Uganda, as reported earlier (Nteziyaremye et al., 2020) in a similar study done in eastern Uganda, where the majority of the respondents were married. However, this is not the case in some other parts of Africa, for example, in Nigeria, it was reported (Ezugwu et al., 2021) that the majority of respondents were not married. They were either single mothers, separated or divorced.

Knowledge Level

The results further show that most of the participants (86.8%) had low knowledge of UTIs. This finding could be related to the low education levels reported above. However, in some African countries like Kenya and Egypt, similar studies showed that the majority of respondents were knowledgeable about UTIs from health care workers (Wambogo et al., 2022; Elfatah et al., 2020).

Number of Partners

Table 1 above further shows that the majority (94.7%) of the respondents had only one sexual partner. This finding may imply that the chances of acquiring UTIs from having many sexual partners are very minimal. This observation is similar to an earlier study conducted in Uganda, at Kasangati Health Centre IV, where the majority of the pregnant women reported having a single partners. However, most had UTIs (Kinene & Nakalema, 2023).

Genital Hygiene

The results show that many (74.2%) respondents had good genital hygiene. This implies that there would be reduced chances of getting UTIs and that the respondents are able to protect themselves against acquiring UTIs through practising good hygiene. The above findings are similar to other studies in Uganda (Bahati et al., 2020) undertaken in Mbarara, where the majority of the respondents had good genital hygiene practices.

Material of Underwear

Most of the respondents (86.3%) reported using underwear made out of cotton. Earlier reports from studies undertaken in Egypt (Shaheen et. al., 2023) indicated that the majority of the pregnant women were using underwear made of synthetic cotton, and that these had less chance of developing UTIs compared to those who were using cotton underwear.

The third objective of this study was to identify the obstetric factors affecting the prevalence of UTIs among pregnant women attending ANC at this health facility. The obstetric factors affecting the prevalence of urinary tract infections (UTIs) among pregnant women attending ANC at Kalagala Health Centre IV are presented (Table 2).

**Table 2: Obstetric Factors Affecting Prevalence of UTIs among Pregnant Women Attending ANC at Kalagala Health Centre IV**

Variable	Categories	Frequency	%
History of UTI	No	47	24.7
	Yes	143	75.3
History of Catheterization	No	124	65.3
	Yes	66	34.7
Parity	≤2children	127	66.8
	>2children	63	33.2
Gravidity	1Pregnancy	43	22.6
	>1Pregnancy	147	77.4
Gestation Age	<24 Weeks	85	44.7
	≥24 Weeks	105	55.3
Diabetes Mellitus	No	169	89.0
	Yes	21	11.0
History of Obstetric Surgery	No	105	55.3
	Yes	85	44.7
History of Premature Labor	No	170	89.5
	Yes	20	10.5
History of abortion	No	129	67.9
	Yes	61	32.1

Source: Primary Data 2024

Table 2 shows that most respondents had a history of UTI, were multiparous, and were in the second or higher gestational age category. It further indicates that a considerable proportion had obstetric risk factors such as catheterisation, abortion history, and obstetric surgery, which may predispose them to UTIs

History of UTI

The results in Table 2 above show that the majority (75.3%) of the respondents have a history of UTI. Having a history of UTI normally triggers changes to the immune system and other cells in the bladder, which may prime the bladder to overreact to bacteria, which may worsen subsequent UTIs. Therefore, most of these respondents who had a history of UTIs are expected to have a higher chance of developing UTIs. However, earlier reports (Shaheen et al., 2023 and Wabe et al., 2020) in Egypt and Ethiopia showed that most of their respondents had low levels of having any history of UTI.

History of Catheterisation

The above results also show that relatively fewer respondents (34.7%) reported having a history of catheterisation. A history of urinary catheterisation may result in induced inflammation, which tends to elicit fibrinogen release into the bladder to heal damaged tissue, and as a result of constant physical damage caused by the urinary catheter, fibrinogen tends to accumulate in the bladder and gets deposited onto the catheter at higher concentrations with time. This may easily result in UTIs.

Parity

Only 33.2% of the respondents reported having more than two children (Table 2 above). Having many childbirths may easily lead to physical changes in the urinary tract and pelvic floor muscles. This may affect the ability to fully empty the bladder, increasing the risk of UTIs (Al-kashif, 2019).

Gravidity

A high proportion (77.4%) of the respondents reported having had more than one pregnancy previously. It has been reported before that hormonal changes during pregnancy may alter the pH balance of the urinary tract, making it more susceptible to bacterial growth (Younis et al., 2019; Ali et.al., 2022), who also reported that UTIs were high among their respondents who had multi-gravidae in Libya and Somalia, respectively.

Gestation Age

More than half (55.3%) of the respondents had 24 Weeks or more of gestation. This implies that most respondents had higher gestational ages. As the uterus grows and expands with advancing gestational age, it can put pressure on the bladder, leading to incomplete bladder emptying and urinary incontinence, which creates an environment conducive to UTIs (Ansaldi Y et.al.,2023).

Diabetes Mellitus

A high (89%) number of the respondents did not have diabetes mellitus. This shows that only a small proportion of pregnant mothers were diabetic. High blood sugar levels among diabetic patients provide an ideal environment for bacteria to thrive, increasing the risk of bacterial overgrowth in the urinary tract and subsequent UTIs (Ansaldi Y et.al.,2023).

History of Obstetric Surgery

Almost half of the respondents (44.7%) reported having a history of obstetric surgery. During obstetric surgeries, urinary catheters are often used to drain urine from the bladder, and this



can increase the risk of introducing bacteria/ UTIs into the urinary tract (Ansaldi et al., 2023).

History of Premature Labor

A high percentage (89.5%) of the respondents have had no history of premature labour. This shows that a small proportion of pregnant women had a history of premature labour. It should be noted that in cases where premature labour necessitates medical interventions such as the insertion of urinary catheters, there is an increased risk of introducing bacteria / UTIs into the urinary tract. Also, premature labour can suppress the immune system's function, making the woman more susceptible to infections, including UTIs.

History of abortion

The results also show that the majority of the participants (67.9%) had no history of abortion. This means 32.1% have had a history of abortion. During abortion procedures, instruments inserted into the uterus can sometimes cause trauma to the uterine cervix, which can easily disrupt the natural protective barriers of the urinary tract, making it more susceptible to infections, including UTIs (Ramers et al., 2024).

In order to address objective 4, which was examining the association between Individual Factors, Obstetric Factors, and Prevalence of UTIs among Pregnant Women at this health facility, a Pearson Chi-square analysis and Multivariate Binary Logistic regression analyses were conducted to determine the association between the individual and obstetric factors with prevalence of UTIs among pregnant women, at 95% level of significance. The results are shown in Tables 3 and 4 below, respectively

The bivariate associations between selected variables using Pearson Chi-square analysis are presented (Table 3).

Table 3: Bivariate Association Using Pearson Chi-Square Analysis

Analysis						
Variable	Categories	UTI %		Chi-Square Statistic	df	p-value
		No	Yes			
Individual Factors						
Age	18-24years	21.1	79.0	5.380	2	0.068
26.4 ± 5.1	25-34years	31.3	68.7			
	>34years	6.7	74.7			
Education level	At most Primary	34.6	65.4	21.900	1	0.000
	Post Primary	1.9	98.1			
Marital Status	Unmarried	26.1	73.9	0.009	1	0.923

	Married	25.2	74.8			
Knowledge Level	Low knowledge	22.4	77.6	5.353	1	0.021
	High knowledge					
Number of partners	One Partner	26.1	73.9	1.302	1	0.254
	Two Partners	10.0	90.0			
1.1 ± 0.2						
Genital Hygiene	Poor Hygiene	4.1	95.9	15.690	1	0.000
	Good Hygiene	32.6	67.4			
Material of underwear	Cotton	28.7	71.3	7.318	1	0.007
	Synthetic material	3.9	96.1			
Obstetric Factors						
History of UTI	No	25.5	74.5	0.002	1	0.961
	Yes	25.2	74.8			
History of Catheterization	No	30.7	69.3	5.476	1	0.019
	Yes	15.2	84.8			
Parity	≤2children	27.6	72.4	1.069	1	0.301
	>2children	20.6	79.4			
Gravidity	1Pregnancy	25.6	74.4	0.003	1	0.956
	>1Pregnancy	25.2	74.8			
1.7 ± 0.4						
Gestation Age	<24 Weeks	35.3	64.7	8.197	1	0.004
	≥24 Weeks	17.1	82.9			



Diabetes Mellitus	No	27.8	72.2	5.256	1	0.022
	Yes	4.8	95.2			
History of Obstetric Surgery	No	29.5	70.5	2.257	1	0.133
	Yes	20.0	80.0			
History of Premature Labor	No	27.1	72.9	2.758	1	0.097
	Yes	10.0	90.0			
History of abortion	No	26.4	73.6	0.254	1	0.614
	Yes	22.9	77.1			

Source: Primary Data 2024

Table 3 shows that education level, knowledge level, genital hygiene, material of underwear, history of catheterization, gestation age, and diabetes mellitus were significantly associated with UTIs at the bivariate level. However, variables such as age, marital status, parity, and history of UTI were not statistically significant ($p > 0.05$).

The results in Table 3 above shows that seven factors, namely: education level ($\chi^2 = 21.900$, $p = 0.000$), knowledge level ($\chi^2 = 5.353$, $p = 0.021$), genital hygiene ($\chi^2 = 15.690$, $p = 0.000$), material of underwear ($\chi^2 = 7.318$, $p = 0.007$), history of catheterization ($\chi^2 = 5.476$, $p = 0.019$), gestation age ($\chi^2 = 8.197$, $p = 0.004$) and diabetes mellitus ($\chi^2 = 5.256$, $p = 0.022$) had significant association with occurrence of UTIs among pregnant women ($p < 0.05$). Whereas the remaining factors (age, marital status, number of partners, history of UTI, parity, gravidity, history of obstetric surgery and history of premature labour) were not significantly associated with the occurrence of UTIs among pregnant women ($p > 0.05$).

Bivariate and Multivariate Association of Different Factors with UTI Occurrence

The study also determined the level of association of the significant factors with the occurrence of UTI among the respondents. All the variables that were significant at the bivariate level were used to develop a multivariate model that explains the prevalence of UTIs, using multivariable logistic regression analysis, so as to control for confounding. The age factor was added to the model in a special way to disaggregate results by age

The bivariate and multivariate associations between variables using logistic regression analysis are presented (Table 4).

Table 4: Bivariate and Multivariate Association using Logistic Regression

Variable s	UTI %		CoR [CI]	p- value	AoR [CI]	p- value
	No	Yes				
Individual Factors						
Age						
26.4 ± 5.1						
18-24 years	21.1	79.0	1	1	1	1
25-34 years	31.3	68.7	0.585[0.292-1.173]		0.555[0.236-1.310]	0.180
>34 years	6.7	74.7	3.733[0.456-30.559]	0.131	2.792[0.291-26.823]	0.374
Education level						
At most Primary	34.6	65.4	1	1	1	1
Post Primary	1.9	98.1	27.989[3.751-208.823]	0.001	11.185[1.399-89.451]	0.023
Knowledge Level						
Low knowledge	22.4	77.6	1	1	1	1
High knowledge	44.0	56.0	0.0368[0.154-0.878]	0.024	0.417[0.141-1.236]	0.114



Genital Hygiene						
Poor Hygiene	4.1	95.9	1	1	1	1
Good Hygiene	32.6	67.4	0.08 8[0.0 204- 0.37 8]	0.001	0.41 7[0. 241- 1.23 6]	0.019
Material of underwear						
Cotton	28.7	71.3	1	1	1	1
Synthetic material	3.9	96.1	10.0 43[1. 323 - 76.2 55]	0.026	9.33 5[1. 118- 77.9 34]	0.039
Obstetric Factors						
History of Catheterization						
No	30.7	69.3	1	1	1	1
Yes	15.2	84.8	2.47 4[1.1 42- 5.36 4]	0.022	2.58 6[1. 004- 6.65 6]	0.049
Gestation Age						
<24 Weeks	35.3	64.7	1	1	1	1
≥24 Weeks	17.1	82.9	2.63 6[1.3 42- 5.17 7]	0.005	2.04 7[0. 865- 4.84 9]	0.103
Diabetes Mellitus						
No	27.0	73.0	1	1	1	1
Yes	0.0	100.0	7.70 5[1.0	0.049	10.2 00[1	0.042

			06- 59.0 40]		.090 - 95.4 47]	
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Source: Primary Data 2024

Table 4 shows that education level, genital hygiene, underwear material, history of catheterization, and diabetes mellitus remained significant predictors of UTIs in the multivariate analysis. Overall, poor hygiene practices, synthetic underwear, catheterization, and diabetes increased the likelihood of UTIs, while good hygiene was protective against infection.

Education Level

At the bivariate analysis level, education level was a strongly significant factor associated with UTI prevalence. The crude odds ratio (COR=27.989; CI: 3.751 - 208.823; P=0.001) indicated that the odds of occurrence of UTIs among pregnant mothers who had post-primary education level were about 28 times higher than those of pregnant women with only primary level of education. Whereas, at multivariate analysis, adjusted odds ratio (AOR=11.185; CI: 1.399-89.451; P=0.023) showed that the odds of occurrence of UTIs among pregnant mothers who had post-primary education level were about 11 times higher than those of pregnant women with only primary level of education, and this difference was still statistically significant. This implies that pregnant women with higher education levels stand a higher chance of getting infected with UTIs.

Genital Hygiene

Genital hygiene was a statistically significant factor at both bivariate and multivariate analyses. The crude odds ratio (COR=0.088; CI: 0.0204 - 0.378; P=0.001) indicated that the odds of occurrence of UTIs among pregnant mothers who had good hygiene practices were about 11.2% lower than those of pregnant women who had poor hygiene practices. Also, at multivariate analysis after controlling for confounding, the adjusted odds ratio (AOR=0.417; CI: 0.241 - 1.236; P=0.019) showed that the odds of occurrence of UTIs among pregnant mothers who had good hygiene practices were about 58.3% lower than those of pregnant women who had poor hygiene practices. This implies that good genital hygiene practices significantly reduce the chances of acquiring UTIs.

Material of Underwear

Table 4 above shows that the material of underwear had a significant association with UTI prevalence among pregnant women at both bivariate and multivariate analyses. The crude odds ratio (COR=10.043; CI: 1.323 - 76.255; P=0.026) indicated that the odds of occurrence of UTIs among pregnant mothers who were using underwear made of synthetic material were about 10 times higher than those of pregnant women who were using underwear made of cotton. Simultaneously, after controlling for confounding, multivariate analysis showed that (AOR=9.335; CI: 1.118 - 77.934; P=0.039) showed that the



odds of occurrence of urinary tract infections (UTIs) among pregnant mothers who were using underwear made of synthetic material were about 9 times higher than those of pregnant women who were using underwear made of cotton. This implies that using synthetic underwear increases the chances of acquiring urinary tract infections.

History of Catheterisation

The history of catheterisation showed a significant association with the occurrence of UTIs among pregnant women. At the bivariate analysis level, the crude odds ratio (COR=2.474; CI: 1.142 - 5.364; P=0.022) indicated that the odds of occurrence of UTIs among pregnant mothers who had a history of catheterisation were about twice as high as those without a history of catheterisation. Whereas, at multivariate analysis, adjusted odds ratio (AOR=2.586; CI: 11.004 - 6.656; P=0.049) showed that the odds of occurrence of UTIs among pregnant mothers who had a history of catheterisation were about 2.5 times higher than those of pregnant women without a history of catheterisation, and this difference was still statistically significant.

Diabetes Mellitus

Diabetes mellitus was also a statistically significant factor at both bivariate and multivariate analyses. The crude odds ratio (COR=7.705; CI: 1.006 - 59.040; P=0.049) indicated that the odds of occurrence of UTIs among pregnant mothers who had diabetes were about 8 times higher than those who did not have diabetes. Also, after controlling for confounding, multivariate results for adjusted odds ratio (AOR=10.200; CI: 1.090 - 95.447; P=0.042) showed that the odds of occurrence of UTIs among pregnant mothers who had diabetes increased to about 10 times higher as compared to those who did not have diabetes. This implies that being diabetic puts one at a higher risk of acquiring UTIs during pregnancy.

4. CONCLUSION

The results clearly indicate that lower education levels are linked to a higher prevalence of UTIs, potentially due to a lack of awareness about proper hygiene practices. Poor genital hygiene practices were also significantly associated with increased UTI risk, emphasising the importance of promoting good hygiene among pregnant women. The material of underwear suggests that certain fabrics may either contribute to or help prevent UTIs.

Also, a history of catheterisation is a significant factor, indicating that past medical procedures may increase the risk of getting UTIs. Additionally, the presence of diabetes mellitus was found to be a significant predictor of UTI occurrence, emphasising the need for careful monitoring and management of pregnant women with diabetes.

These findings highlight the importance of targeted educational and preventive measures in antenatal care settings to reduce the risk of UTIs among pregnant women. Interventions should focus on improving genital hygiene practices, education, use of appropriate underwear materials, and providing special care for women with a history of catheterisation and or diabetes.

5. RECOMMENDATIONS

The study recommends that there are several factors which play an important part in the existence and spread of UTI among pregnant women, and these need to be addressed early. I recommend that women go for check up preferably before even getting pregnant in order to be healthy through pregnancy. At the same time, women go for ANC visits, the interaction with staff at the health facilities should improve their education to include public health and hygiene, especially in the general areas.

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