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Original Research Article

Prevalence and Susceptibility Patterns of Uropathogens among Pregnant Women in Sokoto Metropolis, Sokoto State, Nigeria

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Abstract: Urinary tract infections (UTIs) are among the most common complications of pregnancy, contributing to maternal and neonatal morbidity. This study investigated the prevalence and antibiotic susceptibility of bacterial uropathogens among pregnant women attending antenatal clinics in Sokoto metropolis, Nigeria. A total of 204 midstream urine samples were processed using standard microbiological methods, and antimicrobial susceptibility testing was performed using the Kirby-Bauer disc diffusion method. The prevalence of UTI was 32.8%, with significantly higher infection rates among women with no formal education (59.1%), a history of previous UTI (55.6%), multigravida women (40.4%), and housewives (28.8%) ($p < 0.05$). *Staphylococcus aureus* was the predominant isolate, followed by *Escherichia coli, Klebsiella* spp.*, Proteus* spp., *Pseudomonas aeruginosa*, and *S. saprophyticus, S. epidermidis.* High resistance was observed against amoxicillin-clavulanate, tetracycline, and cotrimoxazole, while gentamicin, ciprofloxacin, and ofloxacin were more effective. UTIs remain prevalent in pregnancy, and the emergence of resistance underscores the need for routine culture and antibiotic stewardship.

Keywords: Prevalence, Urinary Tract Infection, Pregnancy, Antibiotic Resistance.

INTRODUCTION

Urinary tract infections (UTIs) are among the most frequent bacterial infections encountered in clinical practice and are of particular concern during pregnancy. They contribute significantly to maternal and neonatal morbidity and mortality worldwide (Johnson *et al*., 2021). The physiological and anatomical changes that occur in pregnancy including ureteral dilation, reduced bladder tone, increased urinary stasis, and hormonal influences predispose pregnant women to a higher risk of UTIs compared to non-pregnant women (Onoh *et al*., 2013; Onyango *et al*., 2018).

Globally, the prevalence of UTIs among pregnant women ranges between 2% and 30%, with variation influenced by geography, socioeconomic status, hygiene practices, and healthcare access (Tadesse *et al*., 2018). In Nigeria, reported prevalence varies from 8% to 23%, depending on the region and study population (Onoh *et al*., 2013). UTIs may present as asymptomatic bacteriuria, acute cystitis, or pyelonephritis, and if untreated, may result in serious complications such as preterm labor, low birth weight, preeclampsia, maternal sepsis, and neonatal infections (Vicar *et al*., 2023; Johnson *et al*., 2021).

The predominant bacterial etiological agents of UTIs are Gram-negative organisms, especially *Escherichia coli,* which accounts for the majority of infections. Other frequently isolated pathogens include *Klebsiella* spp., *Proteus* spp., *Enterobacter* spp., and Gram-positive bacteria such as *Staphylococcus aureus* and *Enterococcus* spp. (Ochei *et al*., 2018). The increasing prevalence of antimicrobial resistance among uropathogens, including multidrug-resistant (MDR) strains, extended-spectrum β-lactamase (ESBL) producers, and methicillin-resistant *Staphylococcus* *aureus* (MRSA), poses significant challenges for treatment and maternal health (Onyango *et al*., 2018).

Despite numerous reports from various regions of Nigeria, there remains limited information on the prevalence and susceptibility patterns of uropathogens among pregnant women in Sokoto metropolis. Generating such local data is critical for guiding empirical therapy, supporting antimicrobial stewardship, and ensuring favorable maternal and neonatal outcomes. The aim of this study is to determine the prevalence and susceptibility testing of bacteria associated with urinary tract infection among pregnant women attending antenatal clinics in Sokoto metropolis, Northwest Nigeria.

MATERIALS AND METHODS

Study Area

The study was conducted in Sokoto metropolis, the capital of Sokoto State, in selected primary healthcare centers within Sokoto metropolis, Sokoto State, located in the Northwest of Nigeria, between latitudes 11030 ^{0}N and 14000 ^{0}N and longitudes 4000 ^{0}E and 6040 ^{0}E. Sokoto State covers a total land area of 32,000km^2. The State is bordered by Niger Republic in the north, Zamfara State in the east and Kebbi State in the south and west. Based on the 2006 national population census record, the population of Sokoto State is 3,702,676 people (Bello *et al*., 2022).

Ethical Approval

Ethical approval was sought for and obtained from the ethical committee of the selected primary health clinics.

Study Design

A cross-sectional study was conducted among pregnant women attending antenatal clinics in Sokoto Metropolis. The study recruited consenting pregnant women irrespective of age, parity, or trimester.

Demographic Information

Socio-demographic data such as maternal age, parity, gestation age, previous etc. were collected using the questionnaires.

Sample Size Determination

The sample size (204) was used and is determined by using a single population proportion formular by considering the prevalence of 15.8% in Kano (Ali and Abdallah, 2019), with a 95% confidence interval, and a 5% margin of error. Sample size for this study was calculated using this formula;

$$N = \frac{Z^2 P (1- P)}{E^2}$$

Inclusion Criteria

This study included pregnant women attending antenatal clinics for the first time, pregnant women who gave their consent to participate in the study and pregnant women who have not been on any antibiotic medication in the past one month before samples.

Exclusion Criteria

This study excluded pregnant women who are not attending antenatal clinic for the first time, pregnant women who did not give their consent to participate in the study and pregnant women who have been on antibiotic medication in less than one month.

Specimen Collection and Analysis

Verbal consent was obtained from all the pregnant women attending anti-natal care prior to specimen collection. They were counseled on how to collect the specimen appropriately in order to avoid contamination. Clean-catch mid-stream urine samples were randomly (convenient) collected using sterile container labeled and transported to the laboratory for bacteriological analysis.

Isolation Of Bacteria

A loopful of each urine sample collected was inoculated on Cysteine-Lactose-Electrolyte Deficient (CLED) agar and MacConkey agar, plates. The plates were then incubated at 37°C for 24 hours and observed for formed colonies (Cheesbrough, 2010). The growth observed on the various CLED agar plates were counted using colony counter. The plate with a colony counts of $\geq 10^5$ cfu/ml was considered of having significant bacteriuria. The colony that shows different morphological characteristics were then sub-cultured onto MSA, EMB and XLD. Pure colonies from the selective media were purified by sub-culturing them on nutrients agar plates. The obtained pure isolates were inoculated in a slant-bottles and stored in a refrigerator for analysis.

Characterization of Bacterial Isolates

Bacterial isolates were characterized based on, microscopy (shape, Gram's reaction) and biochemical tests. The isolates were identified by comparing the characteristics with those of known taxa as described by Oyeleke and Manga (2008).

Antibiotic Susceptibility Test

The antimicrobial discs containing various proportions of Amoxiclav (10µg), Gentamicin (10µg), Erythromycin (15µg), Tetracycline (30µg), Clindamycin (2µg), Cloxacillin (1µg), Co-trimoxazole (25µg) and Ciprofloxacin (10µg) were used for Gram positive isolates. While Ceftriaxone (30µg), Co-trimoxazole (25µg) Tetracycline (30µg), Amoxiclav (30µg), Ofloxacin (5µg), Levofloxacin (5µg), Netillin (30µg), and Gentamicin (10µg) were used for Gram negative bacterial isolates. The disc in each case was picked and placed onto the inoculated agar plate surface. Inoculated discs were gently pressed down to ensure even radial diffusion of antibiotic contents. The plates were incubated at 35^{0}C for 24hrs. The diameter of zone of inhibition were measured by a transparent calibrated ruler to the nearest millimeter (mm) (CLSI, 2022). Results were interpreted as sensitive, intermediate and resistant according to the guidelines of Clinical Laboratory Standard (CLSI, 2022).

Data Analysis

Data obtained were statistically described in terms of frequency and percentages. The Pearson Chi-Square test was applied to analyze association of urinary tract infection with age, occupation, educational level, previous UTI history, parity, gestation period and previous antibiotic usage of the participants. P value less than 0.05 ($p<0.05$) was considered statistically significant at 95% confidence level.

RESULTS

Prevalence of Urinary Tract Infection

A total of 204 urine samples were analyzed using significant bacteriuria level as 10^5 cfu/ml. Sixty seven (67) of the analyzed urine samples were positive while hundred and thirty seven (137) were negative resulting to a calculated prevalence of 32.8% (Table 1).

Table 1: Prevalence of UTI among pregnant women in Sokoto metropolis

Total samples	Positive UTI Cases	Negative UTI cases	Prevalence (%)
204	67	137	32.8

Frequency Distribution of Identified Bacteria from Urine Samples

Out of the 67 positive samples, the following bacterial isolates were identified with *Staphylococcus aureus* as the most prevalent 19(28.3%), followed by *Escherichia coli* 16(23.9%), *Klebsiella* spp. 6(9.0%), *Enterobacter* spp. 5(7.5%), *S. saprophyticus* 5(7.5%), *S. epidermidis* 4(5.9%), *Proteus* spp. 4(5.9%), *Pseudomonas aeruginosa, P. fluorescent*, *Citrobacter* spp. and *Shigella* spp. 2(3.0%) each (Table 2).

Table 2: Frequency of Occurrence of the Identified Bacteria from Urine Samples

Bacterial species	Number of isolates	Percentage of positive cases (%)
Staphylococcus aureus	19	28.3
Escherichia coli	16	23.9
S. saprophyticus	5	7.5
S. epidermidis	4	5.9
Klebsiella spp	6	9.0
Enterobacter spp	5	7.5
Proteus species	4	5.9
P. aeruginosa	2	3.0
P. fluorescent	2	3.0
Citrobacter spp	2	3.0
Shigella spp	2	3.0
Total	**67**	**100**

Distribution of UTIs Prevalence by Demographic Factors

The demographic distribution of the study subjects ranging from their ages, occupation, previous UTI history, level of education, parity, gestational age and previous antibiotic usage. The highest prevalence was observed among women with no formal education (59.1%), followed by those with a history of previous UTIs (55.6%). and those with previous antibiotic usage (42.9). Conversely, the lowest prevalence was recorded among women with tertiary education (12.5%) (Table 3).

Table 3: Distribution of UTIs prevalence by demographic factors

Variable	UTI Status		Total (n)	p-value
	Negative (%)	Positive (%)		
Age Range				
<20	39	12(23.5)	51	0.137
21-30	66	40(37.7)	106	
>30	32	15(31.9)	47	
Occupation				
Housewife	116	47(28.8)	163	0.029
Employed	34	7(17.1)	41	
Previous UTI History				
Yes	20	25(55.6)	45	0.001
No	117	42(26.4)	159	

Variable	UTI Status		Total (n)	p-value
	Negative (%)	Positive (%)		
Education				
Primary	30	20(40.0)	50	0.001
Secondary	54	16(22.9)	70	
Tertiary	35	5(12.5)	40	
None	18	26(59.1)	44	
Parity				
Primigravida	75	25(25.0)	100	0.018
Multigravida	62	42(40.4)	104	
Trimester				
First trimester	45	15(25.0)	60	0.265
Second trimester	50	30(37.5)	80	
Third trimester	42	22(35.5)	62	
Previous antibiotic usage				
Yes	40	30(42.9)	70	0.014
No	197	37(27.6)	134	

Antibiotic Susceptibility of *Staphylococcus* Isolates among Pregnant Women

The antibiotic susceptibility patterns of Gram-positive uropathogens isolated from pregnant women showed *Staphylococcus aureus* (n = 14) exhibited the highest susceptibility to cotrimoxazole (78.6%), tetracycline (71.4%), ciprofloxacin (64.3%), gentamicin (64.3%), and clindamycin (64.3%). However, all *S. aureus* and Coagulase-negative staphylococci (CoNS) isolates were resistant to cloxacillin (100%), and resistance to amoxicillin-clavulanate was also high (78.6% and 80%). Coagulase-negative staphylococci (CoNS). (n = 5) showed moderate susceptibility to ciprofloxacin (60%), tetracycline (60%), and cotrimoxazole (60%). Intermediate resistance was minimal across both species (Table 4).

Table 4: Antibiotic Susceptibility of *Staphylococcus* isolates among pregnant women

Antibiotic	Isolates (n)	Sensitive (%)	Intermediate (%)	Resistant (%)
AMC	*S. aureus* (14)	3(21.4)	0.0	11(78.6)
	CoNS (5)	1(20)	00	4(80)
CN	*S. aureus* (14)	9(64.3)	00	5(35.7)
	CoNS (5)	2(40)	00	3(60)
CIP	*S. aureus* (14)	9(64.3)	2(14.3)	3(21.4)
	CoNS (5)	3(60)	1(20)	1(20)
CD	*S. aureus* (14)	9(64.3)	00	5(35.7)
	CoNS (5)	1(20)	1(20)	3(60)
COX	*S. aureus* (14)	0(00)	00	14(100)
	CoNS (5)	0(00)	00	5(100)
COT	*S. aureus* (14)	11(78.6)	00	3(21.4)
	CoNS (5)	3(60)	0	2(40)
E	*S. aureus* (14)	8(57.1)	14.3	4(28.6)
	CoNS (5)	1(20)	0	4(80)
TE	*S. aureus* (14)	10(71.4)	0	4(28.6)
	CoNS (5)	3(60)	0	2(40)

Key: AMC: Amoxicillin-Clavulanate, CN: Cefalexin, CIP: Ciprofloxacin, CD: Clindamycin, COX: Cloxacillin, COT: Cotrimoxazole (Trimethoprim-sulfamethoxazole), E: Erythromycin, TE: Tetracycline, CoNS: Coagulase-negative staphylococci.

Antibiotic Susceptibility of Gram-Negative Bacterial Isolates among Pregnant Women

Among the Gram-negative uropathogens isolates, *Escherichia coli* (n = 7) showed susceptibility to levofloxacin (71.4%), ofloxacin (57.1%) and netilmicin (57.1%) However, it exhibited complete resistance to amoxicillin-clavulanate (100%) across all isolates. *Enterobacter* spp. showed higher susceptibility to ofloxacin (75%) and netillin (75%), but notable resistance to tetracycline (100%), ceftriaxone (75%), and gentamicin (50%). while *Klebsiella* spp. (n = 5) retained moderate susceptibility to gentamicin (60%) and levofloxacin (60%). Notably, *P. aeruginosa* displayed complete resistance (100%) to netillin and tetracycline, but remained fully susceptible to ofloxacin (100%). (Table 5).

Table 5: Antibiotic Susceptibility of Gram-negative Bacterial isolates

Antibiotics	Organism (n)	Sensitive (%)	Intermediate (%)	Resistant (%)
(CTR)	*E. coli* (7)	2(28.6)	0(00)	5(71.4)
	Enterobacter spp (4)	1(25)	1(25)	2(50)
	Klebsiella spp (5)	2(40)	0(00)	3(60)
	Proteus spp (2)	1(50)	0(00)	1(0)
	P.aeruginosa (2)	1(50)	0(00)	1(50)
	E. coli (7)	3(42.9)	(00)	4(57.1)
GEN	*Enterobacter spp* (4)	1(25)	1(25)	2(50)
	Klebsiella spp (5)	3(60)	1(20)	1(20)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	1(50)	0(00)	1(50)
COT	*E. coli* (7)	1(14.3)	1(14.3)	5(71.4)
	Enterobacter spp (4)	1(25)	1(25)	2(50)
	Klebsiella spp (5)	2(40)	0(00)	3(60)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	1(50)	0(00)	1(50)
LE	*E. coli* (7)	5(71.4)	0(00)	2(28.6)
	Enterobacter spp (4)	2(50)	1(25)	1(25)
	Klebsiella spp (5)	3(60)	0(00)	2(40)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	1(50)	0(00)	1(50)
NET	*E. coli* (7)	4(57.1)	1(14.3)	2(28.6)
	Enterobacter spp (4)	3(75)	0(00)	1(25)
	Klebsiella spp (5)	3(60)	1(20)	1(20)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	0(00)	0(00)	2(100)
TE	*E. coli* (7)	3(42.9)	2(28.6)	2(28.6)
	Enterobacter spp (4)	2(50)	1(25)	1(25)
	Klebsiella spp (5)	2(40)	1(20)	2(40)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	0(00)	0(00)	2(100)
AMC	*E. coli* (7)	0(00)	0(00)	7(100)
	Enterobacter spp (4)	0(00)	0(00)	4(100)
	Klebsiella spp (5)	0(00)	0(00)	5(100)
	Proteus spp (2)	0(00)	0(00)	2(100)
	P.aeruginosa (2)	0(00)	0(00)	2(100)
OF	*E. coli* (7)	4(57.1)	0(00)	3(42.9)
	Enterobacter spp (4)	3(75)	0(00)	1(25)
	Klebsiella spp (5)	3(60)	0(00)	2(40)
	Proteus spp (2)	1(50)	0(00)	1(50)
	P.aeruginosa (2)	2(100)	0(00)	(00)

Key: CTR: Ceftriaxone, GEN: Gentamicin, COX: Cloxacillin, COT: Cotrimoxazole (Trimethoprim- sulfamethoxazole), LE: Levofloxacin, NET: Netillin, TE: Tetracycline AMC: Amoxicillin-Clavulanate, OF: Oflaxacin

DISCUSSION

Urinary tract infection (UTI) is among the most frequent bacterial infections in pregnancy, accounting for about 25% of all infections (Johnson *et al*., 2021). Previous studies have shown that untreated UTI during pregnancy causes several complications and adverse outcomes for both mother and fetus (Johnson *et al*., 2021; Vicar *et al*., 2023). In this study, the prevalence of UTIs among pregnant women attending antenatal clinics in selected Primary Health Centres (PHCs) in Sokoto metropolis was 32.8%. This prevalence falls within the global range of 13–33% and aligns with reports from Kano (31.6%) (Jido *et al*., 2006), Ogun State (31.0%) (Ochei *et al*., 2018), and Southeast Nigeria (32.7%) (Onuorah *et al*., 2016).

However, higher prevalence has been reported in Abakaliki (46.5%) (Onoh *et al*., 2013), Zaria (64%) (Abdullahi *et al*., 2021), Zamfara (36.7%) (Raji *et al*., 2023), Uganda (35%) (Johnson *et al*., 2021), Nepal (37.8%) (Thakur and Nepal, 2020), Libya (49.3%) (Younis *et al*., 2019), and Saudi Arabia (53.5%) (El-Kashif, 2019). The variation in prevalence across regions may be attributed to differences in geography, screening methods, hygiene practices, sexual behavior, and sociodemographic factors such as age, parity, and gestation period (Vicar *et al*., 2023; El-Kashif, 2019).

On the other hand, lower prevalence rates were reported by Ali and Abdallah (2019) 15.8% in Kano, 17.24%. (Akande *et al.,* 2023) in Bauchi and 24.2% by

Ekwealor *et al*., (2024) in Southeast Nigeria. Similar findings were reported outside Nigeria of 15.7% by Onyango *et al*., (2018), in Kenya and 16.7% by Sonkar *et al*., (2021) in India. The observed prevalence in this study underscores that UTIs remain a significant public health concern among pregnant women in Sokoto metropolis, especially considering the risks of untreated infections, which include pyelonephritis, preterm labor, intrauterine growth restriction, low birth weight, and neonatal sepsis.

Eleven distinct bacterial species were isolated in this study. The most frequently isolated pathogen was *Staphylococcus aureus* (28.3%), followed by *Escherichia coli* (23.9%). The predominance of *S. aureus* contrasts with most global studies where *E. coli* is the leading uropathogen (Agersew *et al*., 2012; Raji *et al*., 2023). However, similar findings were observed in Zaria, where *S. aureus* and other Gram-positive cocci had high prevalence (Abdullahi *et al*., 2021). The unusual predominance of *S. aureus* may be linked to poor personal hygiene, increased vaginal carriage during pregnancy, and possible contamination during urine collection (Ekwealor *et al*., 2024). Several factors may explain the high frequency of *S. aureus* in this population as it is a common skin and nasal commensal that can contaminate urine samples during collection, particularly in low-resource settings where midstream urine collection is challenging, poor personal hygiene practices among pregnant women may facilitate perineal colonization and subsequent infection and an emerging trend of Gram-positive pathogens causing UTIs has been noted in parts of Africa, possibly linked to increasing antibiotic resistance that allows these organisms to compete more effectively with Gram-negative bacteria (Odindo *et al*., 2025).

E. coli, though second in this study, remains the most common global uropathogen due to its fecal origin and virulence mechanisms, such as P-fimbriae that facilitate adherence to uroepithelial cells (Okonko *et al*., 2009). Its lower frequency in Sokoto may reflect ecological differences, sample size, or local hygiene practices. Other isolates included *Klebsiella* spp. (9.0%), *Enterobacter* spp. (7.5%), *Proteus* spp. (5.0%), *S. saprophyticus* 5(7.5%), *S. epidermidis* 4(5.9%), and *P. aeruginosa* (3.0%). *P. fluorescent* (3.0%). Less common isolates included *Citrobacter* spp. (3.0%) and *Shigella* spp. (3.0%). The presence of multiple Gram-negative enteric bacteria is consistent with the pathogenesis of UTIs, since they originate from the gastrointestinal tract and can ascend the urinary tract due to the short female urethra and close proximity to the perineum (Flores-Mireles *et al*., 2015), suggesting possible fecal contamination and poor sanitary conditions, consistent with findings in low-resource antenatal settings (Lee *et al*., 2024).

The association between socio-demographic factors and UTI prevalence revealed several significant relationships. The prevalence was highest among women aged 21–30 years (37.7%) but not statistically significant (p = 0.137). Similar trends were observed in Abuja (Yunusa *et al.,* 2015) and Zamfara (Raji *et al*., 2021). Housewives had significantly higher prevalence (28.8%) than employed women (17.1%) (p = 0.029). Limited mobility, prolonged sitting, and reduced health awareness may contribute (Onuoha and Fatokun, 2014; Ali and Abdallah, 2019). Women with prior UTIs had higher prevalence (55.6%) than those without (26.4%) (p = 0.001), reflecting the recurrent nature of UTIs (Flores-Mireles *et al*., 2015). Women with no education had the highest prevalence (59.1%), while those with tertiary education had the lowest (12.5%) (p = 0.001). This inverse relationship highlights the protective effect of education (Askari *et al*., 2023; Odindo *et al*., 2025). Multigravida women had higher prevalence (40.4%) compared to primigravida (25.0%) (p = 0.018). Repeated pregnancies may increase urinary stasis and colonization risk (Ifrah *et al.,* 2025).

UTI prevalence was higher in the second (37.5%) and third trimesters (35.5%) compared to the first trimester (25.0%), but not statistically significant (p = 0.265). The trend aligns with pregnancy physiology such as ureteral compression and progesterone effects (Baba *et al*., 2023). Women with prior antibiotic exposure had higher prevalence (42.9%) compared to those without (27.6%) (p = 0.014). This may reflect incomplete treatments, self-medication, and antimicrobial resistance (Addis *et al*., 2021). These findings emphasize that both sociodemographic and clinical factors influence UTI risk among pregnant women, with modifiable factors such as hygiene, education, and antibiotic use playing central roles. These findings emphasize that both sociodemographic and clinical factors influence UTI risk among pregnant women, with modifiable factors such as hygiene, education, and antibiotic use playing central roles.

The antibiotic susceptibility testing revealed concerning resistance trends. Gram-positive isolates: *S. aureus* showed high susceptibility to cotrimoxazole (78.6%), tetracycline (71.4%), and ciprofloxacin (64.3%), while Coagulase-negative staphylococci (CoNS) demonstrated moderate activity to the same agents (60%). Both were completely resistant to cloxacillin (100%), suggesting methicillin resistance, consistent with reports of MRSA prevalence in Nigeria (Iregbu *et al*., 2016). Gram-negative isolates: *E. coli* retained moderate sensitivity to levofloxacin (71.4%) and netillin (57.1%). *Klebsiella* spp. showed susceptibility to gentamicin (60%) and levofloxacin (60%), while *Enterobacter* spp. responded to ofloxacin (75%) and netillin (75%). *P. aeruginosa* was resistant to netillin and tetracycline but fully susceptible to ofloxacin, reflecting intrinsic resistance to many drug classes but variable fluoroquinolone activity (Onoh *et al*., 2013).

A striking finding was the near-universal resistance to amoxicillin-clavulanate (AMC) across isolates, suggestive of β-lactamase activity and possible ESBL production (Okonko *et al*., 2009; CLSI, 2022). High resistance to tetracycline and cotrimoxazole may also reflect their widespread availability and misuse in Nigeria. Overall, fluoroquinolones (levofloxacin, ofloxacin, ciprofloxacin) and aminoglycosides (gentamicin, netillin) retained the highest activity and may remain therapeutic options, though their use in pregnancy requires careful safety considerations. These findings align with WHO (2022) reports on rising resistance to β-lactams in low- and middle-income countries and highlight the urgent need for antimicrobial stewardship.

CONCLUSION

Out of the 204 midstream urine samples collected 67 samples yielded significant bacterial growth indicative of urinary tract infection (UTI). This represented a total of 32.8% prevalence rate. From the result of the biochemical identification, 11 bacterial isolates were identified; *S. aureus*, *E. coli*, *Klebsiella* spp., *Enterobacter* spp., *S. saprophyticus, S. epidermidis, Proteus* spp., *Pseudomonas aeruginosa, P. fluorescent*, *Citrobacter* spp. and *Shigella* spp. The analysis demonstrated that occupation, previous history of UTI, educational level, parity and prior antibiotic use were significantly associated with UTI, while age group and trimester showed no significant association. The antibiotic susceptibility revealed that the bacteria that showed high level of resistance to Amoxicillin-Clavulanate, Cloxacillin, and Cotrimoxazole among both gram-positive and gram-negative bacteria, Ciprofloxacin, Gentamicin, and Netillin are most effective against the bacteria tested. The most resistant of bacteria to all the antibiotics tested is *Staphylococcus aureus*. Similarly, the most sensitive bacteria is *Klebsiella* spp. It is recommended that routine UTI screening during antenatal visits must be done to discover the infected cases, there is also a need for proper diagnosis of UTI before treatment, to avoid resistance of uropathogens to antibiotics.

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