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Emerging Trends of Extended Spectrum Beta-Lactamase and Metallo-Beta Lactamase Escherichia Coli Strains among Pregnant Women in Mile 4 Hospital, Abakaliki: Implications for Antenatal Care

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ABSTRACT

This investigation assessed the prevalence of extended spectrum beta-lactamase (ESBL) and metallo-beta lactamase (MBL) producing Escherichia coli among seemingly healthy pregnant women attending the antenatal clinic at Mile 4 Hospital in Abakaliki, Nigeria. A total of 100 midstream urine samples were collected and processed using standard microbiology techniques. Antibiotic susceptibility testing was conducted via the disc diffusion method. ESBL and MBL production screening utilized the double disc synergy test and the combined disc test inhibition assay, respectively. The findings demonstrated a 54% prevalence of E. coli among the study participants, with the highest occurrence observed in the third trimester (31.5%) and the lowest in the first trimester (25.9%). Across age groups, prevalence ranged from 9.3% in participants aged ≤20 years to 44.4% in the 21-30 age bracket. Additionally, among participants with varying educational backgrounds, prevalence ranged from 18.5% in uneducated individuals to 33.3% in those with a secondary education. Antibiotic susceptibility of the isolates varied from 0% to 81.5%. ESBL and MBL screening identified 18 (33.3%) and 11 (20.4%) positive isolates, respectively. The antibiotic susceptibility among ESBL-producing E. coli ranged from 0% to 100%, while MBL-positive E. coli showed susceptibility ranging from 0% to 90.5%. The multiple antibiotic resistance index (MARI) ranged from 0.3 to 1.0, with an average of 0.7 among the isolates. This study highlights a substantial prevalence of multidrug-resistant ESBL and MBL-producing E. coli strains among apparently healthy pregnant women. This situation raises concerns about the early exposure of fetuses to multidrug resistance, emphasizing the urgency for proactive measures to address this emerging health risk.

Keywords: ESBL positive E. coli, metallo-betalactamase positive E. coli, apparently healthy pregnant women, Abakaliki, Nigeria.

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INTRODUCTION

Urinary tract infection (UTI) is a condition in which the urinary tract is infected with pathogenic microorganisms causing inflammation of the urinary tract which is common distressing and sometimes life threatening. Although men can be affected, occurrence of UTI is more frequent in female and the symptoms includes fever, frequent urge to urinate, dysuria, chills, vomiting, cloudy or malodorous urine [1,2,3,4]. [5] reported UTI as the most prevalent hospital acquired infection (43.1%) while [6] described it as the most common medical complications of pregnancy. The prevalence of UTI has been estimated at 150 million cases per year globally. The prevalence is high in Africa with acute cases sometimes. In Nigeria, a study on 12,458 urine samples revealed the prevalence of community-acquired and nosocomial UTIs of about 12.3% and 9.3%, respectively. The study showed higher prevalence among women (14.6%) than among men (7.4%) [7]. Similarly, in Algeria, UTI account for 4.5% of all cases admitted in acute care units for more than 48 hrs [8]. In Uganda, the prevalence of UTI was reported to be 13.3% which showed 20-60% drug resistance rate among antenatal women in Mulago hospital, Uganda [9]. The main pathogens implicated in UTI include *E. coli* which is associated with about 80-85% of cases, and *Staphylococcus saprophyticus* implicated in 5-10% of infections, as well as *Klebsiella*, *Pseudomonas*, *Proteus and Enterobacter* species [10-13].

Escherichia coli (*E. coli*) is a Gram negative facultative anaerobic, rod shaped, coliform bacteria belonging to the genus *Escherichia*. They are commonly found in the lower intestines of warm-blooded organism [11]. *E. coli* strains are known to be the causative pathogens of several diseases in human mostly extra-intestinal infections such as urinary tract infections (UTI), pneumonia, soft-tissue infection and bacteremia among others. Analysis of molecular phylogeny grouped *E. coli* strains into four clusters (A, B1, B2 and D) [12]. Further investigation revealed that pathogenic *E. coli* causing extra-intestinal infection belonged mainly to the B2 cluster and partly in the D cluster while commensal strains belonged to clusters A and B1 [13-16].

Although *E. coli* has long been known to be one of the pathogenic species among the Enterobacteriaceae family causing many diseases worldwide, the surge in spread of resistance to extended generation cephalosporins group of antibiotics is on the increase in both community and hospital settings. The resistance to cephalosporins is due to secretion of some enzymes such as the extended spectrum beta lactamase and Metallo-beta-lactamase enzymes [17-20]. There is also increased prevalence in cabapenem resistance resulting from the production of different cabapenemases [21-24]. These enzymes are capable of hydrolyzing almost every beta-lactam including cabapenems. These β-lactam producing *E. coli* are usually cross-resistant to many commonly used antibiotics including aminoglycosides, trimethoprim-sulfamethoxazole and flouroquinolones thereby leading to fewer therapeutic options in hospital settings [25-30]. These multidrug resistant ESBL and metallo-β-lactamase producing *E. coli* has higher mortality rate and therapeutic cost than those due to non-β-lactamase producing *E. coli* [30-35]. Hence, regular surveillance for the prevalence of ESBL and metallo-β-lactamase *E. coli* in clinical settings is very important. This study therefore, was carried out to investigate the prevalence of ESBL and metallo-β-lactamase producing *E. coli* among apparently healthy pregnant women attending antenatal clinics in Abakaliki, Ebonyi State, Nigeria.

Sample Collection

One hundred (100) urine samples of apparently healthy pregnant women visiting antenatal clinic in Mile Four hospital Abakaliki were collected for this study. Midstream urine samples were collected using a well labeled sterile urine sample bottles. They were transferred to the Laboratory, Applied Microbiology Department, Ebonyi State University, for bacteriological analysis.

Bacteriological Analysis

Each sample was properly mixed and a loopful inoculated on aseptically prepared cysteine lactose electrolyte deficient agar (CLED) using sterile wire loop. The plates were incubated at 37°C for 18-24 hrs. Suspected colonies of *E. coli* were aseptically transferred onto McConkey agar and eosine methylene blue agar plates for further identification and incubated at 37°C for 18-24 hrs. Pure colonies of suspected organisms were then aseptically transferred onto nutrient agar slants and were also incubated at 37°C for 18-24 hrs. Slants containing isolates were then stored in refrigerator pending subsequent analysis.

Gram Staining

Gram staining was carried out on smears prepared from the isolates in different culture plates. The smear was prepared on clean grease-free glass slides. Each slide was allowed to air-dry and heat fixed by passing it 3 times over a busnen burner flame. The heat-fixed smear was flooded with crystal violet and allowed to stand for 30-60 seconds. The stain was washed with slowly running tap water. The smear was flooded again with Lugol's iodine and allowed to stand for 30-60 seconds. The slide was then rinsed off with slowly running tap water. The smear was decolorized with 70% ethanol until the color of the crystal violet stops coming out and was also washed off with slowly running tap water. The smear was counter-stained with safranin and allowed to stand for 30-60 seconds, washed off with slowly running tap water. The slide was blotted dry. The slide was then examined under an oil immersion objective lens of a compound microscope. Organisms that retained the purple colour of crystal violet were recorded as Gram-positive, while those that appeared pink were Gram-negative [7].

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Identification of Suspected *E.coli* isolates

The isolates were further identified using indole, Voges-proskauer, methyl red and citrate tests.

Antibiotics Susceptibility Testing

A standardized inoculum equivalent to 0.5 McFarland standard of each isolate was inoculated aseptically on the surface of freshly prepared Muller-Hinton agar plates. The following antibiotics: cefotaxine (CTX, 30µg), ceftazidine (CAZ, 30 µg), amoxicillin-clavulanic acid (AMC, 25µg), imipenem (IPM, 10µg), doripenem (DOR, 30µg), nalidixic acid (NA, 30µg), cefoxitin (FOX, 30µg), aztreonam (ATM, 30µg), meropenem (MEM, 30µg) and ertapenem (ETP, 30µg) were placed on the inoculated plates. The disks were aseptically placed on the plates using sterile forceps and incubated at 37°C for 18-24 hr after allowing it to stand for 10-15 min for pre-diffusion. The zones of inhibition around each antibiotic disc were determined using a meter rule. This was compared with the National Committee for Clinical Laboratory Standards Institute Guidelines [8].

Phenotypic Determination of ESBL producing *E. coli* isolates using Double Dis Synergy Test (DDST)

Sterile Muller-Hinton agar plate were inoculated with 0.5 McFarland equivalent standard of the test isolates. Ceftazidime (30µg) and cefotaxime (30µg) discs were placed on agar plate 15mm away from the centre of amoxicillin-clavulanic acid (20µg/ 10µg) disc. An increase in zone diameter of ≥5 mm in the presence of clavulanic acid than ceftazidime or cefotaxime alone was interpreted as ESBL producer [9]. This was compared with the National Committee for Clinical Laboratory Standards Institute Guidelines [8].

Determination of Metallo-β-Lactamase producing *E. coli* isolates using Combined Disc Test

The isolates were standardized to 0.5 McFarland equivalence and swabbed on Muller-Hinton agar plates using sterile swab sticks. Two imipenem discs were placed on the surface of the plate at a distance of 4-5cm from each other. A 5µL of 750 µg/mL EDTA solution was then added to one of the IPM discs. The inhibition zone displayed around the imipenem disk and IPM+EDTA disc were compared after 18-24 hrs of incubation at 37°C. If the zone of inhibition of IPM-EDTA disk was ≥7 mm more than that of IPM disk alone, it was considered as MBL positive [12]. This was compared with the National Committee for Clinical Laboratory Standards Institute Guidelines [8].

Determination of Multiple Antibiotic Resistance Index (MARI)

Multiple antibiotics resistance index (MARI) was determined to know the resistance level of the isolates according to the method described by [2]. The following formula was used to determine the MARI.

MARI = a/b

Where a = Number of antibiotics to which the test isolates showed resistance

b = Total number of antibiotics to which the isolates has been tested for sensitivity.

RESULTS

Prevalence of *E. coli* in Urine Samples of Apparently Healthy Pregnant Women Attending Antenatal Clinics at Mile 4 Hospital, Abakaliki

A total of 54 *E. coli* isolates were obtained from the 100 samples collected from pregnant women from Mile 4 hospital, Abakaliki. Out of 54 *E. coli* species, the prevalence was highest among women in 3rd trimester 23 (42.6%) followed by 17(31.5%) in second trimester but lowest 14(25.9%) prevalence was observed in the first trimester of pregnancy as shown in Figure 1.

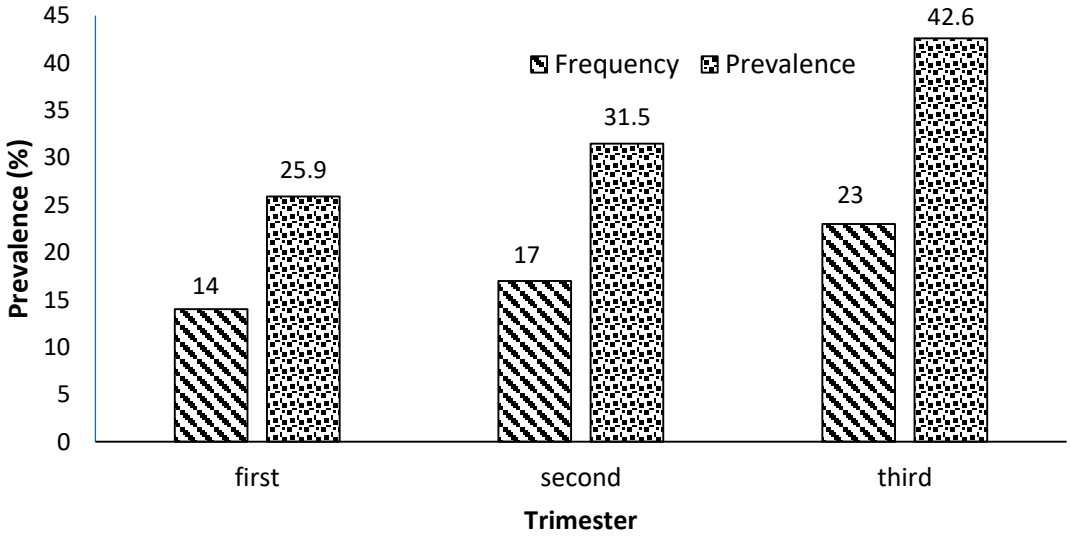

Figure 1: Prevalence of *E. coli* in urine samples of pregnant women

Prevalence of *E. coli* among Apparently Healthy Pregnant Women based on -Age

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The result showed that highest prevalence 22(44.4%) was occurred among pregnant women aged between 21-30 years, followed by those of them who were between the age 31-40 while the least prevalence was observed among those aged 20 years and below (5, 9.3%) as shown in Figure 2.

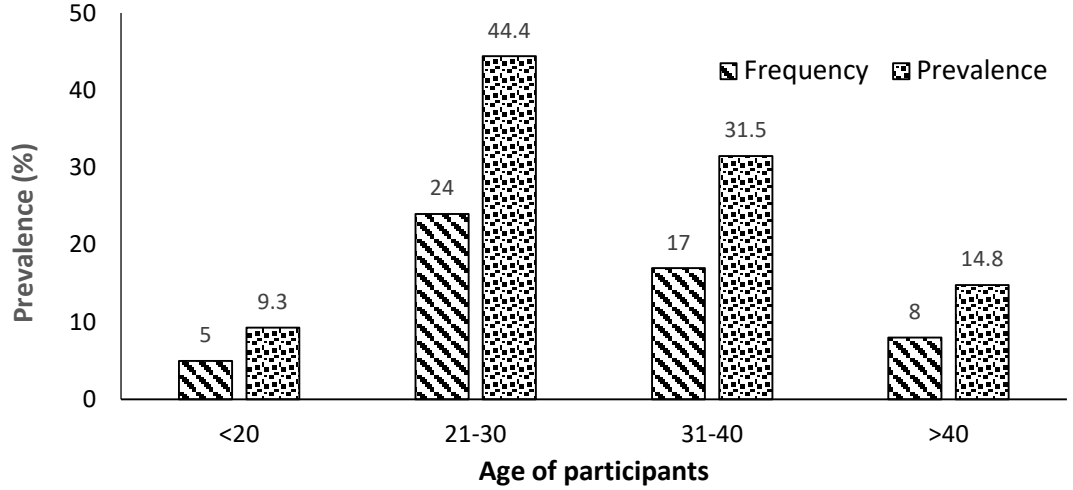

Figure 2: Prevalence of *E. coli* among Apparently Healthy Pregnant Women based on their Age

Prevalence of *E. coli* among Apparently Healthy Pregnant Women based on their Educational Background

Based on their educational background, the highest percentage occurrence was observed among women with secondary education 18(33.3%). This was followed by those with primary education 15(27.8%) and tertiary education 11(20.4%) while the least prevalence occurred among women with no formal education 10(18.5%) (Figure 3).

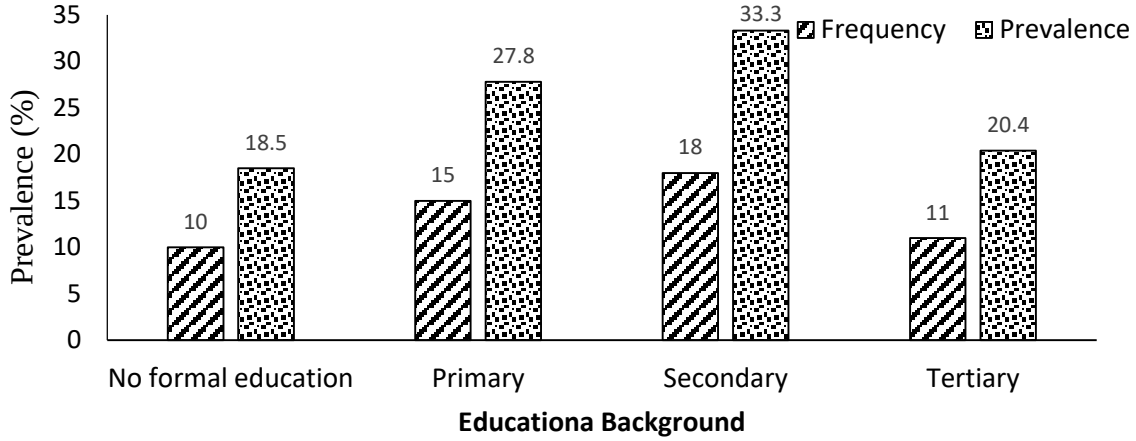

Figure 3: Prevalence of *E. coli* among Apparently Healthy Pregnant Women based on their Educational Background

Antibiotics sensitivity pattern of *E. coli* isolated from urine samples of the apparently healthy pregnant women

The study showed that 44(81.5%) out of the 54 isolates were susceptible to imipenem, 34(62.9%) were susceptible to gentamycin, 31(57.4%), 16(29.9%) and 11(20.4%) were respectively susceptible to ertapenem, aztreonam and doripenem (Table 1). The isolates were least susceptible to cefoxitin and ceftazidime showing 2(3.7%) susceptibility to each. However, all the 54 isolates screened showed total (100%) resistance against nalixidic acid and cefotaxime, followed by resistance to ceftazidime, cefoxitin, meropenem, amoxicillin-clavulanic acid and doripenem which were within the range of 96.3-75.6% resistance as shown in Table 1.

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Table 1: Antibiotics sensitivity pattern of *E. coli* isolated from urine samples of the apparently healthy pregnant women

Antibiotics	Susceptibility (%)	Resistance (%)
Meropenem	5(7.4)	49(92.6)
Ertapenem	31(57.4)	23(42.6)
Doripenem	11(20.4)	43(76.6)
Imipenem	44(81.5)	10(18.5)
Amoxicillin-clavulanic acid	10(18.5)	44(81.5)
Cefotaxime	0(0)	54(100)
Cefoxitin	2(3.7)	52(96.3)
Aztreonam	16(29.6)	38(70.3)
Ceftazidime	2(3.7)	52(96.3)
Gentamycin	34(63)	20(37)
Nalidixic acids	0(0)	54(100)

Prevalence of ESBL and Metallo-Beta-lactamase (MBL) producing *E. coli* isolated from urine samples of apparently healthy pregnant women attending antenatal clinic at Mile 4 Hospital Abakaliki.

The result showed that out of the 54 isolates screened for ESBL production, 18(33.3%) were ESBL positive *E. coli* while 36(66.7%) were ESBL negative. On the other hand, only 11(20.4%) of the isolates were identified as MBL producing *E. coli* while the other 43(79.6%) were non MBL producers (Table 2).

Table 2: Prevalence of ESBL and Metallo-Beta-lactamase (MBL) producing *E. coli* isolated from urine samples of apparently healthy pregnant women

Category	Positive (%)	Negative (%)
ESBL	18(33.3)	36(66.7)
MBL	11(20.4)	43(79.6)

Antibiotics susceptibility and resistance pattern of ESBL and MBL positive *E. coli* isolated from urine samples of apparently healthy pregnant women attending antenatal clinic at Mile 4 Hospital Abakaliki

The result showed that all (100%) of the ESBL and MBL isolates were susceptible to imipenem. This was followed by gentamycin 11(61.5%), ertapenem 10(55.5%), doripenem 5(27.5%), amoxicillin-clavulanic acid 3(16.5%) and aztreonam 2(11.5%). The isolates were least susceptible to meropenem and cefoxitin with 1(5.5%) susceptibility each. On the other hand, all the 18 ESBL positive isolates were totally (100%) resistant to cefotaxime, ceftazidime and nalidixic acid. This was followed by resistance to meropenem, cefoxitin, aztreonam, amoxicillin-clavulanic acid, doripenem, ertapenem and gentamycin with percentage resistance ranging from 38.5 to 94.5% to 38.5% (Table 3).

Similarly, all the 11 MBL positive *E. coli* showed highest susceptibility to ertapenem, imipenem and gentamycin with percentage value of 10(90.5%) each. Their susceptibility to aztreonam and amoxicillin-clavulanic acid were lower with percentage values of (72.5%) and (36.5%), respectively. However, the isolates were least susceptible to meropenem, cefixitin, and ceftazidime with percentage values of 1(9.5%) each. Meanwhile, all the 11 MBL positive *E. coli* isolates showed 100% resistance to doripenem, cefotaxime and nalidixic acid (Table 3).

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Table 3: Antibiotics susceptibility and resistance pattern of ESBL and MBL positive *E. coli* isolated from urine samples of apparently healthy pregnant women attending antenatal clinic at Mile 4 Hospital Abakaliki

	ESBL		MBL	
Antibiotics	**Susceptibility (%)**	**Resistance (%)**	**Susceptibility (%)**	**Resistance (%)**
Meropenem	1(5.5)	17(94.5)	1(9.5)	10(90.5)
Ertapenem	10(55.5)	8(44.5)	10(90.5)	1(9.5)
Doripenem	5(27.5)	13(72.5)	0(0)	11(100)
Imipenem	18(100)	0(0)	10(90.5)	1(9.5)
Amoxicillin-clavulanic acid	3(16.5)	15(83.5)	4(36.5)	7(63.5)
Cefotaxime	0(0)	18(100)	0(0)	11(100)
Cefoxitin	1(5.5)	17(94.5)	1(9.5)	10(90.5)
Aztreonam	2(11.5)	16(88.5)	8(72.5)	3(27.5)
Ceftazidime	0(0)	18(100)	1(9.5)	10(90.5)
Gentamycin	11(61.5)	7(38.5)	10(90.5)	1(9.5)
Nalidixic acids	0(0)	18(100)	0(0)	11(100)

Multiple Antibiotics Resistance Index (MARI) of the *E. coli* isolates

The MARI of the *E. coli* isolated from apparently healthy pregnant women attending antenatal clinic at Mile 4 Hospital in Abakaliki is presented in Table 4 below. It showed MARI ranging from 0.3 to 1 with mean MARI of 0.7 across the 54 *E. coli* isolated from the urine of the participants.

Table 4: Multiple Antibiotics Resistance Index (MARI) of the *E. coli* isolates

S/No	Organism	MARI Value	S/No	Organism	MARI Value
1	*Escherichia coli*	0.6	28	*Escherichia coli*	0.9
2	*Escherichia coli*	0.4	29	*Escherichia coli*	0.7
3	*Escherichia coli*	0.6	30	*Escherichia coli*	0.9
4	*Escherichia coli*	0.8	31	*Escherichia coli*	0.9
5	*Escherichia coli*	0.6	32	*Escherichia coli*	0.8
6	*Escherichia coli*	0.6	33	*Escherichia coli*	0.6
7	*Escherichia coli*	0.6	34	*Escherichia coli*	0.9
8	*Escherichia coli*	0.5	35	*Escherichia coli*	0.7
9	*Escherichia coli*	0.6	36	*Escherichia coli*	0.8
10	*Escherichia coli*	0.5	37	*Escherichia coli*	0.7
11	*Escherichia coli*	0.7	38	*Escherichia coli*	1.0
12	*Escherichia coli*	0.7	39	*Escherichia coli*	0.9
13	*Escherichia coli*	0.5	40	*Escherichia coli*	0.9
14	*Escherichia coli*	0.6	41	*Escherichia coli*	0.9
15	*Escherichia coli*	0.5	42	*Escherichia coli*	0.9
16	*Escherichia coli*	0.4	43	*Escherichia coli*	0.6
17	*Escherichia coli*	0.6	44	*Escherichia coli*	1.0
18	*Escherichia coli*	0.8	45	*Escherichia coli*	1.0
19	*Escherichia coli*	0.6	46	*Escherichia coli*	0.9
20	*Escherichia coli*	0.5	47	*Escherichia coli*	0.7
21	*Escherichia coli*	0.9	48	*Escherichia coli*	0.9
22	*Escherichia coli*	0.7	49	*Escherichia coli*	0.6
23	*Escherichia coli*	0.8	50	*Escherichia coli*	0.6
24	*Escherichia coli*	0.6	51	*Escherichia coli*	0.8
25	*Escherichia coli*	0.7	52	*Escherichia coli*	1.0
26	*Escherichia coli*	0.3	53	*Escherichia coli*	1.0
27	*Escherichia coli*	0.6	54	*Escherichia coli*	0.7
	Average				**0.7**

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DISCUSSION

This study was conducted to evaluate the prevalence of ESBL and MBL producing *E. coli* among pregnant women attending antenatal clinic at Mile 4 Hospital Abakaliki in Nigeria. Out of the 100 mid-stream urine samples collected from different apparently healthy pregnant women, the prevalence of *E. coli* was 54 %. This high prevalence of *E. coli* observed in this study agreed with the report of [20] who reported 51% prevalence of *E. coli* among their study population in Nepal. Also, [11] earlier reported *E. coli* as the predominant bacteria followed by *Staphylococcus* and *Klebsiella* species. [27], also reported *E. coli* as the most prevalent uropathogen.

The result further showed that prevalence of *E. coli* was highest (42.5%) in 3rd trimester but lowest in first trimester (25.9%). This finding negates the report of [2] who observed higher bacteria load in second trimester in their study on asymptomatic bacteriuria isolates from pregnant women in Nairobi Kenya. [5] also reported 56% prevalence of urinary pathogenic microorganisms among pregnant women with 50% of this occurring during second trimester. However, in support of our finding, Hooton *et al.* (2011) reported an important factor for the higher occurrence of microorganisms in the 3rd trimester to be ureteral dilation, presumed to occur as a result of hormonal effects as well as mechanical compression from the growing uterus. Ureteral dilation can lead to the spread of bacteria from the bladder to the kidney thereby increasing the risk of pathogenic microorganisms associated with urinary tract infection.

The result further showed that prevalence of *E. coli* was highest among pregnant women within the age range of 21-30 years and least at ages below 20 years (Fig. 2). In a similar study, Adelaide *et al.* (2017) observed that the prevalence of *E. coli* was highest among pregnant women aged between 22-31 years old. [3] reported that pregnant women between the ages of 15-32 were more prone to infection. [5] earlier reported that bacterial infection generally occurs most frequently in women between the ages of 16 and 35 years. This can be attributed to high reproductive/sexual activities among married women in this age. Similarly, based on their educational background, the incidence of *E. coli* among pregnant women was highest among those in secondary school level (33.3%) but lowest among the uneducated (18.5%). In line with this observation, [4] carried out a study in India which estimated the prevalence rate of UTI among female of reproductive age group. They reported highest UTI cases among those in secondary school (40%), in which *E. coli* was 61%. However, contrary to this finding, [4] reported highest occurrence of *E. coli* among pregnant women who ended their education at primary school level of education. [4] evaluated the prevalence of urinary tract infection in females aged 6-50 years at Kinondoni district Tanzania and concluded that the level of school education is not the problem but a general ignorance about urinary tract infections which also agreed with our findings. This implies that females should be adequately educated on urinary tract infections right from the top to the grassroot level.

The result of the antibiotic sensitivity pattern of the isolated *E. coli* showed high level of multidrug resistance. Among the 54 isolates screen for ESBL and MBL production, as high as 18(33.3%) were ESBL positive while 11(20.4%) were MBL positive. This also indicates that there is higher prevalence of ESBL positive *E. coli* than MDL *E. coli*. The observed prevalence of ESBL *E. coli* was similar to the 33.3% prevalence reported by [4] but was higher than 18.2% reported by [8] and 18.8% observed by [6] in India. Moreso, the observed level of occurrence (20.4%) of metallo-beta lactamase producing *E. coli* was higher than 13.4% reported by Mate *et al.* (2014), but much lower than the 61.5% reported by [10]. The presence of both ESBL and MBL in bacteria is known to confer multiple antibiotics resistance on microorganisms. These enzymes function by breaking down beta-lactam rings of many antibiotics thereby leading to treatment failure, hence, the observed antibiotics resistance and reduced susceptibility to some of the other antibiotics used.

The study revealed that Imipenem would be the most effective antibiotic against the isolated ESBL positive *E. coli* strains. This isolates were 100% susceptible to imipenem weakly followed by gentamycin (61.5%) and ertapenem (55.5%). The isolates were completely (100%) resistant to cefatoxime, ceftazidime and nalidixic acid. So, these antibiotics will not be drugs of choice for treating infections caused by these strains of *E. coli*. This result is in concordance with the findings of [13] who suggested imipenem and ertapenem as the drug of choice in the treatment of ESBL positive *E. coli* infection. Also, in a study by Singh *et al.* (2016), it was reported that imipenem showed the highest susceptibility value of 96.7% against ESBL positive *E. coli*. These same antibiotics were similarly found to be effective against the 11 metallo-beta lactamase producing *E. coli* isolates with percentage susceptibility of 90.5% each and closely followed by aztreonam (72.5%). The metallo-beta lactamase positive *E. coli* isolates were highly resistant to the rest of the antibiotics used with % resistance ranging from 90-100% This finding is in tandem with a report by Bora *et al.* (2014) which showed metallo-beta positive bacteria to be resistant to ceftazidime, cefoxitine aztreonam and meropenem. Contrary to this findings, [15] reported metallo-beta lactamase positive *E. coli* to have shown complete susceptibility to meropenem and ceftazidime but the isolate exhibited high resistance to both antibiotics (90.5%) in this study.

The result of the multiple antibiotics resistance index (MARI) showed 85% (46/54) of the *E. coli* isolates had MARI values ranging from 0.6 to 1.0 (Table 4). This implies that the *E. coli* isolates are highly multidrug resistant. The high MARI of the isolates may be because they were obtained from hospital attendants in line with a report by [14] that *Enterobacteriaceae* species from hospital settings are often multidrug resistant.

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Similarly, [21], and Kader and Kumar (2004) also reported in their respective studies carried out in Nigeria and Saudi Arabia, that *E. coli* isolates from urine are multidrug resistant in nature especially against antibiotics in the beta-lactam group, aminoglycosides and fluoroquinolones. [15,19,24], similarly reported high prevalence of multi-drug resistance among uropathogenes in Nigeria, Ghana and India, respectively.

CONCLUSION

This study has shown high prevalence of multi-drug resistant ESBL and MBL *E. coli* among apparently healthy pregnant women attending antenatal clinic at Mile 4 hospital in Abakaliki, Nigeria. The high prevalence of ESBL and MBL producing *E. coli* among apparently healthy women has some serious implications in the health care sector. First, it indicates high rate of spread of multidrug resistant pathogenic microorganisms in the communities. Second, the high level of these dangerous pathogens among seemingly healthy pregnant women would probably be putting unborn children and infants at risk of dangerous infections, and lastly, the situation has potential to raise the cost of treatment of infections beyond the reach of the poor as only the high class and very expensive antibiotics are effective against the pathogens. Therefore, efforts to cob the spread of these multi-drug resistant *E. coli* species and their likes, including efforts towards finding cheaper alternative but effective herbal drugs against these pathogens is highly recommended.

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