



# The association between multidrug resistance and phylogenetic group with virulence factors in Uropathogenic Escherichia coli (UPEC) isolated in pregnant women of Basra City

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## Abstract:

**Background:** UTIs are the second most prevalent pregnancy problem and may harm the mother and fetus if left untreated. Uropathogenic Escherichia coli (UPEC) is also categorized by antibiotic resistance, serogroup, and pathogenicity. This research examined the incidence of UPEC isolate phylogenetic groups, multi-drug resistance isolates, and virulence characteristics in pregnant women with UTI in Basrah city. This research included 250 urine samples from pregnant and non-pregnant women with UTIs (125 pregnant and 125 control) aged 15–45. Basrah Teaching Hospital, Sadr Teaching Hospital, and Al-Mwana Teaching Hospital provided these pregnant and non-pregnant patient samples. This trial ran from November 2023 until March 2024.

**Methods:** The isolates were diagnosed using culture medium (MacConkey Agar, Blood Agar, Eosin Methylene Blue Agar (EMB), CLED, and Hi Crome). After microscopic examination, Vitek-2 recognized all isolates. Hi, Crome Agar distinguished E. coli from other isolates.

**Results:** In 125 urine samples from pregnant women, several bacterial species were found. In pregnant women, E. coli 72 (34.7%), Klebsiella pneumoniae 22 (10.6%), Staph aureus 12 (5.7%), Staph epidermidis 5 (2.4%), and Pseudomonas 4 (1.9%) were the most common bacteria isolates. UTI bacteria were isolated, and E. coli isolates were chosen to evaluate the predominance of virulence genes (Chu A, yja A, Arp A, TspE4.C2). The investigation yielded five groups: A, B1, B2, C, and D. The most prevalent was group C, with 20 (27%), followed by B2 (18%), B1 (17.7%), D (15.2%), and A (8.3%), based on the virulence genes indicated above.

**Conclusions:** This study creates a database for UPEC dispersion, virulence factors, and genetic makeup in Basrah Province, highlighting the necessity for an epidemiological program to track its spread and genes locally. Women in eastern Basrah Province are more likely to get Escherichia coli, especially pregnant women.

**Keywords:** Escherichia coli, phylogenetic, UPEC, UTI, MDR, ESBL

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