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Epidemiological characteristics and pathogen profiles of non-*Escherichia coli* gram-negative urinary tract infections in pregnant women: insights from Makassar, Indonesia

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Abstract

Introduction: urinary tract infections (UTIs) during pregnancy pose significant health risks for both mother and fetus. While *Escherichia coli* is the most common causative

agent, non-*Escherichia coli* gram-negative bacteria also contribute to UTIs, with their specific prevalence and characteristics in pregnant women needing further elucidation, particularly in local contexts. This study aimed to identify gram-negative non-*Escherichia coli* bacteria causing UTIs in pregnant women and to determine their epidemiological characteristics in Makassar, Indonesia.

Methods: a cross-sectional study was conducted at the Clinical Microbiology Laboratory of Hasanuddin University Hospital, Makassar, from July to August 2024. The study utilized 38 non-*Escherichia coli* bacterial isolates from urine cultures of pregnant women diagnosed with UTIs at various community health centers. After re-culturing on MacConkey Agar, bacterial identification was performed using the API 20e system. Epidemiological data were collected from medical records and questionnaires.

Results: among 38 non-*Escherichia coli* isolates, *Enterobacter cloacae* was most prevalent (34.2%), followed by *Klebsiella pneumoniae* spp. *pneumoniae* (23.7%). Most isolates (76.3%) were lactose fermenters. Epidemiologically, the 25-34 age group dominated (71.0%), with the highest UTI incidence in first pregnancies (47.4%) and the second trimester (44.7%). Significantly, 97.4% of pregnant women with UTI symptoms did not seek treatment.

Conclusion: *Enterobacter cloacae* is the most common non-*Escherichia coli* gram-negative UTI bacterium in this Makassar cohort. Key epidemiological characteristics were elucidated, revealing a substantial proportion of women not seeking treatment for UTI symptoms. These findings underscore the importance of local surveillance and targeted health education interventions for pregnant women regarding UTI management.