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## Prevalence and antimicrobial susceptibility patterns of extended spectrum beta-lactamase producing Enterobacteriaceae in University of Gondar Referral Hospital environments, North West Ethiopia

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**Background & Aim:** Enterobacteriaceae is a large family of Gram-negative bacteria and a common cause of nosocomial infection. Beta-lactam antibiotics are the possible choice of drugs for infections caused by Enterobacteriaceae. But they produce extended spectrum beta-lactamases that cause high resistance to the beta-lactam antibiotics. This study aims at assessing the magnitude of extended spectrum beta-lactamase producing Enterobacteriaceae in Gondar University Referral Hospital environment.

**Method:** A cross sectional study was conducted at the University of Gondar Referral Hospital from January to June 2014. A total of 384 environmental samples were taken from inanimate objects and waste water from the sewage. The samples were cultured in to selective media called Hicrome ESBL agar base to assess ESBL production. The species was differentiated by specific colony color and again by biochemical test. Antimicrobial susceptibility tests were conducted using the disc diffusion method for beta-lactam and non-beta-lactam antimicrobials. Data analysis was carried out using SPSS version 20.

**Results:** From a total of 384 samples, 57 (14.8%) were ESBL producing Enterobacteriaceae. The most predominant ESBL producing isolates were *Klebsiella pneumoniae* 24 (42.10%) followed by *Escherichia coli* 20 (35.09%) and *Proteus mirabilis* 4 (7.01%). Most of ESBL producing isolates were from waste water 14 (24.56%), sinks 13 (22.8%) and bedside tables 13(22.8). All ESBL producing Enterobacteriaceae were found to be resistant to ceftriaxone, ceftazidime, cefpirome, cefpodoxime and amoxicillin with clavulanic acid. Resistance rate was also higher for non-beta-lactam antimicrobials like chloramphenicol 40 (70.18%), cotrimoxazole 37 (64.91%), norfloxacin 24 (42.10%), ciprofloxacin 25 (43.86%) and gentamicin 11 (19.30%).

**Conclusion:** In this study, *Klebsiella pneumoniae*, *Escherichia coli* and *Proteus mirabilis* were the dominant ESBL producing species. Therefore, this is an essential indication to health professionals and others to take an active role in infection prevention and proper antibiotic prescribing practice.

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