Title: Inappropriate dispensing of antibiotics in urban and rural pharmacies in Dhaka: A cross-sectional observation

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Abstract: The rise of antimicrobial resistance (AMR) has become a public health emergency globally, with irrational use of antibiotics being a primary driver particularly in low- and middle-income countries (LMICs) like Bangladesh, where over-the-counter antibiotic sales remain alarmingly high despite legal prohibitions.[1] This study aimed to assess the pattern of antibiotic sales and identify the economic and behavioral factors contributing to inappropriate antibiotic dispensing in both urban and rural private pharmacies of Dhaka.

From September to December 2024, an observational cross-sectional study was conducted in 246 randomly selected pharmacies across Dhaka. Data were collected on licensing status, staff qualifications, sales behaviors, types of antibiotics sold, and reasons behind irrational dispensing. Pharmacy owners and dispensers were informed in advance, but observations were carried out for all drug sales to reduce observer bias. A structured checklist and observational form were used to record variables across pharmacy type, sales pattern, and the presence of a pharmacist. Data were analyzed using SPSS v26.

Among the 246 pharmacies observed, 93.48% held a valid license, but only 7.56% had a registered pharmacist present. A substantial proportion (73.59%) was located in urban areas. Despite the legal requirement, nearly 45% of antibiotics were dispensed without prescription (self-medication), and another 19.17% were dispensed based on informal consultation with dispensers. Only 36.24% were sold with a registered physician's prescription. Self-medication was marginally more common in rural pharmacies (47.69%) than in urban ones (43.65%), a trend consistent with findings from other LMICs.[2]

The most frequently dispensed antibiotic class was penicillin (37.29%), followed by quinolones (18.38%) and macrolides (17.83%). In rural areas, penicillin sales were higher (41.54%) compared to urban pharmacies (35.76%), a pattern aligned with studies in similar settings.[3]

Inappropriate dispensing was driven by a complex interplay of socioeconomic and systemic factors. The leading reason was fear of losing customers, reported by 99.54% of rural and 74.59% of urban pharmacies. Pressure from patients (rural 77.65%, urban 65.32%), lack of adequate healthcare providers, particularly in rural areas (65.49%), and high profitability of antibiotics were other notable drivers (Table 1). Alarmingly, only 25.34% of rural and 21.02% of urban pharmacies cited insufficient knowledge as a cause, reflecting low awareness of the long-term impact of AMR.[4]

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