



Original Research

Antibiotic dispensing in Egyptian community pharmacies: An observational study

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Abstract

Background: Antibiotics are commonly dispensed medications from community pharmacies, and they are frequently prescribed for inappropriate indications. In many countries, they are easily accessible without prescriptions. The inappropriate use of antibiotics results in the emergence of resistant bacterial strains, which represents a considerable public health problem, particularly in developing countries.

Objective: This study aimed to describe the pattern of antibiotics dispensing from Egyptian community pharmacies and to collect baseline descriptive data on the antibiotics dispensed and their appropriateness.

Methods: A cross-sectional, observational study of antibiotic dispensing encounters was conducted at 36 randomly selected pharmacies in Greater Cairo, Egypt. Data were collected during one shift at each pharmacy. Structured questionnaires recording patient demographics, antibiotics dispensed and reasons for dispensing were completed for each antibiotic dispensing encounter. The data were descriptively analysed.

Results: Overall, 1158 antibiotics were dispensed during the study period with a total cost of L.E. 24,487 (approximately 3,673 \$USD). While self-medication and purchasing without medical prescriptions were common, representing around 23.3% of the antibiotics ($n = 270$), most antibiotics were prescribed by a doctor or dentist ($n = 736$, 63.6%). Pharmacist recommendations accounted for the remainder ($n = 152$, 13.1%). The main reasons for antibiotic use were respiratory tract ailments and gastroenteritis symptoms. The antibiotics most commonly dispensed were: penicillins, erythromycin, metronidazole, neomycin, clotrimoxazole and tetracyclines. Approximately 70% of the antibiotics dispensed on prescriptions were judged to be appropriate for the indications while this percentage was around 61% for antibiotics dispensed on pharmacist recommendation and patient's request.

Conclusions: The results of this study show that antibiotics are frequently dispensed from community pharmacies in Egypt without appropriate prescriptions and for inappropriate indications. These findings support the need for strict enforcement of pharmacy laws through improved inspection processes. They highlight the need for evidence-based guidelines and educational interventions to improve antibiotic prescribing and dispensing practices.

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Introduction

It is well documented that antibiotic resistance has reached an alarming level across the globe, particularly in developing countries.^{1–6} Resistance patterns that develop regionally in these countries may then spread globally. This situation has already occurred with respiratory tract pathogens that were once universally susceptible to antibiotics.⁷ The emergence of such highly resistant bacterial strains represents a considerable public health problem, as it compromises efforts to contain the spread of infectious diseases associated with increased morbidity, mortality and economic burden.⁸ Additionally, the low return on investment associated with developing new and more potent antibiotics is overly prohibitive for pharmaceutical companies to invest in developing new antibiotics.⁹ This limits the options available to treat these highly resistant strains, once they occur, particularly in resource poor settings.⁶

As emphasized by the World Health Organization (WHO), an important driving force behind the rise in antibiotic resistance is the inappropriate use of antibiotics.⁸ The emergence of a resistant population of bacteria in a patient as a result of inappropriate antibiotic use generally occurs through a process termed “selective pressure”.¹⁰ The WHO Global Strategy for Containment of Antimicrobial Resistance defines the appropriate use of antimicrobials as “the cost-effective use of antimicrobials which maximizes clinical therapeutic effect while minimizing both drug-related toxicity and the development of antimicrobial resistance”.⁸ Hence, inappropriate use encompasses (1) unnecessary use of antibiotics to treat non-responsive conditions and (2) suboptimal use of antibiotics to treat antibiotic responsive conditions, including use of overly broad agents, incorrect drug dosing or duration, and poor drug adherence.¹¹

Clearly, this is a multidimensional and worldwide problem; however, it features more strongly in the developing countries.^{1,2,4,5,12} A major reason for the problem is that in many parts of the world, including some developed countries, antibiotics are bought directly from drug outlets and pharmacies without a prescription.^{13–20} This is despite the presence of regulations that limit access to antibiotics, as reported in Caracas, Bangladesh, Spain, Greece and Syria.^{13,16–19}

Similarly, antibiotics are prescription medications in Egypt and should not be sold as over-the-counter medications; however the enforcement of this law by regulatory bodies is not very strict.^{15,20}

Prescription-only-medicine status is only strictly adhered to when dispensing controlled drugs, while antibiotics can be purchased in response to a customer request or pharmacist recommendation, despite the law prohibiting this.^{15,20} This practice results in blurring the boundaries between dispensing, in response to a prescription, and sale, based on pharmacist recommendation or patient request, of antibiotics.¹⁹

Consequently, self-medication using antibiotics is widely practiced in countries where antibiotics are easily accessible and patients even base their decisions to buy antibiotics on the advice of friends or relatives, as reported in the Philippines, India, Mexico and Brazil.¹⁴

Another major driver of the inappropriate use of antibiotics, which received considerable attention in the literature, is the inappropriate prescribing practices.²¹ Hence, interventions aiming to improve antibiotic use need to be multifaceted and address these inappropriate practices on the three fronts of prescribing, dispensing and use.

An important first step in tackling these interlinked problems is to collect baseline data on their prevalence. However, in Egypt, there is no governmental monitoring of antibiotic prescribing and dispensing by the regulatory bodies. Additionally, previous research studies focused mainly on antibiotic use in the secondary care setting and interventions to improve it.^{21–24} Studies in the community pharmacy setting, which represents the main access point to antibiotics for the public, are lacking. Only one recent conference abstract reported on a study that examined antibiotic dispensing in an Egyptian city (Alexandria).¹⁵ Hence, the main aim of this pilot study was to collect baseline descriptive data on the proportion of antibiotics dispensed through (1) prescriptions (2) pharmacist recommendation, and (3) patient’s request, and on the appropriateness of these antibiotics in order to inform the design of future interventional research to improve antibiotic prescribing and dispensing practices. The study also aimed to assess the appropriateness of the dispensed antibiotics to the reported indications.

Methods

This was a cross-sectional observational study. It was carried out in 36 community pharmacies, in Greater Cairo during a period of 3 months, from the beginning of September until the end of November 2011. The study was approved by the

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