

**ANTIBIOTIC RESISTANCE (ABR) AND COMMUNITY PHARMACIST: A REVIEW**

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**ABSTRACT**

Antibiotic resistance (ABR) is a major growing global issue. The WHO report points out high proportions of resistance to common bacterial infections in all regions of the world. Common factors associated with resistance include non-adherence to the prescribed course, improper way of disposing the antibiotics (ABs), misuse and abuse, overuse, and underuse of antibiotics. Another complimenting factor for the increase in the antibiotic resistance is self-medication with antibiotics. This all has caused many infectious diseases to be untreatable. Community pharmacists act as primary source of healthcare information providers to whom the patient directly seeks medical advices. Thus, they can play a central role in ensuring the safer use of antibiotics in the community.

**Keywords:** Antibiotics, Antibiotic resistance, Community pharmacists.

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**INTRODUCTION**

Community pharmacies are privately owned pharmacies which are managed by licensed pharmacists to dispense the prescribed medicine [1]. Community pharmacies are integral to healthcare systems playing significant roles in medicine provision, primary prevention, patient education, and lifestyle advices [2]. Certain infectious diseases are self-limiting and thus there is no use for an antibiotic treatment [3]. Dispensing antibiotics without a prescription is a very common practice in community pharmacies [4]. Many community pharmacists ignore the legal guidelines for antibiotics dispensing by making them available in the counter without a prescription. A lack of proper knowledge on the use and disposal of antibiotics is a major threat in developing Antibiotic resistance (ABR). This reduces the clinical efficacy causing many infectious diseases to become untreatable with antibiotics [5]. According to the World Health Organization (WHO) report on ABR, only 33 out of 133 countries surveyed had a national action plan to combat ABR [6,7]. ABR alone has been approximated to cause around ten million deaths worldwide [8]. ABR is a serious threat to global public health security making infections harder to treat and increasing the risk of morbidity, mortality, and economic burden [9]. Because patients directly seek their guidance, community pharmacists play a critical role in maintaining the safe use of antibiotics in the community [10].

**ANTIBIOTICS AND ANTIBIOTIC RESISTANCE (ABR)**

Antibiotics are prescription drugs to fight bacterial infections [11]. An antibiotic kills the bacteria quickly by physical disruption of cell membranes [12]. Proper disease diagnosis and the rational selection of antibiotics are crucial [3]. When symptoms have only been present for two days, or less treatment is generally not recommended as certain bacterial infections are self-limiting [13]. Antibiotic use has increased by 36% globally between 2000 and 2010 in countries including Brazil, Russia, India, China, and South Africa [14,15]. According to a recent WHO multi-country survey, 93% of people self-medicate with antibiotics obtained from a community pharmacy [16]. Self-medication with antibiotics is frequent in most countries, and it is one of the factors contributing to the rise in antibiotic resistance (ABR) [17-19]. Antibiotic-resistant bacteria are highly prevalent in community and hospitals [20,21]. The other contributing factors to this are lack of proper knowledge on the use, disposal, and non-adherence to antibiotics [22]. ABR is a critical issue of concern both in developing and developed countries, making it a global issue [23-27]. A single bacterium resistant to more

than one antibiotic is known as Multidrug-resistant (MDR). Multidrug-resistant patterns in bacteria have resulted in difficult to treat or untreatable [28]. In Southern Asia, multidrug resistance is projected to cause 96,000 deaths [29]. All this increases treatment complexity, healthcare costs, length of hospital stay, morbidity and mortality, side effects [1,30-33].

**COMMUNITY PHARMACY AND PHARMACIST**

A community pharmacy is a professional word that is also known as a medical store, a retail pharmacy, or a medical shop [3,34]. A community pharmacy is a medical establishment tasked with supplying and promoting the best pharmaceuticals, pharmacy services, and goods to the general people [35]. It should aim the welfare of the patient as its prime concern, rather than aiming at maximum sales and profit [6]. Community pharmacists have a central role in providing healthcare information and to supervise the dispensing of antibiotics with prescriptions to ensure rational use [6,36]. Advise the patients about correct application of ABs, the importance of intake regularity, interactions, possible adverse events, importance and consequences of AB misuse, and the basics of resistance [2,37,38]. Barriers mentioned included a lack of suitable counseling space, a lack of demand, and the expectation of a negative response from clients [39]. The rates of antibiotic resistance can be much reduced by community pharmacist by avoiding the illegal dispensing of antibiotics [40].

**ANTIBIOTICS DISPENSING BEHAVIOUR**

The sale of antibiotics without medical prescription has been observed in many countries [41-43]. Globally 62% of antibiotics dispensed in community pharmacy do not have a prescription [9,44,45]. The increase in antibiotic resistance has been frequently linked to unrestrained antibiotic dispensing [46]. The major factors contributing to the irrational use of antibiotics and increasing the rate of antimicrobial resistance is dispensing them without a proper prescription [1,47-49]. To dispense of antibiotics at community pharmacies may be influenced by pharmacists' attitudes, lack of knowledge, and awareness about ABR [47,50,51]. The pharmacist dispenses antibiotics to patient on a direct request for minor infections as they consider antibiotics an effective agent for infection [5,30]. Dispensing antibiotics for viral infection without a proper prescription is also not less common [52]. Antibiotics are dispensed without a prescription, which is one of the key reasons contributing to irrational antibiotic usage and resistance [1].

Antibiotic sales in the outpatient setting account for almost two-thirds of global antibiotic sales [13]. Patients may be at danger of self-medicating with antibiotics due to pharmacy employee behavior [53]. Saudi Arabia, China, Nigeria, Spain, and several European countries demonstrated the common practice of dispensing antibiotics without prescription [31,54-56].

#### ANTIBIOTICS KNOWLEDGE AND FACTORS CONTRIBUTING FOR DISPENSING WITHOUT PRESCRIPTION

Community pharmacists knowledge about antibiotics and resistance have a significant impact on their dispensing practice [57-59]. Those with three to four years of experience knew more about how to use medications correctly than those with nine to ten years of experience [4,41,42]. ABR could be a major factor affecting the illegal and inappropriate supply of antibiotics to patients with mild diseases at community pharmacies because of a lack of information about antibiotics [30]. As a result, continuing education at regular intervals is essential to keep pharmacists up to date and improve their knowledge of antibiotic use. Creating awareness about antibiotics and ABR in society will be another fine step in promoting the rational use of antibiotics [6]. Dispensing of antibiotics without prescription is releasing a wrong message to patients and encouraging them to continue obtaining antibiotics without a proper valid prescription [1]. Many other factors encourage the pharmacists to ignore the rules and regulations for antibiotics dispensing without prescription and are: On patient's direct request, For minor infections, lack of time for clinical visits, Previous treatment experience, having antibiotics at home regular customer, Promotions from pharmaceutical companies, poor public healthcare services, saving cost, familiarity with such antibiotics, doctor's clinic is not available, cost of doctor's consultation, poverty, incorrect self-diagnosis [1,5,60,61]. According to the findings of the majority of studies, pharmacists have a good attitude toward antimicrobial stewardship (AMS), with a high percentage of agreement that maintaining sensible antibiotic usage is important [8,62,63].

#### CONCLUSION

Community pharmacists knowledge and skills in antibiotic distribution are critical for ensuring enough antibiotic availability in the community. Important to abide strictly to the government-enforced law regarding antibiotics supply. Pharmacists need to be critically aware regarding antibiotic resistance. Educational interventions and adequate training about the rational use of antibiotics are needed to improve pharmacists' knowledge and understanding about antibiotics. There is a need for the implementation of antimicrobial stewardship interventions to improve the antibiotic dispensing practices among community pharmacists. Patients should be counseled while taking antibiotics to improve their compliance.

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#### AUTHOR CONTRIBUTIONS

All authors have contributed equally.

#### CONFLICT OF INTERESTS

Author declares no conflict of interests.

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