

## Dispensing of Common Antibiotics at Various Pharmacies in Karachi, Pakistan

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### Abstract

The irrational use of antibiotics in various diseases can be detrimental to health and can promote the resistance too. The patients should be counseled about the use of antibiotic by healthcare professionals, particularly by the pharmacists, at the time of dispensing. This study was conducted to identify the availability of pharmacists at various pharmacies in Karachi, Pakistan and patient counseling during dispensing. The questionnaires were distributed among n=71 pharmacies from January 2016 to December 2016 which were situated in various districts of Karachi. The completed questionnaires were collected from the pharmacies, which were coded and then analyzed using SPSS version 23. The results have shown that the pharmacists were available only in n=40 (56.34%) pharmacies situated in the districts of Karachi, (i.e. South, East, West, Central and Malir) and they

were also engaged in patient counseling. Most of the prescriptions were dispensed from district central (56.3%) and then by district east (32.4%). This may owe to the larger number of people residing there as compared to other districts. Prescriptions for some common antibiotics (i.e. Amoxicillin, Ceftriaxone and Moxifloxacin) were evaluated and it was observed that n=1500 prescriptions of Amoxicillin, n=200 of Ceftriaxone and n=525 of Moxifloxacin on an average were dispensed by the pharmacies on monthly basis. In general, out of about n=2961 prescriptions, approximately n=1224 were dispensed as self-medication from these pharmacies. Pharmacy professionals should be available at all the pharmacies of Karachi who can dispense the drugs safely and can also counsel the patients about their medicines; self-medication should be discouraged at all levels as such practices can lead to adverse health consequences.

## Introduction

Dispensing of medicines is an important part of pharmacy practice, and its drill has grown due to increasing responsibilities towards patients [1]. The pharmacist is central to the pharmacotherapeutic process and dispenses drugs correctly and safely [2,3]. Pharmacies are considered as the sites where purchase of medicines is done along with exchange of information and advice on common health problems with their treatment [4]. Antibiotics are widely used for the treatment of infections which not only cure the infections but also promote the development of resistance against the use of antibiotics [5]. Irrational use of antibiotics has been reported worldwide [6,7]. Also, it has been reported that in some of the developed countries the antibiotics are being purchased as an over the counter drug [8-11]. Unfortunately, almost any drug can be purchased over the counter in less developed countries [4]. There has been an increase in the prevalence of antimicrobial resistance due to non-judicious use of antibiotics [12,13].

Usually people with complaint of disease seek for over the counter (OTC) medicines either for self-medication or for pharmacists' advice in a community pharmacy. Self-medication can potentially contribute to antibiotic resistance in humans. It is necessary to emphasize about its adverse consequences to the community [14]. The increasing trend towards self-medication highlights the need for patient's counselling for proper drug use [1]. A study carried out on the children in Saudi Arabia revealed that antibiotics were being prescribed by the physicians excessively and the patients themselves were also taking the antibiotics without the prescription from the medical shops [15]. In Pakistan, a research reported that 13.45% of the total prescribed medicines comprised of antimicrobial drugs, while there were 45.19% of the prescriptions in which there was at least one antibiotic prescribed to the patients [16].

## Method

The study was carried out by distributing the questionnaires in the pharmacies from January 2016 to December 2016. (n=71). The questionnaires were given to different pharmacies located in various districts of Karachi, i.e. South, East, West, Central and Malir. Pharmacy supervisors were asked to provide the required information, after briefing them about the purpose of study. The questionnaire comprised of information about the number of qualified persons working in each pharmacy, number of antibiotic prescriptions received for dispensing, number of patients asking for antibiotics for self-medication, the number of prescriptions

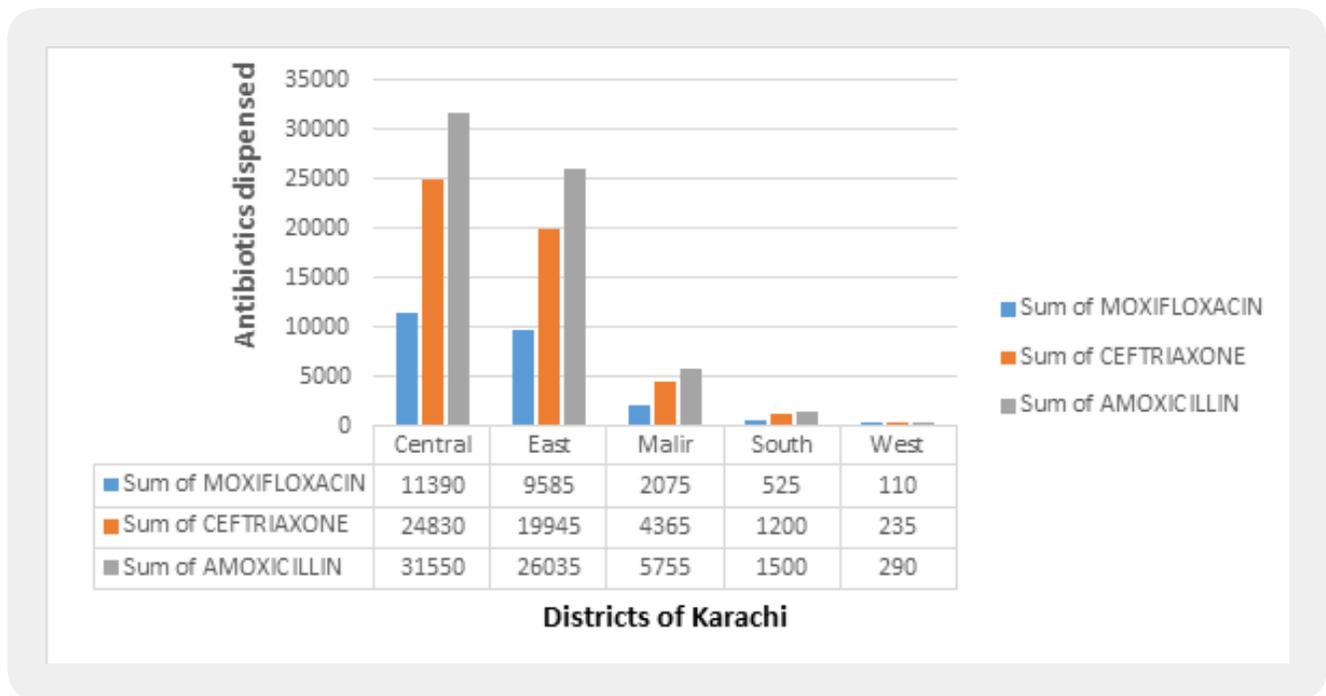
received particularly for Amoxicillin, Ceftriaxone and Moxifloxacin per month and patient counseling by the pharmacists for proper drug use. For the statistical analysis, the responses obtained in the completed questionnaires from the pharmacies were coded and then analyzed via SPSS (Statistical Package for Social Sciences), version 23.

## Results

Majority responses were received by the pharmacies of central district (56.3%) and district east (32.4%) which could owe to the large number of population residing there. The table displays information regarding establishment of pharmacies, number of patients visiting them per month and dispensing of antibiotics. The figure elaborates dispensing of common antibiotics from the pharmacies in a month, district-wise in Karachi. It was found that pharmacists were working only in n=40 (56.34%) pharmacies out of n=71, who were also doing patient counseling for proper drug use.

*Table: Information about the pharmacies under study*

Questions	Mean	Minimum	Maximum
Since how long the pharmacy is established (in years)?	7.7	3.0	27.0
Number of patients visiting pharmacies per month	5755	575	20000
Antibiotics bought on prescription per month	2961	300	10500
Antibiotics bought without prescription per month	1224	120	4200
Number of prescriptions dispensed for Amoxicillin per month	917	90	3300
Number of prescriptions dispensed for Ceftriaxone per month	712	70	2500
Number of prescriptions dispensed for Moxifloxacin per month	334	25	1200



**Figure:** Antibiotics (*Amoxicillin, Ceftriaxone & Moxifloxacin*) dispensed from various pharmacies in Karachi in a month

## Discussion

The literature from various studies suggests that among variety of different medicinal agents, antibiotics are frequently purchased worldwide. Although they are particularly very useful for the infectious diseases but their increased use has led to development of antibiotic resistance [17-19]. The data obtained in this study from pharmacies located in various regions of Karachi indicate frequent dispensing of antibiotics per month (Figure & Table). This is in line with a study that reported antibiotics as the frequently sold drugs to treat infections in the developing countries of the world [18]. Self-medication was also being found practiced by the residents of Karachi (Table). It correlates with the work of Högberg *et al.* (2014) [20] and Morgan *et al.* (2011) [21] which stated that self-medication is a frequent practice of people in major different regions of the world and around 50% of the antibiotics which are used by the people are purchased without a prescription.

The figure shows that the total amount of Amoxicillin dispensed in various districts of Karachi is highest in contrast with Ceftriaxone and Moxifloxacin. This data is comparable with the study conducted by de Jong *et al.* (2008) [22] which identified Amoxicillin as the most prescribed antibiotic among different types of antibiotics included in the study. Another study concluded Cephalosporin (81.50%) as the most frequently prescribed class of antibiotics [23].

The table indicates the purchase of antibiotics without prescription from the pharmacies which has been reported by various studies [8-11]. The non-availability of pharmacists in all the pharmacies of Karachi is reported in this study though the pharmacists are an integral part of the pharmacotherapeutic process [2,3]. People seek for OTC drugs for self-medication or upon pharmacists' advice for their ailments. The irrational use of antibiotics can lead to an increase in the prevalence of antimicrobial resistance [12,13]. It is necessary to accentuate the adverse consequences of self-medication to the community [14] and this can be done by the pharmacists at various pharmacies where purchase of medicines can be done along with exchange of information and advice to consumers on their health problems and treatment [4].

## Conclusion

The placement of pharmacy professionals in all the pharmacies of Karachi is necessary who can counsel the patients about their medicines and discourage self-medication practices, which may aid in lowering the levels of antibiotic resistance in the communities.

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