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Research Article

**FREQUENCY OF OUTPATIENT ANTIBIOTIC PRESCRIPTION
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Abstract:

Introduction: Antibiotics are medications save lives, but these medications are losing their effectiveness due to the development of bacterial resistance. Up to 50 % of antibiotic use is unnecessary or inappropriate. This study aimed to describe the frequency of antibiotics dispensing to explore the need to target antibiotic stewardship efforts to providers and patients in the outpatient settings.

Methodology: We randomly collected prescriptions from different outpatient pharmacies in Riyadh city to demonstrate the number of prescribed antibiotics and the number of the prescribed medications in general

Results and Discussion: The total number of prescriptions is 223, more than half of these prescription (63 %) contain at least 1 antibiotic. The majority of the antibiotics prescribed are solid dosage form and used orally. The most dispensed antibiotic class is penicillin.

Conclusion: The antibiotics prescriptions and dispensing are increasing continuously; in many cases their use is unnecessary or inappropriate. there is a need to encourage the smart use of antibiotics, to encourage the application of antimicrobial stewardship programs, and to improve the knowledge, attitude and the practice of antibiotic use.

Key Words: Antibiotic, Prescriptions, Outpatient, Pharmacy.

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INTRODUCTION:

Antibiotics are medications that save lives, but as other drugs can lead to adverse effects. In addition, these medications are losing their effectiveness due to the development of bacterial resistance. However, its inappropriate use and its over-prescription result in antimicrobial resistance. The antibiotic resistance is a worldwide phenomenon and a global public health crisis. Thus, these inappropriate use of antibiotics in the human, animal, food, and agricultural arenas have contributed to the current dilemma (1).

Moreover, Infectious Diseases Society of America reported that up to 50 % of antibiotic use is unnecessary or inappropriate (2). Likewise, CDC reported that from the total antibiotic prescriptions annually in the United States' emergency departments and physicians' offices there are at least 47 million prescriptions are dispensed inappropriately and for these infections the antibiotic is not recommended, which makes the appropriate antibiotic prescribing is a national priority (3, 4). Additionally, the use of antibiotics in China didn't meet the national requirements in some areas (5). Furthermore, the responsibility of inappropriate use of antibiotics not only on the patients, but also on physicians, pharmacists, dentists, nurses and on other health care professionals. One study reported that midlevel providers and dentists prescribe a higher proportion of antibiotics than other doctors. (6). In Australia, the vast majority of antibiotics are prescribed by general practitioners (7). Therefore, it is necessary to promote the rational use of antibiotics.

Outpatient pharmacies also dispensed antibiotics frequently. In the United States during 2015, outpatient pharmacies dispense approximately 269 million antibiotic prescriptions, At least 30 percent of these antibiotic prescriptions were unnecessary (8). Moreover, antibiotics are commonly dispensed from community pharmacies without prescriptions, and they are frequently prescribed for inappropriate indications. As in many countries, they are easily accessible without prescriptions (9). Farah et al demonstrated that dispensing antibiotics without medical prescription in Beirut' community pharmacies is a common practice (10). Also, Kotwani A et al reported that inappropriate antibiotic dispensing and use are usually caused due to commercial interests and lack of knowledge about the rational use of antibiotics. So, there is an urgent need for

improving the awareness of antibiotics prescribing, dispensing and use (11). As, improving our antibiotic use is critical to the safety of our patients and the future of medicine. Where, the improving of antibiotics usage can enhance patient outcomes, save money, reduce microbial' resistance, and help to prevent negative consequences such as Clostridium difficile infection. Additionally, it is important to conduct a well-organized, planned, and structured educational program to upgrade the appropriate use of antibiotics. Besides, there is a potential need for antimicrobial stewardship (12, 13, 14)

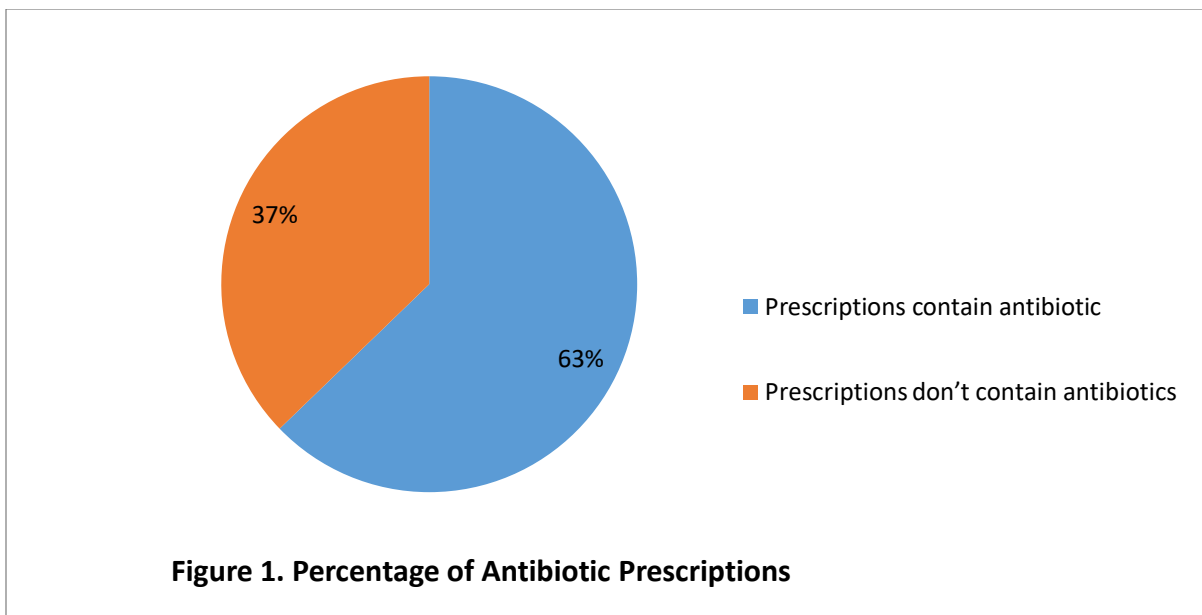
Antibiotics were prescribed commonly either with prescription or without prescription. There are many studies about the dispensing of antibiotics with prescription. This study aimed to describe the frequency of antibiotics dispensing, the most dispensed antibiotics in Riyadh city community pharmacies to explore the need to target antibiotic stewardship efforts to providers and patients in the outpatient settings.

METHODOLOGY:

This was a cross-sectional, observational study conducted to analyze the prescriptions in outpatient pharmacies in Riyadh city. Permission was taken from Institutional Ethical Committee in the Ministry of Health before starting the study. Prescriptions were collected from community pharmacies or from outpatient pharmacies in hospitals. The prescriptions which the patients had presented at the pharmacy after consultation with the doctors were photocopied. We analyzed these randomly collected prescriptions to demonstrate the number of the prescribed medications and the number of prescribed antibiotics. The required data include the total number of drug prescribed, the number of antibiotics prescribed, the number of prescriptions that contain at least 1 antibiotic, the dosage forms of the prescribed antibiotics and the most dispensed antibiotic classes. Excel was used to analyze the data and to prepare tables and figures.

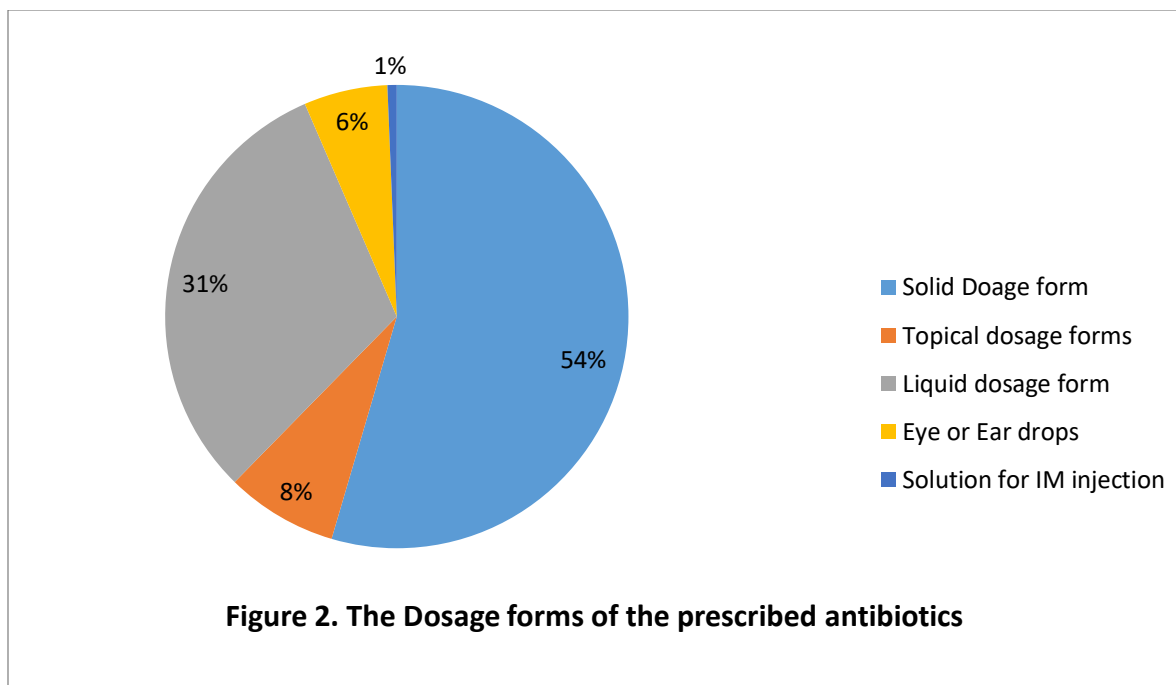
RESULTS AND DISCUSSION:

The total number of prescriptions is 223. The total number of medications in the prescriptions is 536 medications. The total number of antibiotics prescribed is 154 medications. The majority of prescriptions contain more than one drug; 54 prescriptions contain only one medication. Figure 1 represents the percentage of antibiotic prescriptions.



There are 140 prescriptions contain at least 1 antibiotic, 14 prescriptions contain more than one antibiotic. Approximately 63 % of the prescriptions contain an antibiotic. This results demonstrate the high rate of antibiotic dispensing; similar results were find also in previous study (15,)

The majority of antibiotics were given Orally either as a solid or liquid dosage forms (85 % of the prescribed antibiotics). Out of the 154 antibiotics, 84 antibiotics were solid dosage forms (54 %); this means that the majority of the patients weren't pediatrics. Figure 2 represents the dosage forms of the prescribed antibiotics.



The most dispensed antibiotics were Penicillin antibiotics (35.71%), Cephalosporin antibiotics (20.12%), Quinolones (9.10%) and Macrolides (5.84 %). Table 1 shows the most dispensed antibiotics.

Table 1. The most dispensed antibiotics	
Antibiotic	# Of Antibiotic Prescribed
Penicillins	55
Cephalosporins	31
Quinolones	14
Macrolides	9
Aminoglycosides	7
Tetracyclines	3
Others	35

Penicillin antibiotics were the most commonly prescribed antibiotic class, similar results also found in other studies (16, 17). Additionally, Cephalosporins and Quinolones were also prescribed frequently. Additionally, similar results were reported by Haddadin, R et al (2019) that beta lactam antibiotics were the most commonly dispensed Penicillin and cephalosporin (first to third generations) were the most common antibiotics dispensed by prescription (18).

These results demonstrate the high percentage of prescribing antibiotics that in addition to the high percentage of antibiotic dispensing without prescription and in addition to the self-medications of antibiotics can lead to the development of superbugs, increase the resistance of bacteria to antibiotics and decrease the efficacy of antibiotics.

Our results reported that the majority of community pharmacies prescriptions contain antibiotic that were usually dispensed inappropriately because many infections are caused by viruses and don't need antibiotic additionally many bacterial infections aren't severe and don't need antibiotic. Haddadin, R et al (2019) reported similar findings and showed that a considerable proportion of prescribed antibiotics were inappropriate in the community pharmacies in Jordan. (18) Ab Rahman, N et al (2016) study provided evidence of excessive and inappropriate antibiotic prescribing for self-limiting conditions in primary care clinics in Malaysia (19). Additionally, previous studies stated that Total inappropriate antibiotic use, either the unnecessary use and the inappropriate selection, duration and dosing, may compose about 50% of all outpatient antibiotic use (20,21,22)

CONCLUSION:

The Antibiotics prescriptions and dispensing are increasing continuously, in many cases their use is unnecessary or inappropriate and results in antimicrobial resistance. It is important to decrease the inappropriate and unnecessary use of antibiotics; it is important also to save the antibiotics to the next

generations. The result of this study and the result of previous studies showed that there is a need to a cooperative work between individuals, institutions and organizations to encourage the smart use of antibiotics and to encourage the application of antimicrobial stewardship programs. It is important also to improve the knowledge, attitude, behavior and the practice of antibiotic use of the health care professional and the public.

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