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Research Article

Prescribing practices of antibiotics in outpatient setting of a tertiary care hospital in Karachi, Pakistan: An observational study

Syed Imran Ali, *Atta Abbas, Sidra Tanwir, Farrukh Rafiq Ahmed, Arif Sabah, Erum Ejaz, Ayesha Rafi, Aisha Yousuf, Mehreen Qadri, Summaiya Wasim and Erum Fatima Jaffery.

Faculty of Pharmacy, Ziauddin University, Karachi, Sindh, Pakistan.

***Corresponding author: Atta Abbas Email: bg33bd@student.sunderland.ac.uk**

ABSTRACT

Antibiotic resistance is a form of drug resistance whereby certain sub-populations of a microorganism, usually a bacterial species, are able to survive after exposure to one or more antibiotics; pathogens resistant to multiple antibiotics are considered multidrug resistant (MDR) and the issue is the subject of ongoing investigation these days. The present study observed the rationality of antibiotics prescribed in an outpatient setting in a tertiary care hospital. A prospective cohort study was conducted for 2 months on the patients who were prescribed antibiotics in a tertiary care hospital in outpatient setting. The prescriptions of patients were evaluated with respect to the medical condition of the patient. A total of 500 prescriptions were evaluated for rationality out of which 240 prescriptions (48%) were rational and 260 prescriptions (52%) were found to be irrational. The misuse of antibiotics continues to haunt the health care system of Pakistan and pose a threat of pandemic of bacterial resistance due to irrational use. Interventions by clinical pharmacists in the given situation are the need of the hour.

Keywords: Prescribing; Antibiotics; Outpatient; Tertiary Care; Karachi; Pakistan.

INTRODUCTION

Antibiotic resistance is a form of drug resistance whereby certain sub-populations of a microorganism, usually a bacterial species, are able to survive after exposure to one or more antibiotics; pathogens resistant to multiple antibiotics are considered multidrug resistant (MDR). Microbes, rather than people, develop resistance to antibiotics[1]. Awareness of the prevalence of antimicrobial resistance is growing among the medical community and the general public, and the impact of antimicrobial resistance on clinical and economic outcomes is the subject of ongoing investigation[2], since despite the increase in resistance to present drugs, there is decline in the new approved drugs. The antibiotic resistance is therefore posing a serious threat to the medical community at a large.

Although there were low levels of preexisting antibiotic-resistant bacteria before the widespread use of antibiotics[3], evolutionary pressure from their use has played a role in the development of multidrug-resistant varieties and the spread of resistance between bacterial species[4]. One of the major causes of the amplification of resistance of antibiotics is the excessive and misuse of the antibiotics. Unsound practices in the pharmaceutical manufacturing industry can also contribute towards the likelihood of creating antibiotic-resistant strains[5]. Also the natural occurrence of antibiotic resistance is also a common phenomenon. Genes may be transferred from non-disease-causing bacteria to those that do cause disease, leading to clinically significant antibiotic resistance [6]. Antibiotic resistance can be a result of horizontal gene transfer[7].

The augmentation of antibiotic resistance is a multidimensional issue as it is in turn increasing the mortality and morbidity rates. It is also raising the cost of health care services for the population. Hence deterrence of the resistance and prevention of propagation of resistant organisms will not only reduce the adverse effects but will also help to reduce the health costs. The effectiveness of antimicrobial control as a means to prevent the emergence of resistance has been reviewed. The results of available studies are suggestive, but not conclusive[8].

Appropriate antimicrobial stewardship that includes optimal selection, dose and duration of treatment, as well as control of antibiotic use, will prevent or slow the emergence of resistance among micro organisms[9]. Hence it is essential to apply strategies and guidelines in order to avoid the emergence and extending of resistance of antibiotics. The present study observed the rationality of antibiotics prescribed in an outpatient setting in a tertiary care hospital.

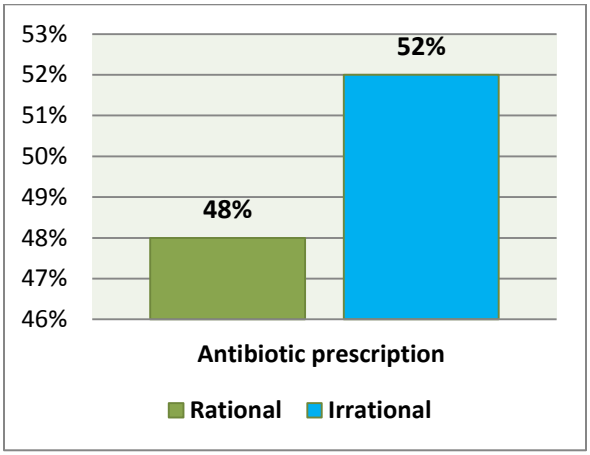
METHODS

A prospective cohort study was conducted for 2 months on the patients who were prescribed antibiotics in a tertiary care hospital in outpatient setting. The prescriptions of patients were evaluated with respect to the medical condition of the patient. The inclusion exclusion criteria were set as all patients visiting outpatient settings and being prescribed antibiotics. All other patients were excluded. The study was ethically approved by the institution and a verbal consent was obtained from patients prior to recording their medical information. The data was analyzed and expressed as percentage (%).

RESULTS

A total of 500 prescriptions were evaluated in 2 months and the study found out that 240 prescriptions (N = 240, 48%) were rational and the rest 260 prescriptions (N = 260, 52%) did not justify their call. It was also observed that out of the total 52% of irrational antibiotic prescriptions (N = 260), assuming it as a whole (100%) 60 prescriptions (N = 60, 23%) contained antibiotics which were prescribed without advising a culture sensitivity test and the rest were not rational with respect to the therapy (N = 200, 77%). The results are represented in graph 1.

Graph 1. Graphical distribution of antibiotic prescribing practices



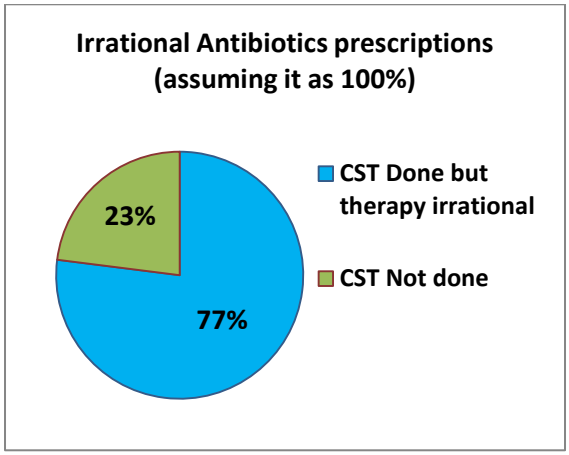


Table 1.Results of the study

S. No	Attributes	Sample number (N)	Percentage (%)
1	**Antibiotic prescriptions**		
	Rational Prescribing	240	48%
	Irrational Prescribing	260	52%
	Total	**500**	**100%**
2	**Attributes of irrational prescriptions**		
	CST Done but therapy not justified	60	23%
	CST Not done	200	77%
	Total	**260**	**100%**

DISCUSSION

Antibiotic misuse is a common but dangerous practice usually seen in developing countries and same goes with Pakistan.[10] The study was aimed at finding the irrational use of antibiotics prevailing in a tertiary care hospital. The findings were in concordance with the situation prevailing in the regional countries[11] and the developing countries of the world in general.[10] The study reported almost half of patients are prescribed an antibiotic irrationally and most of them are not subjected to a culture sensitivity test CST. This pose a risk of bacterial resistance and consequently further complications associated with the said practice. A possible explanation to this practice is the personal experience of physicians and it is observed that the physicians are normally seen banking upon their past experience and using a trial and hit approach rather than a clinical approach. The issue of culture sensitivity test CST is somewhat related to time constraints and economic issues. Pakistan is a country where a patient has to pay a direct medical cost for their treatment and hence the culture sensitivity test is not on the priority list when it comes to financing the treatment. Nevertheless, a clinical pharmacist specialized in pharmacotherapy and pharmacoeconomics can help in the given situation.

The study also highlights the need of pharmacovigilance and drug monitoring activities and demands the consequences of such practices to be investigated.

CONCLUSION

The misuse of antibiotics continues to haunt the health care system of Pakistan and pose a threat of pandemic of bacterial resistance due to irrational use. Interventions by clinical pharmacists in the given situation are the need of the hour.

LIMITATION

This study was limited to a tertiary care hospital and was carried out for duration of 2 months. Most of the patients did not consent leaving behind a small sample size. The authors express these factors as limitations in the study. Nevertheless, it can be termed as an observational study and further digging is recommended in this regard.

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DISCLOSURE OF INTERESTS

The authors declare no conflict of interests exists.

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