

Original Article

Antibiotic Prescribing Patterns in Outpatient and Inpatient Settings of a Tertiary Care Hospital in Dhaka, Bangladesh

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Background: The main objective was to study the prescribing pattern of antibiotic in a tertiary care hospital to assess the frequency and prescribing practice of antibiotics. In order to improve the prescription quality and promoting rational prescription pattern, there is an obligatory need to investigate the factors that affect doctors' prescription patterns.

Materials and Methods: This was a descriptive cross sectional study in a tertiary medical college hospital during the period of January 2024 to June 2024 which was conducted on 300 prescriptions collected from different outpatient and inpatient department. Data were collected from the prescriptions and subjected to analyze by performing descriptive statistics.

Results: In the present study, the prescription was assessed and found that the maximum number of patients belonged to the age group of 21-30 years, and the proportion of male patients were more compared to the female patients. Also observed that the frequency of antibiotics were 1, 2, and 3 or > 3 prescribed to 55 %, 26 %, and 19 % respectively. Among the all group of antibiotics cephalosporins was found to be prescribed to the largest number (36.47 %) of patients, followed by Antifungals (16.36%), Quinolones (10.57 %), Antiamoebics (10.2 9%), Penicillin (9.76 %), Macrolides (8.31%) and others were (8.24%). Among the antibiotics cefixime, ciprofloxacin, itraconazole, amoxicillin, metronidazole and azithromycin were most chosen drugs. Percentages (%) of antibiotic prescribed to male were much higher than female patient's.

Conclusion: This study revealed that percentage of antibiotic was high and most of the antibiotic was given without culture and sensitivity.

Key words: Antibiotic, Frequency, Rational, Prescription.

Introduction

Sir Alexander Fleming's discovery of penicillin in 1928 marked the start of the antibiotic revolution, which fundamentally altered the direction of modern medicine.¹ Antibiotics have successfully increased lifespan of patients everywhere. In hospitals around the world, antibiotics are currently the most frequently prescribed medications.² The widespread use of antibiotics is seen in hospitals has enhanced the quality of care. However, using antibiotics excessively or inappropriately results in greater drug resistance.³ So the rational use of antibiotics is a serious challenge and become a major health need to the health care professionals against development of resistance.⁴

Some factors that contribute to the development of antibiotic resistance are antibiotics over prescribing even for viral infections, incomplete duration of antibiotics, inadequate patient counseling, and over the-counter availability of antibiotics.⁵ Sometimes doctors claimed to prescribe antibiotic as per patient's demand.⁶ In Bangladesh, 55.57 % of the doctors prescribe antibiotics for suspected infections while only 33.46 % do so for confirmed cases. Moreover, 37.31 % of doctors prescribe antibiotics for pleasing the patients whereas 62.69% denied such undue influence. Doctors occasionally receive feedback from

patients on completion of course of antibiotic therapies.⁷ The study of prescribing patterns helps to monitor, assess and improve practitioner's habits to ensure effective patient care.⁸

The knowledge about antibiotic utilization patterns is essential for an organized approach to problems that arise from multiple antibiotic usages. It is extremely important that institutions and hospitals should have an antibiotic policy so that the best choices are made by individual prescribers.⁹ Disposition of evidence based care on regulated antibiotic prescribing can be acquired through periodic prescription audit.¹⁰ Monitoring antibiotic prescriptions can provide feedback about prescription patterns to the physicians.¹¹

By considering all the facts described above, this study was aimed to describe the current pattern of antibiotic use in outpatient and inpatient departments in a Tertiary Medical College Hospital in Dhaka, Bangladesh.

Materials and Methods

Study was conducted at MH Samorita Hospital and Medical College, a Tertiary Medical College Hospital in Dhaka, Bangladesh after taking proper approval from hospital administration. This was an observational study of antibiotic prescribing patterns conducted over 6 months (from January 2024 to June 2024). In this study, enrolled 300 patients who were prescribed with antibiotics from both outpatient and inpatient department. Data were collected from the patient's chart and subjected to analyze by performing descriptive statistics using the Microsoft Excel Software.

Results

In this study, a total of 300 prescriptions were analyzed from the period of January 2024 to June 2024.

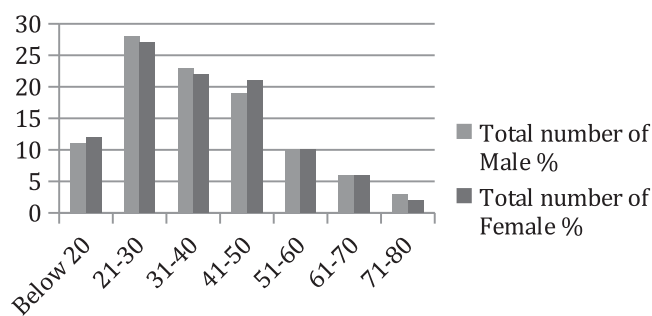


Figure 1. Patient's demographic details

Figure 1 showed the details of patient's demographic. A maximum number of patients belonged to the age group of 21-30 years. The proportion of male patients were more compared to female patients.

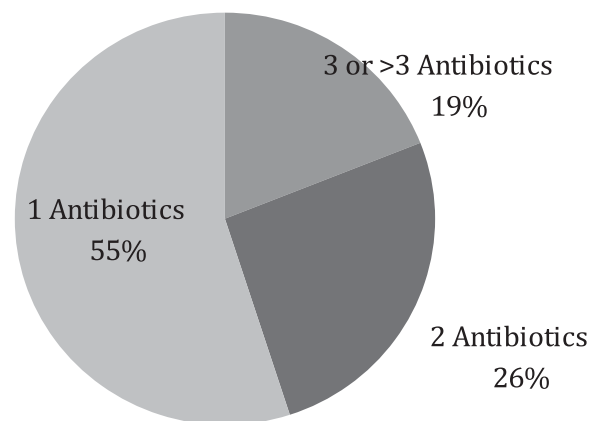


Figure 2. Number of antibiotics per prescription in %

It was observed that 1, 2, and 3 or > 3 Antibiotics were prescribed to 55%, 26% and 19% respectively shown in figure 2.

Table I: Usage of drugs in each antibiotics group in%

Antimicrobial class of drugs and Percentage (%)	Drug	Prescription %
Penicillins (9.76)	Amoxicillin	6.12
	Ampicillin	2.57
	Penicillin-V	1.07
Cephalosporins (36.47)	Cefixime	15.19
	Cefuroxime	8.28
	Cefotaxime	4.16
	Ceftriaxone	6.40
	Cefepime	2.44
Quinolones (10.57)	Ciprofloxacin	7.44
	Levofloxacin	3.13
Antifungals (16.36)	Itraconazole	9.78
	Fluconazole	5.36
	Terbinafine	1.22
Antiamoebics (10.29)	Metronidazole	6.68
	Secnidazole	2.27
	Ornidazole	1.34
Macrolides (8.31)	Azithromycin	4.60
	Erythromycin	2.64
	Clarithromycin	1.07
Others (8.24)	Clindamycin	2.5
	Linezolid	2.1
	Nitrofurantoin	2.45
	Doxycycline	1.19

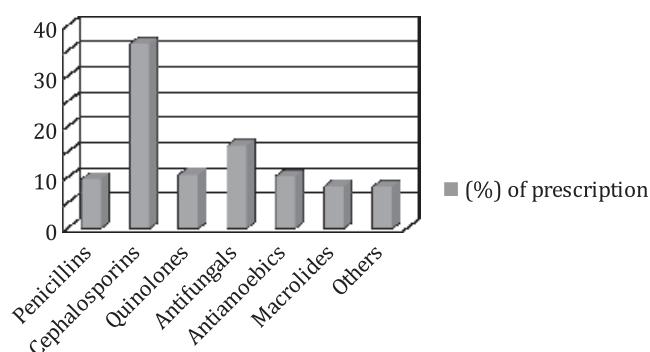


Figure 3. Percentage (%) usage of drugs in each antibiotics group

Among the all group of antibiotics cephalosporins was found to be prescribed to the largest number (36.47%) of patients, followed by Antifungals (16.36%), Quinolone (10.57%), Antiamoebic (10.29%), Penicillin (9.76%), Macrolides (8.31%), and others were (8.24%) shown in figure 3. Among the antibiotics cefixime, cefuroxime, ceftriaxone, amoxicillin, ciprofloxacin, itraconazole, fluconazole, metronidazole and azithromycin most chosen drugs shown in Table 1.

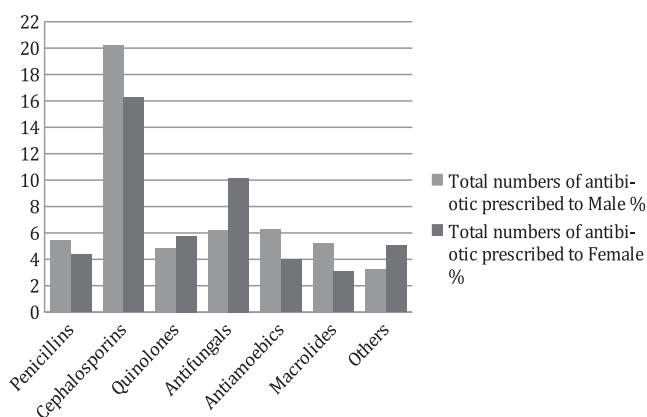


Figure 4. Comparison of antibiotic concerning gender

Among the study, the total numbers (%) of antibiotic prescribed to male were much higher than the % of antibiotics prescribed to female patient's. Penicillins, macrolides, antiamoebics and cephalosporins group of antibiotics were higher in male patient's whereas antifungal and quinolones, group of antibiotics higher in female patient's shown in figure 4.

Discussion

Antibiotic resistance is a global threat to developing countries. Prescribing pattern of drugs reflects the attitude of the physicians. Antibiotics are supposed to be considered as the 2nd most commonly prescribed drugs in the world.¹² Majority of infectious diseases can be treated with antibiotic therapy. Over-the-counter (OTC) the availability of antibiotics and incomplete treatment due to many reasons in a developing country like ours may also be the factors contributing to the development of resistance.¹³ In this study, antibiotic prescriptions of patients in tertiary care hospital were studied. Total 300 numbers of prescriptions were conducted, and male patients were more compared to female patients. It was observed that 1, 2, and 3 or > 3 antibiotics were prescribed to 55%, 26% and 19% respectively shown in figure 2, Similar results were reported from studies done in India, Pakistan, Nepal and other neighboring countries.^{14,15} In present study the highest prevalence rate was observed in number of patients belonged to the age group of 21-30 years and followed by 31- 40 years and so on, may be due to their ill lifestyle, figure 1 showed the detail of patient's demographic. Among all group the most common antibiotics cephalosporins was found to be prescribed to the largest percentage 36.47% of patients, followed by Antifungals (16.36%), Quinolone (10.57%), Antiamoebic (10.29%), Penicillin (9.76%), Macrolides (8.31%), and others were (8.24%) shown in Figure 3. Among the antibiotics cefixime, ciprofloxacin, itraconazole, amoxicillin, metronidazole and azithromycin were the most chosen drugs shown in Table 1. Cephalosporins are generally widely used medicine due to their high potent action, available in various formulations in the market, their extended indications and the activity against both the bacteria gram-negative as well as grampositive means having broad-spectrum activity from the first generation to the fifth generation of cephalosporins.¹⁶ Furthermore, the present study revealed that the % of antibiotic prescribed to male were much higher than the % of antibiotics prescribed to female patient's especially penicillins, quinolones, and cephalosporins group of antibiotics whereas

antifungal and macrolides group of antibiotics higher in female patients than male patient's shown in figure 4. This findings were in agreement with the findings of other studies.^{17, 18, 19}

Conclusion

By understanding the prescribing pattern of antibiotics on patient demographics, we will be able to make the rational use of antibiotic agents as one of the main contributions to control the drug resistance all over the world. To overcome the risk of antibiotic resistance of microorganism, an antibiotics policy should be carefully instituted and implemented. Antimicrobial protocol, guidelines and formulary can be used to improve the rational usage of antibiotics. Further studies are needed to explore the knowledge and skills to correct the physicians' attitudes towards prescriptions.

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