Antibiotics Prescribing Pattern at Outpatient Department of A Tertiary Medical College Hospital

Maliha Ata1*
Rozina Hoque1
Rajat Shankar Roy Biswas2
Asma Mostafa3
Faheem Ul Hasan4
Happy Rani Barua1

1Department of Pharmacology
Chattagram Maa-O-Shishu Hospital Medical College
Chittagong, Bangladesh.
2Department of Medicine
Chattagram Maa-O-Shishu Hospital Medical College
Chittagong, Bangladesh.
3Department of Anatomy
Chattagram Maa-O-Shishu Hospital Medical College
Chittagong, Bangladesh.
4Department of Community Medicine
Chattagram Maa-O-Shishu Hospital Medical College
Chittagong, Bangladesh.

Abstract

Background: 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. The study was conducted to observe the antibiotics prescribing pattern at outpatient department of a tertiary medical college hospital.

Methods: This was a descriptive cross sectional study in a tertiary medical college hospital during the period of January 2018 to June 2018 which was conducted on 300 prescriptions collected from different outpatient department.

Results: Average number of drugs prescribed per encounter was 3.70 (Optimal value 1.6–1.8). Antibiotics (Oral, injectable and topical) were prescribed 46% (Optimal value 20.0–26.8%) and antibiotic as only injected form 19.71% (Optimal value 13.4–24.1% of total injectable drug). Drugs prescribed from the Essential Drugs List (EDL) equated to 52.90% (Optimal value 100%). The antibiotics given in most of the patients (91%) were without doing culture sensitivity test before prescribing. Out of 46% prescriptions with antibiotics, 79.9% had one antibiotic, 19.6% included two antibiotics and 0.7% had three antibiotics. Cefuroxime was the most commonly prescribed antibiotics (22.5%) followed by Azythromycin (11.6%) Cefixime (11.5%) Ciprofloxacin (10.9%) Flucloxacillin (10.9%) and Metronidazole (8.7%).

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

Key words: Antibiotic; Essential Drug List; Rational; Prescription.

INTRODUCTION

Nowadays antibiotic is the most commonly prescribed drug in hospitals, worldwide1. Lack of strict regulation on the excessive and inappropriate use of antibiotic leading to increased drug resistance2. So the rational use of antibiotics is a serious challenge and become a major health need to the health care professionals against development of resistance3. Some factors that contribute to the development of antibiotic resistance—antibiotics overprescribing even for viral infections, over-use and incomplete duration of antibiotics, over-the-counter availability of antibiotics, inadequate patient counseling, and patients buying only as many tablets as they can afford4. Sometimes doctors claimed to prescribe antibiotic as per patient’s demand5. In 2015, the White House released The National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB) which set a goal of reducing inappropriate outpatient antibiotic use by at least half by 20206. National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey (NHAMCS) in the United States from 2010-2011, found that the estimated 154 million prescriptions for antibiotics written in doctor’s offices and emergency departments each year, among them 30 percent are unnecessary. This finding creates a benchmark for improving outpatient antibiotic prescribing and use for the developed country7. In developing country like Bangladesh, 55.57% of the
doctors prescribe antibiotics in suspected infection while only 33.46\% of them prescribe antibiotics in confirmed cases. 40.22\% of doctors prescribe antibiotics in cold and fever before any diagnostic test. Moreover, 37.31\% of doctors prescribe antibiotics for pleasing the patients whereas 62.44\% denied such undue influence. Doctors occasionally receive feedback from patients on completion of course of antibiotic therapies. The study of prescribing pattern infers to monitor, assess and conceive modifications in the practitioner’s prescription habits to ensure reasonable and effective care of the patient. 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. Disposition of evidence based care on regulated antibiotic prescribing can be acquired through periodic prescription audit. Monitoring antibiotic prescriptions can provide feedback about prescription patterns to the physicians. By considering all the facts described above, this study was aimed to describe the current pattern of antibiotic use in outpatient departments in a Tertiary Medical College Hospital in Chittagong.

**MATERIALS AND METHODS**

This was a descriptive cross sectional study in a Tertiary Medical College Hospital during the period of January 2018 to June 2018. A total of 300 prescriptions from different outdoor were used as sample by convenient sampling. For data collection, a self designed data collection sheet was used. After pretesting the tool, data collectors collected different outdoor prescription from exit point of hospital outdoor convenient to their time and patient approach. They informed the patient about the study and took permission to capture the photograph of the prescription and Culture and Sensitivity (C/S) test report related to that prescription. After collecting the photograph of each prescription and related C/S report, data was put in the data collection sheet. Patient of less than 15 years and patient who was going to admitted to the hospital and patient who was not willing to participate in the study were excluded from the study. After completing 300 prescriptions, data was put in the data collection sheet.

Collected data were analyzed by SPSS 18 and descriptive statistics such as frequencies and percentages were used in the analysis of the data.

**RESULTS**

Three hundred prescriptions were included in the study. Antibiotic (Oral, injectable and topical) prescribed in total 138 (46\%) prescriptions among which male 51(36\%) and female 87(63\%) and antibiotic not prescribed in 162 (54\%) prescriptions (Fig 1). Among three hundred prescription 119 (40\%) prescriptions were prescribed by consultant and 181 (60\%) prescription were prescribed by nonconsultant. A high number of prescriptions in which the diagnosis (81\%) were not written and about 94\% antibiotic were prescribed without culture and sensitivity testing. Average number of the drug per prescription 3.70. Antibiotic prescribed by essential drug list 21 out of 138(15.22\%). Out of the surveyed antibiotic prescriptions, 79.9\% contained one antibiotic, 19.6\% contained two antibiotics, and 0.7\% comprised of three antibiotics. Among 138 prescribed antibiotics, 19.71\% was prescribed in injectable form and 18.8\% were prescribed in topical form. The study also assessed the type of antibiotics prescribed (Table 1).

![Figure 1: Sex distribution according to the presence of antibiotic](image)

**Table 1 : Prescribing indicators used (n=300)**

<table>
<thead>
<tr>
<th>Prescribing Indicators</th>
<th>Numbers of drugs/percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of the prescription analyzed</td>
<td>300 cases</td>
</tr>
<tr>
<td>Average drug encountered per patient</td>
<td>3.70 (Optimal value: 1.6-1.8)</td>
</tr>
<tr>
<td>Total number of drugs prescribed</td>
<td>1110</td>
</tr>
<tr>
<td>Total number of antibiotics</td>
<td>138 (46%) (Optimal value: 20.0-26.6%)</td>
</tr>
<tr>
<td>Number of antibiotics given as Monotherapy</td>
<td>79.9%</td>
</tr>
<tr>
<td>Two antibiotic prescribed per prescription</td>
<td>19.6%</td>
</tr>
<tr>
<td>Three antibiotic prescribed per prescription</td>
<td>0.7%</td>
</tr>
<tr>
<td>Antibiotic prescribed by Essential drug list</td>
<td>52.90% (Optimal value: 100%)</td>
</tr>
<tr>
<td>Number of antibiotics prescribed with an injection</td>
<td>19.71%</td>
</tr>
<tr>
<td>Number of antibiotics prescribed with topical form</td>
<td>18.8%</td>
</tr>
</tbody>
</table>

Out of 138 antibiotics prescribed in the study, 22.5\% were of Cefuroxime, 11.6\% were of Azithromycin, 11.5\% were of Cefixime, 10.9\% were of Ciprofloxacin, 10.9\% were of Flucloxacillin, 8.7\% were of Metronidazole, 7.2\% were of Moxifloxacin and Mupiricin, 5.8\% were of Cefuroxime + Clavulonic acid, 4.3\% were of Ceftaxione, 2.9\% were of Levofloxacin and Clindamycin, 2.5\% were of Nitrofurantoin, 2.2\% were of Cefaclor and Tobramycin, 1.4\% were of Amoxicillin + Clavulonic acid, 0.7\% were of Cefradine, Gentamicin and amoxicillin antibiotics (Fig 2).
Similar studies were also done in Dhaka, Bangladesh where it was 46.31% which was also lower as compared to our study. In study of outpatient department of a tertiary medical college hospitals of Bangladesh 2011, Cefuroxime (3.33%) was least commonly used antibiotic but now in our study which is done in 2018, Cefuroxime (22.5%) is the most commonly used antibiotic in outpatient department. There can be various factors behind this such as, may be infection prevalence more in our country, prescribers lacking of the understanding the importance of essential drug concept, influence from the manufacturers to promote a specific brand. In our study 19.71% antibiotic prescribed as injectable form which is less than the number stated in Yemen (27.4%) but this rate is high as the WHO recommended target for injection exposure is 10% or less.

LIMITATIONS
The analysis of antibiotic prescriptions was not based on diagnosis pattern. Antibiotic prescriptions from specific groups like pregnant women, children and geriatric patients were not analyzed and the cost of the antibiotics were not calculated. Moreover it is done for a very short period of time and with limited amount of prescriptions. The prescription practices may have changed as a result of seasonal variation.

CONCLUSION
This study revealed some deviation from rational prescribing by the prescribers because average number of drugs per prescription was higher than that of the recommended by the WHO, antibiotic prescription was considerably higher and maximum antibiotic prescribed without culture and sensitivity testing. Most commonly used antibiotic was Cefuroxime (22.5%) which is excluded from the Essential Drug List (EDL) of WHO. In our study maximum prescription contain single antibiotic which is one of a good indicator of rational prescribing. To create awareness of the rational use of antibiotics is compulsory, basically aimed at reducing the overall prescribing of antibiotics and encouraging to start with a narrower spectrum.

DISCLOSURE
All the authors declared no competing interest.
REFERENCES


7. Centers for Disease Control and Prevention: 1 in 3 antibiotic prescriptions unnecessary. Available at: https://www.cdc.gov/media/releases/2016/p0503-unnecessary-prescriptions.html


