RESEARCH ARTICLE

A prospective, questionnaire-based study to evaluate the knowledge, attitude, and practice of rational use of antibiotics among clinical practitioners in a tertiary care hospital

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ABSTRACT

Background: Irrational antibacterial usage leads to emergence of antibiotic resistance. Hence, to ensure rational prescription regular clinical audits are essential in tertiary care hospitals. Aim and Objective: To assess the knowledge, attitude, and perception of clinician’s on rational use of antibiotics in a tertiary care hospital. Materials and Methods: The prospective, questionnaire-based study was conducted on clinicians in a tertiary care hospital, after getting approval of the Institutional Ethics Committee to obtain information on rational antibiotic usage and was analyzed using descriptive statistics. Results: The study included 100 clinicians. 95% were aware about Rational antibiotic usage, the ingredients, adverse effects, interactions, contraindications, and cost of the drugs they prescribe and they were also analyzing the culture and sensitivity report before prescription of antibiotics, but only 48% of them were prescribing antibiotics from National List of Essential Medicines, 35% were influenced by patient demands. Around 80% agreed with the usefulness of the feedback given by fellow colleagues on antibiotic decisions. Though 98% of them were aware of the hazards of antibiotic resistance only 68% knew about antibiogram and having antibiotic policy at the workplace. In practice, 95% were showing special interest in proper antibiotic usage, 82% knew the new antibiotics available and 91% were providing proper counseling to patients. 95% suggested the need for training on rational use of medicines and antibiotic policy post MBBS. Conclusion: The clinicians recognized the importance of rational antibiotic use in preventing its resistance thus reducing health care burden on the patients.

KEY WORDS: Antibiotic Resistance; Antibiotic Policy; Rational Use; Clinicians

INTRODUCTION

In clinical practice, antibiotics are one of the frequently prescribed drugs. Unnecessary and irrational use of these drugs is a global problem especially in developing countries leading to the emergence of antibiotic-resistant microorganisms, increased cost of treatment, prolonged hospital stays, and adverse drug reactions. The burden of infectious disease is highest in India. In appropriate situations, antimicrobials are evidently important or even lifesaving but at the same time, it is just as important to prevent indiscriminate use of antimicrobials which can lead to resistance. The prevalence of the use of antimicrobial agents varies from 24% to 67% in India. The inappropriate use of antibiotics includes use of these drugs for wrong indication, mode of use, and the poor adherence of the prescribed drugs, which leads to emergence of antibiotic resistance.
In the developing countries, rational use of drug is a new theory[7] and it denotes prescription of the right drug, to the right patient, in the right dose, at the right time intervals, and for the right duration.[9] The WHO evaluates that more than half of all medicines are prescribed, dispensed, or sold inappropriately and that half of all patients fail to take them properly.[9]

There is a necessity of the rationalization of antimicrobial therapy in developing countries according to available literature.[10-12] To ensure rational prescription, regular clinical audits of antibiotic use are essential in Indian tertiary care teaching hospitals. With this background, the main objective of the present study was to analyze the knowledge, attitude, and practice of rational use of antibiotics amongst clinicians working in one of the tertiary care teaching hospitals in the east zone of Bengaluru, Karnataka.

MATERIALS AND METHODS

This prospective, cross-sectional survey was carried out on registered medical practitioners after getting the approval of the Institutional Ethics Committee (IEC): EPCMSRC/ADM/IEC/2019-20/012. All the clinicians who were working in the hospital setting and were willing to give written informed consent were enlisted in the study. Those working in Pre- and Para-clinical departments and those who were not willing to give written informed consents were excluded from the study.

The clinicians were interviewed through direct communication by a structured, validated questionnaire to assess the knowledge, attitude, and the perception of clinicians on various aspects of rational antibiotic use, taken from published studies and reformed to suit the local residents.[12-14] Clinicians were not prompted nor forced to answer questions they did not wish to answer. The information given by clinicians was kept confidential at all times.

Statistical Analysis

The data that was collected was primarily analyzed by descriptive statistics using Microsoft Excel software and results expressed as numbers and percentages.

RESULTS

Out of 100 respondents, 60 were male and 40 females with age ranging from 25 to 70 years. 53 respondents were having <5 years experience including junior residents and 47 with >5 years of experience [Table 1].

In the present study, 95% of clinicians were aware about rational antibiotic usage as they were also analyzing the culture and sensitivity report before prescription of antibiotics, but only 48% of them were prescribing antibiotics from the National List of Essential Medicine (NLEM). Around 97% were aware of the ingredients, adverse effects, interactions, and contraindications of the drugs they prescribe and 92% were aware of the cost of the drugs. About 82% clinicians knew the new antibiotics available in the market. Although 98% of them were aware of the hazards of antibiotic resistance only 68% knew about antibiograms and having antibiotic policy at the workplace [Table 2 and Figure 1].

While practicing, 95% of clinicians were showing special interest in proper antibiotic usage and 91% were also providing proper counseling to patients while prescribing antibiotics, however, 35% of clinicians were influenced by patient demands while prescribing antibiotics. Hence, the majority (95%) also suggested the need for training on rational use of medicines and antibiotic policy post MBBS [Figure 1].

DISCUSSION

The results of our study showed that the majority of the participants (95%) had satisfying knowledge about a rational use of antibiotics and 48% had prescribed drugs as per the NLEM. About 95% clinicians showed special interest while prescribing antibiotics thus ensuring proper antibiotic usage by their patients.

A study done by Remesh et al.[12] stated that the presence of an essential drug list along with rational prescribing based on culture sensitivity was of absolute important. In the present study, 95% of them were aware of interpretation of culture and sensitivity reports effectively. Only 78% of our clinicians had a perception that having hospital policy and rationality in prescribing drugs had an important role in reducing antibiotic resistance [Table 3] when compared to a study by Remesh.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rational antibiotic usage</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>New antibiotics available in the market</td>
<td>82</td>
<td>18</td>
</tr>
<tr>
<td>Term Antibigram</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>Comfortability in interpreting culture and sensitivity results</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>Hazards of antibiotic resistance</td>
<td>98</td>
<td>2</td>
</tr>
<tr>
<td>Ingredients, AEs, interactions and contraindications of the drugs prescribed</td>
<td>97</td>
<td>3</td>
</tr>
<tr>
<td>Cost of the drugs prescribed</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>AEs: Adverse events</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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et al.[12] where 93% of them suggested incorporation of hospital policy would be more useful in achieving rational use of antibiotic. Having antibiotic policy would also ensure improved prescribing patterns and reduced health care burden on the patients. One of the studies showed, the tendency of prescribing drugs by brand names and the excess use of antibiotics were the issues which required educational interventions and a rigorous antibiotic policy.[13] However, in our study, only 35% prescribed antibiotics by brand names [Figure 2] which is a still area of interest and needs to give attention. Prescription of drugs by generic name is essential for the cost-effectiveness of drug therapy to patients. It reduces prescription errors and confusion.[14] Majority (95%) of the clinicians from the present study also emphasized on the necessity of regular training of MBBS and medical postgraduate students in rational use of all medicines, to ensure the rational use of medicines by these future practitioners, as opined by Naik et al., where a large number of interns opined that UG training was insufficient to train them to prescribe rationally.[15] 79% felt the usefulness of the feedback given by fellow colleagues on antibiotic choices analogous to a study done by Remesh et al.[12] which implies that peer discussion and regular meetings on antibiotic therapy in a hospital setting would be more beneficial with regard to improved antibiotic prescribing. Increase in antimicrobial resistance is associated with the amount of the antibiotic prescribed, number of doses missed, and improper and excessive prescribing of antibiotics on patients’ demand and as physicians are not having enough time to explain why they are not needed.[12] In our study, almost 50% of clinicians disagreed on their influence by patients for antibiotic prescription, 24% remained neutral while 26% of them agreed that they might be influenced by patient demands while prescribing [Table 3], compared to a study done by Remesh et al.[12] in which 48% agreed, 35% remained neutral and only 17% of them disagreed on their patient influences on choice of antibiotics.

As antibiotics are routinely prescribed in clinical practice, their misuse, deficiency of hospital formulary, and pharmaceutical and therapeutic committee were few of the significant elements leading to inappropriate prescribing and development of antibiotic resistance.[14] Regular prescription audit and introducing the use of narrow-spectrum antibiotic

### Table 3: Perception of clinicians regarding rational use of antibiotics

<table>
<thead>
<tr>
<th>Questions</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do you think the feedback given by fellow colleagues on antibiotic decisions is useful?</td>
<td>18</td>
<td>61</td>
<td>15</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>How do you think having a hospital policy is more helpful to achieve rational antibiotic use?</td>
<td>40</td>
<td>38</td>
<td>22</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Does the patient influence your choice of antibiotic usage?</td>
<td>0</td>
<td>26</td>
<td>24</td>
<td>38</td>
<td>12</td>
</tr>
</tbody>
</table>

### Figure 1: Attitude and practice of clinicians on rational use of medicines

![Figure 1: Attitude and practice of clinicians on rational use of medicines](image)

### Figure 2: Drug nomenclature followed by clinicians for antibiotic prescription

![Figure 2: Drug nomenclature followed by clinicians for antibiotic prescription](image)
policy would result in decrease in the use of broad-spectrum drugs. There is a need for enhancement of antibiotic surveillance in developing countries[14] and nationwide surveillance program for supervising the antimicrobial susceptibility and resistance patterns is of absolute important. With regard to this, in our hospital setting the majority of the participants (98%) were aware of the hazards of antibiotic resistance, which was assessed as part of our study. Based on the local prescribing and resistance data, it is essential to frame and institute appropriate antibiotic prescribing guidelines. Even though various methods have been introduced by healthcare institutions for an improvement in antibiotic use, indiscriminate and improper antibiotic prescribing by medical practitioners remains a considerable issue prevalent in the world.[12]

CONCLUSION

The clinicians acknowledged the importance of rational use of antibiotics in preventing antibiotic resistance and also health care burden on the patients. Appropriate training of Indian medical graduates, interns, junior and senior residents who are the future medical practitioners in rational antibiotic therapy, enhanced microbiology support, and execution of institutional or departmental antibiotic policy are a vital step toward the rational use of antibiotics in hospital settings.

REFERENCES


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