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Attitude and perception of junior resident doctors' regarding antibiotic resistance – A pilot study

Sourabh Aggarwal¹, Jesna Mathew², Harkirat Singh³, Vishal Sharma^{4*}

¹Department of Medicine, Western Michigan University School of Medicine, Kalamazoo, Michigan, USA

²Department of Surgery, Geisinger Medical Center, Danville, Pennsylvania, USA

³Department of Medicine, Thomas Jefferson University, Philadelphia, USA

⁴Department of Gastroenterology, PGIMER, Chandigarh, India

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ABSTRACT

Objective: To analyze the attitude and perception of junior resident doctors' regarding antibiotic resistance and prescribing. **Methods:** This cross-sectional study was conducted in two tertiary care centres in the New Delhi during the months of May–June 2012. An email based questionnaire was emailed to all the junior residents (JRs) working in the clinical setting and all the responses obtained within 2 months were included in the study. Statistical analysis was done using SPSS v.17. **Results:** This email based questionnaire was forwarded to 80 JRs. 53 responses were deemed appropriate for analysis with response rate of 66.25%. Forty-nine JRs (92.45%) believed that antibiotic resistance is a problem in India while 38 JRs (71.7%) believed it is a problem in their hospital. 28 JRs (52.83%) had received training regarding antibiotic prescription in last 6 months while 25 (47.17%) had not received any training. 47 JRs (88.7%) believed that Medical Council should take strict actions prohibiting irrational use of antibiotics. Only 18 JRs (33.96%) said that Government of India should go ahead with proposed plan of restricting junior doctors from prescribing third and fourth generation antibiotics without Head of Department's permission. **Conclusions:** Most of the junior residents believe that antibiotic resistance is an emerging problem in their hospital as also nationally. There is a large unmet need of providing education to these residents.

1. Introduction

The bacterial disease burden in India is among the highest in the world and antibiotics play a critical role in limiting morbidity and mortality from such diseases^[1]. However, antimicrobials are known to be prescribed extensively in primary care setting and this excessive and inappropriate use of antibiotics has contributed to the emergence of antibiotic-resistant bacteria in the community^[2].

Recent reports on the emergence of “superbug” gene blaNDM-1 (New Delhi metallo-β-lactamase 1)

expressed by some gram negative Enterobacteriaceae has brought the issue of antibiotic use and principles of prescribing them into the limelight^[3].

Antimicrobial resistance is a global problem and is growing worldwide. It is particularly pressing in developing countries where the infectious disease burden is high and cost constrains the replacement of older antibiotics with newer, more expensive ones^[1]. It negatively impacts the patient outcomes. Antibiotic use has been increasing steadily in recent years and between 2005 and 2009, the units of antibiotics sold increased by about 40 percent^[1].

Studies have estimated that between 20% and 50% of antibiotic use is either unnecessary or inappropriate and decreasing it is a necessary first step to curb antibiotic resistance^[4–6]. The recognition that antibiotic

*Corresponding author: Vishal Sharma, Department of Gastroenterology, PGIMER, Chandigarh, India.

E-mail: docvishalsharma@gmail.com

resistance is caused in part by excessive antibiotic prescribing has prompted calls for reform, but still the optimal methods for addressing this problem remain obscure[7]. Since such reforms are likely to require fundamental changes in physicians' behaviour, a better understanding of physicians' perceptions of antibiotic resistance is essential for this. Studies have been done in past analyzing the prescription pattern of physicians, but very few have analyzed the attitude and perception of physicians regarding the problems related to antibiotic resistance[4,7–15].

Authors have argued that the basic problem which contributes to the irrational prescribing is that the medical students are not adequately instructed[16]. Medical Council of India (MCI) has recently proposed that only Head of Departments' and not junior doctors, would be able to prescribe 3rd and 4th generation antibiotics[17].

We believe that in order to initiate appropriate reforms for most effective outcome, it is necessary to understand the attitude and perception of young medical graduate about the problem related to antibiotic resistance. To the best of our knowledge, no previous study has studied the attitude and perception of junior resident regarding antibiotic resistance in Indian setup. Thus this pilot study was done to analyze the attitude and perception of resident doctors' concerning antibiotic resistance and prescribing.

2. Materials and methods

This cross-sectional study was conducted in two government run tertiary care teaching hospitals in the New Delhi during the months of May–June 2012 for which the email lists of the junior residents were available. A previously used close ended questionnaire was used for the purpose of this study with modifications as suited to the Indian setup to include questions related to medical council[4].

All the junior residents working in these hospitals were identified and contacted on email. The term 'junior resident' was defined as those doctors who had finished their graduation within two years from the date the questionnaire was emailed to them. Only those JRs who were working in clinical departments (Medicine, Surgery, Gynaecology, Pediatrics, Dermatology, Anaesthesia, Ophthalmology, Otorhinolaryngology, Community Medicine, Orthopaedics) were included. We excluded

pre-clinical subject and para-clinical departments as also the Department of Psychiatry and Radiology for this study because we believe they are not involved in process of prescribing antibiotics.

A list of the JRs, who could be contacted and were selected for study, was made and an email based questionnaire was then sent to all the junior residents (JRs) in these two hospitals. A reminder was sent to all those who had not replied back after 4 weeks. Another reminder was sent 2 weeks later and final reminder was sent one week prior to completion of two months.

The 46-item self-administered questionnaire collected information on junior doctors' attitude about antibiotic prescribing, their perception of the importance of the problem of antibiotic resistance, their knowledge of the national prevalence of antibiotic resistance and local prevalence of antibiotic misuse, their beliefs about the causes of antibiotic resistance, and their attitude about current and potential interventions designed to reduce antibiotic resistance.

The confidentiality of respondents and their choices was ensured. Statistical analysis was done using SPSS v.17. Continuous variables were expressed as mean \pm SD and percentage was calculated for categorical variables.

3. Results

This email based questionnaire was forwarded to 80 JRs identified after applying the inclusion/exclusion criteria in the two tertiary care centres. After the 3 reminders, we received 60 filled questionnaires back. Seven of them were incomplete and were thus excluded from the study. Thus, 53 responses were deemed appropriate for analysis with response rate of 66.25%.

The respondents included 34 males (64.15%) and 19 females (35.85%). The mean age of respondents was 24.77 years with a standard deviation of 1.10 years. The attitude and viewpoint of respondents regarding their antibiotic prescription practices, the reasons for increasing antibiotic resistance and ways to decrease them is shown in Figures 1–3 respectively.

Forty-nine JRs (92.45%) believed that antibiotic resistance is a problem in India while 4 JRs (7.55%) were not sure of it. 38 JRs (71.7%) believed that antibiotic resistance is a problem in their hospital while 5 (9.43%) believed otherwise and 10 (18.87%) were not sure of this. 11 JRs (20.75%) believed that less than 10% of antibiotic

prescription in their hospital was unnecessary, 17 (32.08%) each believed that 11%–25% and 26–50% was unnecessary while 5 (9.43%) believed that >50% was unnecessary and 3 (5.66%) were unsure of it.

28 JRs (52.83%) agreed that previous experience/knowledge/training influences or guides their prescription decision, while 10 (18.87%) seek advice from a senior colleague and 15 (28.3%) use local/national guidelines/policies/protocols. 28 JRs (52.83%) had received training regarding antibiotic prescription in last 6 months while 25 (47.17%) had not received any training in last 6 months. Among those who received training, 10 (35.71%) via informal education in clinical workplace, 9 (32.14%) did self directed learning, 6 (21.43%) received it in form of lectures and 3 (10.71%) via workshops.

47 JRs (88.7%) believed that Medical Council should take strict actions prohibiting irrational use of antibiotics. Only 18 JRs (33.96%) said that Government of India should go ahead with proposed plan of restricting junior doctors from prescribing third and fourth generation antibiotics without Head of Department's permission.

When asked that what kind of actions should MCI take for physicians repeatedly prescribing antibiotics irrationally, 32 (60.38%) advocated imposing fine, 8 (14.81%) said suspension of license for a short temporary period, 6 (11.32%) advised providing relevant education, 5 (9.43%) said mandatory attendance to a training program on 1st offence, then fine, then subsequently a temporary suspension and 2 (3.77%) said nothing was necessary.

4. Discussion

Our study shows that most of the residents realize that antibiotic resistance is an important problem and the MCI should take strict actions, including fine, to prohibit irrational use of antibiotics. Our findings are consistent with similar studies done in other parts of the world^[4,7].

It also indicated that most of the residents feel quite confident in making an accurate diagnosis, interpreting microbiological results, choosing the correct antibiotic, its dose and duration of treatment. Previous studies have shown misdiagnosis to be a leading cause of unnecessary antibiotic prescriptions^[6].

Most residents also believe too many antibiotic prescriptions, self-prescription and overuse of broad spectrum antibiotics and easy availability of antibiotics from pharmaceutical shops are most important causes

contributing to increased resistance to antibiotics. Low dose of antibiotic, prolonged duration of treatment and paying too much attention on advertising were also considered important causes for increased resistance.

We have shown previously that pharmaceutical gifts do affect prescription practices of some physicians^[18]. Most residents also believe that availability of strict guidelines, resistance data, focus on education and feedback on antibiotic resistance can help reduce the resistance.

They did not believe that restriction on all antibiotics or advice from pharmacist or pharmaceutical representative can help. However, previous studies done in other countries have shown that restriction of prescription of some antibiotics and availability of advice from an infectious diseases specialist and a microbiologist were perceived as very helpful by the majority of respondents^[4,19].

This paper is important because it underlies the fact that most young residents believe that antibiotic resistance is a major problem and since most agree to the fact that MCI should take strict action to control it, speaks of their intention and seriousness on the issue.

We believe that there is a large unmet need of providing education to these residents regarding antibiotic prescription, since a large proportion of residents admitted not receiving any training in last 6 months and even those who received, a large amount got it via informal education and self directed learning. Even a previously done study has shown deficiency in knowledge of good prescription by the interns^[20].

It indicates that policy makers should advocate and arrange for more frequent educational activities and workshops to train fresh graduates regarding current scenario and latest guidelines in the field of antibiotic resistance in order to keep them up-to-date with the latest protocols. Also, both national and local guidelines need to give precise indications concerning intravenous - oral switch criteria, antibiotic combination choice criteria, and optimal durations of antibiotic treatments.

The policy makers and management need to take intensive action to curb the ever-growing problem of antibiotic resistance and we believe that fresh graduates and junior residents should be the earliest targets of these interventions so that they can inculcate good prescribing habits early in the course of their practice.

However, our study has some limitations. With a response rate of just 66.25%, we could not rule out response bias. In any case the participants are not

representative of the population at large as the study population comprised only young medical graduates and junior residents. Also, the possibility that participants were more inclined to give more favourable answer cannot be ruled out.

Since the study was based on self-reporting, we cannot be sure that the answers given by them truly reflect their attitude and practices. Nonetheless, the study highlights very significant issues that need to be tackled urgently and appropriately.

Conflict of interest statement

We declare that we have no conflict of interest

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