

Original Research Article

Knowledge and perception of antibiotic resistance and use among junior doctors' and specialists

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Abstract: This is a cross sectional self-administered questionnaire based study conducted on 67 (response rate 69%) doctors including specialists from medical and surgical branches and junior doctors. Only 15% of junior doctors and 50% of specialists were very confident in their choice of antibiotic. Only 46% had access and used local antibiogram in selection of antibiotics. Use of national guidelines was 18% and 80% in surgical and medical specialties respectively. Only 15% of respondents had any form of education on antibiotics in the last year. 35% of respondents felt there was not enough source of information on antibiotics. 73% of respondents felt that antibiotics are overused in their hospital. Lack of access to local antibiogram (96%), overuse of antibiotics (93%) and self-prescription (85%) were thought as common cause of antibiotic resistance. Respondents failed to recognise hand washing (48%), poor adherence (9%) and use of antibiotics in unknown febrile illness (7%) as cause of antibiotic resistance. Only 24% of the respondents were in favour of an approval committee for use of antibiotics. The study highlights the lack of ongoing education on antibiotics, failure to recognise important causes of antibiotic resistance and non-availability of the local antibiogram data.

Keywords: Antibiotic resistance, antibiotic stewardship, antibiotic overuse, antibiotic awareness.

INTRODUCTION

Antibiotics are among the commonly prescribed drug in the hospital settings. Various studies have highlighted the inappropriate use of antibiotics in acute care setting [1, 2]. Inappropriate and prolonged use of antibiotics is the leading cause for emergence of the drug resistance strains. Various factors contribute to inappropriate use of antimicrobials, such as lack of access to local antibiograms, lack of confidence in choosing antimicrobials, etc. Patients' pressure is also considered one of the reasons for overuse of antibiotics in community [3, 4].

Majority of the practitioners are of the belief that antibiotic resistance is a significant problem worldwide; but less significant in their own practice [3, 5, 6]. The practitioners feel there should be well established antibiotic stewardship program; but are less likely to follow it due to various reasons [7].

The use of appropriate antibiotics, for appropriate duration, and at appropriate doses is the most important step for prevention of emergence of resistance. To avoid inappropriate use of the antibiotics

and prevention of the emergence of the resistance strains; it is important to know the potential barriers for implementation of an antibiotic stewardship program.

The study was aimed to understand the perception about antimicrobial misuse, antimicrobial resistance and its causes, intervention for prevention among junior doctors' and various specialists

MATERIALS AND METHODS

Cross sectional survey conducted among the junior resident's and specialists at MIMS, Mandya through self-administered questionnaire. A self-administered questionnaire was distributed among the junior residents and specialists involved in clinical care, during working hours. The participation was completely voluntary and anonymous. No incentives were provided for participating in survey.

The data collected was analysed using Microsoft excel. The significance of categorical variables was assessed using chi square and/or fisher's exact test. The continuous variables are expressed as mean and standard deviation.

RESULTS

A total of 46 (69%) out of 67 doctors responded to the questionnaire. Among the responders 15 (71%) were from medical specialties, 11 (58%) were from surgical specialties and 20 (74%) were junior doctors' involved in clinical work. 35% and 59% of the respondents were very confident and somewhat confident in their choice of antibiotics.

The responses regarding the selection of the antibiotics are as follows. Only 15% of the junior doctors' were very confident on selection of antibiotics as against 50% of the specialists (p value 0.027). Only 46% of the respondents used the local antibiogram pattern for selection of antibiotics, while 2 of the respondents pointed out to the non-availability of such data. The use of antibiogram pattern was similar among the junior doctors' and specialists. 59% of the respondents felt that national and international guidelines are major source of information for selection of antibiotics. The use of these guidelines was 18% in surgical specialties, 80% among medical specialties and 65% among junior doctors'. Medical specialists were more likely to use guidelines for selection of antibiotics as compared to surgical specialists (p value 0.004). 72% of the respondents felt that it is difficult to select the correct antibiotic.

The responses regarding the education and source of information of antibiotics are as follows. Only 15% of the respondents had attended some teaching session on antibiotics in the last one year, as a part of the departmental activities or continuing medical education. The junior doctors' were more likely to have received some sort of teaching sessions (20%) compared to specialists (12%), but was not statistically significant (p value 0.68). Information from seniors (30%), colleagues (80%) and internet (65%) were seen as the major source of information. Junior doctors' most often rely on the internet for information of antibiotics (90%). 16 of 46 respondents (35%), 40% of junior doctors', 20% of medical specialists and 45% of surgical specialists felt there is not enough source on antibiotics available. 34 (73%) and 39 (85%) of the respondents felt that antibiotics are overused in their hospitals and in other hospitals respectively. 41 (89%) of the respondents felt that patients demands were responsible for overuse on antibiotics in the hospital and outpatient settings. Only 28% of the respondents felt that antibiotic resistance is a problem in their practice. 73% of the medical specialists thought antibiotic resistance was a problem in their practice, as compared to 18% of surgical specialists (p value 0.01). Only 24% of the respondents felt that general knowledge of antimicrobial resistance is relevant when prescribing antimicrobials for individual patients. 61% felt that antibiotics available to them are of inferior quality.

The following factors were seen as the cause of the antimicrobial resistance; lack of access to local antibiogram (96%), widespread or overuse (93%), self-antibiotic prescription (85%), failure to wash hands between patient examination (48%), use of broad spectrum (46%), poor adherence to national guidelines (9%), and misuse of antibiotics for unknown febrile illness (7%).

Respondents felt the following interventions could prevent emergence of antibiotic resistance

- Access to local antibiogram (85%)
- Local / institutional guidelines (72%)
- Ban on over the counter sale of antibiotics (72%)
- Educational programmes in antimicrobial stewardship (52%)
- Committee to monitor and approve use of antimicrobials (24%).

DISCUSSION

Study by Willemsen *et al.* [2], found that 37.4% of antibiotic usage in the hospital setting was inappropriate. According to the study conducted by Roger PM *et al.* [1] inappropriate antibiotic therapy started in the emergency department is due to erroneous diagnosis of infection, and inexperience of the prescribers.

A larger proportion of the surveyed respondents in a study by MO Cotta *et al.* [5] in Australia, believed that the antibiotic resistance was more of serious problem in other hospitals, rather their own. In the same study 58% of the respondents felt that improving prescribing pattern would reduce the incidence of antimicrobial resistance. The study also noted very low acceptance rate (52%) for prior approval for use of antibiotics. Similar findings are noted in our study with only 24% agreeing for a prior approval process.

In study conducted by Bannan A *et al.* [7], though the participants thought it seeking approval for antimicrobial use made them choose antimicrobials with care. But they thought it was time consuming and distracting them from their clinical duties. Few felt it undermined their autonomy.

Abera *et al.* [4] 65% of physicians replied they need training on antimicrobial stewardship. Only 48% of physicians had exposures to local antibiogram data, which is similar to our study (46%). 72% were knowledgeable about antimicrobial resistance. The two most important factors mentioned for development of resistance were poor adherence to prescribed antimicrobials (80%) and overuse of antibiotics (81%). Factors associated with excessive antibiotic

prescriptions were patient drive (56%), treatment failure (79%), unknown febrile illness (40%) and upper respiratory tract infections (33%).

Fifty-seven percent of the residents considered the antimicrobials in their hospital were of poor quality [3]. More than 50% of the antimicrobials are purchased without prescription [8]. In study by Wester *et al.* [6] 97% of the respondents believed widespread and inappropriate use of antimicrobials was responsible to antimicrobial resistance. Only 60% favoured restricting use of broad spectrum antibiotics.

In study conducted by Pulcini *et al.* [9] it was identified that, the perception of cause's antimicrobial resistance was at variance with available medical literature. The prolonged use of antibiotics and poor hand hygiene were rarely being perceived as causes. The educational interventions were preferred interventions, rather than restriction on antimicrobial use.

CONCLUSION

The lack of access to the local antibiogram patterns and local/institutional guidelines are a major drawback for prevention of emergence of resistance. The failure to recognise lack of hand washing, use of broad spectrum antibiotics, use of antibiotics in unknown febrile illness and poor adherence to national guidelines as causes of antibiotic resistance is a matter of concern. The minimal or no ongoing education of antibiotics is alarming and needs to be addressed.

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