

Assessment of knowledge, attitude and practice of interns towards antibiotic resistance and its prescription in a teaching hospital: a cross sectional study

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ABSTRACT

Background: Aim of the present study is to assess the knowledge, attitude and practices adopted by interns towards the antibacterial resistance and prescription.

Methods: This is a cross sectional questionnaire based study conducted among the interns working in a teaching hospital. After obtaining the consent, the interns were asked to answer the preformed structured questionnaire to evaluate their knowledge, attitude and practice towards antibiotic resistance and prescription. Completed questionnaire were collected, compiled and data was analysed using descriptive statistics. Chi-square test was also used at appropriate places to determine the statistical significance.

Results: A total of 80 participants completed the questionnaire. The response rate was 100%. Most of the interns had good knowledge of antibiotic resistance. 95% of the interns felt that the antibiotic resistance is an important and serious global health issue. Only 21.2% felt the need of antibiotic to treat common cold symptoms. Majority of the respondents agreed with the need of an antibiotic policy in the hospital to achieve rational antibiotic usage. With regard to having a course on rational use of antibiotics in the curriculum, 63.7% agreed and 31.2% strongly agreed.

Conclusions: Our study has generated information about the knowledge, attitude and practice of interns towards antibiotic resistance and prescription which can help planning for an effective curriculum regarding antibiotic resistance and prescription.

Keywords: Antibiotic resistance, Interns, Knowledge, Attitude, Practice

INTRODUCTION

Antibiotics are the most commonly prescribed drugs across the globe. But unfortunately, it has been prescribed irrationally in large number of cases.¹ This has resulted in bacterial resistance, treatment failures and hence additional costs to therapy.² There are various reasons for the overuse of antibiotics, such as prescription of antibiotics by healthcare professionals for all fever patients with the concern of patient not turning up for follow up, lack of microbiology labs or patients reluctance for investigations and patients expectation for an antibiotic prescription and also public's lack of knowledge about the correct use of antibiotics.³

Prescribers have an important role to play against antibiotic resistance by rational prescription and also to educate and create awareness among patients regarding usage of antibiotics.⁴ Since the new generation health care professionals are the future prescribers of antibacterial agents their knowledge, attitude and behaviour in relation to public usage of antibiotics can greatly impact in the future on antibiotic-related issues.⁵ Knowledge on driving forces behind the prescription of antibacterial agents is required to change the prescribing practice which is obtained by Knowledge Attitude and Practice-survey.⁶ Hence, this study will be conducted to evaluate the knowledge, attitude and practices adopted by interns towards the antibacterial agents usage and resistance.

Objective of the study

To assess the knowledge, attitude and practices adopted by interns towards the antibacterial agents usage and resistance.

METHODS

Study population

This is a cross sectional questionnaire based study that was conducted in the teaching hospital attached to Mandya Institute of Medical Sciences, Mandya after getting the approval of Institutional Ethical Committee. This study was conducted among interns working in this teaching hospital.

Study tool

A structured questionnaire was developed after reviewing the relevant literature and the questionnaires used in similar studies.⁷⁻¹⁰ The questionnaire was also validated by the subject experts for its content and relevance. The first section of the questionnaire involves the demographic data of the participant such as age, sex, address and educational qualification. The second section of the questionnaire involves questions to assess the knowledge of the participant about the antibiotic usage and resistance. The questions in this section should be answered as 'yes' or 'no'. The third section of the questionnaire consists of questions to study the attitude of the participants towards the antibiotic use and resistance. A 5-point Likert scale whose response ranges from strongly agrees to strongly disagree was used in this section. The fourth section of the questionnaire consists of questions to evaluate the practice of antibiotic prescription by the interns. They were also assessed using 5-point Likert scale with response ranging from very-sure to very-unsure.

Study procedure

Each intern was explained the objectives of the study and their willingness to participate in the study were obtained. After which the questionnaire was distributed and they were asked to complete it anonymously. Completed questionnaires were collected and analysed.

Statistical methods

Descriptive statistical analysis was used to generate frequencies, percentage and proportions. Chi-square test was also used at appropriate places to determine the statistical significance.

RESULTS

In our study a total of 80 questionnaires were distributed and all the questionnaires were returned with complete response. The response rate of the study was 100%. Among the participants 41 were males and 39 were females. The mean age of the respondents was 23.6 years.

In the present study it was observed that the majority of the respondents (93.7%) were aware that antibiotics won't cure viral infections. 78.7% of them disagreed with the need of antibiotics in the treatment of common cold. Only 11.2% of the respondents felt that the newer and costly antibiotics will have better efficacy. All the participants of the study (100%) agreed that indiscriminate use of antimicrobial agents leads to the emergence of growing problem of resistance. 95% of the participants also felt that the antibiotic resistance is an important and serious global health issue. The difference in responses was found to be statistically significant as shown in Table 1. No significant difference was found in response for knowledge related questions among both the genders.

Table 1: Knowledge of respondents regarding antibiotic resistance and its prescribing.

Statement	Yes (N=80) n (%)	No (N=80) n (%)	P
Patients with common cold symptoms need antibiotic treatment	17 (21.2)	63 (78.7)	0.0001
Antibiotics cure viral infections	5 (6.2)	75 (93.7)	0.0001
Is the efficacy better if the antibiotics are newer and more costly?	9 (11.2)	71 (88.7)	0.0001
Antimicrobial resistance means that if they are taken too often, antimicrobials are less likely to work in the future	66 (82.5)	14 (17.5)	0.0001
Indiscriminate antimicrobial use leads to the emergence of the growing problem of resistance	80 (100)	0 (0)	0.0001
Antibiotic Resistance is an important and serious global public health issue	76 (95)	04 (5)	0.0001

Table 2: Attitude of the respondents towards antibiotic resistance and its prescription.

Statement	Strongly agree (N=80) n (%)	Agree (N=80) n (%)	Undecided (N=80) n (%)	Disagree (N=80) n (%)	Strongly disagree (N=80) n (%)
Antibiotics are safe drugs; hence they can be commonly used	02 (2.5)	18 (22.5)	11 (13.7)	42 (52.5)	07 (8.7)
Adverse effects of antimicrobials are reduced by using more than one antimicrobial at a time	01 (1.2)	15 (18.7)	08 (10)	46 (57.5)	10 (12.5)
It is important to obtain culture and sensitivity report for antibiotic prescription	18 (22.5)	48 (60)	07 (8.7)	06 (7.5)	01 (1.2)
Skipping one or two doses does not contribute to the development of antibiotic resistance	02 (2.5)	16 (20)	08 (10)	45 (56.2)	09 (11.2)
There is a need to establish course on 'rational use of antibiotics' in the curriculum	25 (31.2)	51 (63.7)	1 (1.2)	03 (3.7)	0 (0)
An antibiotic policy in a hospital would be more helpful to achieve rational antibiotic usage	30 (37.5)	48 (60)	02 (2.5)	0 (0)	0 (0)

In our study 22.5% of the participants agreed and 2.5% strongly agreed that antibiotics are safe and hence can be used commonly. 18.7% agreed and 1.2% strongly agreed that adverse effects of antimicrobials will be reduced by using more than one antimicrobial at a time. 60% agreed and 22.5% strongly agreed that it is important to obtain culture and sensitivity report for antibiotic prescription. Only 20% agreed and 2.5% respondents strongly agreed that skipping one or two doses does not contribute to the development of antibiotic resistance. With regard to having a course on rational use of antibiotics in the curriculum, 63.7% agreed and 31.2% strongly agreed. Most of the respondents felt that (60% agree, 37.5% strongly agree) an antibiotic policy would be more helpful to achieve rational antibiotic usage.

Practice of interns towards antibiotics prescribing has been shown in Table 3. In our study it was observed that 75% of the respondents were sure and 7.5% were very sure about choosing suitable antibiotic for an infectious disease. 78.7% were sure and 5% of them were very sure of choosing appropriate dose of antibiotic. 80% were sure and 12.5% were very sure about deciding the duration of antibiotic therapy, whereas 35% of the interns were not sure about choosing the combination of antibiotics whenever required. It was also observed that 27.5% of the participants were not sure of interpreting microbiological results and 37.5% were not sure of correctly diagnosing infectious conditions.

Table 3: Response of interns to the questions about practice towards antibiotic prescribing.

Statement	Very sure (N=80) n (%)	Sure (N=80) n (%)	I don't know (N=80) n (%)	Unsure (N=80) n (%)	Very unsure (N=80) n (%)
Choosing suitable antibiotic for an infectious disease	06 (7.5)	60 (75)	09 (11.2)	05 (6.2)	0 (0)
Choosing appropriate dose of antibiotic	04 (5)	63 (78.7)	07 (8.7)	06 (7.5)	0 (0)
Deciding the duration of antibiotic therapy	10 (12.5)	64 (80)	0 (0)	06 (7.5)	0 (0)
Choosing combination of antibiotics when necessary	08 (10)	44 (55)	15 (18.7)	13 (16.2)	0 (0)
Interpreting microbiological results	05 (6.2)	53 (66.2)	12 (15)	10 (12.5)	0 (0)
Making decision about correct diagnosis of infection	07 (8.7)	43 (53.7)	11 (13.7)	19 (23.7)	0 (0)

DISCUSSION

This study was conducted to evaluate the knowledge, attitude and practice of interns towards antibiotic resistance and prescription. Antibiotic resistance has become an important and serious public health problem.³

Most of the participants in our study were aware of this fact. A similar response was observed in a study conducted by Jorak, et al.¹⁰ All the participants in our study were aware of the fact that indiscriminate use of antimicrobial agents results in the bacterial resistance. Similarly, another study conducted in China has also

reported that majority of the participants including medical students were aware of the fact that abuse of antibiotics is a main cause for antibiotic resistance.⁷

Majority of the participants in our study felt that antibiotics are not required to treat the symptoms of common cold. A similar response was also observed in another study.¹⁰ However, study by Hueng, et al has shown that majority of the participants had a belief that antibiotics can speed up recovery of common cold, cough and a number of other related illnesses arising from viral infections.⁷ In our study also there were some respondents who preferred the use of antibiotics for upper respiratory tract infections. Studies have proven that there is no benefit from antibiotics in the treatment of common cold.¹¹ The wrong perception can result in increased usage of antibiotics, which in turn can result in an increase in antibiotic resistance.¹² This observation confirms the need for educational intervention.

Attitude of interns towards antibiotics prescription and resistance was found to be casual and lax in some cases. A quarter of the participants in our study felt that the antibiotics are safe and hence agreed with their frequent usage. Another study on medical students has also shown, much larger number of participants agreeing with the same fact.⁸ 22.5% of the participants felt that incompleteness of antimicrobial therapy does not contribute to antibiotic resistance. In our study there were some interns who thought that usage of more than one antibiotic at a time can reduce the adverse effects.

The possible reason for this attitude may be attributed to the hospital environment having impact on the intern's antibiotic practice. This is supported by the observations of a study by Hueng, et al which showed that the scores on behaviour towards antibiotics usage was lower for fourth and fifth year medical students when compared with their juniors.⁷ Hence there is a need for strict antibiotic policy for its rational usage which was also felt by the participants of our study.

With regard to the practice of antibiotic prescription it was observed that more than a quarter interns in our study were not sure of choosing combination of antibiotics, interpreting microbiological results and making decision about correct diagnosis of infection. Also, most of the participants in our study felt the need to have a course on rational use of antibiotics in the curriculum. Similarly, a survey done on medical students in United States has shown that 90% of the participants desiring for more education on appropriate prescription of antibiotics.¹³ Inadequate training during their undergraduate period might be responsible for the lack of confidence in antibiotic prescription. Frequency of antibiotic prescription and the concern of antibiotic resistance necessitate the undergraduate and postgraduate curriculum to have antimicrobial chemotherapy as a vital topic.¹⁴

It becomes very difficult to change the established beliefs and behaviour after the doctors becomes qualified.¹⁵ Hence, it is important to educate young doctors about antibiotic resistance and its prescription during their training.^{15,16} The undergraduate curriculum should include problem based learning or vignette-based clinical scenario teaching methods that can be more effective than regular formal lectures.⁴ Case-based scenarios teaching can involve small group activities involving the management of common infections where antibiotics are often misused. Also, the principles of antibiotic stewardship can be highlighted. The curriculum should also include skills to communicate with the patients especially in uncertain diagnosis situation which helps reduce the unnecessary prescription.^{17,18}

Medical education should also include strategies to change the behaviour apart from increasing the knowledge for improved patient outcomes.¹⁹ Young generation medical professionals should be tailored with a sense of responsibility that, as prescribers, their responsibility pertains not only to the patients benefit and wellbeing but also to the society at large.

Thus our study has generated information about the knowledge, attitude and practice of interns towards antibiotic resistance and prescription which helps us to plan for an efficient and effective curriculum regarding the same.

CONCLUSION

Our study concludes that there is a need for multipronged approach that includes implementation of a strict antibiotic policy and to plan for an effective undergraduate curriculum regarding antibiotic resistance and prescription which can improve the quality of antibiotic prescription and thereby minimizing the antibiotic resistance.

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