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Research Article

Assessment of antimicrobial self-medication in undergraduate medical students in a rural tertiary care teaching hospital: a cross-sectional questionnaire-based study

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ABSTRACT

Background: According to WHO's definition, "self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms". A sensible clinical use of antimicrobials is crucial to prevent the occurrence of antimicrobial resistance. As undergraduate medical students are aware of the various antimicrobial agents and diseases, this study assessing antimicrobial self- medication carries a significant value.
Methods: A cross-sectional questionnaire-based study was conducted among the undergraduate medical students of Adichunchanagiri Institute of Medical Sciences, BG Nagar, Mandya, Karnataka.
Results: The prevalence of antimicrobial self-medication among the medical undergraduates was 48.4%. Male student participation was 53.2%, whereas female students 46.8%. Among the antimicrobial agents self-medicated, azithromycin (55.6%) was the most common, followed by amoxicillin (12.3%), ciprofloxacin (7.4%), ofloxacin (6.2%), cefixime (4.9%), levofloxacin (3.7%), metronidazole (2.5%), amoxicillin + clavulanic acid (2.5%) and others (5%). The indications for self-medication reported were upper respiratory infection (66.6%), gastroenteritis (12.3%), fever (11.1%), boils (3.7%), acne, tonsillitis and urinary tract infection, 1.2% each. Reasons for seeking self-medication: About 54.4% students felt that their illness is mild in nature and 21% were confident about the illness and treatment. Choice of antimicrobial agents was based on previous prescription of physicians (51.6%) and textbook knowledge (39%). 90% of students had completed the course of treatment, 76.1% were aware of antimicrobial resistance and 92% students considered self-medication as a component of self-care.
Conclusions: Our study shows that antimicrobial self-medication is widely practiced among under-graduate medical students of the institute. In this situation, faculties should create awareness and educate their students regarding advantages and disadvantages of antimicrobial self-medication.

Keywords: Self-medication, Antimicrobial agents, Undergraduate medical students, Antimicrobial resistance

INTRODUCTION

Self-medication with antimicrobial agents is a global phenomenon and potential contributor to antimicrobial resistance. Antimicrobial resistance has become one of the most serious public health concerns worldwide.

The desire to take medicine is perhaps the greatest feature which distinguishes man from animals. This desire is perhaps the key factor for the practice of self-medication which can be defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment. Medical students start practicing self-medication during their formative years of undergraduate training due to

confidence in their acquired knowledge. A previous successful experience is also the main reason for it.

Emerging resistance to antimicrobials is fueled by self-medication which is becoming real global problem.[1] To combat microbial resistance issues, new antimicrobials are under development. Presence of extensive range of over the counter drugs opens up new avenues for inappropriate use of antimicrobials. Inappropriate antimicrobial usage is the major cause of antimicrobial resistance so research is needed to evaluate the specific antimicrobial usage patterns that are prevalent in developing countries so that interventions can be developed and implemented. Self-medication assumes a special significance among the medical students as they are the future medical practitioners and have a potential role in counseling the patients about the advantages and disadvantages of self-medication. Medical students also differ from the general population because they are well-exposed to the knowledge about diseases and drugs. This study is to evaluate the prevalence, pattern and perception of self- medication with antimicrobials among medical undergraduate students.

METHODS

Study design

The study conducted was a cross-sectional, questionnaire-based study.

Study setting

The study was conducted in Adichunchanagiri Institute of Medical Sciences, BG Nagar, Mandya district, Karnataka during the period of January - March 2014 after obtaining permission from the institutional ethics committee, Adichunchanagiri Institute of Medical Sciences, BG Nagar.

Study participants

During the study, students from 1st, 2nd, 3rd and 4th year MBBS participated.

Aims and objectives

To assess the prevalence, pattern and perception of antimicrobial self-medication among undergraduate medical students of A.I.M.S, BG Nagar, Mandya district, Karnataka.

Study procedure

Prior permission was obtained from the ethics committee of the institution for conducting the study. The purpose of the study was explained to the participating students and confidentiality was ensured. After obtaining informed consent, they were asked to fill up a printed, semi-structured questionnaire. Out of 250 students, 194 completed questionnaires were considered for the study.

The questionnaire contained questions regarding demographic information, whether the student sought self-medication in the preceding 6 months, illness for which the medication was used, drug/drug groups used by them, source of the drug information, the reason for not consulting a healthcare professional, course of the treatment, knowledge of adverse effects of drugs used, awareness about antimicrobial resistance, further steps after therapy failure and their attitude towards self-medication.

Statistical analysis

Returned questionnaires were checked for completeness of data. Descriptive data were expressed as percentages.

RESULTS

A total of 194 students were assessed for their attitude and perception regarding self- medication behavior out of which 53.2% were males and 46.8% were females. The mean age of the respondents was 20.3 ± 1.5 years.

The prevalence of antimicrobial self-medication was 48.4% (n= 194).

Table 1: Diseases for which antimicrobial self-medication was practiced.

Diseases	%
Upper respiratory tract infection	66.66%
Gastroenteritis	12.35%
Fever	11.11%
Boils	3.7%
Urinary tract infection	1.2%
Tonsillitis	1.2%
Ear infection	1.2%
Acne	1.2%
Conjunctivitis	1.2%

Table 2: Antimicrobials which were self-medicated.

Self-medicated antimicrobials	%
Azithromycin	55.6 %
Amoxicillin	12.35%
Ciprofloxacin	7.41%
Ofloxacin	6.71%
Cefixime	4.94%
Levofloxacin	3.7%
Amoxicillin + Clavulanic acid	2.47%
Metronidazole	2.47%
Erythromycin	1.23%
Nitrofurantoin	1.23%
Norfloxacin	1.23%
Penicillin	1.23%

Table 3: Reasons for self-medication.

Reason	%
Mild nature of illness	54.4%
Self confidence	20.8%
Easy and effective	19.8%
Saves time and money	4.9%

Table 4: Attitude towards self-medication.

Attitude	%
Part of self-care	92%
Advice self-medication to friends	4.81%
Continue/start self-medication	3.21%

Table 5: Basis for antimicrobial selection.

Source of selection	%
Previous prescription of physician	51.57%
Textbook knowledge	39%
Other reasons	8.42%
Advertisements	1.05%

Table 6: Antimicrobial course completion.

Antimicrobial course completion	
Completed	90.22%
Not completed	9.78%

Table 7: Course taken on failure of antimicrobial treatment.

Course taken on failure of antimicrobial treatment	
Consulted physician	89.33%
Choose a different antimicrobial agent	10.66%

Table 8: Awareness about antimicrobial resistance.

Awareness about antimicrobial resistance	
Aware	76.1%
Not aware	23.9%

DISCUSSION

Antimicrobial resistance is a current problem world-wide; particularly in developing countries. It is widely believed that human malpractices such as indiscriminate drug use, inadequate dosing and incomplete courses have contributed to the emergence and spread of antimicrobial resistance.

Our questionnaire based study about self-medication with antimicrobials among undergraduate medical students has prevalence of 48.4%. This study assessed the prevalence, pattern and perception of antimicrobial self-medication. Prevalence of antimicrobial self-medication reported in other studies from India among medical students are 39.3%, 31.09% and 34%.[2-4] Our results are higher than that reported in other studies. The prevalence has been reported to be 3% in northern Europe as compared to the 4-75% in Asia.[5]

The observed frequency of antimicrobial self-medication in general population study is 57.6%,[6] which is similar to 56.3% and 56.9% documented in community of Abu Dhabi[7] and Nigeria.[8]

The illnesses which prompted medical students to practice self-medication in our study were upper respiratory tract infections (common cold, sore throat and sinusitis) at 66.6%, gastroenteritis (12.3%) and fever (11.1%). Other studies showed that upper respiratory tract infection is the most common indication with prevalence of 58.7%,[3] 22.1%,[9] 20.3%.[10] 85-95% of adult sore throats are viral[11,12] and resolve spontaneously without antimicrobials, hence lead to irrational antimicrobial use. In India, 45-80% of patients with Respiratory Tract Infection (RTI) symptoms and diarrhoea are estimated to receive an antimicrobial.[13]

Also RTI is the principal reason for antimicrobial self-medication in other countries such as Palestine,[14] Turkey,[15] Yemen,[16] European countries,[17] Malaysia[18] and Jordan.[19]

In our study, azithromycin (55.6%) was the most commonly used antimicrobial followed by amoxicillin (13.58%) and ciprofloxacin (7.41%). Beta lactam antimicrobials were most commonly self-medicated by students in other studies.[2]

In our study the most common reason for self-medication reported by a large number of participants was the mild nature of illness (54.45%), 20.79% were confident about the knowledge regarding drugs and their use, 19.8% of students felt self-medication is easy and effective and 4.95% practiced self-medication as it was time saving.

Majority of the medical undergraduates (66.29%) knew that the normal duration of treatment was supposed to be at least a minimum of 5 days; whereas 33.7% were unaware of it. 90.22% of the respondents completed the course of treatment.

A proportion of 9.78% of the students who practiced self-medication indicated that their treatments were not successful, while 90.22% indicated that treatments were successful. In the case of unsuccessful treatment, 89.3% of the respondents indicated that they consulted physician, while the remaining 10.6% continued with self-medication, but changed the antimicrobial.

When asked about the basis for antimicrobial selection 51.57% medical students have repeated the previous physician prescription, 39% used textbook knowledge, 9.47% chose it by other ways like senior student suggestion, advertisement.

23.91% denied having any knowledge about antimicrobial resistance but 76.09% correctly knew that indiscriminate use of antimicrobials can lead to increased antimicrobial resistance.

When approached for their attitude towards self-medication of antimicrobials, 91.9% students had opinion as it is part of self-care, 4.8% were willing to advice friends to practice self-medication and 3.3% were for continuation of self-medication.

Perception of illness and incessant advertising among others have increased the prevalence of self-medication which accounts for about 2.9-3.7% causes of death in hospitals as a result of drug-drug interactions.[6]

Tackling antimicrobial resistance requires a cohesive, consistent approach to restrict antimicrobial self-medication and prescribing. Policy changes have to stand firmly at a national level to encourage rational antimicrobial use, must also play an important role in facilitating student education and helping them to understand that in most cases antimicrobials are not appropriate. Data from Asia show prevalence of multiple drug resistance at almost 60%, compared with 9-24% in the US and 0-43% in Europe.[20]

Medical teaching faculty should take up the responsibility of educating undergraduate students regarding the hazards of anti-microbial self-medication.

Limitations of the study

1. The study was based on self-reported data about self-medication of antimicrobials thus prone to recall bias.
2. Although the students were encouraged to complete the questionnaire independently, mutual influence between the students could not be entirely ruled out.
3. The results of the study would have been more generalized if it could involve students of other medical colleges.

CONCLUSION

Irrational use of antimicrobials must be tackled by government health care system by implementing the strict policies. General population as well as health care professionals must become aware about drug resistance and its further complications. Prospective of self-medication of antimicrobials should be conveyed in proper way to medical students so to play their major role in controlling and decreasing the emerging antimicrobial drug resistance.

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Ethical approval: The study was approved by the institutional ethics committee

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