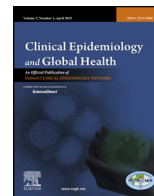




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Original article

Antibiotic use among health science students in an Indian university: A cross sectional study

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ABSTRACT

Background: Antibiotics, one of the frequently prescribed medications in modern medicine is plagued by misuse and consequent development of resistance. We report the knowledge and practice of antibiotic use and the extent of self-medication with antibiotics among health science students of a university in south India.

Methods: A cross-sectional study was carried out that included students from various disciplines such as Medicine, Dentistry, Pharmacy, and Nursing. A random sample of 531 students, were recruited into the study and those students with a history of any chronic disease requiring long-term treatment were excluded.

Results: Almost 58% reported using antibiotics in the last 3 months and 39% frequented its use over 3 times in a year. Thirty percent stated that they had procured antibiotics over the counter without a valid prescription. Common ailments that reportedly triggered antibiotic use, ranged from mild fever to skin infections. Medical (25%) & Dental (36%) students declared self-prescription as a frequent practice. β -lactam group was the most popular group of antibiotics, with over 44% vouching its use.

Conclusion: There appears to be inadequate adherence to antibiotic policies among the study population warranting periodic training and monitoring. Establishment of an effective antibiotic stewardship could be the way forward.

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1. Introduction

Antimicrobial resistance (AMR) is responsible not only for increasing the health care burden on the society but a lot of patients fall victim to avoidable deaths due to infections with resistant strains. The problem has become universal and despite the World Health Organization's best efforts to create awareness regarding this, the challenge continues, given that antibiotics are the most commonly prescribed antimicrobials they are very often misused^{1,2}. This indiscriminate use of antibiotics has resulted in bacterial resistance that has considerable clinical and economic impact^{3,4}. Evidence shows that even in the developed part of the world almost 60% of the people are unaware that antibiotics are

ineffective against viruses⁵. On the other hand, in developing countries like India, antibiotics are very often dispensed as an over the counter medication leading to arbitrary use.

Studies have shown self-medication to be a common problem among college students especially in developing countries wherein strict implementation of laws pertaining to dispensing of prescription-only medicines is lacking^{6,7}. Partial knowledge and easy access to these medications among this group are likely to perpetrate misuse.

Students in the health sciences sector are the future of the health care of the society and thus, it becomes important to ensure proper awareness regarding antimicrobials, especially antibiotics. In the background of this context, this study was designed with an aim to identify the knowledge and practice of antibiotic use among health science students in a university in South India.

2. Materials & methods

This was a cross sectional study carried out among students of various disciplines (Medicine, Dentistry, Pharmacy, and Nursing) of

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Table 1
Prescription source for obtaining the antibiotics (N=456).

Source of Prescription	MBBS (198) Number (%)	Dental (89) Number (%)	Nursing (89) Number (%)	Pharmacy (80) Number (%)
Doctor	141 (71.2)	56 (62.9)	87 (97.7)	70 (87.5)
Pharmacist	007 (03.5)	01 (01.1)	02 (02.3)	04 (05.0)
Self	050 (25.3)	32 (36.0)	00	06 (07.5)

a health science University in southern India. Students with history of any chronic disease requiring long- term treatment were excluded from the study as also those who did not give consent.

Estimating the practice of self- medication to be 42% from literature⁸ for a relative precision of 10 and 95% level of confidence, the minimum required sample was 531. Accordingly, these many number of students, proportionate to size from their respective disciplines, were randomly approached by the investigators for recruiting them into the study. Confidentiality was maintained by according the participants a coded identity. Data was analysed using Statistical Package for Social Sciences (SPSS) version 15.0 and presented in proportions.

Ethical clearance was obtained from the Institutional ethics committee (IEC) and due permissions were sought from heads of the respective institutions prior to commencement of the study. Purpose of the study and its objectives, were clearly explained to all the participants, prior to obtaining a written informed consent from them. A pre-designed questionnaire was administered to each participant to collect the necessary information and they were instructed to fill the questionnaire at a place that had sufficient light and was relatively quiet. In the event of more than one participant being present at the same time, discussions among them were discouraged while they attempted the questions and the investigator was present to clarify any doubts regarding the questionnaire.

The questionnaire consisted of 21 questions of which three were open ended. It broadly comprised of two sections. The first section queried regarding general demographical information about the participant. The second section contained questions pertaining to source of antibiotic procurement, pattern and indications of use and awareness regarding antibiotic resistance. Practice regarding antibiotic use was surveyed through closed

ended questions such as when the antibiotic was taken, how many times in a year, which antibiotic was commonly used and, whether the full course of antibiotic was adhered to.

3. Results

Of the 531 students who were approached, 456 gave consent to participate in the study (response rate of 86%). Of those who consented 43.5% were from medicine (198), 18% belonged to pharmacy (80), while dental (89) and nursing (89) students constituted 19.5% each. There were 205 male students (45%) and 251 female students (55%).

Almost 48% reported to having consumed antibiotics in the last 3 months; nearly 60% at least once a year, while the remaining 40% claimed its use more than twice a year.

Reported self-medication was high among dental (36%) and medical students (25%) while none of the nursing students admitted to it (Table 1). A higher number of dental (12.4%) and pharmacy students (13.8%) stated using the same antibiotic repeatedly irrespective of the illness they suffered from in comparison to medical students (9.6%)

Relatively more number of dental students (73%) reported to completing the course of antibiotics, followed by medical students (67.2%). Nursing students conveyed poor compliance with only one third confirming to completing the course once started (Fig. 1).

As illustrated in Table 2, across disciplines students reported using antibiotics for conditions that could most probably have been viral. A good number (146) of students believed that antibiotics are effective against viral and fungal infections besides bacterial. While majority (77.6%) of the students acquired antibiotics with a valid prescription from a physician, there were others, who obtained it from various unauthorised sources such as over-the-counter with self- prescription, free samples and leftover antibiotics from friends.

Approximately 11% (50) students were unaware about the name of the antibiotic that they used. This information was included in the 'Others' category in Fig. 2.

4. Discussion

The objective of this study was to assess the practice and knowledge regarding antibiotic use among Indian students

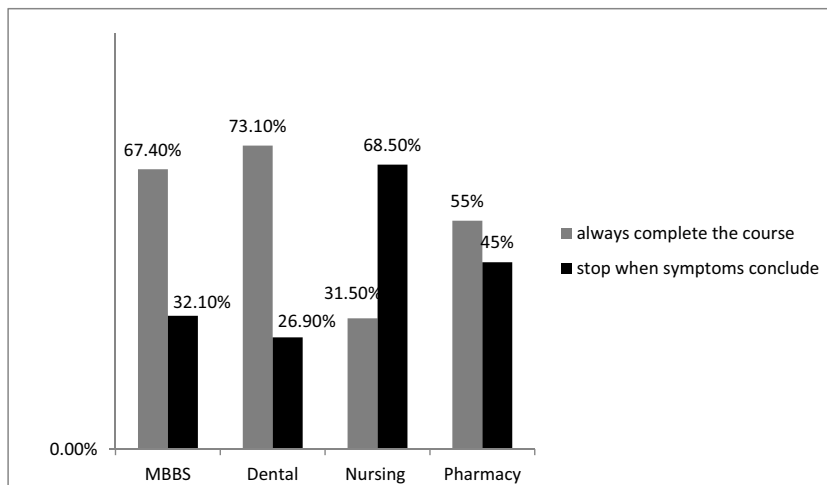


Fig. 1. Pattern of antibiotic intake once started (n = 456).

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