SELF-MEDICATION WITH ANTIMICROBIAL DRUGS AMONG UNIVERSITY STUDENTS IN A NORTHEAST REGION OF ROMANIA

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SELF-MEDICATION WITH ANTIMICROBIAL DRUGS AMONG UNIVERSITY STUDENTS IN A NORTHEAST REGION OF ROMANIA (Abstract): Self-medication with antimicrobial drugs is an important problem in the world and may lead to serious consequences for healthcare systems. **Objective:** To evaluate the prevalence and patterns of self-medication with antimicrobial drugs among university students in a Northeast region of Romania. **Material and methods:** A cross-sectional questionnaire-based study was conducted to collect data from medical and non-medical students who lived in residence halls. Data were analyzed using descriptive statistics and the chi-square test, when applicable. **Results:** Out of the 320 questionnaires distributed, a total of 281 students completed and returned the questionnaires. Among these, 115 (41%) respondents admitted to have used at least one antibiotic in the six months prior to the survey, 44% of whom did not seek medical advice (irrational self-medication). The most common antimicrobial drugs used for self-medication were amoxicillin (37%), amoxicillin-clavulanate (33%), ciprofloxacin and penicillin (14%) and the most frequently reported reasons for self-medication were respiratory and oral infections (31%), common cold (25%), and genitourinary infections (20%). Some students mentioned the use of more than one antimicrobial drug, for more than one disease. **Conclusions:** self-medication with antimicrobial drugs is a relatively common practice among students in Romania. This suggests the need for interventions to prevent the irrational use of antimicrobials, such as the implementation of national programs for public education regarding the risks and consequences for the health of irrational use of antimicrobials. **Keywords:** SELF-MEDICATION, ANTIMICROBIAL DRUGS, STUDENTS.

Self-medication is defined as the use of any type of drug to treat self-diagnosed disorders or symptoms, without seeking the advice of a physician, either for diagnosis, prescription or surveillance of treatment. The World Health Organization (WHO) introduced the term “rational” self-medication, which limits the use of medications without prescription only to over-the-counter (OTC) drugs, thus helping prevent and treat minor illnesses that do not require medical consultation and save medical resources for more severe cases (1). Health authorities for each country have to ensure that only safe drugs are made available OTC and that patients have all the information regarding the drug usage, contraindications and side-effects (2-4).

Self-medication with antimicrobial drugs, a form of irrational use of medi-
Self-medication with antimicrobial drugs among university students
in a northeast region of Romania

cines, is a common phenomenon in many countries, with major implications for the public health: emergence of resistant microorganisms, particularly in developing countries, increased risk of drug interactions and side effects, treatment failures and prolonged hospital stays, wastage of medical resources and increased morbidity-mortality. Self-medication is more common among the youth and it is associated with several factors related to modern society, such as less time for seeking medical advice, increased costs of medical consultations, poor compliance to treatment and aggressive pharmaceutical publicity (5-11).

Self-medication practices vary widely in different populations and previous studies have shown that age, gender, economic status, education level and medical knowledge are important predictors of self-medication (12-15). Students are a population of great interest regarding self-medication practices since they represent a privileged segment of the population, with access to information. Moreover, the attitude of medical students regarding self-medication may reflect in their future medical practice.

To the best of our knowledge, in Romania there are no studies regarding the self-medication practices with antimicrobial drugs among university students. Therefore, a cross-sectional study was conducted to evaluate the prevalence and patterns of self-medication with antimicrobial drugs among medical and non-medical university students. We aimed to describe the most common antimicrobial drugs used for self-medication and the ailments students treat with antimicrobial drugs.

MATERIAL AND METHODS

This cross-sectional questionnaire-based study was conducted on a sample of students from residence halls of two universities (“Grigore T. Popa” University of Medicine and Pharmacy and “Alexandru Ioan Cuza” University) from Iaşi, in the Northeast of Romania, from October to December 2011. The students were selected by convenient sampling. The study was approved by the Ethics Committee of the “Grigore T. Popa” University and written consent was obtained from each participant after a briefing on the objectives of the study.

The including criteria were: medical or non-medical students enrolled in the above-mentioned universities, aged between 18 and 31 years old, both genders, healthy. The non-medical students group included students in the first 2 years of medical studies, who did not study pharmacology and therapeutics. Information regarding demographic characteristics (age, gender, type and year of university studies, social environment) and antimicrobial drugs use in the six months prior to the study were collected through anonymous, self-administered questionnaires with open- and close-ended questions. The questionnaires, written in Romanian language, were pre-tested and validated on a sample of 100 students to determine the application time and to clarify possible questions from the students. If antimicrobial drugs use was confirmed in the previous six months, supplementary information was asked: the name antimicrobial drug, duration of the treatment, the person who recommended the treatment and the disease treated with antimicrobial drugs. The collected data were registered in a database and analyzed using SigmaPlot 11, descriptive statistics and the chi-square test in order to test the difference between proportions. A $p$ value of less than 0.05 was considered significant. Some of the questions had multiple
answers; therefore the sum total of percentages is not always 100%.

RESULTS
Of the 320 questionnaires distributed, 281 students completed and returned the questionnaires, with a response rate of 87.81%. The demographic data of medical students and non-medical students are presented in tab. I.

TABLE I
Demographic characteristics of the respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Medical (n=141)</th>
<th>Non-Medical (n=140)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean±SD, years)</td>
<td>23 ± 1</td>
<td>21 ± 1</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>103</td>
</tr>
<tr>
<td>Social environment</td>
<td>Rural</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>114</td>
</tr>
</tbody>
</table>

Out of the 281 respondents, 115 (41%) reported that they had used at least one antibiotic in the six months previous to the survey. Antimicrobial drugs were used without medical advice (irrational self-medication) by 51 students (44%), while 64 students (56%) followed medical advice. Irrational antimicrobial drugs use was reported by 27 students (53%) as a self-recommended treatment, by 16 students (31%) according to pharmacist advice and by 17 students (33%) according to a friend or relative advice. Some students mentioned the use of more than one antimicrobial drug. There was no significant difference between medical and non-medical students \((p=0.81)\) regarding the use of antimicrobial drugs in the six months before the survey. However, in relation to the source that influenced irrational self-medication, self-prescription was mentioned by 38% of medical students compared to only 9% non-medical students \((p=0.003)\). These findings show that medi-

![Fig. 1. The most commonly used antimicrobial drugs for self-medication (more than one antimicrobial drug were used by a person).](image)
cal students are more confident in their knowledge regarding antimicrobial drugs use. Non-medical students mentioned pharmacists (19%) and friends or relatives (23%) for advice on antimicrobial drugs use compared to medical students, who mentioned taking the advice of the pharmacist and friends or relatives in 9%, respectively 7% of cases. There was a significantly higher prevalence of self-medication with antimicrobial drugs among students from urban areas ($p=0.002$) (fig. 1).

The majority of students reported self-medication with antimicrobial drugs for respiratory infections and oral infections (31%), common cold (25%), genitourinary infections (20%), while fewer students (8%) self-medicated for pain, fever, conjunctivitis, eczema or enterocolitis. Some persons mentioned more than one disease.

**DISCUSSION**

Despite the national regulations that restrict the dispensation of antimicrobial drugs without prescription, our study indicates a relatively high prevalence of irrational self-medication with antimicrobial drugs in the Northeast of Romania. Irrational use of antimicrobial drugs was reported in 44% of our students’ population. This rate is lower than countries such as Ghana (70%) and similar to countries such as Turkey (44.1%) and China (47.8%) (10, 11, 14). Other studies on self-medication with antimicrobial drugs have focused on the general population and reported variable prevalence rates between 7.3% in Indonesia (5) and 77.9% in Greece (15).

Compared to the results obtained by Olayemi et al. (16), showing a very high (80%) prevalence of self-medication with antimicrobial drugs among students from Medical and Pharmaceutical sciences compared to 42.11% of students in Social Sciences and 27.78% of Engineering students, we found that medical students had a higher frequency (38%) of self-prescription of antimicrobial drugs compared to non-medical students (9%), who more frequently had followed the advice of the pharmacist or friends and relatives. Medical students from higher years of studies, attending courses of pharmacology and therapeutics, are generally more confident in their own knowledge regarding antimicrobial drugs use and, hence, mention self-recommended antimicrobial drugs more frequently. Of particular concern is the high percent of 31% of students advised by a pharmacist regarding the antibiotic use for self-medication. Though national regulations restrict the issuing of antimicrobial drugs without a prescription, it seems that regulatory authorities often lack resources to enforce them.

The main limitation of this study consisted in the self-administered nature of the questionnaires. Therefore, the data was based on information provided by students’ recollection only. Since our study included only university students, who represent a well-informed group of individuals, our population sample may not be representative for the general population. Other limitations include the small sample group and its sampling frame based on convenience, which could be a source of possible bias.

**CONCLUSIONS**

The results of this study confirm that self-medication with antimicrobial drugs is a relatively common practice among medical and non-medical students in Northeastern Romania. Self-medication with antimicrobial drugs is associated with serious risks such as emergence of microorganism resistance, drug interactions and toxicity, wastage of medical resources and increase
in morbi-mortality. There is need for national education programs regarding the risks of irrational self-medication with antimicrobial drugs, particularly among students, who represent the young, well-informed population. Furthermore, we consider that there is need for a stronger enforcement of the regulations regarding the sale of antimicrobial drugs and the pharmaceutical publicity.

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REFERENCES


