Self-medication among medical students

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ABSTRACT
The general objective of this research was to know the prevalence of self-medication among medical students at a public university. This was a qualitative cross-sectional study carried out with students from different periods of the medical course in the municipality of Mossoró in Rio Grande do Norte, Brazil, and was approved by the Research Ethics Committee with Opinion number 3.786.118/2019. A questionnaire was applied to 110 students from different periods, containing fifteen closed questions. The collected data were tabulated and organized in a SPSS program file and submitted to descriptive statistical analysis, based on absolute and relative frequencies. The results identified that the use of self-medication is high, especially among women. Only 11.8% of participants have not self-medicated in the past year. The most commonly used medications are analgesics, anti-inflammatories, and antibiotics. The factors that influence the practice of self-medication are family, friends, pharmacists, pharmacy clerks, the internet and others. It is concluded that the rate of self-medication in the university environment is worrying, and preventive measures are needed in order to inform the risks of the use of self-medication and its adverse effects on health.

Keywords: Self-medication, Medical students, Risk factors.

INTRODUCTION

The World Health Organization (WHO)[1] defines self-medication as the selection and use of drugs without a prescription or supervision by a trained and authorized physician or health professional. It is a worldwide phenomenon and its prevalence differs depending on the population studied, the method and the recall period used. Different countries such as Germany, Portugal, Spain, India, Greece and Cuba, in addition to Brazil, show this behavior on the part of their populations2. It is considered a growing phenomenon in the Brazilian population that seeks instant relief from self-perceived pain and discomfort in the representation of drugs, without the prescription and supervision of a qualified professional. In this sense, the ease of access to obtain medicines associated with the dissemination of these substances in the media makes this practice recurrent. Thus, the irrational use of medications is a common practice among the population, with serious health consequences such as: adverse reactions, decreased efficacy and dependence, among others3,4.

Medications, when used indiscriminately, can enable aggravation and disease masking. Drug interactions, intoxication, worsening of the disease, drug dependence, allergic reactions, toxicity and even death are other health problems observed. The use of self-medication by the population is considered high and influenced by several factors, such as the increase in life expectancy, the emergence of new ones, and the reappearance of old communicable diseases, among others2,3.

The most used groups of drugs are over-the-counter drugs, usually called OTC (OTC), and financial, cultural and social aspects contribute to this practice, in addition to the user's self-perception of the conditions suffered3,4. In general, the medications resulting from this reckless and self-indulgent practice come from household stocks, interrupted treatments, or by sharing with people in their own social life, which can mask evolutionary diseases that could be detected early5,6.

These medications, even if they are over-the-counter, are not risk-free, which requires greater attention on the part of health managers and professionals, as possible poisoning and adverse effects can increase health expenditures5,6,7.

In addition to the risks mentioned, there are also other factors that lead to self-medication, such as familiarity with the medication, previous positive experiences, difficulties in accessing health services, media advertising, in addition to the symbolic function that medications have on the population7,8,9. The irrational use of drugs involves several conducts, such as the simultaneous use of many drugs without technical criteria, pharmacological groups or classes, and inappropriate and/or inappropriate medical prescriptions. The difficulties or financial cost of getting a medical appointment, the despair and anguish triggered by symptoms or the possibility of acquiring a disease, for many people, should also be considered. The lack of regulation and supervision of those who sell, as well as educational programs on the often irreparable effects of self-medication, can influence this

practice. The prescription (or guidance) of medications by unqualified people, such as friends, family members or pharmacy clerks, becomes dangerous and can be considered, in some cases, as an illegal practice of medicine10,11.

Another problem related to this practice is the individual's self-perception of the conditions suffered. The incorrect use of the drug, due to a supposed condition, can cause, in addition to microbial resistance, possible damage caused by drug interactions. The habit of self-medication, associated with information and familiarity with some drugs, reveal the inclination to self-attention, resulting from supposed knowledge about health problems, as well as the treatment of various diseases. For this reason, it is essential to create public policies and adopt health education strategies, considering the sociocultural aspects of the population. Appropriate clarifications should be ensured regarding the appropriate duration of antibiotic treatments, in addition to alerting the population about the damage to health due to indiscriminate use. Despite the advances with the prohibition of the sale of antibiotics, black and red stripe drugs still persist in many places, over-the-counter to the population8,9,10.

Self-medication among university students has been researched in several countries in Europe, the Americas and Asia11,12,13,14,15,16. In relation to this segment, especially those in the health area, studies indicate an increase in this practice in Brazil as well[17,18,19, 20,21,22,23]. In this group, this practice is due to factors such as self-confidence, arising from the theoretical and practical knowledge acquired during graduation, easy access to medicines and pharmaceuticals, direct contact with health professionals, and even lack of time to seek medical care[24,25].

A study conducted with graduates of the Dentistry, Pharmacy, Medicine, Physical Education, Nursing and Biological Sciences courses of a public university in the southern region of Brazil observed that the academic position did not play a significant role in the acquisition of inappropriate conduct. These are more related to the demographic profile of individuals. Younger, male, and single students had a higher prevalence of habits considered harmful to health. Female students showed significant acquisition of inappropriate methods for controlling body weight. The results show the importance of implementing policies aimed at intervening and preventing behaviors that are harmful to health, also among university students[16].

Based on this premise, the objective of this study was to determine the prevalence of self-medication among medical students at a public university in the state of Rio Grande do Norte, the most commonly used classes of medications, and the factors that influence self-medication.

This research is justified to the extent that knowledge in this area and with this population, in particular, is scarce in the Northeast region of Brazil and in the state. It is intended, therefore, to expand knowledge about the most used classes of drugs and the factors that influence self-medication. It is hoped that from this knowledge it may be possible to increase activities in order to

reinforce information about the dangers of self-medication among students, expanding this knowledge to other realities.

METHODOLOGY

The research was characterized as a qualitative and cross-sectional study carried out with medical students of a public university in the city of Mossoró in Rio Grande do Norte/Brazil. The study population was composed of students from the different periods of the course: twenty-two (22) from the first period; twenty-one (21) of the second; twenty-six (26) of the third; seventeen (17) of the fifth; twenty (20) of the sixth and four (4) of the seventh, totaling one hundred and ten (110) participants in accordance with the inclusion criteria (being a regularly enrolled student) and exclusion (not being a graduate student). To this end, a questionnaire was applied, containing fifteen closed questions, from January to February 2020. In the other periods, it was not possible for students to participate, as they went on vacation and the return to face-to-face classes was no longer possible due to the stoppage of teaching activities at the college due to the COVID 19 pandemic. Therefore, the sample was reduced to 35% of the universe, which met the criteria for the continuity of the research, defined as a minimum of 30% of the universe.

The participants were selected through data extracted from the Faculty Secretariat and contacted through the research scholarship team. After authorization from the teacher responsible for the classroom, the students were invited to participate in the study. Before filling out the questionnaire, they were invited to read and sign the Informed Consent Form (ICF), in compliance with Resolution 466/2012 of the National Health Council (CNS), which deals with research with human beings. Data collection was carried out through the application of a pre-coded questionnaire with closed questions. It should be noted that in the dissemination of the results it was guaranteed that no individual inferences would be made, but a compilation of the results through absolute and relative frequency.

In view of the personal content of the questions, the application methodology ensured that the questionnaire was answered with confidentiality and anonymity. The students answered in class and, at the end of the filling, they were instructed to fold the document and place it in a ballot box arranged on a table in the room. The collected data were stored and organized from statistical analyses using the IBM SPSS® software, after which they were submitted to descriptive statistical analysis.

The study was authorized by the Research Ethics Committee of the State University of Rio Grande do Norte CEP/UERN, with CAAE 2 25736619.7.0000.5294 and Opinion number 3.786.11 of 12/20/2019.

RESULTS

One hundred and ten (110) questionnaires answered by medical students about self-medication in the mentioned periods were analyzed. The sociodemographic data of the participants can be seen in Table 1.

Table 1. Sociodemographic profile of medical students. Mossoró, RN, 2020.

Variables	n	%
Age:		
Up to 19 years old	7	6,4
Over 19 to 30 years old	95	86,4
Over 30 to 40 years old	8	7, 2
Gender:		
Male	35	31,8
Female	75	68,2
Estado civil:		
Single	102	92,7
Married	8	7,3
Has its own monthly income		
Yes	11	10
No	99	90
Origin (Region)		
Central-West	8	7,3
Northeast	59	53,7
Southeast	27	24,5
On	16	14,5

Source: Prepared by the authors.

Table 1. shows that most of the participants, 86.4%, were aged between 20 and 30 years, i.e., this is a young group. Only 7.2% are in the age group between 31 and 40 years old. Women were the majority, representing 68.2% and 92.7% were single. Only 10% had their own income as a result of their own work and the majority 90% depended financially on their parents and/or guardians. Regarding origin, it was found that most come from other regions and states of the Federation. This fact has been due to the Unified Selection System - Sisu of the Ministry of Education, in which public institutions of higher education offer vacancies for candidates participating in the National High School Exam - Enem. Therefore, public universities have received candidates from various regions of the country and this is the case of the University *where* this study is located. The medical students participating in the study were 24.5% from the Southeast, 14.5% from the South, 7.3% from the Midwest, and 53.7% from the Northeast, of which 29.0% were from the state of Rio Grande do Norte. The North region had no representation.

When asked if they had resorted to self-medication in the last year, it was found that in all periods and sex there was this practice among 88.2% of the participants, which shows the high

prevalence among students. In this context, the values found in this study are similar to those of other universities in Brazil and other countries2,4,5,11,13,14,15,16.

Among women, 71.2% had self-medicated and among men, 28.8%. This study corroborates other studies mentioned in this article, which show a higher prevalence of this practice among women7,12,16.

Information on the most commonly used drug groups can be seen in Table 2.

Table 2. Pharmacological classes most used by the participants. Mossoró (RN), 2020

Classes	**n**	**%**
Analgesics	93	36,6
Anti-inflammatory	69	27,2
Antibiotic	22	8,7
Contraception	17	6,7
Antipyretic	15	5,9
Anti-helmíntic	14	5,5
Appetite Suppressant	2	0,8
Laxative	2	0,8
Other	20	7,9
Total	254	100

Source: Prepared by the authors.

The classes of drugs most used by the students participating in this research can be seen in Table 2. The answers were multiple to the same question.

The use of pain medications was mentioned by 36.6% of the participants, anti-inflammatory drugs (27.2%), antibiotics (8.7%), contraceptives (6.7%), antipyretics (6.9%), anthelmintics (5.5%), appetite suppressants and laxatives (0.8%), respectively, and 7.9% reported using other medications, including anxiolytics and antidepressants.

The most commonly used drugs belong to the class of analgesics. This is due, in part, to the greater availability of these drugs in household stocks, as they are constantly consumed to mitigate acute and minor diseases. Next are anti-inflammatories and antibiotics. Consumption is related to the fact that people think they are capable of solving their health problems without the need to seek indications from specialists10. There seems to be a relationship between self-perception of health status and self-medication as a practice adopted among students in the health area. The low percentage found in a sample of freshmen, when compared to studies with individuals in a more advanced process of professional training, can serve as a warning, pointing to the student's own journey within the course as an element that influences this practice5.

The factors that influence self-medication are shown in Table 3.

Table 3. People that students turn to when they decide to self-medicate. Mossoró (RN), 2020.

People	n	%
Family	72	33,3
Health professionals (non-doctors)	31	14,4
Friends	26	12
Pharmacy clerk	17	7,9
Colleagues from the Faculty	14	6,5
Other	56	25,9
Total	216	100

Source: Prepared by the authors.

In this research, it was also asked who students turn to when they decide to self-medicate. The different responses can be seen in Table 3. Therefore, 33.3% resort to the indication of family members, often because they have these medications at home; 14.4% to other non-medical professionals and 12% to friends who indicate the use of the drug because they have used it in similar situations. The pharmacy clerk and college colleagues represented 7.9% and 6.5%, respectively. The 25.9% of the participants stated that the choice depends on the information acquired in the media such as television, magazines, radio, the package insert, the *internet* and the decision to choose the medication. The factors that most contributed to self-medication by medical students in this study were having previous prescriptions and taking the medication at home.

In this study, no direct relationship was identified between the course period and the habit of self-medication. The reasons that lead them to self-medicate are having a medication previously prescribed, 32.0%, and/or having the medication at home 65.0%. The participants stated that before taking medication, they read the package insert or look for information on the Internet, magazines or are guided by commercials aired on television as a way of seeking information about the drug.

DISCUSSION

The results of the study show that self-medication is not only a problem among medical students. A cross-sectional study was conducted with 116 nursing students from a public university in the state of Amazonas/Brazil20 to determine the prevalence and factors associated with self-medication. The researchers used a questionnaire consisting of socioeconomic variables and medication consumption. The prevalence of self-medication was 76.0%, especially motivated by the perception that the health problem does not require a visit to the doctor (46.6%). Half of the students reported pain complaints. The most consumed pharmacological groups were non-steroidal anti-inflammatory drugs (63.2%) and antibiotics (11.1%). Lack of knowledge of the negative implications of self-medication was associated with the practice of self-medication3,4,18.

A similar study was carried out in Porto Nacional/TO, with students in the health area (nursing, medicine, dentistry) aiming to know the prevalence of self-medication. The results showed

that more than 50% of the participants are adept at this practice. The most used drug class was analgesics, associating this practice with their greater knowledge about the drugs. The risks of this procedure show that students should develop greater awareness about the practice of self-medication and, thus, avoid unnecessary damage and risks to their health and that of others22.

Self-medication among university students in the first (1st) and tenth (10th) semesters of health courses in Vitória da Conquista/BA, in 2017, showed that 95.8% of the participants used over-the-counter medications. Of these, 34.9% reused old recipes from their own, their mothers and/or other family members. Only 4.2% did not practice self-medication23.

There are several factors that influence students to use self-medication, including the high workload, the multiple hours dedicated to studying, and the fatigue generated by test periods, which end up causing stress and pain. The fact that this type of drug does not require a medical prescription for its purchase, according to ANVISA, facilitates access and consequent use26.

To evaluate the practice and perception of self-medication among medical students, a cross-sectional study was conducted at Mahadevappa Rampure Medical College Gulbarga, Karnataka, India. A total of 440 questionnaires were analyzed and it was found that 88.18% of the students self-medicated when they had colds and coughs. Antibiotics were used by 63.91% and 40.0% stated that this behavior was part of self-care. In studies conducted in Ethiopia, the prevalence of self-medication was 25.4%; in Egypt 55% and in Karachi 55.3%. It was concluded that self-medication is widely practiced among medical students in these countries11.

At the University of Zabol (Iran), another study carried out among students in the health area (Pharmacy and Medicine) showed that 57.1% had self-medicated in the last 6 months prior to the survey, and it was more prevalent in male students: 65.4%. Non-severity, previous experience with the disease, and the availability of medications were the most prevalent reasons cited by the participants for self-medication15.

At the University of Turin/Italy, a cross-sectional study was carried out with the objective of evaluating the knowledge and attitudes of students in relation to the use and resistance of antibiotics with 1,050 students from all academic years of courses in medicine, dentistry, nursing and other health professions. The collected data were analyzed using the statistical software StataMP11. The response rate was 100%. About 20% of participants stated that antibiotics are suitable for viral infections. This answer is, in part, related to the lack of knowledge of physicians on the subject, which reinforces the need to focus attention on students in the health area12.

In France, a cross-sectional, national and multicenter study was carried out, whose objective was to define sociodemographic profiles and behaviors of patients seeking analgesics, not prescribed, in French community pharmacies. Adults (women and men under 60 years of age) (71%) who requested medication without a medical prescription for acute or chronic physical pain were

included. The information was collected through separate questionnaires for patients and health professionals, 1215 and 1271, respectively. The analysis was based on data collected from 164 pharmacies. Headaches, rheumatologic and musculoskeletal pain were the most frequent reasons for obtaining analgesics, with an intensity of 6 on a scale graded from 0 (no pain) to 10 (intolerable pain). The main reasons for self-medication were time savings, pain and/or a well-known product16.

Cough and cold were the most common symptoms treated with self-medication 93.2% and antibiotics 74.4% were the most used medications. The main source of information used by the students was the previous medical prescription 47.4%. Pharmacy students had a higher level of information about medications. There was a statistically significant association between the level of information about medications and the rate of self-medication. Recurrence of the disease was the most common negative complication of self-medication.

At the same University in 2018, another similar study was conducted with the aim of investigating the knowledge, attitude, and practice of students in self-medication. A total of 170 pharmacy and medical students were included using a questionnaire. Statistical analysis was performed using the SPSS software. According to the results, 57.1% of the students had self-medicated in the last 6 months. Students self-medicate an average of 4.2 ± 2.9 times a year. The practice was higher in male students with 65.4%. Colds were the most common disease treated with self-medication (93.2%) and antibiotics (74.4%). The main sources of information used by the students were previous prescriptions (47.4%). Pharmacy students had a higher level of information about medications. There was a statistically significant association between the level of information about medications and the tendency to self-medication. Disease recurrence was the most common negative complication[27].

Potential risks of self-medication practices include: incorrect self-diagnosis, delays in seeking medical advice when necessary, serious adverse reactions, dangerous drug interactions, incorrect form of administration, incorrect dosage and choice of therapy, masking of a serious illness, risk of addiction and abuse13,17,24,26, [27,29].

The influence of advertising, the practice of indicating medications, self-reported health status as good or very good, and having had the last medical appointment more than a month ago, were the factors associated with self-medication. These factors reinforce the importance of access to medical consultations and awareness actions on the rational use of [medications30,31,32].

In this study, self-medication among medical students is high and there were no differences in relation to the variables age, gender, marital status, employment relationship or period in which they studied. The higher prevalence of self-medication among women may be related to symptoms resulting from the menstrual cycle, as well as the use of contraceptives. In addition, women, in general, are more concerned about their health than men. This data corroborated several studies

referred to in this research. In this sense, it is crucial to address this problem throughout the course in order to minimize the risks associated with this consumption.

The high prevalence of self-medication, in addition to being able to lead to adverse reactions , also portrays the irrational use of medications by students, especially when considering the role of these future professionals in patient safety and guidance.

In addition to this aspect, the practice of self-medication found reinforces the need for this problem to be addressed more directly in medical education, in order to create awareness so that students can, in the future, critically guide their patients regarding the rational and responsible use of medications.

Some limitations should be pointed out: the use of a sample of 35.0% of the students in the course may also lead to some bias, although the proportion of participants was maintained, within the minimum expected for the research.

The desired representativeness of 50.0% was impaired, since, during the collection period, face-to-face classes were suspended as a result of the COVID 19 pandemic, which prevented other students from being listed.

Thus, studies that promote actions to raise awareness among this population about the risks of self-medication are of great importance, as they contribute to the training of professionals who are aware of their share of responsibility for the rational use of medications. One of the many ways to deconstruct the idea of self-medication as a safe practice is to teach, during graduation, students that the consumption of drugs in itself already has risks and using them without guidance and professional help maximizes these riches in number and potential. In addition, these students should be instructed that the knowledge acquired in the discipline of pharmacology alone is not enough to support the practice of self-medication.

In view of the above, it is important to carry out new studies, seeking to elucidate the aspects that serve as the basis for the perpetuation of this behavior. There is a need to foster the discussion of the topic, seeking to make the academic population aware of the risks involved in this practice. The preventive action of self-medication must be rooted in the roots of the professional training of health actors, being encouraged by teachers, institutions, the media, among others.

It is necessary that students in health courses, especially those in medical courses, become aware of the risks of self-medication and that they become multipliers of information on the rational use of medicines, and not conniving with this recurrent practice, thus reducing adverse reactions and the indiscriminate use of medicines.

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