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**Analysis of drug consumption without medical prescription
by academic at a university of Campo Grande, Mato Grosso
do Sul**

***Análise do consumo de medicamentos sem prescrição
médica por acadêmicos em uma universidade de Campo
Grande, Mato Grosso do Sul***

***Análisis del consumo de medicamentos sin prescripción
médica por académicos de una universidad de Campo Grande,
Mato Grosso do Sul***

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Abstract: Self-medication has become a common practice in the daily life of the Brazilian population, causing its prevalence to increase. Thus, given the issue of drug consumption on its own, the present study aims to analyze the influence of the training area of university students in self-medication practice, with students from the Dom Bosco Catholic University (UCDB) in Mato Grosso do Sul as a research source. The study was of the analytical type using the questionnaire self-applied technique on the profile of the interviewees regarding the practice of self-medication and other questions related to health management. We interviewed 143 university students from different areas of education, 75 of them from health courses. Through the results obtained, we observed the need to promote strategies that encourage awareness and rational consumption of medicines.

Keywords: self-medication; awareness; college students; rational consumption; health.

Resumo: A automedicação tornou-se uma prática comum no cotidiano da população brasileira, fazendo com que a prevalência dela aumente. Assim, tendo em vista a questão do consumo de medicamentos por conta própria, o presente estudo tem como objetivo analisar a influência da área de formação de universitários na prática da automedicação, tendo como fonte de pesquisa acadêmicos da Universidade Católica Dom Bosco (UCDB), em Mato Grosso do Sul. O estudo foi do tipo analítico, utilizando a técnica do questionário autoaplicado sobre o perfil dos entrevistados, quanto à prática da automedicação e a outras questões relacionadas ao manejo da saúde. Foram entrevistados 143 universitários das diferentes áreas de formação, e destacam-se 75 entrevistados oriundos de cursos da área da saúde. Por meio dos resultados obtidos, foi observada a necessidade da promoção de estratégias que incentivem a conscientização e o consumo racional dos medicamentos.

Palavras-chave: automedicação; conscientização; universitários; consumo racional; saúde.

Resumen: La automedicación se ha convertido en una práctica común en la vida cotidiana de la población brasileña, haciendo que su prevalencia aumente. Así, en vista del tema del consumo de drogas por cuenta propia, el presente estudio tiene como objetivo analizar la influencia del área de formación de estudiantes universitarios en la práctica de la automedicación, con estudiantes de la Universidad Católica Dom Bosco (UCDB), en Mato Grosso do Sul, como fuente de investigación. El estudio fue de tipo analítico, utilizando la técnica del cuestionario autoaplicado sobre el perfil de los entrevistados, con respecto a la práctica de la automedicación y otras preguntas relacionadas con la gestión de la salud. Entrevistamos a 143 estudiantes universitarios de diferentes áreas de la educación, 75 de ellos de cursos de salud. A través de los resultados obtenidos, se observó la necesidad de promoción de estrategias que fomenten la concienciación y el consumo racional de medicamentos.

Palabras clave: automedicación; concienciación; estudiantes universitarios; consumo racional; salud.

1 INTRODUCTION

Regardless of the social and economic class of the individual, self-medication is often seen as a solution for immediate relief of some symptoms, however it can bring serious consequences. The inappropriate use of medications can worsen the disease, as their use is able to camouflage certain symptoms. Another concern regarding the use of drugs refers to the inadequate combination, causing the use of a certain drug to enhance or nullify the effect of the other. One of the most frequent health risks of those who self-medicate is the danger of intoxication.

The proper use of the drug must be monitored by qualified professionals, preferably a pharmacist, a professional who has technical efficiency capable of assisting users by offering pharmaceutical assistance recommended by laws, competent agencies such as the National Health Surveillance Agency (ANVISA), Ministry of Health (MS) and Municipal Health Department (SMS). This agency also states that a certain level of self-medication is considered acceptable and beneficial to the Public Health System, as long as it is rational, as this practice often prevents its collapse.

The practice of self-medication is a consequence of many factors, such as: the variety of products manufactured by the pharmaceutical industry; the ease of marketing of medicinal products; lack of access to the health system and even advertisements. Several studies have shown that this habit is common, in the elderly it can reach 80%. The risk of this practice is related to the level of information and education of people who use the drugs, as well as their access to the health system. In Brazil, the pharmaceutical industries have a great power in the market over the population, these stimulate the consumption of medication and transform the drug into a product symbol of feeling of well-being and relief.

Self-medication among university students, considered more enlightened and with greater access to information in relation to the general population, has been widely studied in countries in North America, Europe and Asia, but in developing countries, such as Brazil, there is a lack of useful data to promote effective measures to combat self-medication and promote the rational use of medications, aspects developed and recommended by the WHO.

The inappropriate use of medications without medical advice among university students has become a serious problem. In this sense, the objective of this work is to analyze and discuss the data found from an analytical study, using the technique of a self-applied questionnaire among university students from different areas of education, and its influence on the practice of self-medication.

2 MATERIALS AND METHODS

2.1 Study design and place of realization

The study was of the analytical type using the technique of the self-applied questionnaire, and data collection was composed of closed questions. The sample was composed of university students from the Dom Bosco Catholic University (UCDB), located in the capital of the State of Mato Grosso do Sul, Campo Grande- MS. The Institution currently offers 40 courses that were organized in three areas: Human, Biological and Exact Sciences. Data were collected online, through a questionnaire sent to students in September and October 2020.

2.2 Sampling procedure, inclusion and exclusion criterion

The sampling process took place in two steps. In the first, the draw of 9 courses was carried out, three representatives of each of the previously exposed areas. Then, for convenience, there was the choice of classes of students of the courses drawn. It was used as inclusion criteria for the interviewees the fact that they belonged to classes that have attended at least 50% of the respective courses, assuming that these students would have already definitely chosen their area of training.

For this selection, the coordinators were asked for permission to carry out the research. They helped in the definition of the classes to make up the sample and helped in the choice of the best times for data collection. The selected students signed a Free and Informed Consent Form (TCLE) before completing the questionnaire authorizing their participation in the research.

The exclusion criterion adopted was not to sign the TCLE and not to answer all the questions proposed. The excluded were not reset in the search.

The present study was submitted and approved by the Research Ethics Committee (CEP) of the Dom Bosco Catholic University (UCDB) under protocol number CAAE 4.259.953.

2.3 Research instrument and variables

The tool used for data collection was composed of 11 questions, fragmented into two parts. In the first, there was a survey of the profile of the interviewees, which was composed with the following data: gender, age and course. In the second, questions regarding self-medication (about this practice in the last 15 days and at some point in life; medications employed; factors that influence; health problems whose management was performed by self-medication; the reasons why this practice is used) and about the incidence of alternative therapies PICs (Integrative and Complementary Practices).

2.4 Statistical methods and data analysis

For the statistical evaluation, in relation to categorical variables, the Q-square test was used to evaluate the influence of the profile of university students in the practice of self-medication, being adopted as significance $\alpha = 0.05$ (Board 1).

Board 1- Chi-Square test applied to the variables areas of knowledge and practice of self-medication in the treatment of health problems adopted by academics of the Catholic University of Don Bosco catholic in Mato Grosso do Sul, Brazil, October 2020

Hypotheses Test		
H ₀	Self-medication is independent of the Area of Knowledge	if χ^2 critical < χ^2 calculated → Rejects H ₀
H ₁	Self-medication depends on the of knowledge	if χ^2 critical > χ^2 calculated → Accepts H ₀

Hypotheses Test				
Significance level	α	Degree of freedom $gl = (m-1) \times (n-1)$	critical χ^2 tabled for $gl=A$ and $\alpha=0.05$	Conclusion critical $\chi^2 > \chi^2$ calculated
Parameters	5%	A	B	$B > \chi^2 \rightarrow$ Accepts H_0

Source: Elaborated by the authors.

3 RESULTS

We interviewed 143 students divided among 9 courses drawn in the three areas. Of these, 1 was excluded who did not answer all questions, totalizing 142 interviewees. The courses drawn in the area of exact sciences were: administration, civil engineering and accounting; in the area of human sciences: psychology, journalism and law and in the area of biological sciences: biomedicine, physiotherapy and nursing.

Of the total respondents, 116 (81.7%) were female and 27 (18.3%) were male; 123 (86.6%) academics are between 18 and 25 years of age and 75 (52.8%) were in the health area. Regarding self-medication, 142 (100%) of the interviewees stated that they had already performed this practice at some point in their lives, 90 (63.4%) of them self-medicated in the last 15 days.

The most reported health problem among university students was pain in general with 46 (32.4%) of the interviewees, however, this percentage should be higher, since 75 (52,8%) university students mentioned having 2 or more problems, including pain in general one of them. Regarding the drugs used, to alleviate the complaints mentioned, analgesics are the most consumed among the interviewees, being reported by 30 (21,1%) of them, however, this percentage tends to be higher, given that 85 (59,9%) of them indicated the use of 2 or more drugs in their responses, with analgesics included.

Among the reasons that led to the practice of self-medication, the most reported was practicality and convenience by 78 (54,9%) individuals. However, this index should have a higher value, since 50 (35,2%) people reported in the questionnaire more than one option, including practicality and

convenience. As for what influenced the university students to self-medicate, the most pointed item was own knowledge, with 32 (22,5%) citations, and yet, this number may be higher, since 59 (41,5%) people presented as response 2 or more items, encompassing their own knowledge as influence.

The health problems whose management was carried out by self-medication are presented in table 1, together with the most used medications, the reasons for the practice and the influences for self-medication.

Table 1 - Practice of self-medication: health problems, medicines used, motives and influences adopted by academics of the Dom Bosco Catholic University in Mato Grosso do Sul, Brazil, October 2020

Variables	N (=142)	(%)
Health Problems		
Pain in general	46	(32,4)
Colds and flu	12	(8,5)
Rhinitis	4	(2,8)
Inflammation	1	(0,7)
2 or but	75	(52,8)
Other	4	(2,8)
Drugs		
Analgesics	30	(21,1)
Anti-inflammatory drugs	3	(2,1)
Antibiotics	1	(0,7)
Muscle relaxant	11	(7,7)
Antigripais	10	(7,0)
Gastroprotetor	1	(0,7)
2 or but	85	(59,9)
Other	1	(0,7)
Reasons		
Practicality and convenience	78	(54,9)
Ease of purchase in the pharmacy	9	(6,3)
Lack of access to health services	1	(0,7)
2 or but	50	(35,2)
Other	4	(2,8)
Influences for self-medication		

Variables	N (=142)	(%)
Pharmacist or pharmacy staff	6	(4,2)
Family, neighbors and friends	28	(19,7)
Self-knowledge	32	(22,5)
Old prescriptions	16	(11,3)
Advertisements	1	(0,7)
2 or but	59	(41,5)

Source: Elaborated by the authors.

To achieve the general objective and in view of the data presented in the research, avoid generating bias, since 100% of the interviewees reported self-medicating, we used the data tabulated to the answers to the question about self-medication in the last 15 days. It was proposed in the general objective to analyze the influence of the training area in the practice of self-medication and for this purpose, the Q-square test (χ^2) was used to verify the interdependence of the variables course and self-medication.

The hypotheses were formulated, the null hypothesis (H_0) is that self-medication is independent of the course and the hypothesis to be proven (H_1) is that self-medication depends on the course. After the calculations, the χ^2 calculated was 0,90, which compared to the critical χ^2 obtained in the thumint Q-square for degree of freedom 2 and the significance of 0,05 is 5,99. Thus, it is necessary to reject the hypothesis that the practice of self-medication depends on the areas of knowledge, according to the results presented in table 2.

Table 2 - Q-Square test applied to the variables areas of knowledge and practice of self-medication in the treatment of health problems adopted by academics of the Dom Bosco Catholic University in Mato Grosso do Sul, Brazil, October 2020

Areas of knowledge	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
	Yes	No		Yes	No		
Biological Sciences	46	29	75	47,53	27,46	0,05	0,09

Areas of knowledge	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
Exact Sciences	13	9	22	13,94	8,05	0,06	0,11
Humanities Sciences	31	14	45	28,52	16,47	0,22	0,37
$\Sigma (n = 142)$	90	52	142			$\chi^2_{\text{Calc}} =$	0,90
Test hypotheses							
Significance level	$\alpha=5\%$	A=2	B=5,99	Conclusion $5,99 > 0,90 \rightarrow$ Accepts H_0			

Source: Elaborated by the authors.

The hypotheses were formulated, with the null hypothesis (H_0) is that self-medication is independent of the course and the hypothesis to be proven (H_1) is that self-medication depends on the course. After the calculations, the χ^2 calculated was 0,90 which compared to the critical χ^2 obtained in the χ^2 table for degree of freedom 2 and the significance 0,05 is 5,99. Thus, it is necessary to reject the hypothesis that the practice of self-medication depends on the areas of knowledge, according to the results presented in table 3.

Table 3- Q-Square test applied to the variables training course and practice of self-medication in the treatment of health problems adopted by academics of the Dom Bosco Catholic University in Mato Grosso do Sul, Brazil, October 2020

Training course	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
	Yes	No		Yes	No		
Administration	3	1	4	2,53	1,46	0,09	0,14
Biomedicine	16	11	27	17,11	9,88	0,07	0,13
Accounting	3	2	5	3,16	1,83	0,01	0,02
Law course	16	7	23	14,57	8,42	0,14	0,24
Nursing	18	12	30	19,01	10,98	0,05	0,09
Civil engineering	7	6	13	8,23	4,76	0,18	0,32
Physiotherapy	12	6	18	11,40	6,59	0,03	0,05

Training course	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
Journalism	3	4	7	4,43	2,56	0,46	0,81
Psychology	12	3	15	9,50	5,49	0,66	1,13
$\sum (n = 142)$	90	52	142			$\chi^2_{\text{Calc}} =$	4,63
Significance level	$\alpha=5\%$	A=8	B=15,51		Conclusion 15,51 > 4,63 → Accepts H_0		

Source: Elaborated by the authors.

In the same line of reasoning, the Q-square test was performed using the variables sex and self-medication, in which it was found that self-medication is independent of sex, with the χ^2 calculated of 2,45 that compared to the critical χ^2 obtained in the Q-square table with degree of freedom 1 and significance of 5% was 3,84. Thus, it should be accepted H_1 , results reported in table 4.

Table 4 - Q-Square test applied to the variables sex and self-medication practice in the treatment of health problems adopted by academics of the Dom Bosco Catholic University in Mato Grosso do Sul, Brazil, October 2020

Sex	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
	Yes	No		Yes	No		
Male	13	13	26	16,47	9,52	0,73	1,27
Female	77	39	116	73,52	42,47	0,16	0,28
$\sum (n = 142)$	90	52	142			$\chi^2_{\text{Calc}} =$	2,45
Significance level	$\alpha=5\%$	A=1	B=3,84		Conclusion 3,84 > 2,45 → Accepted H_0		

Source: Elaborated by the authors.

Therefore, according to the calculated data, the practice of self-medication among university students is independent of the course, the areas of knowledge and sex.

Likewise, using the Q-square test, in the survey with the variables PIC and gender, in which the χ^2 calculated was 4,98 compared to the critical χ^2 obtained in table 4, Q-square with the significance of 0,05 and degree of freedom 1 was 3,84. Therefore, one should reject the null hypothesis and accept H_1 , showing that the use of alternative therapies to treat some diseases depends on the sex of the interviewee, in the case of this survey of the female public, as presented in table 5.

Table 5- Q-square test applied to the variables sex and PIC as alternative treatments of health problems adopted by academics of the Dom Bosco Catholic University in Mato Grosso do Sul, Brazil, October 2020

Sex	Observed frequency		Total students	Expected frequency		$X^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$	
	Yes	No		Yes	No		
Male	3	23	26	7,69	18,30	2,86	1,21
Female	39	77	116	34,30	81,69	0,64	0,27
$\sum (n = 142)$	42	100	142			$\chi^2_{calc} =$	4,98
Significance level	$\alpha=5\%$		A=1	B= 3,84	Conclusion 3,84 < 4,98 → Accepted H_1		

Source: Elaborated by the authors.

4 DISCUSSION

Regarding self-medication, 100% of the interviewees have performed this practice at some point in their lives, according to Galato, Madalena and Pereira in a study conducted in 2012, this percentage was 96.5%. In another study, performed by Freitas, Marques and Duarte (2018) about making use of or buying over-the-counter medications, 95.8% of individuals reported doing this practice. Thus, the values described in the present study are similar and corroborate those found by other authors.

In the studies by Araújo *et al.* (2016) the prevalence of self-medication in the last 15 days of 37%, while in the present study this percentage was

63.4%. This difference in results may be related to some factors including location, region, climate, population, since these factors were distinct.

Even if self-medication is a common form of self-care, it is important to assess whether it occurs responsibly. When such a practice is carried out it should be in the context of rational use of medicines, since the wide availability of these increases the probability of irrational consumption (AQUINO, 2008; ALMASDY; SHARRIF, 2011).

In Brazil, approximately one third of hospitalizations originate from incorrect drug management (AQUINO, 2008; BISPO *et al.*, 2017). According to the National System of Toxic-Pharmacological Information of the Oswaldo Cruz Foundation, in 2015 more than 20.000 cases of drug poisoning were recorded, which is the leading cause of poisoning in Brazil, totaling more than 30% of the corresponding events (BRASIL, 2015). Thus, when the practice of self-medication does not occur rationally, the individual can suffer serious consequences (AQUINO, 2008; BENNADI, 2014).

In the present study, it was found that the most cited health problem among university students was a pain in general with 32.4%. This health problem is also presented in other studies, such as in the Galato, Madalena and Pereira study (2012), the most cited health problem for self-medication management was pain with 90.4% of the situations, including headaches, pain in general, cramps, etc. Pain as the main health aggravation is also exposed in Franco's work, Rangel and Mella Júnior (2009). Studies carried out in developed and developing countries show that the habit of self-medication is related to the predominance of symptoms and "minors" signs of acute characteristics, in which headache is the most common occasion, 66.03% (VITOR *et al.*, 2008).

When the drugs selected to alleviate health problems were investigated, it was observed that analgesics are the most consumed among university students with 21.1%. A percentage is similar to that described in the study by Aquino, Barros e Silva (2010) which states that analgesics are the most consumed among the interviewees (24.0%). Barros *et al.* (2019) also presented analgesics a leading the preference, showing in their study that 78.4% of patients with chronic pain enjoy this medication. In the work of Silva and Rodrigues (2014) the most used drugs were analgesics and

anti-thermal drugs. The explanation for the use of such drugs is associated with ease of acquisition, because they are over-the-counter drugs. However, like any other medicine, it may present risks and adverse reactions (SCHUELTER-TREVISOL *et al.*, 2011).

Among the reasons that led to the practice of self-medication, the most cited was practicality and convenience with 54.9%. This result is similar to the works of Galato, Madalena and Pereira (2012) and Mussolin (2004).

As for what influenced the students to self-medicate, the most pointed item was own knowledge with 22.5%. In a study conducted by Cruz *et al.* (2019) 24% of the interviewees said they had sufficient knowledge of self-medication, with 13% being from the health area and 11% from the humanities area. This percentage of academics in the health area may be related to the fact that these students have disciplines focused on the study of medications, such as pharmacology.

Regarding the use of PICs in the treatment of health problems, 29,6% of the interviewees are adept at alternative therapies. No studies related to the use of alternative therapies by university students have been found in the literature. However, in the work of Salafia and Gemignani (2019), with the target audience being the elderly, 42% of them stated that they used some method of integrative or complementary medicine on their own means, that is, through medical or private insurance. The same study shows that the PICs most used by the elderly were Acupuncture, Homeopathy and Phytotherapy (SALAFIA; GEMIGNANI, 2019). These same therapies were also mentioned in the present study.

The support for the use of alternative therapies could be higher among the population, since many people are unaware of the fact that there is in the legislation the National Policy of Integrative and Complementary Practices (PNPIC) and this is offered by the SUS (Brazilian National Health Service), implemented in 2006 by the Ministry of Health (CEOLIN *et al.*, 2009).

One of the hypotheses raised for this work was that the practice of self-medication was influenced by the area of university education. However, this hypothesis was discarded after the Q-square test (course variables and self-medication). In addition, two other Q-square tests were performed, the first exchanging the course variable for areas of knowledge, and the second

with the variants sex and self-medication. Thus, it was observed that self-medication is not related to the gender of the students interviewed or to the areas of knowledge to which they belong.

A curious fact observed in this study is the fact that when the Q-square test with the variables PIC and gender was performed, the null hypothesis was rejected. Thus, H_1 was accepted showing that the use of alternative therapies in the treatment of diseases depends on gender, in the case of this research of the female public. In the work presented by Neto, Faria and Figueiredo (2008) women use alternative therapies more frequently than men. This fact can be explained since women are more predisposed to seek health services (LEVORATO *et al.*, 2014) and the campaigns are more directed to them (GOMES; NASCIMENTO; ARAÚJO, 2007).

5 FINAL CONSIDERATIONS

It was observed that self-medication is very common in the population of university students. However, it was proven, like other studies compared in this research, that the area of education or the course of university students does not influence the practice of self-medication, as little as sex. It can also be said that, from the data obtained and presented, few are adepts in the use of alternative therapies in the treatment of diseases, even if these therapies are offered free of charge by the SUS. However, it was found that, among the adepts, women use PICs more frequently than men. As was shown through the results of the research, the most reported health problem among students was a pain in general, since many of them pointed out the use of self-medication for two or more types of problems suggested in the research, and thus the practice of analgesic self-medication is frequent among the interviewees, since this drug is easily found in pharmacies and has a free sale.

Given the relevance of the data collected and accuracy, and since the majority of the target audience points to the influence of family members, neighbors and friends in addition to self-medicating, strong indications are evidence that the practice of self-medication is more comprehensive, customary and usual in the general population, not restricted to the university public. Therefore, it is necessary to deepen research on self-medication and

its effects on avoiding possible endemism, and for this, the data exposed here, as well as those found in other related studies, can be used as parameters in the definition of strategies and public policies aimed at raising awareness of the population about the damage that a drug used indiscriminately or wrongly can cause.

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