



## ORIGINALES

### Self-medication among undergraduate nursing students

Automedicación en estudiantes de pregrado de enfermería

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#### ABSTRACT:

**Introduction:** Self-medication is a common behavior in society and a frequent practice among university students. It is a severe health problem that affects the familiar, individual, and collective health.

**Objective:** To determine the reasons that lead to self-medication in nursing students at the Santiago de Cali University, Colombia.

**Method:** A descriptive cross-sectional study was conducted with 234 undergraduate nursing students. The study was carried out between April and May 2020. To calculate the sample, we applied the statistical formula with a confidence level of 95%, a margin of error of 5%, and a desired confidence interval of 5%. We used a virtual, validated questionnaire, which the students filled out voluntarily.

**Results:** Ninety percent of the participating students were between 18–26 years old. The mean was 21.7, while the median was 20, and the mode was 19 years. A total of 81% were women. A total of 69% of the students stated that they self-medicate. Pain relievers are the drugs of choice for self-medication. Among the reasons for self-medication, it was found that: 44% of participants do not believe that it is necessary to consult a doctor, while 20% expressed not having the time to consult with a doctor. The participants obtain the medication in the pharmacy (95%).

**Conclusions:** Self-medication is a common practice in nursing students between the first and fifth semesters of the Santiago de Cali University. Although it is recognized as a risky practice, the prevalence is high.

**Keywords:** nursing, students, self-medication, public health, self-care. Enfermería, estudiantes, automedicación, salud pública, autocuidado

## RESUMEN:

**Introducción:** La automedicación es una conducta común en la sociedad y práctica frecuente en estudiantes universitarios. Es un problema severo de salud que tiene implicaciones en la salud familiar, individual y colectiva.

**Objetivo:** Determinar las razones para la automedicación en estudiantes de enfermería de la Universidad Santiago de Cali, Colombia.

**Método:** Se realizó un estudio descriptivo transversal entre 234 estudiantes de pregrado de enfermería. El estudio fue realizado, entre abril y mayo de 2020. Para el cálculo de la muestra se aplicó la fórmula estadística con un nivel de confianza de 95% y margen de error de 5% e intervalo de confianza deseado de 5%. Se utilizó un cuestionario validado, diligenciado de forma virtual y desarrollado de forma voluntaria por los estudiantes.

**Resultados:** El 90% de los estudiantes estaban comprendidos entre los 18- 26 años; media de 21,7, mediana de 20 y moda de 19 años. El 81% fueron mujeres. El 69% de los estudiantes manifestaron automedicarse. Los analgésicos son los medicamentos de elección para la automedicación. Entre las razones para automedicación se encontró que: el 44% no cree que sea necesario consultar al médico, el 20% no tiene tiempo para asistir al médico. La fuente para obtener el medicamento es la farmacia (95%).

**Conclusiones:** La automedicación es una práctica común en los estudiantes de enfermería de primero a quinto semestre de la Universidad Santiago de Cali. Aunque se reconoce que es una práctica riesgosa, la prevalencia es alta.

**Palabras clave:** enfermería, estudiantes, automedicación, salud pública, autocuidado.

## INTRODUCTION

Self-medication is commonly done by most people in society. If this is not done responsibly, it can seriously affect people's health through allergic reactions, drug interactions, incorrect self-diagnoses, masking of diseases and, in extreme cases, death from abuse, bad dosage, or error in the administration of medications. The World Health Organization (WHO) defines self-medication as “the use of drugs to maintain and preserve health and prevent and cure diseases”<sup>(1)</sup>. Although, self-medication is conceived as a self-care practice that subsequently reduces healthcare costs<sup>(2)</sup>, it is also responsible for negatively affecting people's health. Although self-care is one of the fundamentals of health promotion, self-medication must be performed responsibly.

Responsible self-medication is defined as “the will and capacity of patients to participate intelligently and autonomously (and be informed) in making decisions and the management of preventive, diagnostic, and therapeutic activities”<sup>(3)</sup>; this must be assumed responsibly without making it a routine activity against physical suffering. The World Self-Medication Industry defines self-medication it as a type of aid wherein the individual assumes greater responsibility for a minor ailment by using a pharmaceutical product that is available without a medical prescription<sup>(4)</sup>. However, this concept is perceived as being far from reality as some people, indiscriminately and without any confirmed diagnosis or knowledge of the cause of their discomfort, resort to taking medications without prior medical evaluation, on the advice of people who are not health professionals<sup>(5)</sup>, or by prioritizing the advice of a drugstore assistant, family member, or someone who is not qualified to prescribe medication.

Self-medication practice has increased worldwide and constitutes a severe public health problem with severe implications for the individual, their family, and public health. According to the WHO, >50% of medicines are improperly prescribed, dispensed, or sold in the world. One-third of the world's population does not have access to essential medicines and half of them take medications incorrectly<sup>(6)</sup>.

According to a survey by the National Health Institute of Spain, for the year 2011-2012, the practice of self-medication represented 20% of the population <sup>(3)</sup>. Furthermore, in Brazil, a self-medication percentage of 35% was reported by the largest study on self-medication in adults<sup>(7)</sup>. In 2014, it was reported that 80% of the studied population resorts to self-medication in Peru<sup>(8)</sup>. In Colombia, the study on family self-medication conducted by the University of Antioquia found that 42% of the families included in the study used drugs without a prescription as influenced by media<sup>(9)</sup>.

Self-medication among university students and professionals, especially within healthcare, has become common in recent years, which could become an occupational problem<sup>(10,11)</sup>. Several studies on self-medication in university students were conducted, such as student of Nursing, Medicine, Physiotherapy, and Pharmaceutical departments. Lack of time to go to the doctor<sup>(4)</sup>, previous experience with the medication, influence of the media<sup>(9)</sup>, mild symptoms<sup>(3,4)</sup>, or distance from a medical center<sup>(12)</sup> are some of the reasons why university students take medications without a proper prescription.

Considering the risks associated with self-medication, addressing this social phenomenon in a population of nursing students is of public health interest. Researching self-medication among nursing students will contribute to the discipline for decision-making as this profession is responsible for providing individual holistic care including the responsible use of medication. Nursing staff must be aware of the risks of self-medication and must ensure responsible practice. Professors are responsible for correcting misconceptions that students have about self-medication and encouraging responsible practice<sup>(13)</sup>. The objective of this study was to determine the reasons for self-medication by nursing students at the Santiago de Cali University, Colombia.

## MATERIAL AND METHOD

We conducted a descriptive, cross-sectional study with a quantitative approach that included 234 students in the first to fifth semester of the Nursing Program at USC. Participants were selected using stratified random sampling, including a proportional sample from each semester and including only enrolled students at the time of application. Students aged <18 years were excluded. To calculate the sample size, we applied the statistical formula related to finite populations, with a confidence level of 95%, a margin of error of 5%, and a desired confidence interval of 5%. The sample was selected between April and May 2020. This project was approved by the Institutional Ethics Committee and the institutional ethics guidelines were followed.

**Table 1: Percentage distribution of the sample for each semester**

Semester	Number of Students	%
First year	48	20.4
Second year	47	20.24
Third year	44	18.89
Fourth year	51	21.75
Fifth year	44	18.72
<b>TOTAL</b>	<b>234</b>	<b>100</b>

Source: self made.

Intending to evaluate and measure self-medication practice, the study assessed sociodemographic and academic variables as well as administered a questionnaire including questions related to self-medication such as frequency, reasons for self-medicating, source of information on the medication, decision to self-medicate, where the medication was obtained, and beliefs about self-medication. For the analysis of the qualitative variables, we used frequency distributions expressed in quantity and percentages. For the quantitative variables, we analyzed the measures of central tendencies, such as mean, median, mode, and standard deviation.

The questionnaire included 13 questions based on an instrument used in the research study of Altamirano O et al in 2019 in Chile. Expert review and a pilot test were used to validate. We modified the questionnaire to include open-ended question with prior authorization from the original authors, to gain a deeper understanding of the reasons why students self-medicate and the drugs of choice.

Participation in the study was voluntary. Throughout the study, data confidentiality was guaranteed. For risk control, we avoided the explicit identification of the participants. The data was sorted using MS Excel, and the SPSS statistical software was used for statistical analysis.

## RESULTS

All selected students participated in the study. Most of the students were aged 18–26 years old, with a mean age of 21.7, a median age of 20, and a mode age of 19 years.

**Table 2: Sociodemographic variables**

Variables	Number of participants (n = 234)	%
Gender		
Female	190	81%
Male	44	19%
Age distribution		
18–26 years	211	90%
27–35 years	19	8%
≥36 years	4	2%
Participants with household including		

Parents	154	66%
Other family members	60	26%
None	16	7%
Roommates	4	2%
<b>Healthcare system affiliation</b>		
Private	168	72%
Public	66	28%

Source: self made.

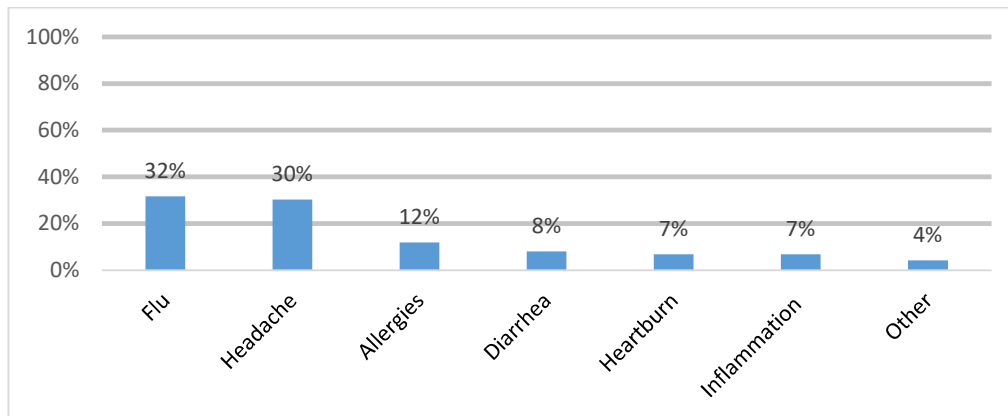
**Table 3: Data about frequency of and symptoms associated with self-medication**

<b>Self-medication by semester in 2020</b>	<b>Number of participants</b>	<b>%</b>
First	34	21%
Second	33	20%
Third	26	16%
Fourth	38	24%
Fifth	30	19%
<b>Self-medication in the last 4 months</b>		
Yes	161	69%
No	73	31%
<b>Frequency of self-medication during the last 4 months</b>		
Once a week	9	4%
Once every 15 days	26	11%
Once a month	167	71%
Daily (in the last week or days)	32	14%

Source: self made

The highest number of self-medicating students was found in the fourth semester (38 students; 24%), followed by the first (34 students; 21%), second (33 students; 20%), fifth (30 students; 19%), and third (26 students; 16%) students. A total of 69% (n = 161) students responded saying that they self-medicate. In terms of the frequency of self-medication in the last 4 months, 71% of the students self-medicate once a month, 11% twice a month, 4% once a week, and 14% daily in the last week or last days. The health problems for which the students self-medicated were flu, headache, allergies, diarrhea, heartburn, and inflammation (Figure 1).

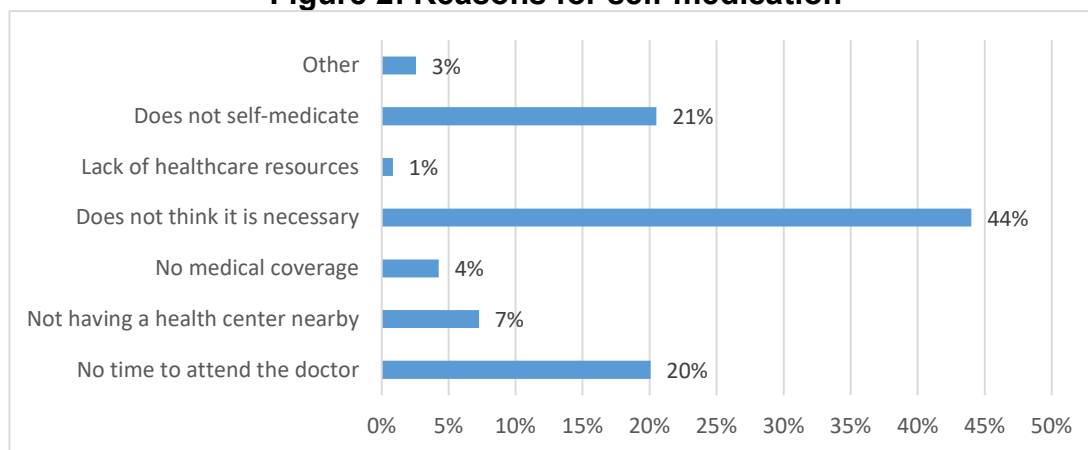
**Figure 1: Self-medication for symptoms**



Source: self made

Students expressed the following reasons for medicating without a proper medical prescription: not considering medical consultation as necessary (n = 103; 44%), not having a nearby health center (n = 17; 7%), not having time to visit a physician (n = 47; 20%), not having medical coverage (n = 10; 4%), and lack of resources (n = 2; 1%). Overall, 48 students (21%) stated that they did not self-medicate (Figure 2).

**Figure 2: Reasons for self-medication**



Source: self made

**Table 4: Practices associated with self-medication among students**

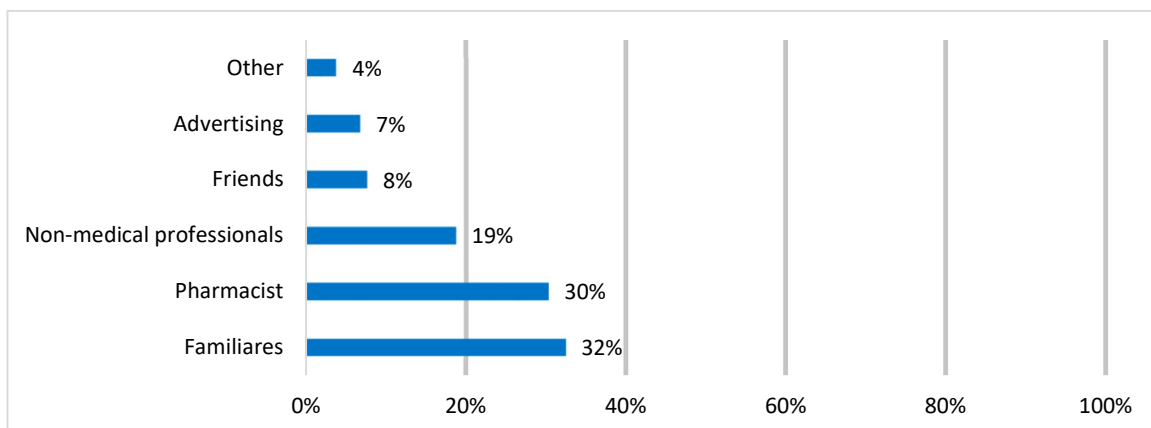
Medicines used without a prescription	Number of participants	%
Acetaminophen	136	58%
Ibuprofen	74	32%
Other	13	6%
Pain medication with caffeine	10	4%
<b>If there is the persistence of symptoms</b>		
Goes to the doctor	189	81%
Increases dosage	12	5%
Changes medication	24	10.2%
Uses home remedies	9	3.8
<b>Reasons for discontinuation of the medication</b>		

When symptoms disappear	131	56%
According to the instructions of the package insert	69	30%
When they run out of the medication	23	10%
If they forget to take it	10	4%
<b>Availability of medicines at home</b>		
Yes	123	53%
No	111	47%
<b>Aware of the risks of self-medication</b>		
Yes	193	82.4%
No	41	17.5%
<b>Aware of the ramifications of self-medication</b>		
Disease worsening	69	29%
Cause poisoning	63	27%
Death	54	23%
Organ damage	48	21%

Source: self made

Painkillers such as acetaminophen were the drugs of choice for students (n = 136 students, 58%), followed by nonsteroidal anti-inflammatory drug (NSAIDs) (n = 74, 32%), other drugs (6%), and painkillers with caffeine (4%). When symptoms persist, 81% (n = 189) consult a doctor, 10.2% (n = 24) change medications, 5% (n = 12) increase the dosage, and 3.8% (n = 9) resort to home remedies. A total of 56% (n = 131) stop taking the medication when the symptoms disappear, whereas 30% (n = 69) follow the instructions provided in the package insert. Moreover, 10% (n = 23) of the participants discontinue when the medication is finished, and 4% (n = 10) forget to take it. Regarding medicine access in the household, 53% (n = 123) state that they have a family medicine cabinet. On the contrary, 83% (n = 193) consider self-medication risky as it can worsen their disease (29%), cause intoxication (27%), lead to death (23%), or cause organ damage (21%).

**Figure 3: Sources of self-medicating recommendations**



Source: self made

The greatest source recommending self-medicating is their family, followed by the pharmacist, professionals who are not doctors, friends, advertising, and other sources (Figure 3).



**Table 5: Sources and information regarding self-medication among students**

Source of access to medication	Number of participants	%
Pharmacy	222	95%
Others (market or the street)	12	5%
Student recommendation for self-medication		
Yes	109	47%
No	125	53%
Influence of advertising		
Yes	118	50%
No	116	50%
Use of computer networks		
Yes	180	77%
No	54	23%
Request for information from pharmacists		
Yes	170	73%
No	64	27%
Reading package insert before taking medication		
Yes	198	85%
No	36	15%

Source: self made

The most used source of obtaining medicines is the pharmacy (n = 222, 95%), followed by markets, chain stores, or through their family (n = 12, 5%). Out of all participants, 47% (n = 109) recommend self-medicating in case of a health problem. In addition, 50% (n = 118) acknowledge that advertising has influenced their decision to self-medicate, and 77% (n = 180) stated that they use the internet to look up medicines. Overall, 73% (n = 170) stated that they requested information from the pharmacist, and 85% (n = 198) usually read the instructions included in the package insert of the medication.

## DISCUSSION

According to the results of this study, self-medication in nursing students is high (n = 161, 69%). However, it was lower compared to other studies on the subject conducted on university students: 90.8%<sup>(3)</sup>, 90.8%<sup>(14)</sup>, 87%<sup>(15)</sup>, 78.2%<sup>(16)</sup>, 83.3%<sup>(17)</sup>. We found other studies with similar results to this research: 79.3%<sup>(18)</sup> and 72.5%<sup>(19)</sup>. We also found a lower percentage (56.68%) of self-medication in the university population of Costa Rica<sup>(20)</sup>. These discrepancies can be attributed to when the survey was applied, or the methodologies used in the different studies. The findings show self-medication is a common practice in university students.

It is noteworthy that most of the students are women (n = 190, 81%). This can be considered a constant since nursing has been classified through the ages as a female profession. According to the National Nursing Plan 2020-2030 in Colombia, in the year 2019 80.3% of nursing professionals were women<sup>(21)</sup>. Other studies on self-medication also reported a majority of female students<sup>(3,11,14,18,22)</sup>. Most of the studied population falls in the age group between 18 and 25 years old (90%). It should be taken into



account that this research included students in the first semesters of the degree; therefore, this should not be considered as a determining factor. Out of the students who self-medicate, 89% are between the ages of 18 and 25. Similar studies also showed a higher percentage of self-medication in the young population, under 26 years of age<sup>(11,14,18,23)</sup>. Regarding the semesters they attend, we did not find major differences. However, it is worth noting that self-medicating became more noticeable during the fourth semester, which coincides with their pharmacology course at university. Other related studies show an increase in self-medication in students as they advance in their careers<sup>(19, 24)</sup>.

The highest percentage of students live with their parents and, additionally, they acknowledge that their relatives recommend self-medicating to a higher percentage of students, which coincides with other studies<sup>(11,12,18,25)</sup>. Therefore, raising awareness toward responsible self-medication, as described by the WHO, must begin with interventions within the family. Considering an approach from nursing school is appropriate, given the scope of the profession toward the care of the patient, the family, and the environment.

Students expressed that the flu and headaches are the most common ailments that lead to self-medication, which coincides with other studies<sup>(1,18,24)</sup>. In other studies, the flu is associated with fever<sup>(16)</sup>. A similar study evidenced heartburn and allergies<sup>(19)</sup> as relevant symptoms in addition to the flu. Another research concluded that muscle pain was the number one cause of self-medication (42.12%)<sup>(17)</sup>, followed by headaches (36.57%). It is noteworthy that some of the medications for this type of symptomatology are sold over the counter. However, it is worth remembering that they can cause unwanted effects in the body, cause damage to vital organs, and mask other diseases, so they should be regulated.

According to the results of this research, painkillers are the main drugs students use to self-medicate (n = 146.62%). Their consumption is associated with symptoms such as headaches and flu. Concurring with similar studies<sup>(3,14,19,20,25)</sup>, the drug of choice was acetaminophen, which is consistent with a study carried out on university students from the city of Bandar Abbas<sup>(26)</sup>. Although acetaminophen is indeed an over-the-counter drug, its use should be regulated considering that, like other drugs, it can cause damage to the organs, such as the liver, when used periodically. Students who are in training must learn about pharmacokinetics and pharmacodynamics so that they can safely guide their families and the community in general. Nursing students also mentioned other medications, such as NSAIDs, as their choice to relieve pain, discomfort, or fever in 32% of the cases. NSAIDs are recognized for their analgesic, anti-inflammatory, and antipyretic effect and in general for any process causing pain. Due to the adverse effects of this type of drug, regulatory bodies should monitor their consumption. Another study carried out at the Universidad del Rosario in Colombia, shows Ibuprofen as the most used drug for self-medication by Medicine students<sup>(18)</sup>. Also, NSAIDs were the drugs of choice for university students in Costa Rica<sup>(20)</sup>. In most studies, painkillers are the medication of choice for students. Concerning other drugs, we found some differences with other studies. While we found that NSAIDs are the second option to self-medicate, others studies found that the second choices are antihistamines<sup>(19)</sup> and anti-flu medication<sup>(3,4,14,20)</sup>. The symptoms that influenced taking the medication without a prescription the most were: headaches, flu, heartburn, menstrual cramps, diarrhea, inflammatory processes, and allergies. The minimal evidence found in this study of self-medication with antibiotics (1.2%) is striking and

opposite to what is reported in other studies with the same purpose<sup>(10,12,14,19,24,28)</sup>. In the latter, antibiotics such as azithromycin and amoxicillin were those with the highest consumption (37.5% and 30.1% respectively). Thus, even if the percentage is low awareness is paramount, since self-medicating antibiotics is a harmful practice that affects public health due to the microbial resistance caused by the indiscriminate administration of antibiotics and subsequent fewer treatment alternatives and increased hospital costs. Other studies also showed scarce self-medication with antibiotics: 4.4%<sup>(18)</sup> and 3.5%<sup>(25)</sup>. The lack of regulation in the sale of antibiotics and the non-compliance with the full treatment in time and dose are factors related to the misuse of this group of drugs<sup>(29)</sup>.

Variables such as lack of time, a long distance from a medical center, and no access to health resources are some of the reasons why students decide to self-medicate. A majority of students also consider that it is not always necessary to consult a doctor due to the mildness of the symptoms, which agrees with the data from other studies<sup>(3,12,30-32)</sup>. We found that family members are the main source recommending self-medication, which concurs with a similar finding in another study where 58.12% of the participants mentioned that the drugs were first recommended by their relatives<sup>(30)</sup>.

A high percentage of the studied population understands that self-medication is a dangerous practice (83%). A similar situation was reported in other studies<sup>(12,14)</sup>, and although students understand its dangers, they do it routinely with different frequencies: once a month, every 15 days, or daily, which reflects the indiscriminate practice of this phenomenon. Moreover, they recognize that self-medication has serious ramifications, such as intoxication, damage to vital organs, and even death.

In the research carried out on self-medication in nursing and other related careers, students regard the pharmacist as the person to whom they ask for recommendations on medications that will help ease their discomfort. In this study, 91% of students consider it important when making the decision and 73% ask for information about the drug. On the other hand, 85% of the students are used to reading the package insert. The foregoing is consistent with other studies<sup>(11,14,18,25)</sup>, which, like this research, refer to obtaining the drug directly from the pharmacy<sup>(11,25,27)</sup>.

Regarding the influence of advertising on the decision to self-medicate, the studies reviewed showed that in some cases students are influenced by the media<sup>(11,23)</sup> and in others, it was found that there is no marked influence<sup>(25)</sup>. In this research, there were shared statements (50%), considering that the internet is an important source for searching for drugs (77%). A study carried out on medications and self-medication on social networks concluded that users share more information about medications than about self-medication. However, these studies showed that painkillers are the most consumed medication according to information obtained from the social networks included<sup>(33)</sup>. In general, the articles reviewed in this research also indicate that painkillers are the most used self-administered medication, being consistent with the results of the present research.

The limitations of this research were those of a study whose sample collection technique was through a survey, where biases may occur in the responses related to memory, motivation, and information classification among others.

## CONCLUSIONS

In this study, we conclude that self-medication is a common practice in nursing students between the first and the fifth semesters of the Santiago de Cali University, with painkillers being the most widely used drugs, especially in cases of headaches and flu symptoms. However, when used indiscriminately, these over-the-counter medications can produce mild, moderate, or serious consequences, depending on the person and considering that each body has different biological characteristics. Hence, it is worth highlighting the importance of conducting educational awareness campaigns aimed at reducing this social and public health phenomenon. Awareness should include pharmacists and other pharmacy employees, since, according to this research, students ask them for recommendations. The nursing curricula must include training actions aimed at raising self-care awareness that targets the responsible use of medications. Nursing professionals who have a direct relationship with pharmacological therapy have a responsibility to raise awareness within the population, educating patients, family members, and other users about the rational, adequate, and controlled use of medication. It is also important to instruct pharmacists not to prescribe or sell non-prescription drugs.

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