

The Use of Methylphenidate Among Pharmacy Undergraduate at The University of Gurupi

Kelly Perilo Argenta Valadares¹, Eryka Stephany Silva De Jesus¹, Saulo José de Lima Júnior¹, Vanderson Ramos Mafra¹, Maykon Jhuly Martins de Paiva², Christiane Rodrigues de Paula Marques¹, Renata Ferreira Diogo³, Marillos Peres de Melo⁴, Claudia Christina Ribeiro Guimarães Neri de Magalhães⁵, José Gomes da Silva Júnior⁶, Manoel Henrique de Carvalho⁶, João Gabriel Fidel Santana^{2,3}, Vanessa das Graças Pinto⁶, Vera Lúcia Cavalcante Rodrigues⁷

¹ Pharmaceutical, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

² Pharmaceutical, FAPAL - Faculty of Palmas, 402 South – Set 2 – Lots 7 and, 8. Palmas, TO CEP: 77016-524, Brazil.

³ Pharmaceutical, Tocantinense University Center Presidente Antônio Carlos (UNITPAC), Av. Filadélfia, 568 - St. Oeste, Araguaína - TO, 77816-540, Brazil.

⁴ PhD in Plant Production, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

⁵ Nurse, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

⁶ Undergraduate, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

⁷ Master in Management and Regional Development, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

Corresponding Author: Vanderson Ramos Mafra - vandersonkesya@yahoo.com.br

Abstract: In recent years, psychoactive substances (PSAs) have been increasingly consumed by young people and adults around the world, including in Brazil. In the context presented, among the (APAs) produced for therapeutic purposes, methylphenidate is highlighted for being a drug that belongs to the group of medication known as amphetamines, which are classified as central nervous system (CNS) stimulants. In Brazil, this substance is used in large numbers and is becoming increasingly known, becoming one of the most sold and consumed medications in recent years, since its commercialization was approved in the national territory. Among the users, the students are the ones who generally make indiscriminate use of these substances, aiming to enhance academic performance, with little or no concern about the adverse effects that this medication can bring. This study is a reflection, despite the relatively small number of respondents, it was found that there is a high frequency of indiscriminate use of methylphenidate among pharmacy students, in addition to evidencing the non-compliance with the current legislation regarding the marketing of the drug. In addition, it is necessary to promote the continuing education of health professionals and raise awareness among academics and the general population about the risks of indiscriminate use.

Keywords: methylphenidate, psychoactive substances, substance indiscriminately, undergraduate.

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I. INTRODUCTION

In recent years, psychoactive substances (PSAs) have been increasingly consumed by young people and adults around the world, including in Brazil. This issue is indeed a major concern for health professionals because consumers of this medication do not always use it under medical supervision, i.e., they use the substance indiscriminately. The inappropriate or inadequate use of this drug can cause several harms to health and compromise the quality of life of users (DE BEM 2016; WHO 2016).

In the context presented, among the (APAs) produced for therapeutic purposes, methylphenidate is highlighted for being a drug that belongs to the group of medication known as amphetamines, which are classified as central nervous system (CNS) stimulants (CALIMAN, 2017; CESAR, 2012). Its origin dates back to mid-1944, synthesized by Leandro Panizzon, a pharmacist at the former CIBA (now Novartis S/A) company

in Switzerland, and patented in 1954 (CESAR, 2012). Currently, this medication is widely known through its commercial representations, Ritalin® and Concerta®. In Brazil, these substances are regulated by ordinance 344 of May 12, 1998, which aims to control consumption and provide only to those who are under medical supervision (ORTEGA, 2010; Brazil, 1998).

The use of this substance is commonly indicated for the treatment of Attention Deficit Hyperactivity Disorder (ADHD), but it can also be used for narcolepsy, lethargy caused by other drugs, depression, and in the reduction of fatigue (CARNEIRO, 2013).

In Brazil, this substance is used in large numbers and is becoming increasingly known, becoming one of the most sold and consumed medications in recent years, since its commercialization was approved in the national territory (CALIMAN, 2013). It is reported that the large increase in consumption of this substance is because it provides a greater concentration in studies, work, and leisure. A large part of the consumers are academics, who have several obligations and activities related to their studies. They believe that the drug provides better concentrations for performing activities and increases individual performance, including productivity (STOREBO, 2018; MORGAN, 2017).

Among the users, the students are the ones who generally make indiscriminate use of these substances, aiming to enhance academic performance, with little or no concern about the adverse effects that this medication can bring. This same group often lacks guidelines and therapeutic indications for consumption (CARNEIRO, 2013). Although this drug has restricted consumption and requires a prescription to be legally acquired, it is also found illegally, mainly on the internet and through smuggling, which is some of the ways it is distributed (DA SILVA, 2016).

In some cases, the indiscriminate use of this drug, i.e., without professional guidance, can provide countless risks to the consumer. According to the literature, the main adverse effects of this drug are tachycardia, appetite reduction, insomnia, dry mouth, headache, and nervousness (COELHO, 2010), and it can also cause dependence through irregular use and affect the physical and mental health of the users (CARNEIRO, 2013).

From this perspective, the objective of this research is to identify the frequency of indiscriminate use of methylphenidate among pharmacy students at the University of Gurupi, and the possible problems regarding the use. It also proposes to raise data on the profile of individuals, frequency of use, and how they obtain it so that it can contribute and guide discussions and outline possible preventive strategies for public health.

II. MATERIALS AND METHODS

This is a cross-sectional, descriptive study with a quantitative approach, whose sample was composed of pharmacy students from the University of Gurupi-UnirG, in the southern region of Tocantins. Students from the 1st to the 10th periods, aged 18 years or older were included in the research. Academics under 18 years old were excluded from the study.

For data collection, a questionnaire was used. This questionnaire, standardized and self-completed, was answered by the students themselves, and made available on the online platform "Google Forms", containing 22 closed and open questions, anonymous.

The project was submitted to the Research Ethics Committee (CEP) of the University of Gurupi (UnirG) and approved. The students participating in the study authorized the use of the data collected by signing and accepting the online Free Informed Consent Form (FICF).

Regarding the analysis, the quantitative data obtained from the answered questionnaires were electronically processed using the MICROSOFT/EXCEL spreadsheet manager and presented employing graphs and tables.

III. RESULTS AND DISCUSSIONS

Of the 28 participants, 23 were female (82.14%) and 5 were male (17.85%). The predominant age range was 20 to 24 years.

Table1-Distribution of gender, age group of pharmacy students interviewed.

Variables	N= 28	%
Interviewees by gender		
Female	23	82,14
Male	5	17,85

Age Group		
> = 18	1	3,56
20 a 24*	18	64,28
25 a 29	4	14,28
> = 30	5	17,88

When asked if they had ever heard of methylphenidate, 27 (96.42%) said yes. When asked if they had ever used the drug, 17 (60.71%) reported that they had not, and only 11 (39.28%) said they had used the drug, and of these, only 2 (18.18%) used the medication under medical prescription to treat ADHD, the other 9 (81.81%) used it non-prescribed. (Table 2).

Table 2- Knowledge and use of methylphenidate by pharmacy students at UnirG.

Drug Knowledge (n=28)	N	%
Yes	27	96,42
No	1	3,58
Makes use of MTF (n=28)		
Yes	11	39,28
No	17	60,71
MTP use (n=11)		
Prescribed use/diagnosis ADHD	2	18,18
Non-prescribed use	9	81,81

Methylphenidate is used as one of the means to obtain greater cognitive enhancement, which can be noticed in students submitted to situations that require greater cognitive capacity. The frequent use of the drug can be explained by the fact that the students are in a highly competitive environment, and associated with stress factors (Carneiro, 2013).

According to Andrade et al. (2018), health students have more knowledge about the drug than most of the population. It is also noteworthy in this study that pharmacy students have a higher level of knowledge about the drug because they have specific subjects related to pharmacology in their curriculum. These factors may be associated with the indiscriminate use found in this study.

The present study revealed that 32.14% of the students make indiscriminate use of the drug and 7.14% make prescribed use. Similarly, a study conducted with medical students from a medical school in Brasilia showed that 7.04% of the interviewees make prescribed use and 12.08% make indiscriminate use (TOLENTINO, 2019).

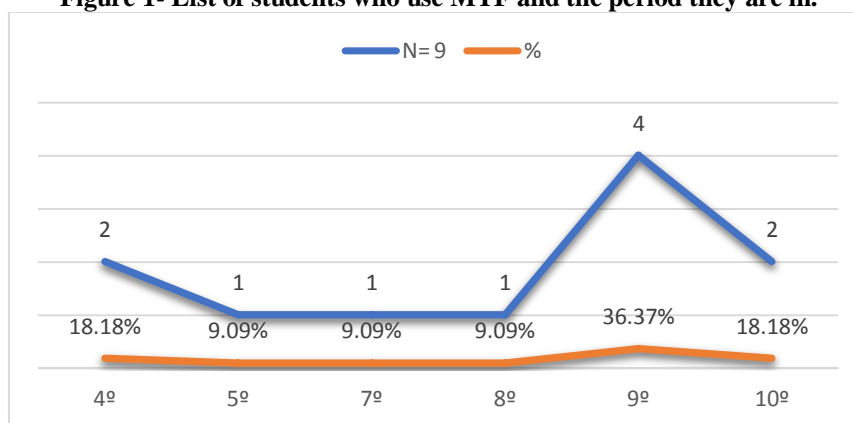
The non-therapeutic use of this drug has relevant values and the standard deviation between its indiscriminate (RASCADO, 2014).

Among those who make non-prescribed use, 8 are female, representing 38.09% of the female sample, and 1 male, representing 3.84% of the male sample. It can be considered a higher number of female users compared to males, due to the sample size, and most of them being female, this explains the significant difference in consumption between men and women (ROCHA, 2016). This result was also found in a study conducted at the University of Santa Cruz do Sul, where a difference between genders was found, about 40% of users were female (ROCHA, 2016).

Regarding the side effects presented to the use of methylphenidate, 36.36% of those who use it, reported presenting side effects, being the most frequent, dry mouth, anxiety, nausea and or vomiting, slowing, tachycardia, tiredness after the effect and even presenting side effects after use, only 1 (33.33%) of the participants reported having continued the use of the drug, according to the needs of the college. The results resembled studies that reveal anxiety, tachycardia, and headache as the three side effects most commonly reported by college students who use methylphenidate (BRATS, 2014).

Regarding the age of the users, it was found that the use of the drug was higher in the age group between 20 and 24 years (66.67%), followed by >=30 years (33.33%). The relation of the 9 participants who had already used methylphenidate without prescription was between the 4th and 10th period, as follows: in the 4th period, we had 2 students, as well as in the 5th, 7th and 8th period (we observed 1), in the 9th period, 4 participants reported use. In the 10th period, two people said they had already made use.

Figure 1- List of students who use MTF and the period they are in.



The study shows that there is an increasing increase in the consumption of methylphenidate according to the period in which the student is, as shown in the study by Bastos (2016) indicating greater consumption of methylphenidate in the last periods of the course. The age group with the highest prevalence of MTF use was 20 to 24 years, as in the studies conducted by Wille et al., 2016.

The form of acquisition reported by respondents indicates that 36.6% acquired from friends, which configures self-medication. And 36.6% of respondents reported having acquired from drugstores, and two of these acquired without the need to present a prescription, which, therefore, these drugs are being dispensed illegally, not following the legislation. In a study conducted by Cruz et al., 201121 at the Federal University of Bahia, the illegal sale of methylphenidate was elucidated, without the need for a medical prescription. Demonstrating the practice of buying drugs, especially psychoactive drugs without a prescription (CRUZ, 2011).

Table 2- Answers obtained from the students (n = 11) to the form of acquisition of methylphenidate, use, frequency, need to increase the dose, simultaneous use with continuous medication and alcohol intake

Acquisition Mode	N	%(n=11)
Drugstore	4	36,4
Friends	4	36,4
Internet	1	9,1
Another	2	18,2
Frequency of Use	N	%(n=11)
During all the proofs of the period	2	18,2
Alternated/ depending on the difficulty of the content of the exams	1	9,1
Little use only in extreme cases	5	45,5
Only in periods of a higher number of proof	3	27,3
Need for dose escalation	N	%(n=11)
No	10	90,9
Yes	1	9,09
Use of other continuous medication	N	%(n=11)
No	7	63,64

Yes	4	36,36
Alcohol Ingestion	N	% (n=11)
Does not use alcohol	4	36,36
2-4 days/week	1	9,09
Once/week	1	9,09
Sporadically	5	45,45

The frequency of use is little use of methylphenidate by 5 students (45.5%) followed by 3 (27.3%) who use in periods of a higher number of tests (ROCHA, 2016).

Regarding the reported motivations for non-prescribed use, 5 (45.45%) of the interviewees reported using the drug to obtain more concentration when studying, 1 (9.09%) to reconcile study and work, and 1 (9.09%) to stay awake longer. There were no reports of use to improve mood and energy for leisure or weight loss. Many studies bring as the main motivation for non-prescribed use of methylphenidate the need to increase concentration when studying. Having verified that academics use it with the intention of increasing and improving their performance in studies, it can be suggested that there is an indiscriminate increase in the use of the medication (CRUZ, 2011).

The reports of 10 (90.90%) of the students are that since they started using methylphenidate, they have not observed the need to increase the dose to get the same effect as in the beginning, and 1 (9.09%) reported the need to increase the dose to get the same effect. These results were similarly found in a study conducted in southern Minas Gerais and at the University of Santa Cruz do Sul, respectively, where values of 16.67% and 11.8% were found (CRUZ, 2011; ROCHA, 2016). This may characterize a drug tolerance picture in these students (ROCHA, 2016).

Regarding the simultaneous use with continuous medication, 4 (36.36%) answered yes. Of these 4 participants, 2 (50%) reported using an only oral contraceptive, 1 (25%) reported using contraceptive, Fluoxetine and Propranolol, and 1 (25%) Nifedipine, Hydrochlorothiazide. It was also reported, that 5 (45.45%) of the interviewees sporadically drink alcohol.

IV. CONCLUSION

In this study, despite the relatively small number of interviewees, it was found that there is a high frequency of indiscriminate use of methylphenidate among pharmacy students, besides evidencing noncompliance with current legislation regarding the sale of the drug. These data show a problem that can become a serious public health problem about the probable consequences.

Thus, it is necessary to discuss actions on the control, prescription, and dispensing of this medication, to develop more intensified enforcement strategies. Furthermore, it is necessary to promote continued education on the part of health professionals, and for them to raise awareness among academics and the general population about the risks of indiscriminate use.

Conflict of interest

There is no conflict to disclose.

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