

The Indiscriminate use of Ritalin by Universities in the Health Area at the University of Gurupi – UNIRG

Heydy Rodrigues da Silva¹, Leissane Rodrigues Barbosa¹, Vera Lúcia Cavalcante Rodrigues², Vanderson Ramos Mafra¹, Renata Ferreira Diogo³, Maykon Jhuly Martins de Paiva⁴, Christiane Rodrigues de Paula Marques¹, Claudia Christina Ribeiro Guimarães Neri de Magalhães⁵, Silvania Rosa de Souza⁶, Saulo José de Lima Júnior¹, Vanessa das Graças Pinto⁷, João Gabriel Fidel Santana⁸, Manoel Henrique de Carvalho⁷, José Gomes da Silva Júnior⁷

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

²Chemical Engineer, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

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

⁴Pharmaceutical, FAPAL - Faculty of Palmas, 402 South – Set 2 – Lots 7 and, 8. Palmas, TO CEP: 77016-524, Brazil.

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

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

⁷Undergraduate, Regional University of Gurupi – UNIRG, Av. Rio de Janeiro, Nº 1585 - St. Central, Gurupi - TO, 77403-090, Brazil.

⁸Doctor, Tocantinense University Center Presidente Antônio Carlos (UNITPAC), Av. Filadélfia, 568 - St. Oeste, Araguaína - TO, 77816-540, Brazil

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

Abstract: MPH methylphenidate, popularly known as Ritalin, was synthesized in 1954 in Switzerland and marketed in Brazil in 1998, belonging to the class of amphetamines. It acts in the CNS crossing the blood-brain barrier very easily. used for cognitive improvement by college students. Its excessive consumption leads to dependence and possible side effects. The objective of this study was to analyze 91 university students who answered questionnaires on the theme. The collected data analyzed the incidence of Ritalin use among health academics at the University of Gurupi-UNIRG. After conducting the surveys, it was intended to understand the real reason that leads the student to the indiscriminate use of the drug and its possible consequences, to subsequently conduct guidance regarding the use without a prescription for academic purposes.

Keywords: Methylphenidate. Attention Deficit Hyperactivity Disorder. Side effects. Undergraduate.

Date Of Submission: xx-xx-xxxx

Date Of Acceptance: xx-xx-xxxx

I. INTRODUCTION

The search for social satisfaction and increased productive capacity in recent years has become stimulating for pharmacological prescription of drugs that alter their mental state. According to Brant and Carvalho, (2012) this consumption has currently reached a progressive and alarming scale in Brazil and worldwide.

Ritalin is a stimulant drug, its active ingredient is methylphenidate (MPH), belongs to the group of amphetamines, acting on the central nervous system by inhibiting the receptor of noradrenaline and dopamine, blocking the uptake of catecholamines, although the risk is inherent in the drug of the first choice for attention deficit hyperactivity disorder (PIRES et al., 2018).

Methylphenidate (MPH) synthesized in 1944 in Switzerland and marketed in Brazil in 1998, a drug listed as a psychotropic, with retention of prescription in pharmaceutical establishments, because they act

similar to cocaine by having a direct action on the central nervous system (CNS), provides the patient with a state of alertness and cognitive improvement (BRANT; CARVALHO, 2012).

It is estimated that Brazil is the second-largest consumer of Ritalin in the world, where studies show that between the years 2003 to 2012 the consumption of this drug increased by about (75%) compared to previous years, taking into account several factors that made this increase possible (COLI; SOUSA; NAKASU, 2016).

The current concern is related to the uncontrolled use of this drug among students, who, with or without a prescription, have access to its use in an increasingly intense way, which leads people to risk exposure to the drug, indiscriminate use has extreme consequences and can cause abuse and dependence, so several factors induce healthy people to the exacerbated use of this substance (COELHO, 2015).

The increase in the irrational use of this drug is due to several causes among them: increase in the diagnosis of mental disorders, the indication of drugs for different treatments, formulation of new psychiatric drugs (BRANT; CARVALHO, 2012).

Junior (2015) states that the increase in popularity of Ritalin among college students for the improvement of academic performance aroused the interest to deepen the studies related to the desired benefits and side effects arising from the indiscriminate use of this substance, supported by theoretical discussions and research that indicate the growing consumption of this psychopharmaceutical by academics.

As in Brazil, this fact is no different in the city of Gurupi, especially at the UNIRG University, a reference center of academic health in the southern region of Tocantins, where the indiscriminate use of Ritalin has become more evident, especially among health students.

Given this reality, there is a need to research a bibliographic survey and questionnaires distributed among the health students at the University of Gurupi, to verify the prevalence of the use of Ritalin, investigate the frequency in which it is used, verify the motivation for its use, draw the profile of the student who uses Ritalin, and determine which health course most uses the drug among the Pharmacy, Nursing, Medicine, and Physiotherapy courses.

To achieve the intended objectives, this research drew a comparative analysis with the data obtained in the questionnaires of the first and last term students of each course that was the object of this study.

Because of the above, this research is of utmost importance to contribute to the promotion of educational campaigns among the students about the indiscriminate use of Ritalin, besides being able to contribute to the theoretical basis for future research in the academic field.

II. MATERIALS AND METHODS

This research was authorized by the Research Ethics Committee (CEP) of the University of Gurupi-UNIRG.

This is an exploratory study with a quantitative, descriptive, and observational approach, carried out in the aforementioned institution, through the analysis of 108 (one hundred and eight) questionnaires applied among the first and last term students of some courses in the health area.

After data collection, they were analyzed according to the selected parameters, observing the following variables: gender, age, existence or not of a medical prescription, the reason for use, and course of higher incidence.

Included in this study were students from the University of Gurupi, duly enrolled in the first and last periods of the Pharmacy, Nursing, Medicine, and Physiotherapy courses. Excluded from the study were students who were not part of any of the courses mentioned, who used Ritalin for therapeutic purposes, who were not present on the day of data collection, or who refused to sign the ICF.

After collection, the data were analyzed using the Microsoft Office Excel® 2016 program and interpreted descriptively utilizing simple percentage statistics, and the results were presented through tables and percentages and interpreted through simple percentage statistics.

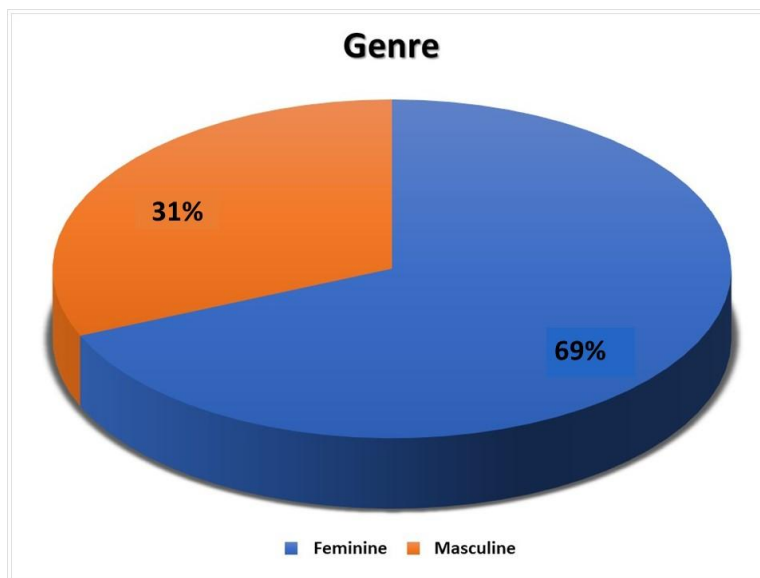
III. RESULTS AND DISCUSSIONS

A total of 108 questionnaires were analyzed among the students from Pharmacy, Medicine, Nursing, and Physiotherapy courses belonging to the first and last periods of these courses. The data that follow correspond to the discussion of this study.

4.1 Profile of the Students

To outline the profile of the academics of the courses covered in this study, the research sought to evaluate variables such as: age, gender, and undergraduate course. The data will be discussed below.

Graphic 1. Shows the Gender Characteristics of the Academics Interviewed.



Regarding gender, it can be considered that the largest number of people questioned were females (69%), which implies a significant difference compared to males (31%), and the data are similar to the results of Rocha, (2016) where (78.4%) of methylphenidate users were female. Contrary to the study of Pires et al. (2018), which observed a higher consumption (68.42%) of this psychostimulant among males. It is worth noting that this percentage is shown above (Graph 1) is balanced between "Yes" and "No" responses.

Table 1. Shows the Various Age Groups of The Students Involved in The Research and Shows the Highest Prevalence

Variable: Age	N	%
From 17 to 19 yearsold	25	23,14
20 to 22 years old	36	33,33
23 to 25 years old	20	18,51
26 to 30 years old	09	8,33
More than 30 years	18	16,66
Total	108	99,97

It is observed that among the academics surveyed the most prevalent age group is between 20-22 years (31.86%). In the study of Rocha, (2016) the age groups of 22-25 years were more prominent with (45.1%).

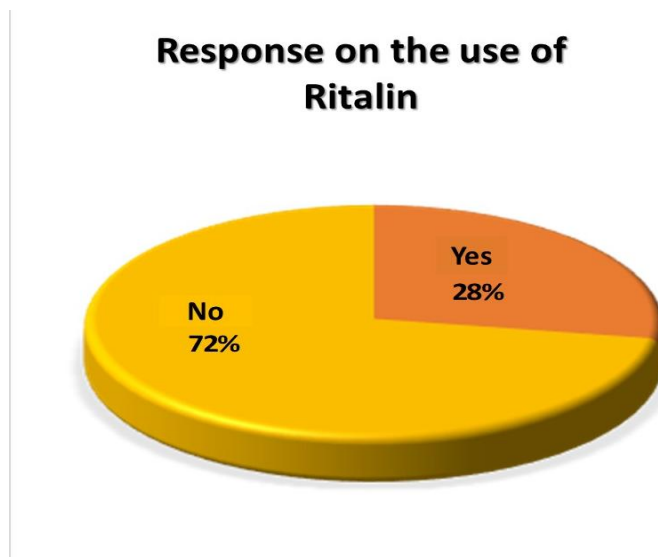
Table 2. Distribution of the undergraduate courses involved in the study, as well as the course that most contributed to the study.

UndergraduateCourse	N	%
Medicine	32	29,62
Nursing	28	25,92
Pharmacy	24	22,22
Physiotherapy	24	22,22
Total	108	99,98

It was noted according to the total sample of 108 university students from the initial and final periods that among the courses medicine (29.62%), nursing (25.92%), pharmacy (22.22%), and physical therapy (22.22%), however, those that most contributed to the favorable result of the research were the medical and nursing courses.

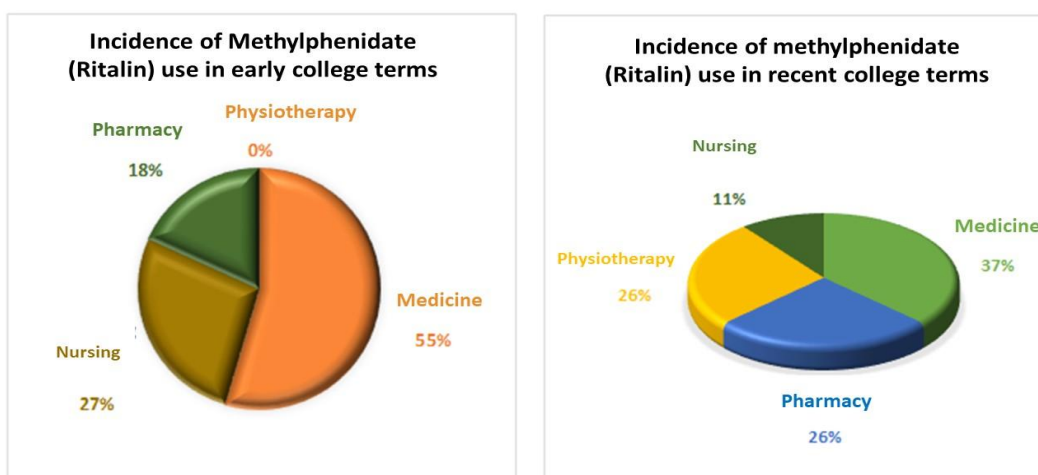
4.2 Indiscriminate Use of the Substance (Ritalin)

Graphic.2 shows the total variable of the use of Mtilfenidate among the respondents.



Of the 108 respondents, 30 people (28%) claimed to have used or made use of this psychoactive drug, while the remaining 78 (72%) denied making use and even not having knowledge of the drug. Already in the research of Jesus et al. (2018) shows that almost all participants (96%) of the University of Mogi das Cruzes reported knowing the drug since other studies have also mentioned that university students in the health area have wide access to information about the drug, which generates a certain concern. In the results of Carneiro et al. (2013) on the indiscriminate use of methylphenidate among medical students, 37 undergraduates (23.72%) stated that they have or do abuse the drug.

Graphic 3. shows the highest incidence in the use of the drug by students of the institution (UNIRG), according to the academic period.



Concerning the positive responses to use, specific to each academic semester, it can be concluded that the courses listed (Graph 3) correspond to the following sequence: first periods of medicine (55%), followed by nursing (27%) and pharmacy (18%). With this result it was noted that the highest incidence of methylphenidate consumption is found in the medical course, since it is a complex undergraduate course that requires a little more from the students, making them opt for uncomplicated means. This result is close to the study conducted by Pires et al. (2018) in a private institution in Zona da Mata of Minas Gerais. It is likely as explained by Cruz et. al, (2011) that the long periods of studies, competitiveness, and fatigue makes this course considered a risk factor. About the last period, it was observed that the medicine course (37%) leads in the consumption of this

psychoactive drug in an illicit form for aggregation in academic achievement, followed by the pharmacy (26%), physiotherapy (26%), and nursing with (11%).

Table 3. shows the variable frequency of non-prescribed use of Ritalin.

Frequency of use	N	%
Only in the tests	14	46,66
Once in a lifetime	13	43,33
Once a week	01	0,35
Once a month	01	0,35
Every day	01	0,35
Total	30	91,04

About the frequency used, two answers stood out, and it was found that 14 students (46.66%) said they used it only during the exam period. These results are similar to what Rocha 2016 carried out at the University of Santa Cruz do Sul-RS, where 15 (29.4%) students reported using them frequently during exams. A possible explanation by the author is that most of them take them during the most demanding period, both with the amount of content applied during exams and during stress and overload of obligations. The main purpose of the medication is to improve academic performance. It was also observed that 13 students (43.33%) reported using the drug once in their lives, which according to them can be judged by the fact that the drug presents irreversible adverse effects. Pasquini, (2013) ensures that the substance can raise dopamine levels in large periods of peaks, and may cause adverse reactions throughout the human organism.

Jesus et al. (2017) evidenced in their study conducted at Mogi das Cruzes University that (59.2%) of methylphenidate users (n=16) presented side effects with the use of the psychostimulant substance.

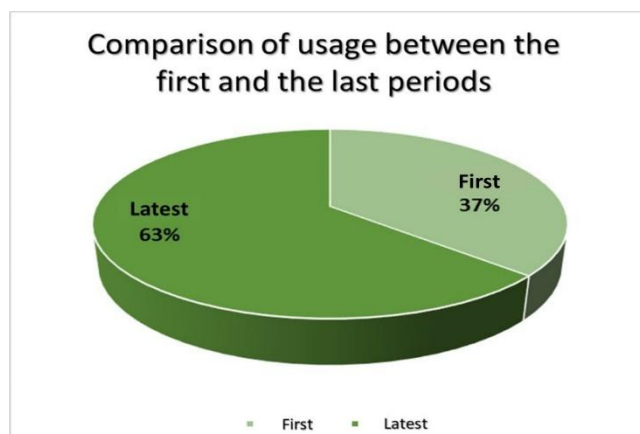
Table 4. presents the variable of due or wrong indication of Ritalin for the academics.

Pharmacist's statement	N	%
Pharmacist	05	16,66
Relatives	02	6,66
Friends	10	33,33
Doctor	01	3,33
Own initiative	12	40
Total	30	99,98

As shown in the results above, of the 30 respondents, the greatest indication of excessive use of this medication is through the students' initiative, where 12 (40%) of them said that they self-medicate without any guidance, an important fact, since we know that one should not use medication without the guidance of a trained professional. The study revealed that there is also a predominance (33.33%) concerning the indication of third parties (friends).

Some individuals even reported the adverse effects they felt when taking Ritalin, one of them said - "I took it once, I almost died, my heart started racing, I got dizzy all night long. Because of the reports, we realize that the medication, if used abusively and without medical advice, can cause adverse reactions to both physical and mental health.

Graph 4 - shows a comparison of the positive responses for use between the first and last periods of the health area at the University of Gurupi- UNIRG



It is noted in the total sample of 30 students that the results obtained from the interviewees who use Ritalin are students who are leaving the university (last period) with (63%), one of the reasons that can be cited about the use is that each period that advances require more time from the university student, where he has to reconcile studies, internships, and tasks. Many of them can't keep up with this stressful routine, and when the time for exams comes, they want to make up for lost time and study to have a good performance at the end of the term. According to Coli, Souza, and Nakasu, (2016) the quality of life of academics is an important factor for cognitive improvement. In the same way, it was also found that the first periods had a high percentage (37%) compared to the fact that individuals are still adapting to the academic routine and still do not have a complex collection focused on studies.

IV. FINAL CONSIDERATIONS

In this study, we sought to evaluate the use of Ritalin for non-therapeutic purposes without medical advice in a population of college students from the University of Gurupi UNIRG. Given the results shown in the graphs and tables, we can see that the prevalence of substance use was 28%, the same percentage presented in a study conducted by Tsuda and Christoff (2015) at a university in the forest zone in Minas Gerais, a result slightly higher than the prevalence of use found by Coli (2016) in his research was 29.16%. With a percentage of 23.72% Carneiro et al (2013) shows us a result well below the results cited above. We note that the prevalence of the use of methylphenidate has been showing high results as shown in all the research cited.

Concerning the frequency in which the substance is used (46.66%) said they use it only during exams, Pires et al (2018) say that cognitive enhancement is a determining factor leading to the indiscriminate use of psychostimulant drugs.

Tracing the profile of the academic who uses the most prevalent age group is between 20-22 years with 31.86% being the female gender responsible for self-consumption of the drug, this because the number of women who answered the questionnaire was higher than males. Unlike what was shown by Cruz et al (2011), Pires et al (2018), and Coli (2016) where they reported that the highest consumption of the drug comes from the male gender, unlike Carneiro et al (2013) as shown in their study there was no significant difference between genders.

Regarding the indiscriminate use of the drug in the courses according to the information a higher incidence of misuse of this drug and in the medical course in both the first 55% and the last 37% period being responsible for self-consumption of methylphenidate (Ritalin), According to Carneiro et al (2013), According to Carneiro et al (2013), one of the factors that lead to this abuse is the fact that they have a high workload and a greater amount of content administered in class that will later be covered in evidence, which ends up demanding more from the student, in addition to competitiveness, physical fatigue and stress of everyday life.

These data collected confirm the hypothesis that there is indiscriminate use among Brazilian college students, which leads to a concern about the increase in the consumption of CNS stimulant drugs. However, further research on the subject is extremely important for the health of the population. Since the abusive use of the drug can become a public health problem as Andrade et al (2018) reports in their study.

V. CONCLUSION

It can be concluded, because of the intended objectives, that the research was successful since they were reached. However, more satisfactory results could have been obtained if there were not so many obstacles to data collection within the academic community itself, such as

✓ Refusal on the part of students to contribute to the research, not accepting to answer the questionnaire;

✓ The impeccability on the part of some managers, hindering access to the academics surveyed. However, with the data collected it was possible to have a significant percentage for the discussion of the results.

However, regardless of the results, it is worth pointing out that no substance is safe if used incorrectly and without guidance, because it can present irreversible damage or harm to the physical and mental health of the user.

Therefore, it is evident the need to promote awareness campaigns in the academic field by the university administrators, to make the population aware of the risks that self-medication can present, as well as, that works such as this one should be carried out so that it is possible to know more deeply about the subject in question.

Conflict of interest

There is no conflict to disclose.

ACKNOWLEDGEMENT

The authors are grateful to the "National Council for Scientific and Technological Development –CNPq and www.normatizaoficial.com

REFERENCES

- [1]. ALVES, Rosana Cardoso et al. Diretrizes brasileiras para o diagnóstico da narcolepsia. *Revista Brasileira de Psiquiatria*, n. 3, v. 32, p. 295-304, 2010.
- [2]. ANDRADE, Luana da Silva et al. Ritalina, uma droga que ameaça a inteligência. *Revista de Medicina e Saúde de Brasília*, n. 1, v. 7, p. 99-112, 2018.
- [3]. BRANT, Luiz Carlos; CARVALHO, Tales Renato Ferreira. Metilfenidato: medicamento gadget da contemporaneidade. *Interface-Comunicação, Saúde, Educação*, n.42, v. 16, p. 623-636, 2012.
- [4]. CARNEIRO, Samara Guerra et al. O uso não prescrito de metilfenidato entre acadêmicos de Medicina. *Cadernos UniFOA*, v. 8, n. 1, p. 53-59, 2013.
- [5]. COELHO, Augusto César Alves Arifa. Metilfenidato: acesso pela internet, indicações e riscos à saúde. 2015.
- [6]. COLI, Ana Clara Mauad, SOUSA, Marília Pires e NAKASU, Maria Vilela Pinto. Uso não Prescrito de Metilfenidato entre Estudantes de uma Faculdade de Medicina do Sul de Minas Gerais. *Revista Ciências em Saúde*, n. 3, v. 6, p. 121-132, 2016.
- [7]. CORDEIRO, Nicolas; PINTO, Rodrigo Moreira Caetano. Consumo de estimulantes cerebrais em acadêmicos da área da saúde na cidade de Ponta Grossa-PR. *Visão Acadêmica*, v. 18, n. 2, p 23-42, 2017.
- [8]. COSTA, Jessica Sophia. Metilfenidato. 2016. Tese de Doutorado.
- [9]. CRUZ, Tarcisio et al. Uso não-prescrito de Metilfenidato entre estudantes de medicina da Universidade Federal da Bahia. *Gazeta Médica da Bahia*, n. 81, v.1, p. 3-6, 2011.
- [10]. DOMITROVIC, Nathalia; CALIMAN, Luciana Vieira. As controvérsias sócio-históricas das práticas farmacológicas com o metilfenidato. *Psicologia & Sociedade*, v. 29, p. 1-10, 2017.
- [11]. FARDIN, Carlos Eduardo; PILOTO, Juliana Antunes da Rocha. Uso indiscriminado do metilfenidato para o aperfeiçoamento cognitivo em indivíduos saudáveis. *Revista UNINGÁ Review*, v. 23, n. 3, p. 98-103, 2015.
- [12]. FERREIRA, Rosana Cristina Spezia et al. *Bulário detalhado*. Rideel Editora, 2017.
- [13]. GUEDIM, Talita Fernanda Gonçalves et al. Performance of children with attention deficit hyperactivity disorder in phonological processing, reading and writing. *Revista CEFAC*, v. 19, n. 2, p. 242-252, 2017.
- [14]. GIOTTO, Edmarlon; COSTA, Camila Kaibara; BORGES, Lucielle da Silva. Caracterização das prescrições de metilfenidato em rede de farmácias do município de Londrina, Paraná, 2010. *Revista Eletrônica de Farmácia*, v. 8, n. 3, p. 26-40, 2011.
- [15]. ITABORAHY, Cláudia. *A Ritalina no Brasil: Uma década de produção, divulgação e consumo*. 2009.
- [16]. JESUS, M.G, et al. Análise do uso de metilfenidato por vestibulandos e graduandos de medicina em uma cidade do estado de São Paulo, revista debates em psiquiatria, 2017.
- [17]. JUNIOR, Francisco José da Silva Sousa. As consequências do uso indiscriminado do metilfenidato por estudantes universitários – uma revisão bibliográfica. *Revista Especialize On-line IPO*. Edição nº 10 Vol. 01/ 2015 dezembro/2015.
- [18]. ORTEGA, Francisco et al. *A Ritalina no Brasil: produções, discursos e práticas*. Interface- Comunic., Saude, Educ. 2010.
- [19]. ROCHA, Bruna. Avaliação da frequência do uso do metilfenidato por estudantes de ensino superior. 2016.
- [20]. PASQUINI, N. C. Uso de Metilfenidato (MFD) por Estudantes Universitários com Intuito de “Turbinar” o Cérebro. *Biofar, Rev. Biol. Farm. Campina Grande*, v. 9, n. 2, p. 107-113 junho-agosto, 2013.
- [21]. PIRES, Marina dos Santos et al. O uso de substâncias psicoestimulantes sem prescrição médica por estudantes universitários. *Revista Científica FAGOC-Saúde*, v. 3, n. 2, p. 22-29, 2018.
- [22]. SANTANA, Rosângela Soares. Tratamento utilizado no transtorno de déficit de atenção hiperatividade e impulsividade (TDAH): cloridrato de metilfenidato como fármaco de primeira escolha. 2011.
- [23]. TSUDA, Cristiane Armstrong; CHRISTOFF, Adriana de Oliveira. Avaliação do padrão de uso de estimulantes em uma faculdade de Curitiba-PR. *Cadernos da Escola de Saúde*, n. 13, v. 1, p. 116-132, 2015.
- [24].