

RESEARCH

Factors Associated With Use of Medications for Anxiety and Depression in Pharmacy Students in Brazil

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Objective. To map undergraduate pharmacy students' use of medications for anxiety and depression and associated factors at one university in Brazil.

Methods. A cross-sectional study was conducted from May to July 2019 among undergraduate pharmacy students at one university. Data regarding sociodemographic issues and the use of psychotropics were collected using an online questionnaire. Exploratory descriptive analysis of data, the chi-square test, and multivariate binary logistic regression were performed to identify factors associated with the use of medications for anxiety and depression.

Results. Of 900 students enrolled, usable survey responses were received from 198. Most respondents were female with a mean age of 22.3 years. Among these, 17.7% of pharmacy students used medications to treat anxiety and 13.1% used medications for depression. The most common psychotropics were escitalopram and fluoxetine. There were two peak usage times: the initial and final year of pharmacy school. Dissatisfaction with the pharmacy program and psychological care were significantly associated with the use of medications for anxiety. In contrast, monthly income from three to 15 times the minimum wage, religiosity/spirituality, and psychological care were associated with students' use of medications for depression.

Conclusion. There was a high prevalence of medication use to treat anxiety and depression among undergraduate pharmacy students, and this use was associated with psychological care, monthly income, and religiosity/spirituality.

Keywords: depression, anxiety, pharmacy students, prevalence, psychotropic

INTRODUCTION

Mental disorders, such as anxiety and depression, are highly prevalent and increasing globally. The World Health Organization (WHO) has reported in 2015 that the proportion of the global population with depression and anxiety disorders was estimated at 4.4% and 3.6%, respectively.¹ In Brazil, this number is higher, with depression affecting 5.8% of the population and anxiety disorders affecting 9.3%.¹ The phenomenon of mental illness has been widely studied as it raises serious concerns for public health authorities and managers. These disorders are known to be incapacitating and have physical, economic, and social consequences for the individual and society.²

Anxiety disorders are characterized by persistent and excessive fear and an exacerbated state of anxiety (eg, panic, social anxiety, and generalized anxiety disorders). Depressive disorders are characterized by sad, empty, or irritable mood accompanied by somatic and cognitive changes that significantly affect an individual's ability to function. They can include, for example, disruptive mood disorder, major depressive disorder (eg, major depressive episode), and persistent depressive disorder (dysthymia).³ Symptoms of either disorder can range from mild to severe and frequently exist simultaneously.⁴

There is an urgent need to evaluate the mental health of students in the university environment. An estimated 20% of university students have some type of mental disorder during their academic training,⁵ and depression and anxiety are the most common self-declared mental disorders in this group.⁶ Undergraduate college students are reported to experience rates of depression and anxiety that are

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significantly greater than those found in the general population.^{5,7} Depression and anxiety in university student may result in decreased academic performance as well as increase dropout rates, alcohol and other substance abuse, academic dishonesty, and suicide.^{8,9}

During the transition phase from high school to the university environment, students face several relational (eg, establishing new bonds), vocational (eg, career identity and insecurity regarding entering the job market), and academic challenges (eg, increased workload, adaptation to a new models of assessment/learning) as well as other stressors (eg, family expectations, financial burden, and sleep disruption).¹⁰⁻¹² Thus, the same environment that contributes to the building of knowledge and facilitates students' involvement in professional training experiences also can be the trigger for mental disorders when an individual has difficulty facing these challenges.¹³

Most studies focus on mental disorders among medical students, with few observational studies including other health professions students.^{8,14,15} One systematic review among undergraduate pharmacy students reported that the prevalence of anxiety ranged from 29.3% to 50.3% and the prevalence of depression ranged from 4.9% to 51.1%.¹⁶ These findings support the premise that a high prevalence of these mental disorders exist among pharmacy students and reinforce the need to include mental health care in any efforts to improve the well-being of this population.

Having knowledge of factors that negatively influence the quality of life and performance of students during their training can facilitate health promotion, improve satisfaction, and guide faculty in making adjustments to the curriculum.¹⁷ However, there remains a lack of studies that explore the profile of pharmacy students who use psychotropic medications for anxiety and depression, determine which medications are most consumed, and identify possible factors associated with psychotropic medication use, such as gender, age, and duration in college. Thus, the aim of this study was to map the use of medications for anxiety and depression among undergraduate pharmacy students and determine factors associated with their use.

METHODS

This study was conducted and reported based on the STROBE (STrengthening the Reporting of OBservational Studies in Epidemiology) statement.¹⁸ The statement consists of 22 items that should be included in observational studies to ensure that the published report contains all relevant information, including specific instructions for the title, abstract, methods, results, discussion, and funding.

A cross-sectional study was conducted from May 2019 to July 2019, and included undergraduate students from the

Faculty of Pharmaceutical Sciences at the University of São Paulo (USP). This is the largest Brazilian public university, and its pharmacy school has nearly 900 undergraduate students, distributed in full-time (five years) or part-time (six years) pharmacy programs. The period for completing the program can be extended by a maximum of two and a half years. The curriculum for Bachelor of Pharmacy (BPharm) is divided into two training stages, basic education (first and second years) and pharmacy education (the remaining years), with students completing a total of 5115 hours of training before graduation. Pharmacy students must develop an understanding of medications, clinical and toxicological analyses, the food industry, and the provision of health care. The study was approved by the Human Research Ethics Committee of the Faculty of Pharmaceutical Sciences.

All undergraduate students enrolled in the pharmacy school were invited to participate in this study, and were told the purpose of the study in the invitation. Those who agreed completed an informed consent form with the online survey. A sample size was calculated using the population proportion test, with $\alpha = .05$ being adopted, a maximum error of 5% (95% power), a proportion of 16% for the consumption of medications to treat anxiety or depression in health care students in Brazil,¹⁹⁻²¹ and the known population size of 900 students. Thus, we estimated that the sample size needed was 169 pharmacy students.

The data were collected using an online anonymous questionnaire developed on the Google Forms platform, and students could respond to the survey only once. This questionnaire was distributed through an official email from the college and was posted on social networks (Facebook and WhatsApp) to expand the possible number of responses. The following variables were collected: demographics and social characteristics (gender, age, current student year, type of pharmacy program, race/ethnicity, with whom the student lives, monthly income, relationship status, physical activity, use of alcohol and illicit drugs, religiosity and spirituality, psychological care, and student satisfaction with the pharmacy program) and the profile of consumption of psychotropic medications (use in the last 30 days, therapeutic indication, duration of treatment, prescriber, influence of pharmacy program on the use of psychotropics, and use of alternative treatments).

All data collected were organized and categorized in an Excel spreadsheet. First, an exploratory descriptive analysis of all variables included in this study was performed, and the data were described as frequency (percentage) and mean (standard deviation - SD). Next, a chi-square test was used to identify possible independent variables (demographics and social characteristics) associated with the use of psychotropic medications. Variables with a p value $\leq .25$ in this

analysis were included in the multivariable binary logistic regression. The results of the regression are presented as adjusted odds ratios (ORs) and their 95% confidence intervals (CIs), and variables with p -values $<.05$ were considered statistically significant. All analyses were performed using the SPSS Statistics (IBM).

RESULTS

Responses were obtained from 207 pharmacy students. Of these, nine responses were disqualified for having the student's incorrect year of birth (ie, 2019). Thus, 198 valid responses, equivalent to 22% of students regularly enrolled in 2019 in the USP pharmacy school, were included.

Student characteristics are displayed in Table 1. Among the students, 35 (17.7%) reported using medications for anxiety and 26 (13.1%) reported using medications for depression, while 22 (11.1%) had been treated for both mental disorders. The mean age of all students was 22.3 (SD=3.3) years. The mean age of students using medications for anxiety and depression was 22.5 (SD=3.0) and 22.6 (SD=3.9) years, respectively. Most of the students were female (76.8%), attending the full-time program (53.0%), White (73.7%), living with their parents (73.7%), having a single partner (49.5%), and a monthly income from five to 15 times the minimum wage (38.4%). A minority of pharmacy students engaged in regular physical activity (40.4%), used alcohol regularly (23.2%), and used illicit drugs (19.2%). Approximately two-thirds of the students were religious or spiritual. In addition, 55 (27.8%) students received psychological care from a psychologist or a psychoanalyst. There were some students who did not receive counseling or other monitoring but used medications for anxiety or depression, and students who did receive professional care but did not need treatment with psychotropics. In response to the item on how they felt about the quality of the pharmacy program, 71.2% of students were satisfied or neutral.

The profile of psychotropic medication use among pharmacy students is presented in Table 2. In our sample, 39 (19.7%) students used psychotropics. Of these, 35 (89.7%) were being treated for anxiety and 26 (66.7%) for depression. Most of these students (64.1%) used only one psychotropic medication, and the mean number of psychotropic medications used per student was 1.5 (SD=0.8). The most used psychotropics were escitalopram and fluoxetine, with more than half the pharmacy students (51.3%) using one of the two medications. Approximately half of the students (51.3%) had started their treatment less than a year before completing the survey. Most students (79.5%) believed that the use of psychotropics was influenced by their experience in the pharmacy program. In addition,

84.6% of psychotropic medications were prescribed by a psychiatrist. On comparing data related to the current student year in the pharmacy program and duration of treatment, two peaks for beginning the use of psychotropic medications were noted: the initial and last years of the pharmacy program (Figure 1).

A chi-square analysis identified the following variables as promising for inclusion ($p \leq .25$) in the multivariate logistic regression model (Table 3): race/ethnicity, monthly income, who the student lived with, use of alcohol, religiosity, psychological care, use of an alternative treatment, and student satisfaction with the pharmacy program. The regression analysis showed a significant association between psychological care and the consumption of medications for anxiety (OR=20.23 [CI, 7.56-54.13]; $p < .001$) and dissatisfaction with the pharmacy program and the consumption of medications for anxiety (OR=3.21 [CI, 1.07-9.61]; $p = .037$). In contrast, monthly income from three to 15 times the minimum wage (OR=6.35 [CI, 1.12-35.81]; $p = .036$), religiosity/spirituality (OR=0.19 [CI, 0.06-0.56]; $p = .002$), and psychological care (OR=15.6 [CI, 5.34-45.55]; $p < .001$) were associated with the use of medications for depression (Table 4).

DISCUSSION

To our knowledge, this is the first study in Brazil to examine the use of medications for anxiety and depression and associated factors among undergraduate pharmacy students. In our sample, 17.7% of pharmacy students used psychotropic medications to treat anxiety and 13.1% used them for depression. Previous studies conducted in France,²² Brazil,²³ and United States²⁴ showed that the use of psychotropic medications for a mental disorder among pharmacy students was 9.4%, 21%, and 25%, respectively. These findings are similar to those of the present study and reveal a higher prevalence among pharmacy students compared to students overall. A survey by the American College Health Association reported a 6.9% and 6.2% prevalence of using psychotropic medications for anxiety and depression, respectively, among national undergraduate students in the United States.²⁵

The psychotropic medications most used for anxiety and depression were escitalopram, fluoxetine, and sertraline, which belong to the pharmacological class of selective serotonin reuptake inhibitors and are indicated for both anxiety and depression. Oliveira and colleagues²³ reported that fluoxetine and sertraline were as the most consumed psychotropic medications among students in Brazil. Alternatively, studies among university students have reported a higher consumption of anxiolytics, hypnotics, and sedatives for mental disorders.^{6,22} The high rate of use of psychotropic

Table 1. Characteristics of Undergraduate Pharmacy Students Using Medications for Anxiety and Depression

Characteristic	Total (N=198)	Taking Medications for Anxiety?		Taking Medications for Depression?	
		Yes	No	Yes	No
Student age in years, mean (SD)	22.3 (3.3)	22.5 (3.0)	22.2 (3.4)	22.6 (3.9)	22.2 (3.3)
Female, n (%)	152 (76.8)	28 (14.1)	124 (62.6)	20 (10.1)	132 (66.7)
Male, n (%)	46 (23.2)	7 (15.2)	39 (84.8)	6 (13.0)	40 (87.0)
Student year, n (%)					
1st	37 (18.7)	3 (1.5)	34 (17.2)	5 (2.5)	32 (16.2)
2nd	16 (8.1)	5 (2.5)	11 (5.6)	4 (2.0)	12 (6.1)
3rd	24 (12.1)	5 (2.5)	19 (9.6)	4 (2.0)	20 (10.1)
4th	23 (11.6)	3 (1.5)	20 (10.1)	3 (1.5)	20 (10.1)
5th	28 (14.1)	4 (2.0)	24 (12.1)	1 (0.5)	27 (13.6)
6th	39 (19.7)	9 (4.5)	30 (15.2)	4 (2.0)	35 (17.7)
7th or more	31 (15.7)	6 (3.0)	25 (12.6)	5 (2.5)	26 (13.1)
Full-time student, n (%)	105 (53.0)	19 (9.6)	86 (43.4)	15 (7.6)	90 (45.5)
Race/ethnicity, n (%)					
White	146 (73.7)	27 (13.6)	119 (60.1)	21 (10.6)	125 (63.1)
Yellow	17 (8.6)	1 (0.5)	16 (8.1)	1 (0.5)	16 (8.1)
Brown	24 (12.1)	6 (3.0)	18 (9.1)	4 (2.0)	20 (10.1)
Black	10 (5.1)	1 (0.5)	9 (4.6)	0 (0.0)	10 (5.1)
Red	1 (0.5)	0 (0.0)	1 (0.5)	0 (0.0)	1 (0.5)
Monthly income, n (%) ^a					
>15x minimum wage	26 (13.1)	5 (2.5)	21 (10.6)	2 (1.0)	24 (12.1)
5-15x minimum wage	76 (38.4)	16 (8.1)	60 (30.3)	12 (6.1)	64 (32.3)
3-5x minimum wage	52 (26.3)	9 (4.5)	43 (21.7)	9 (4.5)	43 (21.7)
1-3x minimum wage	41 (20.7)	5 (2.5)	36 (18.2)	3 (1.5)	38 (19.2)
Less than 1x minimum wage	3 (1.5)	0 (0.0)	3 (1.5)	0 (0.0)	3 (1.5)
Lives with, n (%)					
Parents	146 (73.7)	24 (12.1)	122 (61.6)	20 (10.1)	126 (63.6)
Alone	22 (11.1)	6 (3.0)	16 (8.1)	4 (2.0)	18 (9.1)
Others	30 (15.2)	5 (2.5)	25 (12.6)	2 (1.0)	28 (14.1)
Relationship status, n (%)					
Single partner	98 (49.5)	15 (7.6)	83 (41.9)	9 (4.5)	89 (44.9)
Multiple partners	5 (2.5)	1 (0.5)	4 (2.0)	2 (1.0)	3 (1.5)
None	95 (48.0)	19 (9.6)	76 (38.4)	15 (7.6)	80 (40.4)
Regular physical activity, n (%) ^b	80 (40.4)	13 (6.6)	67 (33.8)	9 (4.5)	71 (35.9)
Use of alcohol, n (%) ^c	46 (23.2)	5 (2.5)	41 (20.7)	6 (3.0)	40 (20.2)
Use of illicit drugs, n (%)	38 (19.2)	8 (4.0)	30 (15.2)	6 (3.0)	32 (16.2)
Religion, n (%)					
Non-organizational religion ^d	43 (21.7)	5 (2.5)	38 (19.2)	1 (0.5)	42 (21.2)
Organizational religion ^d	33 (16.7)	5 (2.5)	28 (14.1)	4 (2.0)	29 (14.6)
Spirituality ^c	75 (37.9)	14 (7.1)	61 (30.8)	9 (4.5)	66 (33.3)
None	47 (23.7)	11 (5.6)	36 (18.2)	12 (6.1)	35 (17.7)
Psychological care, n (%)	55 (27.8)	27 (13.6)	28 (14.1)	19 (9.6)	36 (18.2)
Student satisfaction with the pharmacy program, n (%)					

(Continued)

Table 1. (Continued)

Characteristic	Total (N=198)	Taking Medications for Anxiety?		Taking Medications for Depression?	
		Yes	No	Yes	No
Completely satisfied	16 (8.1)	2 (1.0)	14 (7.1)	1 (0.5)	15 (7.6)
Satisfied	83 (41.9)	14 (7.1)	69 (34.8)	10 (5.1)	73 (36.9)
Neutral	58 (29.3)	7 (3.5)	51 (25.8)	7 (3.5)	51 (25.8)
Unsatisfied	34 (17.2)	11 (5.6)	23 (11.6)	7 (3.5)	27 (13.6)
Completely unsatisfied	7 (3.5)	1 (0.5)	6 (3.0)	1 (0.5)	6 (3.0)
Alternative treatments, n (%)					
Homeopathy	7 (3.5)	2 (1.0)	5 (2.5)	1 (0.5)	6 (3.0)
Phytotherapy	16 (8.1)	0 (0.0)	16 (8.1)	0 (0.0)	16 (8.1)
Florals	14 (7.1)	2 (1.0)	12 (6.1)	0 (0.0)	14 (7.1)
Other	15 (7.6)	5 (2.5)	10 (5.1)	2 (1.0)	13 (6.6)

^a Minimum wage is equal to US\$257 (conversion rate as of July 2019).

^b Engaging in 150 mins. of light- or moderate-intensity physical activity per week or at least 75 mins. of vigorous-intensity physical activity per week.

^c Ingestion of five or more doses of alcoholic beverages for men and four or more doses for women, on a single occasion, in the last 30 days.

^d Organized system of beliefs and practices observed by the community, supported by rituals that recognize, idolize, and communicate with the Sacred. It can be organizational (participation in the church or religious temple) or non-organizational (praying, watching religious programs on television, reading books).

^e Complex and multidimensional part of the human experience, it has to do with reflection, the relationship with the Sacred or the transcendent, the search for the meaning of life.

medications among students and young adults should be discussed, as a mental disorder is shaped to a great extent by the social, economic, and physical environments in which people live.²⁶ Considering that currently there is a great concern about reduce psychotropic medications burden and harm while maintaining or improving quality of life,²⁷⁻²⁹ it is essential that individuals reassess the meaning of mental health in early adulthood.

Among students treated with psychotropic medications, 79.5% partially or totally associated use with pharmacy graduation. Thus, it is essential to understand the moment at which these disorders develop to propose preventive measures to improve students' mental health care. Two peaks in the use of psychotropic medications, the initial and final years of the pharmacy program, were identified in this study. Upon entering higher education, students must adapt to a new educational setting and undergo changes in their lives; therefore, moments of crisis are expected, depending on the student's particular mental health conditions.^{11,20} In contrast, as students approach graduation, new pressures arise related to beginning a career, entering the job market, and planning their professional future.^{23,30} In addition, even if the pharmacy student has the perception that the treatment was not influenced by their experiences in the pharmacy program, attention is needed so that his clinical condition does not worsen because it is known that the environment educational contributing to the potential psychological distress.¹³

Medication consumption for anxiety and depression was more common among female students than among male students in our study; however, this difference was not significant. Unlike the present study, Mayer and colleagues⁸ and Farrer and colleagues³¹ have shown that female gender is a common predictor of the consumption of psychotropic medications. This can be explained by the fact that male students may feel shame regarding their mental health problems, thereby raising barriers to seeking help from mental health services.^{32,33} However, Tabalipa and colleagues³⁴ and Saeed and colleagues³⁵ have reported that male students are more likely to experience anxiety and depression; therefore, discussing the treatment of mental disorders among young men and the various events and experiences affecting their mental health is essential.

In the present study, students with a monthly income from three to 15 times the minimum wage were most likely to use psychotropic medications to treat depression. Oliveira and colleagues²³ observed that a higher income was associated with a greater chance of using psychotropic medications among university students. However, many studies associate the prevalence of depression with lower family income.³⁶⁻³⁸ In addition, depression can affect individuals of all ages and in all walks of life, but the risk is increased by financial difficulties, such as low socioeconomic status, unemployment, and financial strain.³⁹ Thus, although the highest prevalence of depression is not among individuals

Table 2. Use of Medications for Anxiety and Depression Among Pharmacy Students in Brazil

Variables	Students Using Psychotropic Medications (N=39), No. (%)
Therapeutic indication	
Anxiety disorders	35 (89.7)
Depressive disorders	26 (66.7)
Psychotropic medication, mean (SD)	
Escitalopram	10 (25.6)
Fluoxetine	10 (25.6)
Sertraline	5 (12.8)
Desvenlafaxine	4 (10.3)
Clonazepam	3 (7.7)
Alprazolam	2 (5.1)
Lithium	2 (5.1)
Fluvoxamine	2 (5.1)
Quetiapine	2 (5.1)
Topiramate	2 (5.1)
Trazodone	2 (5.1)
Venlafaxine	2 (5.1)
Zolpidem	2 (5.1)
Other ^a	10 (25.6)
Duration of treatment	
0 to 1 year	20 (51.3)
1 to 2 years	10 (25.6)
2 to 3 years	1 (2.6)
3 to 4 years	1 (2.6)
4 to 5 years	2 (5.1)
More than 5 years	5 (12.8)
Influence of pharmacy program on the use of psychotropics	
Yes, totally	7 (18.0)
Yes, partially	24 (61.5)
No	8 (20.5)
Prescriber	
Psychiatrist	33 (84.6)
Neurologist	3 (7.7)
Other ^b	3 (7.7)

^a amitriptyline + chlordiazepoxide, bupropion, clozapine, diazepam, duloxetine, lisdexamphetamine, lorazepam, nortriptyline, paroxetine, vortioxetine.

^b General practitioner, gynecologist, adolescent health specialist.

with higher incomes, they are more financially able to seek medical attention and obtain treatment.

Students who identified as being religious or spiritual had a lower chance of being prescribed medications for depression than those who identified as having no religion. Religiosity and spirituality help individuals cope with their illnesses by increasing hope and comfort and improving emotional health and cognitive functioning; consequently, it is an important protective factor, particularly for individuals under psychosocial stress.^{40,41}

Also, religiosity and spirituality have been associated with lower levels of depressive symptoms, posttraumatic symptoms, perceived stress, and personality disorder, and to have a positive effect on treatment adherence.⁴² Current evidence indicates an association between religiosity and spirituality and health-related physiological processes, including cardiovascular, neuroendocrine, and immune function.⁴³ These practices may lead to an emotional balance, thus positively affecting pharmacy students' quality of life.

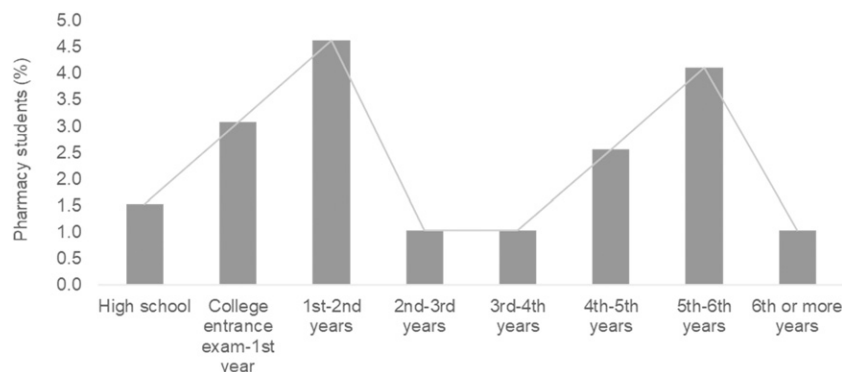


Figure 1. Moment at Which Undergraduate Pharmacy Students Began Using Psychotropic Medications

Compared to students who were satisfied or neutral, dissatisfaction with the pharmacy program increased the chances that a student used medications for anxiety by three times. This is notable given that dissatisfaction with graduation can cause a crisis owing to questioning of career identification and influencing the development of knowledge and skills. This aspects are the basis of proactive choices and confidence in building one's future career.⁴⁴ Mental disorders were also a significant predictor of students having academic dissatisfaction and intentions to drop out, whereas positive mental health was a significant predictor of satisfaction and persistence.⁴⁵ However, a student's decision to leave school, prompted by dissatisfaction with their experience, might be avoided if the institution is able to control the factors contributing to this dissatisfaction.⁴⁶

Psychological care and the consumption of psychotropic medications were strongly linked among undergraduate pharmacy students. Psychotherapy or psychological intervention are recommended as the first-line therapy for anxiety treatment; in contrast, the treatment for mild to moderate depression disorder is either psychotherapy and pharmacotherapy in combination or monotherapy with the decision as to which therapy to use jointly made by the physician and patient.⁴⁷⁻⁵⁰ In this study, the psychological care may have presented as a confounding factor for the use of psychotropic medications of both mental disorders; however, in general, it indicates that the students' treatment was in accordance with clinical practice guidelines, starting with psychotherapy or combined treatments.

This study has some limitations. The study was conducted at a single pharmacy school in Brazil, making the generalization of findings to other pharmacy students worldwide inappropriate. Additionally, in the survey, we did not ask the students when they started using psychotropic medications. Instead, we compared the student year with the duration of treatment. Therefore, identification of the exact moment (month and year) of psychotropic drug use (Figure 1) was not possible as this research was conducted

in the middle of the school year of the USP pharmacy program and the questioning on duration of treatment was done at intervals of one year. Moreover, the type of depressive or anxiety disorder that pharmacy students were diagnosed with was not specified, and these disorders are known to be quite different from each other and not treated in an identical manner. The use of psychotropic medications and their therapeutic indication was self-reported, and we relied on the students to accurately share their mental health diagnosis. However, for all medications cited here, including those of a different pharmacologic category than antidepressants or anxiolytics, there are reports of their use for depression or anxiety treatment. Although the questionnaire was anonymous, the stigma of mental illness may have prevented some students from being completely truthful in their survey responses. We also did not measure the influence of medication adherence on the estimate of satisfaction with the pharmacy program. Finally, it would be important to list other potential associated factors with the use of psychotropic medications among university students, such as personal history, comorbidities, and the working student that combining pharmacy program with formal work or internships.

CONCLUSION

This study found a high prevalence of psychotropic drug use for anxiety and depression among undergraduate pharmacy students at one university in Brazil. Most medications were prescribed by a psychiatrist, and selective serotonin reuptake inhibitor class antidepressants were the most used medications. Most students who were prescribed medications believed that their treatment was influenced by their experience in the pharmacy program, with peaks for beginning of use of psychotropic medications in the initial and final years of their education. Thus, these time periods may require special attention in relation to pharmacy students' mental health. Psychological care and dissatisfaction

Table 3. Factors Associated with the Use of Psychotropic Medications to Treat Anxiety and Depression Among Undergraduate Pharmacy Students

Variables	Medications for Anxiety			Medications for Depression		
	Yes n=35	No n=154	p value	Yes n=26	No n=163	p value
Gender			.781			1.000
Male	7	39		6	40	
Female	28	124		20	132	
Type of pharmacy program			1.000			.764
Full-time	19	86		15	90	
Part-time	16	77		11	82	
Race/ethnicity			.214			.258
White	27	119		21	125	
Brown	6	18		4	20	
Other	2	26		1	27	
Monthly income			.461			.181
>15x minimum wage	5	21		2	24	
3-15x minimum wage	25	103		21	107	
<3x minimum wage	5	39		3	41	
Lives			.236			.501
Alone	6	16		4	18	
With other	29	147		22	154	
Relationship status			.524			.394
None	19	76		15	80	
Other (single/multiple)	16	87		11	92	
Regular physical activities	13	67	.808	9	71	.666
Use of alcohol	5	41	.246	6	40	1.000
Use of illicit drugs	8	30	.711	6	32	.596
Religion			.337			.008
None	11	36		12	35	
Religion/spirituality	24	127		14	137	
Psychological care	27	28	<.001	19	36	<.001
Alternative treatments	7	41	.669	3	45	.169
Student satisfaction with the pharmacy program			.092			.365
Unsatisfied/ completely unsatisfied	12	29		8	33	
Neutral	3	18		3	18	
Satisfied/completely satisfied	20	116		15	121	
Student year			.929			.400
1st and 2nd	8	45		9	44	
3rd and 4th	8	39		7	40	
5th and 6th	13	54		5	62	
7th or more	6	25		5	26	

with the pharmacy program were significantly associated with the use of medications for anxiety. In contrast, psychological care, monthly income from three to 15 times the

minimum wage, and religiosity/spirituality were associated with the use of medications for depression. The present study provides a glimpse into the mental health issues

Table 4. Multivariate Logistic Regression of Factors Associated with the Use of Psychotropics for Anxiety and Depression Among Pharmacy Students

Variables	Medications for Anxiety		Medications for Depression	
	Adjusted odds ratio (95% CI)	p value	Adjusted odds ratio (95% CI)	p value
Race/ethnicity				
White	3.06 (0.55-17.05)	.202	-	-
Brown	7.37 (0.90-60.16)	.062	-	-
Other	-	-	-	-
Monthly income				
<3x minimum wage	-	-	2.53 (0.32-20.15)	.380
3-5x minimum wage	-	-	6.35 (1.12-35.82)	.036
>15x minimum wage	-	-	-	-
Use of alcohol	0.34 (0.96-1.22)	.099	-	-
Religion/spirituality	-	-	0.19 (0.06-0.56)	.002
Lives alone	2.64 (0.72-9.75)	.144	-	-
Psychological care	20.23 (7.56-54.13)	<.001	15.60 (5.34-45.55)	<.001
Alternative treatments	-	-	0.35 (0.08-1.42)	.141
Student satisfaction with the pharmacy program				
Unsatisfied/ completely unsatisfied	3.21 (1.07-9.61)	.037	-	-
Neutral	0.82 (0.17-3.84)	.795	-	-
Satisfied/ completely satisfied	-	-	-	-

experienced by USP pharmacy students in Brazil, and the results may assist other pharmacy schools worldwide in the identification of mental health issues among their students.

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