



## **Screening for Common Mental Disorders Using the SRQ-20 in Medical Students from Porto Velho-RO, Brazil**

**Rosely Valéria Rodrigues<sup>1</sup>, Antônio Carlos Oliveira<sup>1\*</sup>,  
Christopher Harrison Salomão Andrade<sup>1</sup>, Israel Carlos Cavalcanti De Lima<sup>1</sup>,  
Vitor Marcelo Frez Marques<sup>1</sup>, Wilyan Dias Cosmo De Oliveira<sup>1</sup>  
and Wudson Henrique Alves De Araújo<sup>1</sup>**

<sup>1</sup>*Department of Medicine, Fundação Universidade Federal de Rondônia (UNIR), Campus - BR 364,  
Km 9.5, Zip Code: 76.801-059, Porto Velho, RO, Brazil.*

### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author RVR was responsible for coordinating all the research, supervising all stages of the project, interpretation and writing the first and subsequent drafts of the paper. Author ACO contributed to interviews, data tabulation, data analysis in R and STATA, interpretation, and writing of the paper's first and subsequent drafts. Authors CHSA, ICCDL, VMFM, WDCDO and WHADA contributed to interviews, data tabulation, interpretation, and writing of the paper's first and subsequent drafts. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aims:** To investigate the prevalence of common mental disorders among medical students at the Federal University of Rondônia Foundation.

**Study design:** Cross-sectional study.

**Place and Duration of Study:** Department of Medicine, *Federal University of Rondônia Foundation (UNIR)*, in October 2019.

**Methodology:** Cross-sectional study was conducted in October 2019, using a questionnaire adapted with the Self-Report Questionnaire 20 (SRQ-20). Sample: 116 students, 56 females and 60

\*Corresponding author: E-mail: [antoniooliveira.med@gmail.com](mailto:antoniooliveira.med@gmail.com);

males, from different periods completed the questionnaire. The prevalence of positive results in the SRQ-20 and the variance of positive responses were verified.

**Results:** The prevalence of positive results for the SRQ-20 was estimated at 69.8% (95% CI 61.0-78.6; 81 cases). No difference was found in the proportions of positive results for the variables analyzed ( $p > .05$ ). There was no significant association between the calculated prevalence ratios and the factors analyzed ( $p > .05$ ). The symptoms related to the reduction in vital energy showed the highest average amount of positive responses ( $76 [\pm 10.4]$ ;  $p < .01$ ).

**Conclusion:** The prevalence of positive results for the SRQ-20 observed in our study was much higher than the average reported for Brazilian medical students. The number of students who said they thought about suicide was also high. We understand that these findings reinforce the need for the development and implementation of medical students' mental health care programs to identify, monitor, and, if possible, adequately treat these cases.

*Keywords: Mental disorders; medical students; cross-sectional studies; prevalence.*

## 1. INTRODUCTION

The global prevalence of Common Mental Disorders (CMD) is estimated to be 17,6% of the adult population worldwide [1]. These disorders, also known as minor psychiatric disorders, have been the subject of several studies regarding medical students. A 2017 systematic review estimated a prevalence of 31.5% for CMD among Brazilian medical students [2]. The academic and social environment added to the individual's internal aspects, as well as other stress factors inherent to the graduation process, would be potential substrates for the development of CMD, manifested in symptoms such as stress, fatigue, anxiety, depression, headache, eating disorders [3,4].

The prevalence rates found in the various studies are variable. A study with medical students at the Federal University of Espírito Santo (UFES) reported a prevalence of 37.1% [5], the rate was even higher for students at the Paulista State University, where 44.9% of the students had results positive screening for CMD [6]. Another study involving medical students showed a variable prevalence throughout the semesters, in which first-year students presented a percentage of 12.5% while those in the fifth year registered a rate of 43.2% [7]. Likewise, studies covering academics from other courses related to health also showed variable results. Students in the nursing course in Rio de Janeiro had a prevalence of 55.3%, and students in the last year of health courses evaluated in a 2010 survey showed a proportion of 33.7% of CMD [8,9].

Several tools can be used to screen for CMD, and one of them is the Self-Report Questionnaire (SRQ-20). A systematic review published in 2016

to evaluate tools for screening CMDs recommended applying SRQ-20 to screen general CMDs [10]. Developed to track non-psychotic disorders, based on a collaborative study by the World Health Organization (WHO), the SRQ-20 consists of twenty questions with yes or no answers and, due to its easy implementation, can be used in different service levels or even by self-application [11,12]. Validated in several studies, the SRQ-20 has sensitivity and specificity ranging from 60% to 95%, according to the established cutoff point [13–17].

In Brazil, the tool was validated for the first time in 1986, with sensitivity and specificity of 83% and 80%, respectively [18]. The SRQ-20 can be a useful tool for extensive epidemiological studies in environments with few resources for identifying depression and anxiety cases.

Each item evaluates the presence of a symptom of psychological distress and is scored as one if the affirmative participants' responses. The individual items are added together to generate a total score, which can reach 20 points. The SRQ-20 questions reflect states of depression, anxiety, and psychosomatic complaints [12]. The dimensions analyzed in the SRQ-20 include anxious and depressed mood, somatic symptoms, decreased energy, and depressed thoughts [12].

Thus, given the risk factors inherent in physician training, the lack of consensus among authors on the prevalence of these disorders, and the need for further studies to estimate the prevalence of common mental disorders in medical students, our objective was to investigate the prevalence of common mental disorders among medical students at the Federal University of Rondônia Foundation.

## 2. MATERIALS AND METHODS

Cross-sectional study applied to a sample of medical school students from the Federal University of Rondônia Foundation, with active enrollment in the second academic semester of 2019. According to the Department of Medicine data, the total population is composed of 219 students, distributed in six semesters.

The sample required for this study was calculated using a probability sampling technique proportional to the population size. At a significance level of 5%, a confidence level of 95%, and six strata, the number of students to compose the sample was calculated at 144. However, only 116 students accepted to participate in this research. Details on the selection of respondents can be found in APPENDIX A.

Data collection was carried out between 07 (seven) and 25 (twenty-five) days of October 2019 by completing the self-applicable form.

Semester, sex, age, skin color, marital status, occupation, and income were recorded and analyzed as sociodemographic variables. Semester is an ordinal multinomial variable with six groups: 2nd semester, 4th semester, 5th semester, 7th semester, 9th semester, and 11th semester. Sex is a binomial variable, the possible results of which are: male and female. Age is a continuous variable, represented in whole numbers, but analyzed in a categorized way, multinomial ordinal, in four age groups: 18 – 20; 20 – 25; 25 – 30; and > = 30. The *skin color* variable is multinomial, but not ordered, with five categories, according to the interviewee's self-declaration: yellow/Asian, white/Caucasian, indigenous, brown, and black. *Marital status* is an ordinal multinomial variable with four categories: married, stable union, singles, and others. *Occupation* is a binomial variable and represents the exercise or not of some paid activity. *Income* is an ordinal multinomial variable with seven groups, from the lowest income perception to the highest: unreported income; less than 1 minimum wage; 1 – 1.5 minimum wages; 1.5 – 3 minimum wages; 3 – 5 minimum wages; 5 – 10 minimum wages; 10 minimum wages or more.

The result for CMD was analyzed as a dichotomous variable, the results of which are yes (SRQ-20 positive) and no (SRQ-20 negative). Were considered positive results scores greater than or equal to six for males and

results greater than or equal to eight for females. This is the dependent variable for estimating the prevalence of common mental disorders.

The statistical analysis of data was performed using STATA/IC 16.1 [19] and packages present in R, version 3.6.1 [20] using Rstudio [21].

The heterogeneity/comparison of proportions of the variables concerning the CMD was verified. Pearson's chi-square test ( $\chi^2$ ) was applied. The tested hypotheses were as follows: i. Null hypothesis ( $H_0$ ): The proportion of individuals with positive and negative CMD does not differ between groups; ii. Alternative hypothesis ( $H_A$ ): The proportion of positive and negative CMD differs between groups. The confidence intervals for the proportions were estimated using the Wald method.

An analysis of variance was applied from the count of positive results for each of the responses to the SRQ-20 questionnaire and grouped according to the questionnaire's four dimensions. The test applied to compare the means was the one-way ANOVA, considering that the total responses grouped showed normal distribution and homogeneity of variances ( $p > .05$  in the Shapiro-Wilk normality tests and Bartlett test of homogeneity of variances). The tested hypotheses were as follows: i.  $H_0$ : The number of positive responses is not different between the dimensions analyzed; ii.  $H_A$ : The number of positive responses is different between the dimensions analyzed.

Finally, a Poisson regression model with robust variance was developed to estimate CMD Prevalence Ratios (PR). The model was automatically adjusted using the stepwise backward module of STATA to the point that all variables showed statistical significance ( $p < .05$ ). No variables were selected after adjusting the model. The P values calculated for the complete and adjusted model correspond to Wald's Z values.

Original data from this study, codes for the analysis, and files with results obtained in R and STATA are available for consultation in Mendeley Data doi:10.17632/htdkz4539r.2.

## 3. RESULT

In this study, 116 medical students, 56 females and 60 males, distributed over six academic periods were analyzed – 2nd semester, 4th

semester, 5th semester, 7th semester, 9th semester, and 11th semester. The overall median age was estimated at 23 years (95% CI 22-23). Among men, the median was 22 years (95% CI 22-23), and for women, the median was 23 years (95% CI 22 -23).

The prevalence of positive SRQ-20 was estimated at 69.8% (95% CI 61.0-78.6). None of the analyzed variables showed a statistically significant difference for the proportion of SRQ-20 results in its subgroups ( $p > .05$ ). For the multivariate analysis, no association was found between the prevalence of positive SRQ-20 and the factors analyzed. In the multilevel analysis, for the *skin color* variable, a positive PR of SRQ-20 was identified as being 2.31 times higher for the self-declared yellow students than the self-declared black students. However, it should be noted that the sample of this subgroup is only one student; therefore, the interpretation of this PR as significant should be disregarded. The details of this information are shown in Table 1.

An analysis was carried out with the dichotomization of these variables to reduce the effects of the small sample number observed in the subgroups of the variables age, skin color, and income. The age variable was dichotomized for two age groups: 18 to 24 years old and 25 or more. The skin color variable was dichotomized into the following groups: light skin (self-declared white and yellow) and dark skin (self-declared indigenous, brown, and black). The income variable was divided into two groups: income less than three minimum wages (included in this group who did not declare income) and income higher than or equal to three minimum wages. Even with these changes, the results remained similar. The results mentioned in this paragraph can be found in Table S2a of APPENDIX B.

In the analysis by dimensions of the SRQ-20, there was variation in the number of responses for the groups analyzed ( $p < .01$ ). Dimension three (Reduction of vital energy) presented a higher number of positive responses and the lowest dispersion, with an average of 76 ( $\pm 10.4$ ). Dimension One (Depression/anxiety) had the second-highest average and the highest dispersion among the groups analyzed (76 [ $\pm 26.8$ ]). The average obtained for dimension two (somatic symptoms) was 47 responses ( $\pm 19.0$ ). Dimension four had the lowest average of positive responses (27 [ $\pm 18.5$ ]). The questions that obtained the highest number of positive responses were related to nervousness, tension,

or concern, with 98 responses. Suicidal thinking had the lowest percentage of positive responses (10.3%; 12 positive responses). All of this information can be found in Table 2.

#### 4. DISCUSSION

The prevalence of CMD observed in our study was relatively high (69.8%), with more than two-thirds of the students presenting a positive result in the SRQ-20. However, none of the analyzed variables was associated with the calculated prevalence.

When compared to other studies, the prevalence observed in our sample is much higher. Even in research that considered other health field courses, such as dentistry, nursing, and medicine, there were no statistically significant differences in the prevalence of CMD among academics [7].

Several studies in Brazil, which applied the SRQ-20, showed the prevalence of CMD ranging from one-third to half of the students in health courses [5–9,22–24]. A systematic review of mental health problems in Brazilian medical students, published in 2017, estimated that the prevalence of CMD in medical students would be 31.5% [2]. Approximately half of the students would have had poor quality sleep, and 46.1% had excessive daytime sleepiness; Burnout affected approximately 13% [2]. Although they are considered high compared to the prevalence of 17.6% estimated in the global population [1], the results presented are still much lower than those registered in our research.

An integrative review recently published pointed out that, among other factors, being female, being older, having a lower income, and having a partner would be risk factors for psychological distress in university students [25]. These sociodemographic variables were also included in our research, but they did not show a significant association with the results of the SRQ-20.

A study carried out at the Federal University of Paraíba, using the SRQ-20, found a statistically significant relationship between CMD and the age factor below 19 years, with a prevalence of 42.6% ( $p = .027$ ), as well as in other variables: not following some religion (44.8%;  $p = .005$ ); difficulty in making friends (77.5%,  $p = .005$ ); feeling rejected by friends or others in the same age group, (82.9%;  $p < .001$ ); and having a family

**Table 1. Distribution of students by sociodemographic criteria, prevalence and prevalence ratios for CMD**

	<b>N (%)</b>	<b>CMD</b>	<b>CMD Prevalence (95% CI)</b>	<b>P-value*</b>	<b>PR (95% CI)</b>	<b>P-value**</b>
<b>Overall</b>	<b>116 (100%)</b>	<b>81</b>	<b>69.8% (61.0-78.6)</b>	-	-	-
Semester				.674	1.030 (0.951-1.115)	.474
2nd semester	25 (21.6%)	16	64.0% (42.5-82.0)	-	(base)	(base)
4th semester	22 (19.0%)	18	81.8% (59.7-94.8)	-	1.383 (0.972-1.967)	.071
5th semester	20 (17.2%)	12	60.0% (36.1-80.9)	-	0.910 (0.564-1.469)	.700
7th semester	22 (19.0%)	15	68.2% (45.1-86.1)	-	1.126 (0.736-1.722)	.585
9th semester	18 (15.5%)	13	72.2% (46.5-90.3)	-	1.148 (0.720-1.829)	.562
11th semester	9 (7.8%)	7	77.8% (40.0-97.2)	-	1.260 (0.759-2.091)	.371
Sex				.717	0.947 (0.733-1.224)	.679
Female	56 (48.3%)	40	71.4% (57.8-82.7)	-	(base)	(base)
Male	60 (51.7%)	41	68.3% (55.0-79.7)	-	1.045 (0.803-1.360)	.745
Age				.389	0.901 (0.709-1.145)	.395
18 † 20	9 (7.8%)	5	55.6% (21.2-86.3)	-	(base)	(base)
20 † 25	76 (5.5%)	57	75.0% (63.7-84.2)	-	1.546 (0.774-3.087)	.217
25 † 30	17 (14.7%)	10	58.8% (32.9-81.6)	-	1.120 (0.475-2.639)	.795
>=30	14 (12.1%)	9	64.3% (35.1-87.2)	-	1.116 (0.433-2.876)	.820
Skin color				.820	0.988 (0.883-1.105)	.835
Yellow/Asian	1 (0.9%)	1	100% (2.5-)	-	2.315 (1.065-5.032)	.034
White	37 (31.9%)	26	70.3% (53.0-84.1)	-	0.906 (0.605-1.358)	.634
Indigenous	4 (3.5%)	3	75.0% (19.4-99.4)	-	0.947 (0.400-2.240)	.901
Brown	63 (54.3%)	42	66.7% (53.7-78.0)	-	0.833 (0.561-1.236)	.364
Black	11 (9.5%)	9	81.8% (48.2-97.7)	-	(base)	(base)
Marital status				.887	0.918 (0.706-1.195)	.526
Married	7 (6.0%)	5	71.4% (29.0-96.3)	-	(base)	(base)
Common-law marriage	5 (4.3%)	3	60.0% (14.7-94.7)	-	0.746 (0.283-1.971)	.555
Single	102 (87.9%)	72	70.6% (60.7-79.2)	-	0.714 (0.390-1.306)	.274
Not answered	2 (1.7%)	1	50.0% (1.3-98.7)	-	0.473 (0.132-1.687)	.249
Occupation				.775	1.030 (0.646-1.641)	.902
Yes	15 (12.9%)	10	66.7% (38.4-88.2)	-	(base)	(base)
Not	101 (87.1%)	71	70.3% (60.4-79.0)	-	1.031 (0.644-1.650)	.898
Income				.937	0.984 (0.920-1.052)	.629
Unreported income	8 (6.9%)	6	75.0% (34.9-96.8)	-	(base)	(base)
< 1 minimum wage	3 (2.6%)	2	66.7% (9.4-99.2)	-	0.889 (0.363-2.179)	.797

	<b>N (%)</b>	<b>CMD</b>	<b>CMD Prevalence (95% CI)</b>	<b>P-value*</b>	<b>PR (95% CI)</b>	<b>P-value**</b>
<b>Overall</b>	<b>116 (100%)</b>	<b>81</b>	<b>69.8% (61.0-78.6)</b>	-	-	-
1  -- 1.5 minimum wage	15 (12.9%)	11	73.3% (44.9-92.2)	-	0.960 (0.558-1.652)	.884
1.5  -- 3 minimum wage	22 (19.0%)	14	63.6% (40.7-82.8)	-	0.801 (0.507-1.266)	.342
3  -- 5 minimum wages	19 (16.4%)	14	73.7% (48.8-90.9)	-	0.923 (0.607-1.403)	.706
5  -- 10 minimum wage	25 (21.6%)	19	76.0% (54.9-90.6)	-	0.881 (0.611-1.270)	.498
>= 10 minimum wages	24 (20.7%)	15	62.2% (40.6-81.2)	-	0.728 (0.464-1.143)	.168

*CMD = common mental disorders. \* Chi square of Pearson. \*\* Z of Wald*

**Table 2. Manifestations of the self-reporting questionnaire (srq-20) by dimensions**

Variables	N (%)	Mean (± SD)	95% IC	P-value*
Dimension I: Depressive/anxious		63 (± 26.8)	42.0-84.5	.0055
Do you feel nervous, tense or worried?	98 (84.5%)	-	-	
Do you feel unhappy?	69 (59.5%)	-	-	
Are you easily frightened?	44 (37.9%)	-	-	
Do you cry more than usual?	40 (35.5%)	-	-	
Dimension II: Somatic symptoms		47 (± 19.0)	34.0-61.2	
Do you sleep badly?	78 (67.2%)	-	-	
Do you often have headaches?	54 (46.6%)	-	-	
Do you have uncomfortable feelings in your stomach?	49 (42.2%)	-	-	
Is your digestion poor?	46 (39.7%)	-	-	
Do your hands shake?	34 (29.3%)	-	-	
Is your appetite poor?	22 (19.0%)	-	-	
Dimension III: Reduced vital energy		76 (± 10.4)	67.3-82.0	
Is your daily work suffering?	84 (72.4%)	-	-	
Do you feel tired all the time?	84 (72.4%)	-	-	
Are you easily tired?	80 (69.0%)	-	-	
Do you find it difficult to make decisions?	76 (65.5%)	-	-	
Do you find it difficult to enjoy your daily activities?	76 (65.5%)	-	-	
Do you have trouble thinking clearly?	56 (48.3%)	-	-	
Dimension IV: Depressive thoughts		27 (± 18.5)	14.5-45.5	
Have you lost interest in things?	54 (46.6%)	-	-	
Do you feel that you are a worthless person?	22 (19.0%)	-	-	
Are you unable to play a useful part in life?	20 (17.2%)	-	-	
Has the thought of ending your life been on your mind?	12 (10.3%)	-	-	

\* ANOVA

history of psychiatric illness (43.8%;  $p = .003$ ) [26]. Contrary to what was observed in this study, in our study, the variable age was not associated with CMDs. It is important to note that the number of students aged 18 to 19 years old interviewed in our study was only nine academics, which is statistically considered a small sample for making inferences. However, even after the dichotomization of the age variable, no association was observed for this variable concerning the positive results of the SRQ-20.

At the Federal University of Sergipe (UFS), a study was conducted with data collected from 40 students during their six years of training, between 2004 to 2011, to assess the prevalence of CMD and associated factors [7]. The first assessment was carried out on the first day of school of the first year; the other assessments were repeated in the following years [7]. The

highest prevalence was observed in fifth-year students (43.2%) and the lowest in first-year students (12.5%) [7]. In our study, no statistically significant difference was identified between students from different semesters. However, differently from what was reported in the study cited, our research did not record data from the same class in different periods. Also, we did not collect data from students who would be starting the course since there was no class taking the first semester at that time, and this certainly explains the reasons for not having identified significant differences in the prevalence of CMD between the different classes evaluated.

Another data that deserves attention in our study is the percentage of students who, when responding to the SRQ-20, declared suicidal thoughts in those last 30 days. The suicide rate among medical students would be higher than those observed in the general population, and

this trend continues even after academic training [27–30]. The leading causes pointed out as precursors of suicide in this group of individuals would be a higher incidence of psychiatric disorders and psychological distress related to specific experiences of the profession and academic activities [29]. Our research did not collect data to determine the students' feelings about the course's activities. However, was pointed out a high prevalence for possible diagnoses of CMD, where two-thirds of the interviewees presented positive results for CMD in the SRQ-20, and about 10% would have reported thinking about ending their own lives.

Our study's main limitation is the lack of data for behavioral variables and other sociodemographic variables frequently reported as CMD precursors. In a wide-ranging systematic review, the following factors were listed as associated with CMDs in Brazilian medical students: Not receiving sufficient emotional support; difficulty in making friends; thoughts of dropping out; feelings of rejection; academic overload; few leisure activities; financial problems; not satisfied with professional choice; clinical cycle; feeling rejected by peers/friends; history of psychological treatment; sleep pattern disorder; sedentary lifestyle; not working; not having a car; lack of confidence in acquisition of skills; feelings of discomfort in relation to the activities of medical school; unmatched expectations about the course; prior diagnosis of mental disorder; emotional tension and feelings of unhappiness; long-lasting difficulty asking questions during classes due to shyness; arousal during the night; insomnia; daytime sleepiness; less than seven hours of sleep per night; poor self-evaluation of academic performance; difficulty initiating sleep; difficulty maintaining sleep; falling asleep later; waking up earlier; low social interaction [2]. Except for occupation, none of these factors were analyzed explicitly in our research, and although some can be assessed from the responses obtained in the SRQ-20, this analysis would not be sufficient to cover all the listed circumstances. Another limitation found was the low participation of academics in the internship period, reducing the sample's power of representation.

## 5. CONCLUSION

The prevalence of positive results for the SRQ-20 observed among medical students who participated in this research was relatively high. Although with a low overall percentage, the

number of responses indicating suicidal thinking should not be ignored given the seriousness of the situation. Regardless of the lack of significant associations between the variables analyzed and the results presented in the questionnaire, the high prevalence observed in our study demonstrates the importance of monitoring and managing medical students' mental health. We hope that the data presented in this study can be useful in elaborating mental health monitoring programs for students in the health area and elaborating new studies that can address a higher number of factors that may help better understand the evolution of CMD among healthcare students.

## CONSENT

The objective of the study was presented to all participants, and all participants who agreed to participate in this research signed the informed consent form, in accordance with resolution 466/12, which deals with research with human beings in Brazil. All the participants signed two copies of the Term of Free and Informed Consent (FIC), in which one copy remained with the researchers and the other with the participant. The FIC had information about the objectives of the trial, risks and benefits for the participant, and the preservation of privacy and confidentiality of participant data.

## ETHICAL APPROVAL

The study was approved by the Research Ethics Committee of the FEDERAL UNIVERSITY OF Rondônia FOUNDATION (UNIR) with the legal opinion n. 3,556,646.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## APPENDIX

### Appendix A – Details of selection of interviews

An analysis was carried out with the dichotomization of these variables to reduce the effects of the small sample number observed in the subgroups of the variables age, skin color, and income. The age variable was dichotomized for two age groups: 18 to 24 years old and 25 or more. The skin color variable was dichotomized into the following groups: light skin (self-declared white and yellow) and dark skin (self-declared indigenous, brown, and black). The income variable was divided into two groups: income less than three minimum wages (included in this group who did not declare income) and income higher than or equal to three minimum wages. Even with these changes, the results remained similar. The results mentioned in this paragraph can be found in Table S2a.

**Table S1a. Sample size by strata and numbers selected to answer the form**

Stratum 1; Sample size = 16											
1	2	4	8	9	10	12	13	14	15	19	21
22	23	24	25								
Stratum 2; Sample size = 39											
1	2	3	5	6	7	8	9	11	13	15	19
20	22	23	24	26	29	31	32	34	35	36	37
38	39	40	41	42	46	47	49	50	52	53	54
55	56	58									
Stratum 3; Sample size = 22											
3	4	6	7	8	9	10	13	14	15	18	19
22	23	24	25	28	30	31	32	33	34		
Stratum 4; Sample size = 20											
1	2	3	4	6	8	10	11	13	14	15	16
18	19	20	22	24	28	29	30				
Stratum 5; Sample size = 22											
1	2	3	4	6	7	9	10	12	13	15	16
18	19	20	21	22	25	26	27	28	29		
Stratum 6; Sample size = 25											
1	2	4	5	7	8	10	12	13	14	16	17
18	19	20	21	22	27	28	29	31	32	35	36
37											

### Appendix B – Analysis with dichotomized variables

An analysis was carried out with the dichotomization of these variables to reduce the effects of the small sample number observed in the subgroups of the variables age, skin color, and income. The age variable was dichotomized for two age groups: 18 to 24 years old and 25 or more. The skin color variable was dichotomized into the following groups: light skin (self-declared white and yellow) and dark skin (self-declared indigenous, brown, and black). The income variable was divided into two groups: income less than three minimum wages (included in this group who did not declare income) and income higher than or equal to three minimum wages. Even with these changes, the results remained similar. The results mentioned in this paragraph can be found in Table S2a.

**Table S2a. Distribution of students by sociodemographic criteria, prevalence and prevalence ratios for CMD**

	<b>N (%)</b>	<b>CMD</b>	<b>CMD Prevalence (95% CI)</b>	<b>P-value*</b>	<b>PR (95% CI)</b>	<b>P-value**</b>
Overall	116 (100%)	81	69.8% (61.0-78.6)	-	-	-
<b>Semester</b>				<b>.674</b>	<b>1.036 (0.957-1.122)</b>	<b>.386</b>
2nd semester	25 (21.6%)	16	64.0% (42.5-82.0)	-	(base)	(base)
4th semester	22 (19.0%)	18	81.8% (59.7-94.8)	-	1.330 (0.927-1.909)	.122
5th semester	20 (17.2%)	12	60.0 (36.1-80.9)	-	0.934 (0.588-1.485)	.773
7th semester	22 (19.0%)	15	68.2 (45.1-86.1)	-	1.168 (0.773-1.766)	.461
9th semester	18 (15.5%)	13	72.2 (46.5-90.3)	-	1.206 (0.772-1.883)	.411
11th semester	9 (7.8%)	7	77.8 (40.0-97.2)	-	1.204 (0.844-2.216)	.204
<b>Sex</b>				<b>.717</b>	<b>0.932 (0.720-1.207)</b>	<b>.594</b>
Female	56 (48.3%)	40	71.4 (57.8-82.7)	-	(base)	(base)
Male	60 (51.7%)	41	68.3% (55.0-79.7)	-	0.948 (0.736-1.221)	.678
<b>Age</b>				<b>.226</b>	<b>0.744 (0.502-1.103)</b>	<b>.141</b>
18 - 25	85 (73.3%)	62	72.9% (62.2-82.0)	-	(base)	(base)
>=25	31 (26.7%)	19	61.3% (42.2-78.2)	-	0.731 (0.481-1.112)	.143
<b>Skin color</b>				<b>.820</b>	<b>0.944 (0.732-1.216)</b>	<b>.654</b>
Light skin	38 (32.98)	27	71.1% (54.1-84.6)	-	(base)	(base)
Dark skin	78 (67.2%)	54	69.2% (57.8-79.2)	-	0.932 (0.714-1.217)	.605
<b>Marital status</b>				<b>.887</b>	<b>0.911 (0.715-1.162)</b>	<b>.452</b>
Married	7 (6.0%)	5	71.4% (29.0-96.3)	-	(base)	(base)
Common-law marriage	5 (4.3%)	3	60.0% (14.7-94.7)	-	0.835 (0.336-2.076)	.698
Single	102 (87.9%)	72	70.6% (60.7-79.2)	-	0.790 (0.480-1.301)	.355
Not answered	2 (1.7%)	1	50.0% (1.3-98.7)	-	0.575 (0.176-1.879)	.360
<b>Occupation</b>				<b>.775</b>	<b>1.087 (0.691-1.710)</b>	<b>.718</b>
Yes	15 (12.9%)	10	66.7% (38.4-88.2)	-	(base)	(base)
Not	101 (87.1%)	71	70.3% (60.4-79.0)	-	1.079 (0.683-1.705)	.744
<b>Income</b>				<b>.937</b>	<b>1.002 (0.789-1.271)</b>	<b>.990</b>
< 3 minimum wage	48 (41.4%)	33	68.8% (53.7-81.3)	-	(base)	(base)
>= 3 minimum wages	68 (58.6%)	48	70.6% (58.3-81.0)	-	0.965 (0.755-1.233)	.752

CMD = Common mental disorders. \* Chi-square of Pearson. \*\* Z of Wald

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