

## Prevalence, severity and factors associated with depression in university students\*

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**Objective:** to identify the prevalence, severity and factors associated with depression among university students in the Federal District. **Method:** a cross-sectional study carried out with 521 university students, aged between 18 and 60 years old. Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9) scale. Descriptive statistics and the chi-square test were used. **Results:** among the 521 individuals studied, there was predominance of females. The prevalence of depressive symptoms was 521 (96.6%) university students; 31.3% with mild depression; 23.4%, minimal depression, 13.1%, moderately severe depression; 9.6%, severe depression; and 9.2%, moderate depression. Family income and the semester attended are associated factors for the severity of depression. **Conclusion:** the prevalence of depression in the university environment is common, being at a high and worrying proportion. It is crucial to track depression, its severity and its associated factors, in order to stimulate reflection on the theme and to think of intervention strategies for the prevention and promotion of mental health.

**Descriptors:** Depression; Students; Universities; Mental Health.

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## Prevalência, severidade e fatores associados à depressão em estudantes universitários

**Objetivo:** identificar a prevalência, a severidade e os fatores associados à depressão entre estudantes universitários no Distrito Federal. **Método:** estudo transversal realizado com 521 estudantes universitários, com idade entre 18 e 60 anos. Os sintomas depressivos foram avaliados através da escala *Patient Health Questionnaire-9* (PHQ-9). Utilizou-se estatística descritiva e o teste do qui-quadrado. **Resultados:** dentre os 521 indivíduos estudados, houve predomínio do sexo feminino. A prevalência de sintomas depressivos foi de 521 (96,6%) estudantes universitários, sendo 31,3% com depressão suave, 23,4%, depressão mínima, 13,1% depressão moderadamente grave, 9,6% depressão grave e 9,2% depressão moderada. A renda familiar e o semestre cursado são fatores associados para a severidade da depressão. **Conclusão:** a prevalência da depressão no ambiente universitário é comum, sendo uma proporção alta e preocupante. É crucial o rastreamento da depressão, sua severidade e seus fatores associados, a fim de estimular reflexão sobre a temática e pensar em estratégias de intervenção para a prevenção e promoção da saúde mental.

**Descritores:** Depressão; Estudantes; Universidades; Saúde Mental.

## Prevalencia, gravedad y factores asociados a la depresión en estudiantes universitarios

**Objetivo:** identificar la prevalencia, la gravedad y los factores asociados a la depresión entre los estudiantes universitarios del Distrito Federal. **Método:** estudio transversal realizado con 521 estudiantes universitarios, con edades comprendidas entre 18 y 60 años. Los síntomas depresivos se evaluaron mediante la escala del *Patient Health Questionnaire-9* (PHQ-9). Se utilizó estadística descriptiva y la prueba de chi-cuadrado. **Resultados:** Entre los 521 individuos estudiados, predominó el sexo femenino. La prevalencia de síntomas depresivos fue de 521 (96.6%) estudiantes universitarios, 31.3% con depresión leve, 23.4%, depresión mínima, 13.1% depresión moderadamente severa, 9.6% depresión severa y 9, 2% de depresión moderada. Los ingresos familiares y el semestre asistido son factores asociados para la gravedad de la depresión. **Conclusión:** la prevalencia de depresión en el entorno universitario es común, siendo una proporción alta y preocupante. Es crucial rastrear la depresión, su gravedad y sus factores asociados, para estimular la reflexión sobre el tema y pensar en estrategias de intervención para la prevención y promoción de la salud mental.

**Descriptorios:** Depresión; Estudiantes; Universidades; Salud Mental.

## Introduction

Depression is a psychiatric chronic disease that affects more than 300 million people worldwide<sup>(1)</sup>, increasing among the university population<sup>(2-10)</sup>. It is characterized by severe or persistent sadness, interfering with personal life, and it often decreases enjoyment in the individual's daily activity. Among the possible etiologies of this disease, biological and psychosocial factors can be mentioned<sup>(11)</sup>.

There are examples of some of these factors that influence on the emergence of depression, which are commonly evidenced in the university context: difficulty in reconciling personal life with academic life, sleep loss, feeling of guilt, reduced self-esteem, fatigue, dissatisfaction with the course, family conflicts, problems with social and interpersonal relationships, low income, unemployment, sedentarism, and loneliness<sup>(12-15)</sup>.

Although this is the disease of the century, there still is too much prejudice, taboo, and misinformation towards depression, as its prognosis is provided through clinical information from the patient and with the use of scales to help in the diagnosis, without the need to run additional tests. This makes a lot of people not to believe in the existence of the disease and, sometimes, the illness is mistaken for laziness, discouragement, and lack of interest, which causes more suffering to the patient<sup>(16)</sup>.

Depression among students is recognized, throughout the graduation course, as having consequences in several life spheres, such as personal, family, professional, and academic. In the academic setting, the following characteristics are observed in students diagnosed with depression: drop in performance, increased risk of abandonment/discontinuation of the course, and increased risk of suicide<sup>(14,17)</sup>.

Considering the high prevalence of depression in the world<sup>(1-10)</sup> and its negative impact on multiple aspects of life, especially, on the university population<sup>(18-20)</sup>, it is believed that early identification of the disease, its severity, and its associated factors is crucial for the population, health professionals, governmental bodies, and public policy managers to recognize the impact of this disease, in order to stimulate the reflection on the theme and to investigate the development of strategies/action aimed at preventing the disease and promoting mental health, for example, in the university setting<sup>(13,21-24)</sup>. Therefore, the aim of this study is to identify the prevalence, severity, and the factors associated with depression in students from a private Higher Education Institution (HEI) in the Federal District.

## Method

### Study design/locus/period

This is a cross-sectional and descriptive study that was carried in a private HEI located in Brasília, Federal District, Brazil. This Teaching Institution had 5,507 students enrolled in various knowledge fields, such as Health Sciences, Exact Sciences, and Human Sciences, during the study data collection period. Data collection took place between April and May 2019.

### Sample selection

Students between 18 and 60 years of age, regularly enrolled in the HEI, were the subjects of the research, and a convenience sample was used.

### Data collection

A structured questionnaire which was elaborated by the researchers themselves was used to collect the sociodemographic data. To evaluate the frequency of the signs and symptoms of depression in the last two weeks, the Patient Health Questionnaire-9 (PHQ-9) was used. This questionnaire was validated in Brazil for its use in the adult population and has 9 questions arranged in a 4-point scale which goes from 0 (not once) to 3 (almost every day), with a score sum ranging from 0 to 27 points. A total score from 1 to 4 indicates minimal depression; from 5 to 9, mild depression; from 10 to 14, moderate depression; from 15 to 19, moderately severe depression; and from 20 to 27, severe depression. In addition, this instrument is used to indicate greater depression, when the total score is equal to or higher than 10 points<sup>(18-19,25)</sup>.

Data collection took place in a university environment by inviting the students to participate in the study. Subsequently, the researchers explained the study details, read the Free and Informed Consent Form (FICF) and, those who accepted, were asked to sign it and were given the questionnaires.

### Data analysis

The collected data were analyzed through the Statistical Package for Social Science (SPSS) software, version 21.0. The categorical variables were expressed as absolute frequency, and the percentages and the continuous variables were analyzed with median and interquartile range, depending on their nature. The chi-square test was used to identify the association of the sociodemographic and academic variables with the severity levels of depression. The associations with  $p < 0.05$  were adopted as statistically significant.

## Ethical aspects

The study was approved by the Institution Ethics Committee, under opinion No. 3,193,785; CAAE: 08598819.4.0000.5056. All the participants signed the FICF.

## Results

A total of 521 university students participated in the study, with an age median of 21 years old, ranging from 19 to 23 years of age. Most of them were women,

347 (66.6%), 259 (49.7%) were single, 117 (21.7%) did some work activity, and 258 attended the initial semesters of the graduation course. Regarding the courses, most of the participants were attending the Nursing course, 147 (26.7%), followed by Law with 110 (20.0%), and by Odontology with 72 (13.1%).

As for the distribution of depression among the students, 163 (31.3%) were classified as individuals with mild depression, 122 (23.4%) as with minimal depression, 100 (19.2%) as with moderate depression, 68 (13.1%) as with moderately severe depression, and 50 (9.6%) as with severe depression (Figure 1).

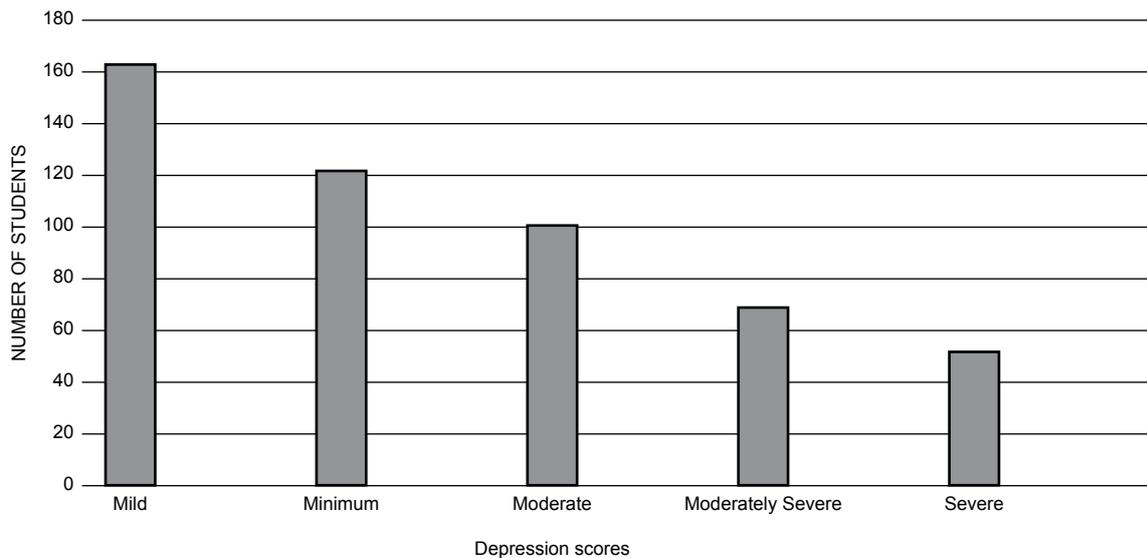


Figure 1 - Frequency of depression in university students according to the PHQ-9 scale classification, Brasília, FD, Brazil, 2019

Regarding the association of the sociodemographic and academic factors with the severity levels of depression, it was verified that family income and the semester attended showed statistical significance (Table 1).

Table 1 - Associations of the sociodemographic and academic variables with the severity of the depressive symptoms in university students. Brasília, FD, Brazil, 2019

Variables	Depression- n (%)		p*
	Minimal/ Mild	Moderate/ Severe	
Gender			0.137
Female	171 (63.1)	165 (71.1)	
Male	96 (35.4)	63 (27.2)	
Relationship status			0.310
Single	133 (49.1)	121 (52.2)	
Dating	80 (29.5)	70 (30.2)	
Married	21 (7.7)	13 (5.6)	
Others†	36 (13.3)	27 (11.6)	
Profession			0.700

(to be continued...)

(Table 1 - continuation)

Variables	Depression- n (%)		p*
	Minimal/ Mild	Moderate/ Severe	
Student	198 (73.1)	159 (68.5)	
Student/Worker	51 (18.8)	56 (24.1)	
Others†	20 (7.4)	17 (7.4)	
Individual income(minimum wage 2019-R\$998,00)			0.663
Up to one minimum wage	62 (22.9)	65 (28.0)	
01 to 03 minimum wages	55 (20.3)	51 (22.0)	
03 to 05 minimum wages	9 (3.3)	5 (2.2)	
05 to 15 minimum wages	3 (1.1)	1 (0.4)	

(to be continued...)

(Table 1 – continuation)

Variables	Depression- n (%)		p*
	Minimal/ Mild	Moderate/ Severe	
More than 15 minimum wages	2 (0.7)	0 (0.0)	0.006
No family income	135 (49.8)	107 (46.1)	
Family income(minimum wage 2019- R\$998,00)			
Up to one minimum wage	19 (7.0)	25 (10.8)	
01 to 03 minimum wages	105 (38.7)	84 (36.2)	
03 to 05 minimum wages	70 (25.8)	68 (29.3)	
05 to 15 minimum wages	47 (17.3)	30 (12.9)	
More than 15 minimum wages	15 (5.5)	8 (3.4)	
No family income	8 (3.0)	12 (5.2)	
Course			
Law	57 (21.0)	41 (17.7)	0.004
Physical Education	28 (10.3)	15 (6.5)	
Nursing	61 (22.5)	71 (30.6)	
Pharmacy	15 (5.5)	12 (5.2)	
Physiotherapy	24 (8.9)	23 (9.9)	
Odontology	37 (13.7)	29 (12.5)	
Others(Crush) <sup>§</sup>	48 (17.7)	39 (16.6)	
Semester			
1 <sup>st</sup>	66 (24.4)	37 (15.9)	
2 <sup>nd</sup>	8 (3.0)	8 (3.4)	
3 <sup>rd</sup>	60 (22.1)	52 (22.4)	
4 <sup>th</sup>	4 (1.5)	9 (3.9)	
5 <sup>th</sup>	25 (9.2)	18 (7.8)	
6 <sup>th</sup>	16 (5.9)	9 (3.9)	
7 <sup>th</sup>	42 (15.5)	28 (12.1)	
8 <sup>th</sup>	18 (6.6)	20 (8.6)	
9 <sup>th</sup>	21 (7.7)	36 (15.5)	
10 <sup>th</sup>	5 (1.8)	10 (4.3)	

\*Chi-square test; <sup>†</sup>Others = Administration, Architecture, Accounting Sciences, Civil Engineering, Environmental Management, Medicine, Nutrition, Psychology, Student/Intern, Student/Worker/Volunteer; <sup>§</sup>Others(Crush) = Stable Union

## Discussion

The results of this study cause concerns due to the high frequency of depression (96.6%) in its sample, with varying severity. As pointed out in the literature, this is a considerable problem, since depression is a disabling disease which can even lead to suicide<sup>(26)</sup>. Although the mild level presented the highest frequency classification of depression in this sample, it is essential that the academic

community draws due attention to this population because of the risk for this level to evolve to the highest levels of the disease, according to the classification in the PHQ-9 scale<sup>(18)</sup>.

A cross-sectional study conducted with 1,245 students in Saudi Arabia showed that 34% of the participants had mild depression; 26%, minimal depression; 24.6%, moderate depression; 10.4%, moderately severe depression; and 5%, severe depression<sup>(27)</sup>. Likewise, the present study showed similar results with regard to the classification percentage, mild depression being the most common in this sample, which can be perceived in daily habits as polyphagia and hyporexia, procrastination, apathy, carelessness with personal hygiene, constant desire to sleep or stay in bed, and excessive use of social media<sup>(14)</sup>.

On the other hand, another cross-sectional study conducted by Andreas and Brunborg with a sample of 1,326 Norwegian students, verified that the score of minimal depression was the most frequent (46.8%), a result which differs from the one observed in this study<sup>(20)</sup>. It is important to note that, in several aspects, the reality of these countries is different from the Brazilian's and, even so, they have results similar to those of this study.

In a cross-sectional study conducted with 234 medical students from the Pernambuco Health School, whose aim was to determine the prevalence of depression symptoms, it was verified that 5.6% of the participants manifested symptoms suggestive of depression. Also, an association of the prevalence of depression symptoms with the use of psychoactive and illicit drugs was observed, which indicates the need for prevention measures and early diagnosis of the disease<sup>(21)</sup>.

In Brazil, there are few actions for the promotion/prevention of mental health in the university environment; however, some HEIs have been raising discussions as for the topics related to mental health and developing health promotion/prevention activities for this target population<sup>(28-29)</sup>.

As an example, an action conducted by the University of Rio Grande do Norte can be mentioned: in 2018, it promoted a project called Integrative Practices in the Health Sciences School, with the objective to develop weekly psychosocial appointments with psycho-pedagogues and educational and clinical psychologists<sup>(30)</sup>.

Another successful experience identified in the literature was the one conducted by the Federal University of Pernambuco, which used positive psychology to stimulate feelings of well-being, happiness, and pleasure in the academic population<sup>(31)</sup>. The main objective of positive psychology is to encourage positive feelings, that is, it does not aim to minimize psychiatric symptoms or negative emotions. The case is that, when they have

positive thoughts, human beings tend to diminish negative feelings as a consequence<sup>(32)</sup>.

Thinking about the mental health of the population, psychology professionals from the state of Minas Gerais created a campaign called "White January", planned and designed to promote the citizens' emotional health, seeking political, social, and cultural strategies for emotional distress to be prevented, known, and fought by the whole population<sup>(33)</sup>.

By means of a number of studies, the Federal University of Rio Grande do Sul also disclosed examples of health promotion actions. For example, the promotion of debates in meetings and rounds of talks with students and teachers about mental health in the institution in order to create initiatives to reduce mental pathological processes in this population<sup>(30,34)</sup>. Likewise, in this institution a specific material for an institutional website called "Mental Health" was developed, which gathered several instructions on the recognition of signs and symptoms of psychic suffering, in addition to indicating places for psychological support. Another project that took place in this organization, called "Take it Easy" and developed by students, had as its action the work of students who played the role of "mental health agents", by helping other students with psychic/emotional problems to find support places<sup>(30)</sup>.

A number of studies show that health promotion strategies in the academic setting exert a positive influence on the improvement of health, reduce risk behaviors, and improve the students' physical and social environment. Furthermore, they are essential so that the students perceive the importance of balancing their daily activities with leisure activities, such as diverse relaxation techniques, interaction with other students, and playful dynamics<sup>(22-24)</sup>.

Given the aforementioned successful experiences, the importance of actions directed to the promotion and prevention of health is highlighted. As pointed out in the results of this study, family income and the semester are factors that can exert an influence on depression and on its severity. It is therefore understood that the identification of such factors is essential to support the promotion and prevention actions for mental health, considering that these factors are some of the critical nodes that lead to depression.

Diverse evidence shows the association of the socioeconomic factors with mental problems, such as depression. For example, in a study by Yohannes and collaborators, whose objective was to explore the socioeconomic status of families having a member with a severe mental disorder (SMD; psychosis or bipolar disorder) or depression, in comparison to families with no affected individuals, the results show that those that have a member with a severe mental disorder or depression were socioeconomically disadvantaged when

compared with the general population. Likewise, in a study conducted in Germany with 12,484 participants, which aimed to analyze the cross-sectional and longitudinal association of three defined dimensions (schooling, occupational position, and liquid household income) of the Higher Education System with the occurrence of high depressive symptoms in relation to the impact of important co-variables, it was observed that socioeconomic status plays an important role in the development of the severity of the depressive symptoms and that, the greater the income, the lower the risk to develop depressive symptoms<sup>(35-36)</sup>.

It is understood that, based on the factors identified, more health strategies can be planned and carried out in different communities and in health and teaching institutions. In addition, the importance of this survey for the adequacy of such strategies is emphasized, so that mental health actions are shaped to the reality of each population and place.

Although it was not one of the objectives of this study, it is important to highlight that the HEI where this research was carried out has a support center for the student in terms of psychosocial monitoring. Thus, it is believed that the findings of this study can contribute to decision-making related to actions planned for the profile of this university target population, aiming at decreasing depressive symptomatology and at stimulating awareness in the academic community on the factors leading to depression.

However, it is worth mentioning the need to sensitize the university population as for the identification of the depressive signs/symptoms, for the search by the mental health support services, by the students themselves and/or by referencing from professors/coordinators of the HEI courses.

It is worth highlighting that this study was limited by information loss, since data collection was conducted by applying a questionnaire and some students left some questions unanswered.

## Conclusion

It is believed that disclosing the results of this research is important for knowledge, both of the academic community and of the external community of the HEI, due to the high frequency of depression (96.1%) and its associated factors, so that these populations are encouraged to discuss the theme, as well as to develop/reflect on actions for the promotion and prevention of mental health in the university environment. Thus, it is crucial to think together about efficient ways to identify individuals in the academic setting with psychic-emotional problems and to survey the causes that lead to such disorders, such as depression, object of this study.

It is also believed that more studies on the frequency and associated factors of depression in university students are needed, in the different regions of the country, in order to increase the theoretical-scientific background about the disease and, therefore, raise awareness in the population on the importance of talking about the topic, aiming at preventing complications emerging from depression, like suicide.

## References

1. Organização Pan- Americana de Saúde/ Organização Mundial de Saúde. Com depressão no topo da lista de causas de problemas de saúde, OMS lança a campanha "Vamos conversar". [Internet]. 2017. [Acesso 30 out 2018]. Disponível em: <[https://www.paho.org/bra/index.php?option=com\\_content&view=article&id=5385:com-depressao-no-topo-da-lista-de-causas-de-problemas-de-saude-oms-lanca-a-campanha-vamos-conversar&Itemid=839](https://www.paho.org/bra/index.php?option=com_content&view=article&id=5385:com-depressao-no-topo-da-lista-de-causas-de-problemas-de-saude-oms-lanca-a-campanha-vamos-conversar&Itemid=839)>.
2. Mao Y, Zhang N, Liu J, Zhu B, He R, Wang X. A systematic review of depression and anxiety in medical students in China. *BMC Med Educ* . 2019. Available from: <<https://bmcmmededuc.biomedcentral.com/articles/10.1186/s12909-019-1744-2>>. doi: <https://doi.org/10.1186/s12909-019-1744-2>
3. Muniz FWMG, Maurique LS, Toniazzi MP, Rösing CK, Casarin M. Female undergraduate dental students may present higher depressive symptoms: A systematic review. *Oral Dis*. 2019. Available from: < [https://www.researchgate.net/publication/330094828\\_Female\\_undergraduate\\_dental\\_students\\_may\\_present\\_higher\\_depressive\\_symptoms\\_A\\_systematic\\_review](https://www.researchgate.net/publication/330094828_Female_undergraduate_dental_students_may_present_higher_depressive_symptoms_A_systematic_review)>. doi: 10.1111 / odi.13029
4. Tam W, Lo K, Pacheco J. Prevalence of depressive symptoms among medical students: overview of systematic reviews. *Med Educ*. 2019. Available from: < <https://pubmed.ncbi.nlm.nih.gov/30474128/>>. doi: 10.1111 / medu.13770
5. Tung YJ, Lo KKH, Ho RCM, Tam WSW. Prevalence of depression among nursing students: A systematic review and meta-analysis. *Nurse Educ Today*. 2018. Available from: <<https://pubmed.ncbi.nlm.nih.gov/29432998/>>. doi: 10.1016 / j.nedt.2018.01.009
6. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C et al. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students: A Systematic Review and Meta-Analysis. *JAMA*. 2016. Available from: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5613659/#:~:text=In%20this%20meta%20analysis%2C%20the,%2C%2015.7%25%20sought%20psychiatric%20treatment.>> doi: 10.1001/jama.2016.17324
7. Lei XY, Xiao LM, Liu YN, Li YM. Prevalence of Depression among Chinese University Students: A Meta-Analysis. *PLoS One*. 2016. Available from: <<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0153454#:~:text=The%20results%20of%20this%20meta,depression%20in%20university%20students%20worldwide%2C>>. doi: <https://doi.org/10.1371/journal.pone.0153454>
8. Samaranayake CB, Arroll B, Fernando AT. Sleep disorders, depression, anxiety and satisfaction with life among young adults: a survey of university students in Auckland, New Zealand. *N Z Med J* . [Internet]. 2014. [cited June 5 2020]. Available from: < <https://pubmed.ncbi.nlm.nih.gov/25145302/>>.
9. Shamsuddin K, Fadzil F, Ismail WSW, Shah AS, Omar K, Muhammad NA et al. Correlates of depression, anxiety and stress among Malaysian university students. *Asian J Psychiatry*. 2013. Available from: < <https://www.sciencedirect.com/science/article/abs/pii/S1876201813000592?via%3Dihub>>. doi: <https://doi.org/10.1016/j.ajp.2013.01.014>.
10. Fernandes MA, Vieira FE, Silva JS, Avelino FVSD, Santos JDM. Prevalence of anxious and depressive symptoms in university students from a public institution. *Rev Bras Enferm*. 2018. Available from: <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0034-71672018001102169&lng=pt](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-71672018001102169&lng=pt)>. doi: <http://dx.doi.org/10.1590/0034-7167-2017-0752>
11. Coryell W, Winokur G. Depressive disorders. *Merck Manual - Diagnosis and treatment (MSD) - Version for healthcare professionals*. [Internet]. 2016. [cited May 23 2019]. Available from: <<https://www.msmanuals.com/pt-br/profissional/transtornos-psiouic%C3%A1tricos/transtornos-do-humor/transtornos-depressivos>>.
12. Ebert DD, Buntrock C, Mortier P, Auerbach R, Weisel KK, Kessler RC et al. Prediction of major depressive disorder onset in college students. *Depression and Anxiety*. 2019. Available from: <<https://onlinelibrary.wiley.com/doi/epdf/10.1002/da.22867>>. doi: 10.1002/da.22867
13. Liu CH, Stevens C, Wong SHM, Yasui M, Chen JA. The prevalence and predictors of mental health diagnoses and suicide among U.S. college students: Implications for addressing disparities in service use. *Depression Anxiety*. 2018. Available from: <<https://onlinelibrary.wiley.com/doi/abs/10.1002/da.22830>>. doi: <https://doi.org/10.1002/da.22830>
14. Leão AM, Gomes IP, Ferreira MJM, Cavalcanti LPG. Prevalence and Factors Associated with Depression and Anxiety among University Students in the Field of Health in a Large Urban Center in the Northeast of Brazil. *Rev Bras Educ Med*. 2018. Available from: <<http://www.scielo.br/pdf/rbem/v42n4/1981-5271-rbem-42-4-0055.pdf>>. doi: <https://doi.org/10.1590/1981-52712015v42n4r20180092>
15. Flesch BD, Houvèssou GM, Munhoz TN, Fassa AG. Major depressive episode among university students

- in Southern Brazil. *Rev Saúde Pública*. 2020. Available from: < [https://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0034-89102020000100210](https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102020000100210)>. doi: <https://doi.org/10.11606/s1518-8787.2020054001540>
16. Pasqualucci PL, Damaso LLM, Danila AH, Fatori D, Lotufo Neto F, Koch VHK. Prevalence and correlates of depression, anxiety, and stress in medical residents of a Brazilian academic health system. *BCM Med. Educ*. 2018. Available from: <<https://bmccmededuc.biomedcentral.com/articles/10.1186/s12909-019-1621-z>>. doi: <https://doi.org/10.1186/s12909-019-1621-z>
17. Barbosa JG, Filho NA, Miranda IMO, Rezende LF, Tank K, Zeuri E. Characterization of suicide idea in university students. *Rev UNINCOR*. Universidade Vale do Rio Verde. 2018. Available from: < [http://periodicos.unincor.br/index.php/revistaunincor/article/view/3731/pdf\\_788](http://periodicos.unincor.br/index.php/revistaunincor/article/view/3731/pdf_788)>. doi: <http://dx.doi.org/10.5892/ruvrd.v16i1.3731.g3426>
18. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression severity measure. *Patient Health Questionnaire (PHQ) Screeners*. JGIM. *J Gen Internal Med*. 2001. Available from: <<https://onlinelibrary.wiley.com/doi/full/10.1046/j.1525-1497.2001.016009606.x>>. doi: <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
19. Ang AL, Wahab S, Abd Rahman FN, Hazmi H, Md Yusoff R. Depressive symptoms in adolescents in Kuching, Malaysia: Prevalence and associated factors. *Pediatr Int*. 2019. Available from: <<https://onlinelibrary.wiley.com/doi/abs/10.1111/ped.13778>>. doi: <https://doi.org/10.1111/ped.13778>
20. Andreas JB, Brunborg GS. Depressive Symptomatology among Norwegian Adolescent Boys and Girls: The Patient Health Questionnaire-9 (PHQ-9) Psychometric Properties and Correlates. *Front Psychol.*, Department of Substance Use, Norwegian Institute of Public Health. [Internet]. 2017. [cited May 5 2019]. Available from: <<https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00887/full>>. doi: <https://doi.org/10.3389/fpsyg.2017.00887>
21. Andrade LR, Barbosa L, Dias BRT, Melo GF, Souza E, Vasconcelos TC. Prevalence of Anxiety and Depression Symptoms among Medicine Students. *Rev Bras Educ Med*. 2015;39(1):135-42. Available from: <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0100-55022015000100135](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022015000100135)>. doi: <https://doi.org/10.1590/1981-52712015v39n1e00042014>
22. Ferreira FMPB, Brito IM, Santos MR. Health promotion programs in higher education: integrative literature review. *Rev Bras Enferm*. 2018. Available from: <[https://www.scielo.br/pdf/reben/v71s4/pt\\_0034-7167-reben-71-s4-1714.pdf](https://www.scielo.br/pdf/reben/v71s4/pt_0034-7167-reben-71-s4-1714.pdf)>. doi: <http://dx.doi.org/10.1590/0034-7167-2016-0693>
23. Braga ALS, Cavalcanti TVC, Cortez EA, Dutra VFD, Marinho TG, Mattos MMGR, et al. Promotion of Mental Health for University Students. *Rev Pró UniverSUS*. [Internet]. 2017. [cited April 25 2020]. Available from: < <http://editora.universidadedevassouras.edu.br/index.php/RPU/article/view/896>>.
24. Sahnão FT. University student mental health: behaviors that favor adaptation to teaching higher. *Universdade Estadual de Londrina*. [Internet]. 2019. [cited May 25 2020]. Available from: < <http://www.uel.br/pos/pgac/wp-content/uploads/2019/08/Saude-mental-do-estudante-universitario-comportamentos-que-favorecem-a-adaptacao-ao-ensino-superior.pdf>>.
25. Wondimagegnehu A, Abebe W, Abraha W, Teferra S. Depression and social support among breast cancer patients in Addis Ababa, Ethiopia. *BMC Cancer*. 2019. Available from: < <https://bmccancer.biomedcentral.com/articles/10.1186/s12885-019-6007-4>>. doi: <https://doi.org/10.1186/s12885-019-6007-4>
26. Melo AK, Siebra AJ, Moreira V. Depression in Adolescents: Review of the Literature and the Place of Phenomenological Research. *Psicol Cienc Prof*. 2017. Available from: < [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1414-98932017000100018](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-98932017000100018)>. doi: <http://dx.doi.org/10.1590/1982-37030001712014>
27. Alharbi R, Alsuhaibani K, Almarshad A, Alyahia A. Depression and anxiety among high school student at Qassim Region. *J Family Med Prim Care*. 2019. Available from: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6436297/>>. doi: 10.4103 / jfmpc.jfmpc\_383\_18
28. Santos JC. Como enfrentar o adoecimento mental na universidade: conheça iniciativas de professores e alunos [Internet]. Rio Grande do Sul (RS): Universidade Federal do Rio Grande do Sul; 2019 [Acesso 8 nov 2019]. Disponível em: <<https://www.ufrgs.br/humanista/2019/10/10/como-enfrentar-o-adoecimento-mental-na-universidade-conheca-iniciativas-de-professores-e-alunos/>>.
29. Robaert DW, Schonardie EF. Education and practices for the promotion of mental health in. *RC&E*. 2017; 32(103):191-212. Available from: <<http://dx.doi.org/10.21527/2179-1309.2017.103.191-212>>. doi: <https://doi.org/10.21527/2179-1309.2017.103.191-212>
30. Morais A. PRAE desenvolve projetos voltados à saúde mental dos estudantes [Internet]. Rio Grande do Norte (RN): Universidade do Estado do Rio Grande do Norte; 2018 [Acesso 16 nov 2019]. Disponível em: <<http://portal.uern.br/blog/prae-desenvolve-projetos-voltados-a-saude-mental-dos-estudantes/>>.
31. Victor JF, Lopes MVO, Ximenes LB. Analysis of diagram the health promotion model of Nola J. Pender. *Acta Paul Enferm*. 2005; 18(3):235-40. Available: <[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0103-21002005000300002&lng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-21002005000300002&lng=en)>. doi: <https://doi.org/10.1590/S0103-21002005000300002>

32. Tavares LM. Common mental disorders and subjective wellbeing in medical students: a preventive intervention based on positive psychology. [Internet]. Recife (PE): Universidade Federal de Pernambuco; 2017 [cited Nov 16 2019]. Available from: <<https://repositorio.ufpe.br/handle/123456789/26477>>.
33. Abrahão L, Ribeiro V. Campanha Janeiro Branco. Janeiro Branco: por uma cultura da Saúde Mental. [Internet]. Minas Gerais. 2020. [Acesso 25 jan 2020]. Disponível em: <<http://janeirobranco.com.br/projeto-janeiro-branco/>>.
34. Pureza JR, Kuhn CHC, Castro EK, Lisboa CSM. Positive psychology in Brazil: a systematic review. Rev Bras Ter Cogn. [Internet]. 2012. [cited Jan 6 2020]. Available from: <[http://pepsic.bvsalud.org/scielo.php?script=sci\\_arttext&pid=S1808-56872012000200006&lng=pt&nrm=iso](http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1808-56872012000200006&lng=pt&nrm=iso)>.
35. Hailemichael Y, Hanlon C, Tirfessa K, Docrat S, Alem A, Medhin G et al. Mental health problems and socioeconomic disadvantage: a controlled household study in rural Ethiopia. Int J Equity Health. [Internet]. 2019. [cited June 1 2020]. Available from: <<https://pesquisa.bvsalud.org/portal/resource/pt/mdl-31366362>>.
36. Schlax J, Jünger C, Beutel ME, Münzel T, Pfeiffer N, Wild P, et al. Income and education predict elevated depressive symptoms in the general population: results from the Gutenberg health study. BMC Public Health. [Internet]. 2019. [cited June 1 2020]. Available from: <<https://pesquisa.bvsalud.org/portal/resource/pt/mdl-31014301>>.

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