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Anxiety and depression prevalence and determinants in health sciences students during Covid-19 pandemic: a quantitative study in Nampula, Mozambique

Abstract

Introduction: anxiety and depression are the most prevalent mental disorders in the world, close to 50% of the international disease burden due to psychiatric disorders and substance use. Research with university students show psychiatric disorders 'rates around 15 to 25%. Student' environment interferes in higher education and life conditions bias training context, often adverse and a mental health stressor. Population' depressive disorders prevalence is around 7%, but these disorders' incidence increased due to the SARS-CoV-2 pandemic, impairing individual's functional and psychosocial lives, and increasing the risk of major depressive disorder if not recognized and treated.

Objective: estimate anxiety and depression prevalence rates in Faculty of Health Sciences' students, at Lúrio University in Nampula, Mozambique, and associated determinants, during the Covid-19 pandemic.

Methods: descriptive, quantitative cross-sectional study, applying a digital survey about psychologic stress determinant factors, based on Hospital Anxiety and Depression Scale. The Faculty of Health Sciences students' random sample in Nampula answered the survey during August to October 2020, in a declared Public Calamity period due to Covid-19 pandemic. Results were analysed with Statistic Package for Social Science with a confidence interval of 95% and an error margin of 5%, using Q^2 test to determine statistically significant associations.

Results: 276 students answered the survey, 50% of each gender, aged from 17 to 51 years, 60% coming from Nampula province, showing high rates of anxiety, depression and co morbidity, respectively 42.3, 34.3 and 25.9%, with a statistically significant association with bad relationships with friends, not enough sleep, trauma, lost and family antecedents.

Conclusion: we confirmed the high prevalence of mental disorders in the Mozambican population, aggravated by governmental restrictive measures due to SARS-CoV-2 pandemic, implementing distance digital learning. Faculty of Health Sciences' students have high anxiety and depression prevalence rates, mental disorders limiting academic performance and decreasing life quality. These results are important to allow the University to launch preventative activities and to promote therapeutic options, to grant the teaching – learning system success.

Keywords: anxiety, depression, determinant, higher education, Mozambique, prevalence, student

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Abbreviations: BMI, body mass index; BAS, beck anxiety scale; BDSB, beck depression scale; FHS, faculty of health sciences; HADS, hospital anxiety and depression scale; ICF, informed consent form; UniLúrio, lúrio university; RR, relative risk; WHO, world health organisation

Introduction

Mental and neurobiological disorders attain almost 450 million people in the world. Depression is the main disability cause and will probably become the second disease burden in 2023, a growing public health problem.[1] Depression has a high prevalence, and it is the most common mental condition in the population: it affects one in five people on some occasion of their lives.[2] Besides the psychological suffering it causes, it interferes with academic performance and social relationships,[3] leading to suicide in extreme cases,[4] an indicator of a serious depressive episode.[5] Several studies show psychosocial determinants associated with increased rate of depressive disorders: child abuse, low rent, unemployment, smoking, sedentarism, unhealthy food habits, poor social support, stress, and isolation.[6]

Anxiety is defined as a feeling of fear and apprehension, characterized by tension or discomfort arising from the anticipation of an unknown or dangerous situation.[7]

Mental health problems are one of the main causes of morbidity in our society, resulting in serious limitations. Depression is the cause of 6,2% of morbidity in the World Health Organization (WHO) European region. Some studies show that more than 20% of the population has at least one of these disorders during their live. Co-morbidity is common in depression and anxiety disorders: 50% of patients diagnosed with depression present an anxiety disorder simultaneously.[8]

Adolescents and youth go through critical development and transition periods, and anxiety disorder signs are often disregarded.

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Starting academic life in higher education is also a psychosocial period of big changes, extremely relevant to human development. Depressive disorder prevalence rate is higher in young students than in the general population, and university students have been studied to explore associated determinants of this population' characteristics. Over studying and agitated and tiring live, alcohol abuse, distance to family, high expectations from society, institution, and the student himself, often submit him to crisis, launching depressive episodes;[9] 15 to 25% of university students are estimated to present some sort of psychiatric disorder during their education; among those, depressive and anxiety disorders are the most frequent.[10] University health sciences students' mental health has been evaluated by specialists because their emotional suffering is not self-limited and has an impact in their relationship with patients. In general, those students do not receive an adequate training in mental health and are often exposed to psychologic stresses, affecting academic performance, causing mental disorder, risk of suicide or difficulties to treat their patients.[11] Studies about depression with medical students found prevalence from 8 to 17% in this population.[12] Psychologic stress events during medical training are possible anxiety and depression symptoms appearance determinants: little free time, contact with disease and death, aggressivity of medical procedures, difficulties to communicate bad news to families and "patient problem".[13]

The Covid-19 pandemic due to the SARS-CoV-2 virus infection declared in 2020 by the WHO affected millions of people,[14] putting a strain on countries' health systems.[15,16] The resulting measures taken to control this pandemic, the Declaration of State of Emergency of the President of Mozambique in March 2020,[17] had negative secondary effects, restricting travel, meetings and public services, limiting access to and provision of health services, determining confinement and a new modality of distance learning, facing a lack of means of information and communication. The negative impact of these measures on health services is well documented, namely on the incidence of suicide as well as on maternal mental health.[18–20]

Depression treatment is an important aspect. In 2016, the WHO and the World Bank announced that investing in the treatment of depression and anxiety yields four times the return, because these conditions cost the global economy a trillion dollars a year. Humanitarian emergencies and conflicts make urgent the need to expand therapeutic options: pharmacological, psychotherapeutic, behavioural, cognitive-behavioural, and interpersonal treatments.

Objective

To estimate the prevalence and determinant factors associated with anxiety and depression in students at the Faculty of Health Sciences (FHS) at Lúrio University (UniLúrio), during the Covid-19 pandemic.

Methods

Descriptive study,[21] cross-sectional quantitative, applying an indirect questionnaire from August to October 2020 to a students' universe enrolled at the FHS of UniLúrio in Nampula, during the year 2020: 1,050 students.

To have a representative sample, the number was calculated with a 95% confidence interval and a margin of error of 5%, considering the estimated prevalence (unknown) equal to 50%, obtaining 282 subjects. The selection of the sample was based on the students' accessibility to the digital questionnaire on smartphone, as well as on their voluntary participation, aged 18 years or over, enrolled in the courses of Dentistry, Medicine, Nursing, Nutrition, Pharmacy, and Optometry, who attended the first to sixth year of graduation and who signed an Informed Consent Form (ICF). A simple random sampling without return was performed for sample selection; each student was assigned a unique number which was then chosen at random. All surveys that had 20% or more unanswered questions were excluded.

Collected independent variables were demographic (gender, age), social (place of origin, with who resides, descent, family income, trauma, or family history) and behavioural characteristics (hours of sleep, physical activity, cigarette use, alcohol consumption, interpersonal relationships, reason for choosing the course, level of option for choosing the course, overdue disciplines, body mass index – BMI). Dependent variables were anxiety or depression diagnosis. Data were collected based on the survey in digital support, answered and filled out directly on the smartphone by the study subjects. The Hospital Anxiety and Depression Scale (HADS),[22] was used to assess symptoms suggestive of anxiety and depression, with 14 questions interspersed with anxiety and depression. The HADS score ranges from 0 to 21 for each subscale; participants with a score less than 7 are considered to have no significant clinical signs for anxiety and depression; between 8 and 10 with possible symptoms (false positives); above 10, symptoms suggestive of disturbance. Data collection applied a questionnaire, with indirect contact with respondents, using an app sent on the smartphone, due to the Covid-19 pandemic restrictive measures issued by the government declaration of "State of Calamity" . Its filling lasted between 20 and 30 minutes. This questionnaire assessed the level of perception of factors that induce psychological tension.

Data were processed with Microsoft Office Excel 2010 and treated with the Statistical Package for Social Science (SPSS 20.0). Variable frequency distribution tables were constructed, and statistical data analysis was used, in frequencies and percentages, with a confidence interval of 95% and a margin of error 5%, considering results with statistically significant association those that present a $p<0.05$. Prevalence ratios were calculated. The two-entry table of cross-sectional studies was used to assess the relative risk increased by the determinants of disease (exposure). To estimate the association between categorical variables of exposure and outcome, univariate and bivariate analysis were performed, as well as their respective confidence intervals. For the treatment of lost data, participants who had 20% or more unanswered questions were excluded from the sample. Participants who answered at least six questions for each of the HAD subscales were kept for analysis. Participants who did not answer only one question from the anxiety or depression subscale had these items filled out by the average of their answers to the other questions of the respective dimensions of the HADS. The internal consistencies of the HADS-Anxiety and HADS-Depression subscales were analysed using Cronbach's alpha test.

The study protocol was approved by the Institutional Bioethics Committee for Health at UniLúrio (26/Junho/CIBSUL/20), and the study complied with all the guidelines of the Declaration of Helsinki, 2013. The ICF written in Portuguese using clear language was applied to all participants. They could withdraw from the study at any stage without suffering reprisals or prejudice. Precautions were taken to protect the privacy of each subject and the confidentiality of their personal data by a code system, on the investigator's computer and at no time was the information related, in the database and in the data collection instrument, with the participant' identity. Collected information was exclusively used to meet the study objectives and there were no changes to the protocol. Participants did not have any financial or material support. There was no damage to participants' physical or mental health.

Results

Demographic, social, and behavioural characterization

The study group consisted of 276 students, 138 (50%) of each gender, aged between 17 and 51 years (28.3% teenagers aged 19 or under, 35.1% young people between 20 and the 24 years old and 36.6% adults aged 25 or over), 266 (96.4%) of Mozambican nationality and 233 (84.4%) single, 167 (60.5%) from the province of Nampula. The largest number of students (120, 43.5%) live with their parents, 78 (28.3%) live with a spouse and the same number alone. As for those who have children, 89 (32.2%) answered affirmatively and 269 (97.5%) said they profess a religion. About monthly income, 115 (41.7%) have less than the minimum wage, 63 (22.8%) the equivalent of the minimum wage and 98 (35.5%) more than this. Almost all students (273, 98.9%) do not smoke or drink alcohol (234, 84.8%). In the group of alcohol consumers, the majority (39, 14.1%) consume less than one drink a day or less than seven drinks a week. The practice of physical activity is stated by the majority (231, 83.7%). The vast majority (263, 95.3%) are concerned about their professional future. As for relationships, most consider their relationship with family (240, 87%), friends (256, 92.8%), colleagues (251, 90.9%) and teachers (255, 92.4%) to be satisfactory. Considering the quality of sleep, 185 (67.0%) claim to be satisfactory. Regarding the perception they have about their health status, 115 (41.7%) consider it good, 75 (27.7%) regular, 45 (16.3%) very good and 34 (12.3%) great. The body mass index (BMI) is normal in 227 (82.2%), low in 26 (9.4%) and high in 23 (8.3%). As for the choice of the course they attend, 154 (55.8%) indicated vocation as the main reason and 144 (52.2%) reported that it was their first choice; 249 (90.2%) are satisfied with the course; 233 (80.8%) finance university expenses with their own resources and the rest (19.2%) have a scholarship. The majority (224, 81.2%) do not have overdue disciplines (academic chairs), 12.3% have one overdue chair, 4.3% two and 1.4% three; 9.4% failed one year and 5.8% two years. A small majority (147, 53.3%) consider the course hours distribution as satisfactory. The time spent accessing the telephone or social networks exceeds eight hours a day for 106 (38.4%) students. Hormonal dysfunction (of any type) occurs in 33 (12%); physical or psychological trauma is reported by 65 (23.6%) and significant loss (marital separation, job loss, prolonged unemployment, loss of a loved one) by 103 (37.3%). Direct family history of anxiety or depression was reported by 40 (14.5%) students.

Prevalence and determining factors of anxiety and depression

HADS assess shows that 116 students (42.3%) have anxiety criteria and 94 (34.3%) depression; the number of individuals with depression and anxiety is 71 (25.9%). There is a statistically significant association between depression and whether the individual has anxiety, as by using the Chi-square test, we obtain a *p*-value <0.001, lower than the defined significance level (0.05). Table 1 presents risk determinants with statistical significative association with anxiety and depression.

Table 1 Anxiety and depression determinants' relative risk

Mental disorder	Anxiety		Depression	
Risk determinants	**Relative Risk**	**p-value**	**Relative Risk**	**p-value**
Young people (20 – 24 years old)	1.52	0.026	1	>0.05
Living with parents	1.7	0.016	1.37	>0.05
Not having children	1.4	0.023	1	>0.05
Poor relationship with family	1.68	0.015	1.73	>0.05
Bad relationship with friends	1.6	0.034	1.86	0.012
Bad relationship with colleagues	1.71	0.007	1.52	>0.05
Poor relationship with teachers	1.47	>0.05	1.7	0.04
Little sleep	2.29	<0.001	2.42	<0.001
Chairs in arrears	1.36	>0.05	1.72	0.003
BMI<18	2.1	0.001	1.71	>0.05
Trauma history	1.5	0.007	1.54	0.016
Loss antecedent	1.44	0.009	1.46	0.023
Family history	1.77	0.001	1.53	0.041

Discussion

The study group was made up mostly of young people of Mozambican nationality from the three provinces in the North of the country, who live with their parents, attending the six courses of the FHS. Several studies have shown a prevalence of anxiety disorders of 5 to 19% among young people. In our study we found a much higher prevalence (42.7%), which confirms the high burden of mental illness in the Mozambican population.[23] This situation was aggravated by the SARS-CoV-2 pandemic and by the restrictive measures declared by the Mozambican government, due to the state of emergency, followed by public calamity, with the closure of classroom classes and implementation of distance learning, without guaranteeing the necessary technological conditions. Factors such as parental anxiety and depression, low income and alcohol and tobacco use may be associated with anxiety disorders in adolescence. In our study, with a statistically significant association with a higher prevalence of anxiety, we found young age, living with parents, not having children, having

an unsatisfactory relationship with family, friends and colleagues, insufficient sleep, BMI low, history of trauma, significant loss, or direct family members antecedents. Anxiety determining factors with most significant relative risk (RR) (RR>2) were low BMI and lack of sleep. A WHO report states that the number of cases of depression increased by 18% between 2005 and 2015: there are 322 million people worldwide, mostly women. In Brazil, depression affects 11.5 million people (5.8% of the population). In our group we found a much higher prevalence (34.3%). With a statistically significant association with higher depression prevalence, we found unsatisfactory relationships with friends and teachers, insufficient sleep, delayed course chairs, trauma history, significant loss, or family members antecedents. The most significant determinant of RR for depression (RR>2) was lack of sleep. Some studies suggest that medical students experience high rates of depression and suicidal ideation. Estimates of the prevalence of depression among students range from 1.4 to 73.5% and suicidal ideation varies from 4.9 to 35.6%. Approximately 90% of people who commit suicide had symptoms of depression and 47 to 74% of the risk of suicide in the population is related to depression and other psychiatric disorders.[24] The lifetime prevalence of depression varies from 20 to 25% in women and 7 to 12% in men, being a significant determinant of quality of life and survival, accounting for approximately 50% of psychiatric consultations and 12% of hospital admissions.[25]

In our study, the association of anxiety and depression affects 25.9% of students, a higher rate than expected, probably due to the radical change in academic practice towards distance learning, recommended in several countries,[26] but not very applicable in Mozambique. Adolescent depression is associated with suicidal behaviour, substance abuse, interpersonal problems, academic failure, and concomitant psychopathology. Despite the significance of depressive disorders, less than 50% of depressed adolescents receive treatment, suggesting the need for effective prevention programs to be widely implemented.[27] Several studies have shown that public health campaigns aimed at reducing the risk of modifiable factors can significantly prevent the occurrence of mental disorders. Modifiable risk factors can be used as prevention targets.

The use of the HADS in this study is due to its high sensitivity (70.8 to 80.6%) and specificity (69.6 to 90.9%), when compared to the Beck Anxiety Scale (BAS) and the Beck Depression Scale (BDS), both considered the gold standard. The results of this study are important for the University, assessing the mental health of its main target group, which can subsequently trigger preventive activities and promote therapeutic options, framed in the Students' Support Office.

Conclusion

FHS students have high prevalence rates of anxiety and depression, mental disorders limiting academic achievement and quality of life. These disturbances are accentuated by an insufficient amount of sleep, low BMI, poor interpersonal relationships or traumatic or family history, as expected. The Covid-19 pandemic may have aggravated the incidence of these disorders. Prevention would benefit from an education campaign about mental health risks, encouraging the practice of regular physical activity and group activities, with access to cognitive behavioural psychotherapy treatment in interpersonal relationships.

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Conflicts of interest

The author declares there is no conflict of interest.

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