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Religiosity was Associated with Lower Scores on Anxiety and Depression Symptoms in Medical Students During the Covid 19 Pandemic

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Abstract

Aims: To associate symptoms of anxiety and depression with religiosity among medical students during the pandemic by COVID-19.

Methods: Students were randomly selected to complete a questionnaire with sociodemographic data, the Hospital Anxiety and Depression Scale (HADS), and Duke University Religion Index (DUREL). The Kruskal-Wallis test was used to analyze the groups in independent samples and the Spearman test was used to correlate the variables.

Results: 255 subjects were selected, 67.1% (171) female and 32.9% (84) male. Regarding the HADS scale, 57.3% (146) exceeded the cut-off points for anxiety and 32% (82) and for depression. A higher prevalence of depression was found, with high statistical significance, in students of the clinical cycle. Was demonstrated the absence of a difference in anxiety indices between course cycles. When correlating anxiety, depression, and religiosity, there was a significant and inversely proportional relationship between anxiety and intrinsic religiosity. We also observed, with statistical significance, an inversely proportional correlation between organizational religiosity and depression among participants.

Conclusions: There was an inversely proportional association between anxiety symptoms and intrinsic religiosity. We also observed an inversely proportional association between depression symptoms and organizational religiosity among medical students during the period of home isolation during the pandemic by COVID-19. The stressful event triggered by the pandemic favored the analysis of the association with religiosity, whose protocol for defining risk or protection in longitudinal studies becomes challenging due to the unlikely repetition of the severity of the time when the present study was conducted.

Keywords: Anxiety, depression, religiosity, medical students

Introduction

According to the World Health Organization, the global prevalence of anxiety is 3.6%, reaching 5.6% in the American continent. In Brazil, anxiety symptoms affect 9.3% of the population, and the prevalence of this disorder is increasing among the academic community, reaching 63%[1].

Anxiety is less prevalent among people with higher education, and the social phobic disorder stands out because it commonly causes limitations that prevent patients from finishing college[2]. It affects college students excessively, due to the need for commitment, performance, and good

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interpersonal relationships[3]. Obsessiveness, perfectionism, and self-demanding are direct personality traits among medical students, and reports of anxiety, drug addiction, depression, and even suicide are more frequent than in the general population[4].

Anxiety and depression cause damage to the ability to deal with daily life events and may increase vulnerability to negative situations, being able to impact and destabilize these students' personal and professional lives[5]. In the USA, almost 10% of college students were diagnosed or treated with depression, while in Brazil, studies suggest a prevalence of anxiety or depression of 30.6% among medical students[6]. In contrast, religion has been shown to have a considerable impact on the mental health of college students, and it has been observed that students who make use of some religious support and use their beliefs to cope with adversities may have lower repercussions of anxiety symptoms and better face adversities in daily life[7].

In addition to this scenario, the Covid-19 pandemic was a phenomenon of global dimensions with varied impacts on the lives of the whole society, which suffered undeniable shocks to its psychological health and general well-being [8]. Fear for oneself and for others, the need for social isolation, and the loss of routine were some of the related stressors[8]. Among college students, there were effects on their own academic life that also influenced the increase in anxiety and stress levels, such as difficulties in concentrating and adapting to remote teaching, and fear of losses in school progress[9].

We found several cross-sectional studies which correlated anxiety and depressive symptoms with religiosity in the general population, university students, and healthcare professionals during the COVID-19 crisis [10]. Religiosity had an adaptive effect on the mental health of its association with psychological resilience. Only one study evaluated the trajectory of anxiety and depressive symptoms and their association with religion at three-time points during the COVID-19 pandemic in a general population[10]. In this way, we did not find studies that analyzed religiosity, depression, and anxiety in medical students during the COVID-19 pandemic. Therefore, we questioned whether religiosity is associated with anxiety and depression symptoms in medical students during the pandemic by COVID 19. Thus, this study aimed to correlate the variables of anxiety, depression, and religiosity among medical students during the period of home isolation during the pandemic by COVID-19.

Methodology

The present study is characterized as an observational, descriptive, quantitative, and transversal study, which obeyed resolutions 466/12 and 510/16 of the National Council on Health (NCH) in its legal and scientific aspects that deals with research involving human beings, thus ensuring respect and protection to the participants. The research was submitted to the local Research Ethics Committee and was only conducted after its approval. Furthermore, it was also carried out after authorization from the research site and completion of the ICF - Free and Informed Consent Form, directed to the participants who were included. All methods were carried out in accordance with relevant guidelines and regulations.

The study was carried out with medical students of a college in Teresina, a capital city of the Brazilian northeast with an average of 871.000 habitants (IBGE 2021). The population of students from the 1st to the 12th period of the course was included. The finite sample size was calculated with a sample calculation formula, according to a known closed sample of 701 medical students. Therefore, the sample size was 255 students, with a margin of error of 5%, and a 95% confidence interval.

The survey was conducted via an online formulary which was randomly sent to 255 subjects from a list of 701 emails of the students given by the University. This formulary was only filled out after the student read and accepted/agreed to the ICF. There was no prior or "face-to-face" contact with the academics due to the COVID-19 pandemic. Soon, the recruitment occurred initially for e-mail contact. If the authors disclosed no initial response, we performed a telephone contact. All subjects contacted after e-mail and telephone full fill the questionaries. Missing data entry was not observed because the forms can make the data entry mandatory before final submission.

The distribution period of the questionnaires occurred between May and July 2020. During this interval, home isolation was decreed by government measures in the locality in question. We included only students over 18 years of age, who remained in restricted home isolation throughout the data collection period, regularly enrolled in medical school, and with class attendance greater than 75%. Subjects working in other jobs were excluded, as were those working in essential services during the home isolation request, and subjects who were taking another undergraduate or graduate course or had some already diagnosed chronic disease, forms that weren't totally, or when there was missing data entry were excluded from the full sample.

The questionnaire (in attachment) took an average of 10 to 15 minutes to complete. It was composed of the following variables: age, gender, education, level in the course (basic, clinical, or internship), period, family income, previous diseases, and chronic use of medication. For the analysis of the prevalence of anxiety and depression, we used the Hospital Anxiety and Depression Scale (HADS) (in attachment), created for non-psychiatric patients who were hospitalized and later used for several population groups[11]. This scale, duly validated for Portuguese[12], is composed of fourteen multiple choice questions, subdivided into questions about

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anxiety and depression, whose final score can vary from 0 to 21 points, and was validated by Botega et al., (1995) for the Portuguese spoken in Brasil.

For the analysis of the behavior towards religiosity, the Duke University Religiosity Index (DUREL) (in attachment) was used - an instrument to assess the aspects that have to do with organized religiosity, non-organized religiosity, and intrinsic religiosity - it is important to mention that this index was duly validated for the Portuguese spoken in Brazil [13] by Koening et al. (2001).

Statistical Analysis

With regard to the data, double typing, validation, verification of data consistency, and other analyses were performed using the Microsoft Excel 2007 program. Descriptive statistical analysis was performed. The mean, median, and standard deviation were performed for numerical variables. Ordinal variables were described by absolute frequency and percentage frequency. The Kolmogorov-Smirnov test was used to define the standard of normality, and non-parametric data was found. To compare the distribution of the groups in independent samples, the Kruskal-Wallis test methodology was used, and for comparison between continuous and categorical variables, the Spearman test was used. The analysis was performed considering a confidence interval of 95% and an alpha error of 5%. The SPSS software version 20.0 was used to perform the correlations.

Results

A total of 255 medical students were selected to compose the sample that respected the inclusion and exclusion criteria. 67.1% of the subjects were female, with a higher frequency between the ages of 18-24 years, single, without comorbidities, and with an incomplete college degree.

Most of the subjects had a family monthly income of 1 to 3 minimum salaries, few comorbidities, and no use of continuous medications. Regarding the continuous use of medication, 90% (230) reported not using any medication and 10% (25) reported using a medication, but not related to neurological, psychiatric, or chronic disease medications.

Regarding the HAD Scale for anxiety (HAD-A) and depression (HAD-D), most participants scored for probable anxiety, 57.3% (146) and 32% (82) scored probably for depression.

In the DUKE scale, the profile of medical students, regarding organizational religiosity (OR), the prevalence of responses was 32.2% (82) who go to religious institutions a few times a year; in non-organizational (NOR) 31.4% (80) reported participating in some religious activity - praying, reading or listening to religious subjects - daily; and in the intrinsic (IR), 35.7% (91) reported feeling God's presence in their life all the time, 39.6% (101) reported that religious beliefs connect to their way of life, and 41.2% (105) reported striving to live with religion in their life.

After analyzing the scores obtained in the scales, the mean scores in each domain of DUREL were OR 2.85 ± 1.32, RNO 2.66 ± 1.5, and RI 7.92 ± 2.9. It is reiterated that in this instrument, the higher the score, the higher the index of religiosity in the participant.

Through the Kruskal-Wallis test for independent samples, it was possible to verify the absence of difference between groups [X^2 (2)=.250; p>0.05] between the prevalence of anxiety between the basic cycle, clinical cycle, and internship. Furthermore, it was possible to identify the difference [X^2 (2)=.58.715;p<0.05] in the prevalence of depression among the basic, clinical, and residency cycles (p=0.013), which shows a higher prevalence of depression during the internship.

It was found that in relation to gender and levels of anxiety and depression, the prevalence of anxiety in women was higher compared to men, with statistical significance. The prevalence of depression by gender did not show significant differences.

When performing the test of correlation of variables from the Spearman coefficient, it was found a non-existent and non-significant correlation between the organizational and non-organizational religiosity index (OR/NOR) and anxiety. Furthermore, a negative, weak and significant correlation (r=-.209**) was found (p<0.001) between the intrinsic religiosity index (IR) and anxiety among participants.

On performing the variable correlation test from Spearman's coefficient, a non-existent and non-significant correlation was found between the religiosity and non-organizational (NOR) index, intrinsic religiosity (IR), and depression. And a positive, strong, and significant correlation (r=,-0.65*) with p<0.05 was found between the organizational religiosity index (OR) and depression among the participants.

Discussion

From the results found, 57.3% (146) of the participants scored probable anxiety and 32% (82) scored probable depression. Regarding organizational religiosity (OR), 32.2% (82) go to religious institutions a few times a year; in non-organizational (NOR) 31.4% (80) reported participating in some religious activity daily; and in intrinsic (IR), 35.7% (91) reported feeling God's presence in their life all the time, 39.6% (101) reported that religious beliefs connect to their way of life, and 41.2% (105) reported striving to live with religion in their life. Regarding gender and levels of anxiety and depression, the prevalence of anxiety in women was higher and the prevalence of depression by gender showed no significant differences.

The results presented show an association between higher

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indices of intrinsic religiosity and organizational religiosity with a lower prevalence of depression. It is worth mentioning that the data collection period occurred during the critical time of the COVID-19 pandemic when there were greater social restrictions and home isolation imposed by governmental measures. Furthermore, the present study was conducted in a specific sample, medical students, who already routinely live in stressful events with a high prevalence of depression and anxiety even outside the pandemic period. Thus, even during the worsening stress pattern by social isolation, religiosity was relevant to mental health.

The studies of Lima et al. (2015) [14] corroborated the findings of the present research regarding age and gender. According to Maso and Feitosa (2013), most of the academics surveyed were also female, as in the sample in question, with a prevalence of the age range between 18 and 22 years. Regarding marital status, the findings observed in this sample converged with those published by Vizotto (2013), whose percentage of singles in the sample exceeds 80%[15].

Concerning the monthly income obtained in the results, most presented monthly income of 1 to 3 minimum wages, data that diverge from the results presented by Silva (2013)[16], whose wages were around 10 minimum wages. As for comorbidities and use of continuous medications, in this research, we observed few comorbidities and a low prevalence of use of continuous medications - only 10% - different from the surveys carried out by Orsini (2015), who pointed out the high rates of use of sporadic and continuous medications in health students, especially in the medical course[17].

In the present study, we observed a prevalence of depression of 32%. Studies conducted with medical students outside the pandemic period showed a variation of this prevalence of 47%, as pointed out by Baldassin et al.,(2008)[18].

The high rates of anxious symptoms are homogeneously found in the three-course cycles. According to Anjos and Aguilar (2017), students in the clinical cycle are the ones who suffer the most from anxiety and the ones who are most prone to develop depressive traits due to anxieties about future professional life[19]. Regarding depression, it is possible to observe an absence of difference between the course cycles. Costa et al (2020), in a sample of 279 medical students, found depressive symptoms in approximately 28% and equally among the course cycles[20].

Several cross-sectional studies associated symptoms of depression-anxiety in the adult populations with lower levels of religiosity in different countries such as Qatar [21], Italy [22]. This conclusion to become conflicting since another study from Eastern Europe showed that religiosity had no effect on students' mental health [23]. Another multi-centric study evaluated the association between pre-pandemic measures of religious and self-reported symptoms of depression, anxiety, and stress across 29 countries. They found a trend toward a positive association between pre-pandemic religious belief and practice and anxiety in response to the pandemic but this was not significant in multivariate analysis. Soon, the authors concluded that cultural individualism and urbanization were negatively associated with anxiety during the pandemic [24].

Only one research evaluated the trajectory of anxiety and depressive symptoms and their association with religion at three-time points during the COVID-19 pandemic [10]. Examining predictors of these trajectories in a general population, they found that the resilience trajectory was associated with self-identification as religious [10].

For medical students and healthcare workers, the COVID-19 pandemic imposes psychological burdens such as depression and anxiety [25, 26]. It was suggested that resilience-building interventions should be expanded in healthcare workers to avoid the COVID-19 pandemic burden [27]. During the COVID-19 pandemic, life satisfaction showed a moderately positive, slightly linear correlation with resilience scores in medical students [28]. The practical implication for the interpretation of the results is that life satisfaction can be improved among medical students by focusing on strategies that enhance resilience. Religion is identified as a significant coping strategy among medical students that enhance resilience [28]. Happiness scores were also associated with the spiritual health of medical students during the COVID-19 pandemic [29]. However, we did not find other studies that associated depression, anxiety, and religiosity among medical students during the home isolation period during the pandemic by COVID-19.

Table 1: Data with descriptive characteristics in relation to epidemiological and clinical aspects and results in defined outcomes for medical students at a college in Teresina-PI during the COVID-19 pandemic

	n	%
Age		
18-24	169	66,3
25-30	72	28,3
31 ou +	14	5,4
Sex		
Masculine	84	32,9
Feminine	171	67,1
Marital Status		
Single	224	87,8
Married	27	10,6
Divorced	4	1,6
School level		
Incomplete Superior	230	90,2
Complete Superior	16	6,3
Graduated	9	3,5

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Income		
None	9	3,5
Approximately R$ 1.045,00	21	8,2
From R$ 1.045,00 to R$ 3135,00	201	78,2
More than R$ 3135,00	24	9,4
Course Cycle		
Basic	83	32,5
Clinic	87	34,1
Internship	85	33,1
Comorbidity		
Yes	46	18
No	209	82
Continuous medication		
Yes	25	10
No	230	90
Total	**255**	**100%**

SOURCE: (SPINDOLA-RODRIGUES, et al., 2020)

Table 2: Distribution of the prevalence of anxiety and depression symptoms among academics at a college in Teresina – Pi during the COVID-19 pandemic

	n	%
HAD-A*		
Unlikely	109	42,7
Probable	146	57,3
HAD-D**		
Unlikely	173	68
Probable	82	32
Total	**255**	**100**

SOURCE: (SPINDOLA-RODRIGUES, et al., 2020) *HAD-A - Anxiety; **HAD-D - Depression

Table 3: Correlation between religiosity, anxiety and depression among medical students at a college in Teresina-PI during the COVID-19 pandemic.

Variables	Correlation coefficient	p
DUREL*(OR) X HAD-A	0,38	0,550
DUREL*(NOR) X HAD-A	-0,027	0,664
DUREL*(IR) X HAD-A	-,209**	<0,01
DUREL*(OR) X HAD-D	-,065*	<0,01
DUREL*(NOR) X HAD-D	,026	0,674
DUREL*(IR) X HAD-D	0,046	0,466

SOURCE: (SPINDOLA-RODRIGUES,et al., 2020). DUREL*(OR)= Organizacional Religiosity; DUREL*(NOR)= Non Organizacional Religiosity; DUREL*(IR)= Intrinsic Religiosity.

Conclusion

It was concluded that regarding the characteristics of the sample, the majority of participants were female, aged 18 to 24 years, single in civil status, university students, with no comorbidities, and no continuous use of medication. The subjects showed a higher prevalence of anxiety and depression, with higher rates of anxiety than depression. About the course cycle, a higher prevalence of depression was observed in the internship compared to previous cycles. The religious behaviors of these medical students showed the prevalence of organizational religious beliefs. An inverse relationship between intrinsic religious beliefs and anxiety can be observed. There is also an inverse relationship between an organization's religious beliefs and depression during the COVID-19 pandemic. A limitation of our study is that we did not control the gender of the subjects. Even understanding the bigger prevalence of depression among women, it was possible to perform an association with religiosity despite gender differences. Another limitation is that this study is based on students from a single college. Since the study was performed in the COVID-19 pandemic there was a limitation on the evaluation of the organizational religiosity that was the quarantine in which the festivals and important festivities of the churches and temples where not in person, despite the fact that in the town the study took place there weren't many of those.

List of Abbreviations

NCH: National Council on Health

HADS: Hospital Anxiety and Depression Scale

DUREL: Duke University Religion Index (DUREL)

OR: Organizational Religiosity

NOR: Non-Organizational Religiosity

IR: Intrinsic Religiosity

Statements

Ethical Approval and Consent to Participate

This study was approved by the Ethics and Research Committee of the Centro Universitário Unifacid|IDOMED through Plataforma Brasil. Informed consent was obtained from all participants by signing an Informed Consent Form before providing the data. All methods were carried out by relevant guidelines and regulations.

Consent for Publication

This article contains no identifiable data, such as individual details, images, or videos.

Availability of Data and Materials

The data sets generated and/or analyzed during this study

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are not publicly available because such information was not part of the consent form that participants signed. If someone wants to request the data or please provide the data for this study should contact the corresponding author, Kelson James Almeida, by the phone number: +55(xx86) 98100-6337, and /or e-mail: kelsonj@gmail.com, and/or send a lether to the Department of Neurology, Universidade Federal do Piauí, Av. Nossa Senhora de Fátima, 64049-550, Teresina, Piauí, Brazil.

Competing Interests

The authors declare that they have no competing interests

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Authors' Contributions

RA analyzed and collected data obtained through questionnaires applied to medical students. MA worked on the development of the abstract, in the organization of references and final formatting of the article, IF did the data analysis and table organization. LM did the methodology and the article formatting. AA did the organization and research of references for the background. AV wrote and structured the conclusion. BT organized the results, tables, and graphs. KJ and EA supervised and oriented the other authors in the process of constructing this article. Together they all organized the results and the discussion. In the end, all read and approved the final manuscript.

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