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## Mental health burden among multiprofessional health residents: a cross-sectional study at a major academic center in Brazil

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This is a preliminary, unedited version of a manuscript that has been accepted for publication in the Brazilian Journal of Psychiatry. As a service to our readers, we are providing this early version of the manuscript. The manuscript will still undergo copyediting, typesetting, and review of the resulting proof before it is published in final form. The final version may present slight differences in relation to the present version.

# Mental health burden among multiprofessional health residents: a cross-sectional study at a major academic center in Brazil

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## Abstract

**Objective:** To assess the prevalence and severity of depressive and anxiety symptoms, as well as associated factors, among residents enrolled in multiprofessional residency programs at a major academic medical center in Brazil.

**Methods:** A cross-sectional, quantitative study was conducted with 106 residents from diverse health professions at the Faculdade de Medicina da Universidade de São Paulo (FMUSP). Participants completed validated instruments assessing depression (PHQ-9), anxiety (GAD-7), quality of life (WHOQOL-BREF), religiosity (DUREL), and sociodemographic characteristics.

**Results:** A high prevalence of psychological distress was observed, with 88.7% of participants presenting moderate to severe depressive symptoms and 46.9% reporting clinically significant anxiety. Lower quality of life scores, particularly in the psychological domain, were strongly correlated with symptom severity. No religiosity dimensions were associated with depressive and anxiety symptoms.

Prior psychiatric medication use, higher BMI, and self-identification as white were also associated with increased symptom burden.
**Conclusion:** The findings underscore the substantial mental health challenges faced by multiprofessional residents and highlight the need for institutional policies that promote psychological well-being, improve access to care, and address structural stressors in postgraduate training environments.
**Keywords:** Caregivers, Depression, Anxiety, Quality of life, Religiosity.

## Introduction

Mental health issues among healthcare trainees have become a growing concern in recent years, particularly among those undergoing rigorous postgraduate education such as residency programs. Medical and health-related training environments are often characterized by excessive workloads, emotionally taxing clinical responsibilities, and limited institutional support, which collectively contribute to increased vulnerability to psychiatric disorders (1, 2). A significant body of literature has established higher rates of depression, anxiety, burnout, and suicidal ideation among medical residents compared to the general population (3, 4, 5). However, while the mental health of medical residents has been extensively studied, there remains a notable paucity of data on residents in multiprofessional and non-medical health residency programs.

Multiprofessional residency programs in Brazil were officially established through federal legislation in 2005 as part of a strategy to strengthen the federal public healthcare system (SUS) by fostering interdisciplinary training among non-medical health professionals (6, 7, 8). These programs offer hands-on clinical experience integrated with theoretical instruction, requiring full-time dedication and often operating under resource-constrained conditions. Residents are expected to attend 60 hours a week of training, primarily in a practice setting under supervision (9). Despite their increasing importance in healthcare education, research on the mental health outcomes of participants in these programs remains limited. Preliminary studies have suggested high levels of emotional exhaustion, depersonalization, and reduced personal accomplishment among these professionals, raising concerns about the psychological toll of their training (10, 11, 12, 13).

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Recent challenges, such as the COVID-19 pandemic, have further exacerbated mental health stressors among healthcare workers. Residents in multiprofessional programs were often deployed to high-demand clinical settings without adequate preparation or protective measures. Studies conducted during the pandemic identified elevated rates of anxiety, depression, and burnout in this population, with additional risk factors including fear of infection, increased workload, and lack of psychological support (14, 15, 16). These findings underscore the necessity of evaluating the broader determinants of mental health in residency settings, including sociodemographic variables, substance use, religious coping, and quality of life.

Given this background, there is an urgent need for comprehensive, context-specific investigations into the mental health of residents in multiprofessional training programs. Our goal is to assess the prevalence and severity of depressive and anxiety symptoms, as well as associated factors, among residents enrolled in uni- and multiprofessional residency programs at a major academic medical center in Brazil. By elucidating these relationships, the authors hope to facilitate the development of institutional policies and mental health interventions tailored to the needs of this vulnerable and understudied population.

## Methods

### Study Design and Participants

This study employed a cross-sectional epidemiological design with a quantitative approach to assess mental health outcomes among residents enrolled in multiprofessional health residency programs at the Faculdade de Medicina of the Universidade de São Paulo (FMUSP). The authors collected the data between July and December 2022 using an online survey distributed via institutional email, messaging platforms, and in-person during academic activities.

All uni- and multiprofessional residents enrolled in FMUSP's residency programs during the data collection period were invited to participate and considered eligible to participate in the study. Exclusion criteria included not being enrolled in a residency program associated with the FMUSP teaching complex, residents who did not wish to participate in the survey, not having

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signed the informed consent and full completion of the survey instruments within the designated timeframe, or having declared a wish to withdraw previous consent..

Ethical aspects

Participation was voluntary, and there was no financial compensation. The Institutional Ethical Review Board approved this study according to report 4,764,779. All participants signed an informed consent form, and confidentiality was guaranteed.

Data Collection

Data were collected using the REDCap-HCFMUSP platform (17, 18), and all responses were anonymized following data protection protocols. Participants identified as having moderate to severe symptoms or high suicide risk were proactively referred to the university's psychological support service (GRAPAL) for psychiatric clinical evaluation. All data were anonymized before analysis.

Instruments

A structured sociodemographic questionnaire collected data on age, gender, race, income, academic background, living conditions, and history of psychological or psychiatric treatment. Participants completed a battery of validated instruments designed to measure depressive and anxiety symptoms, quality of life, religiosity, and sociodemographic characteristics.

Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9) (19), while anxiety symptoms were measured with the Generalized Anxiety Disorder-7 (GAD-7) (20) scale. The PHQ-9 consists of nine scored items, and a tenth item that is not included in the final score. Each item's score varies from 0 to 3, according to increasing symptom intensity. Total scores range from 0 to 27 points, and higher scores represent increased severity of depression. GAD-7 consists of seven scored items, each scored from 0 to 3, according to increasing symptom intensity. Total scores range from 0 to 21 points, and higher scores represent increased severity of anxiety symptoms. Both instruments' cut-off scores of more than nine indicated clinically relevant symptomatology.

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Quality of life was assessed with the World Health Organization Quality of Life Instrument – Brief Version (WHOQOL-BREF) (21), and religiosity was evaluated using the Duke University Religion Index (DUREL) (22), which captures organizational (RO), non-organizational (NRO), and intrinsic religious practices (IR). The WHOQOL-BREF is a 26-item instrument designed to assess individuals' perceptions of their quality of life across four core domains: physical health, psychological health, social relationships, and environment. Each item is rated on a 5-point Likert scale. Scores for each domain are scaled positively and can be transformed to a 0–100 scale for interpretability, with higher scores indicating better perceived quality of life. The DUREL is a 5-item measure assessing three dimensions of religiosity: RO evaluates attendance at religious services, NRO captures private religious practices such as prayer or meditation, and IR (3 items) reflects the internalization of religious beliefs in daily life. Each item is rated on a 6- (RO and NRO) or 5-point (IR) Likert scale, and lower scores represent greater levels of religiosity.

Statistical Analysis

Descriptive statistics were calculated to determine the prevalence and severity of depressive and anxiety symptoms in the sample. All data are presented as means and standard deviations (SD) for continuous variables and frequency and percentages (%) for ordinal or nominal variables. To examine associations between symptom severity and sociodemographic factors, quality of life domains, and religiosity indicators, the authors conducted bivariate analyses, Spearman correlation. Additionally, group comparisons were performed using Mann–Whitney U test, Spearman's correlation, and chi-square tests, as appropriate.

We used SPSS Statistics for Macintosh (23) for data analysis. The significance level was set at 0.05 for all analyses; all tests were two-tailed.

We performed post hoc size calculations using an online tool (MedCalc Software Ltd. Sample size for Single proportion. https://www.medcalc.org/en/calc/sample-size-single-proportion.php (Version 23.3.7; accessed October 8, 2025)) of 75, considering the prevalence of PHQ-9>9 in the sample and the whole population as the denominator, using both alpha and beta errors set as 0.05. The post hoc power calculation using an

BJP PRE-PROOF

online tool (https://www.medcalc.org/en/calc/post-hoc-power-analysis.php) presented a 100% power.

## Results

A total of 106 residents from multiprofessional health residency programs at FMUSP completed the survey and were included in the final analysis (Figure 1). The sample was predominantly female (86.8%) with a mean age of 26.2 years (SD=3.6) (Table 1). The most represented professional backgrounds were pharmacy (18.9%), nursing (17.9%), and physiotherapy (15.1%) (Table 2).

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Figure 1. Flowchart describing candidates and responses included in the study.

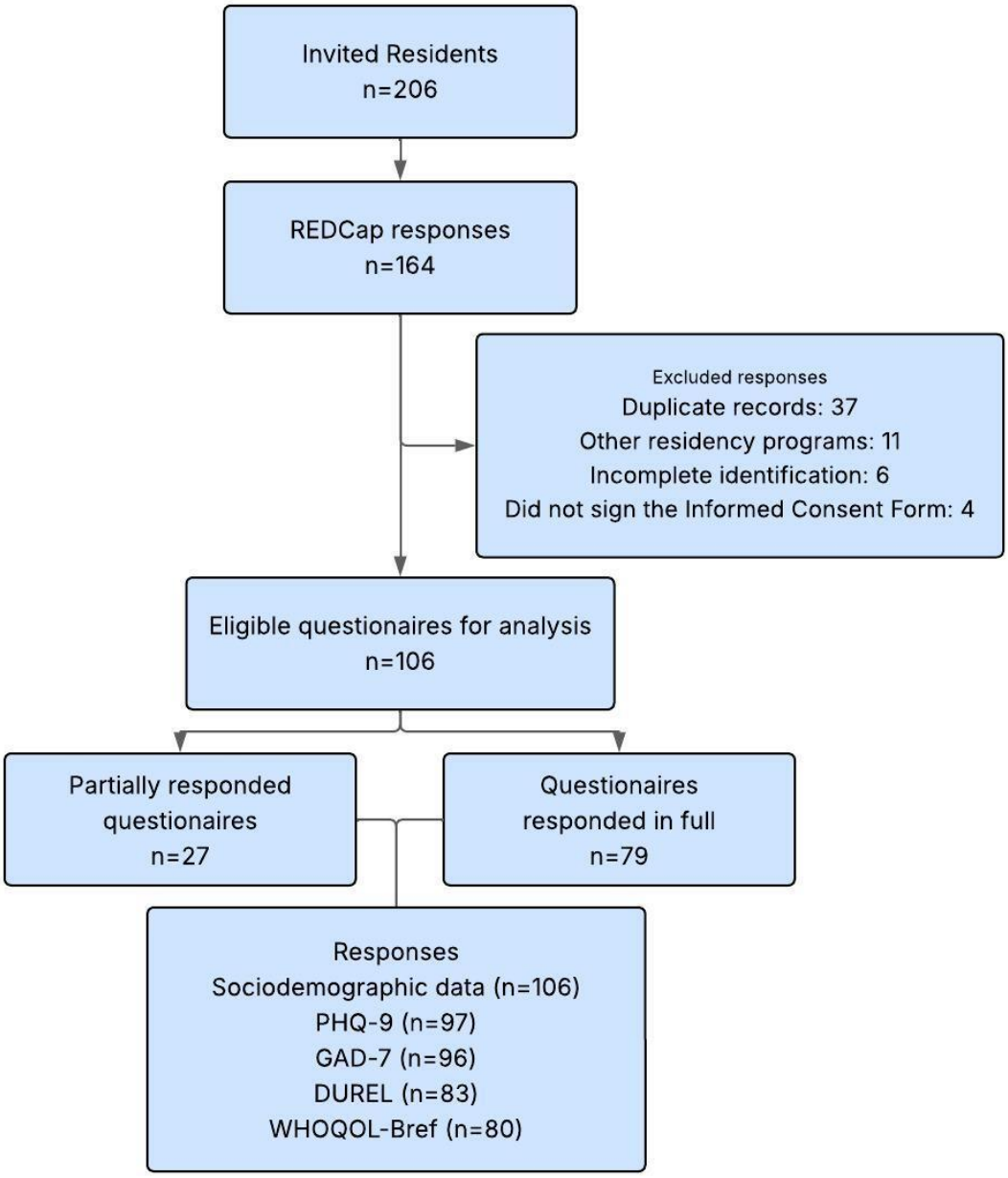


**Table 1: Sociodemographic characteristics of the sample**

| | | | |
|---|---|---|---|
| Sex (n, %) | | | |
| Female | 92 | 86.8 | |
| Male | 14 | 13.2 | |
| Age, years (mean, SD; median, interquintules ranges; Range) | 26.2 (3.63) | 21.1 - 45.4 | 25.4; 23.9, 24.9, 25.9, 27.7 |
| Gender Identity (n, %) | | | |
| Woman | 91 | 85.8 | |
| Man | 14 | 13.2 | |
| Other | 1 | 0.9 | |
| Marital Status (n, %) | | | |
| Single | 90 | 84.9 | |
| Married/Stable union | 16 | 15.1 | |
| Race (n, %) | | | |
| White | 83 | 78.3 | |
| Brown | 16 | 15.1 | |
| Black | 7 | 6.6 | |
| Sexual Orientation (n, %) | | | |
| Heterosexual | 67 | 63.2 | |
| Bisexual | 25 | 23.6 | |
| Homosexual | 11 | 10.4 | |
| Pansexual | 2 | 1.9 | |
| Asexual | 1 | 0.9 | |
| Religious Affiliation (n, %) | | | |
| Has religion and attends | 26 | 24.5 | |

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| | | | |
|---|---|---|---|
| Has religion, does not attend | 35 | 33.0 | |
| Had religion | 31 | 29.2 | |
| Agnostic | 10 | 9.4 | |
| Atheist | 4 | 3.8 | |
| Year of Graduation (mean, SD; median, interquintules ranges; median, interquintules ranges; Range) | 2019.5 (2.72) | 2003 - 2022 | 2020; 2019, 2020, 2021, 2021 |
| Year of Residency (n, %) | | | |
| First | 63 | 59.4 | |
| Second | 43 | 40.6 | |
| Commute Time, minutes (mean, SD; median, interquintules ranges; Range) | 50.9 (38.23) | 5 - 180 | 40.0; 15.0, 20.0, 56.0, 90.0 |
| Number of Co-residents (mean, SD; median, interquintules ranges; Range) | 2.4 (1.33) | 0-10 | 2; 1, 2, 2, 2.2, 3 |
| Per Capita Income, BRL (mean, SD; median, interquintules ranges; Range) | 4668.3 (3493.4) | 1000 - 25000 | 3654; 3000, 3600, 4000, 5300 |
| Weight, kg (mean, SD; median, interquintules ranges; Range) | 68.3 (17.43) | 45 - 150 | 64; 56, 59.8, 67.2, 80 |
| Height, cm (mean, SD; median, interquintules ranges; Range) | 164.2 (7.06) | 148 - 186 | 163; 159, 162, 165, 170 |
| BMI, kg/m² (mean, SD; median, interquintules ranges; Range) | 25.4 (6.79) | 15.9 - 62.4 | 23.3; 20.5, 22.5, 24.6, 29.7 |

n=number of respondents, %: overall frequency in the sample, SD=standard deviation, BRL=Brazilian Reais, kg=kilogram, cm=centimeter, $k/m^2$=kilograms per square meter.

BJP PRE-PROOF

**Table 2: Undergraduate training of respondents**

| | n | % |
|---|---|---|
| Total sample | 106 | 100 |
| Pharmacy | 20 | 18.87 |
| Nursing | 19 | 17.92 |
| Physiotherapy | 16 | 15.09 |
| Nutrition | 10 | 9.43 |
| Dentistry | 9 | 8.49 |
| Psychology | 8 | 7.55 |
| Speech Therapy | 6 | 5.66 |
| Occupational Therapy | 6 | 5.66 |
| Social Work | 4 | 3.77 |
| Biomedical Sciences | 2 | 1.89 |
| Medical Physics | 2 | 1.89 |
| Physics | 3 | 2.83 |
| Physical Education | 1 | 0.94 |

n=number of respondents, %: overall frequency in the sample

BJP PRE-PROOF

**Table 3: Mental health scores of participants**

| | | | | | |
|---|---|---|---|---|---|
| PHQ-9 (Depression) (range; mean score; SD; median, interquintules ranges) | 0-27 | 15.2 | 5.1 | 15.0 | 1, 11, 14, 16, 20, 27 |
| PHQ-9 >9 (n; %) | | 86 | 88.7 | | |
| GAD-7 (Anxiety) (range; mean score; SD; median, interquintules ranges) | 0-21 | 9.6 | 4.9 | 9.0 | 0, 5, 8, 11, 15, 18 |
| GAD-7 >9 (n; %) | | 45 | 46.9 | | |
| WHOQOL-BREF – Psychological Health (range; mean score; SD; median, interquintules ranges) | 0–100 | 57.8 | 11.7 | 58.3 | 23.3, 47.3, 53.3, 63.3, 66.7, 86.7 |
| WHOQOL-BREF – Physical Health (range; mean score; SD; median, interquintules ranges) | 0–100 | 63.0 | 11.0 | 62.9 | 34.3, 54.3, 62.9, 65.7, 71.4, 94.3 |
| WHOQOL-BREF – Social Relationships (range; mean score; SD; median, interquintules ranges) | 0–100 | 65.3 | 13.6 | 66.7 | 33.3, 53.3, 60.0, 66.7, 78.7, 93.3 |
| WHOQOL-BREF – Environment (range; mean score; SD; median, interquintules ranges) | 0–100 | 66.1 | 12.6 | 67.5 | 35.0, 55.0, 63.5, 70.0, 79.5, 95.0 |
| DUREL – Organizational Religiosity (range; mean score; SD; median, interquintules ranges) | 1–6 | 4.6 | 1.4 | 5.0 | 1.0, 3.0, 4.0, 5.4, 6.0, 6.0 |
| DUREL – Non-Organizational Religiosity (range; mean score; SD; median, interquintules ranges) | 1–6 | 4.6 | 1.6 | 5.0 | 1.0, 2.8, 5.0, 6.0, 6.0, 6.0 |
| DUREL – Intrinsic Religiosity (range; mean score; SD; median, | 1–5 | 2.9 | 1.3 | 3.0 | 1.0, 1.7, 2.3, 3.3, 4.3, 5.0 |

BJP PRE-PROOF

interquintules ranges)

n=number of respondents, %: overall frequency in the sample, SD=standard deviation, BRL=Brazilian Reais, kg=kilogram, cm=centimeter, $k/m^2$=kilograms per square meter, PHQ-9: Patient Health Questionnaire-9, GAD-7: Generalized Anxiety Disorder-7, WHOQOL-BREF= World Health Organization Quality of Life Instrument – Brief Version, DUREL= Duke University Religion Index.

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Regarding mental health outcomes, 88.7% of participants scored >9 on the PHQ-9, indicating moderate to severe depressive symptoms. That would account for a prevalence of at least 41.7% considering that all non-participants presented a score not suggestive of a depressive episode. Additionally, 46.9% scored >9 on the GAD-7, reflecting clinically significant anxiety, 21.8% considering the whole population, and a similar assumption that the non-participants were asymptomatic. These findings suggest a high prevalence of mental health distress in this population. The mean PHQ-9 score was 15.2 (SD=5.1), and the mean GAD-7 score was 9.6 (SD=4.9), corresponding to moderate symptom severity on average.

Bivariate analyses revealed significant associations between higher depressive and anxiety scores and several sociodemographic variables. As expected, the PHQ-9 and GAD-7 scores presented significant correlation ($r_s$=0.665, p<0.001). Depressive symptom intensity (PHQ-9) was positively correlated with reported use of psychiatric medication (p=0.019), and self-identification as a white person (p=0.013). Similarly, anxiety symptom intensity (GAD-7) was associated with self-identification as a white person (p=0.033), weight ($r_s$=0.257, p=0.011) and BMI ($r_s$=0.251, p<0.01).

Analysis of quality of life using the WHOQOL-BREF indicated moderate overall scores, with the lowest values reported in the psychological health domain (M=57.8, SD=11.7). Both depressive and anxiety symptoms showed strong negative correlations with psychological (PHQ-9: $r_s$=-0.558; GAD-7: r=-0.492), physical health (PHQ-9: r=-0.580; GAD-7: r=-0.467), social relationships (PHQ-9: $r_s$=-0.558; GAD-7: r=-0.429) and environment (PHQ-9: $r_s$=-0.487; GAD-7: r=-0.403) domains, all statistically significant at p<0.001.

All dimensions of religiosity (DUREL), organizational, non-organizational, and intrinsic religiosity did not demonstrate statistically significant associations with depressive (p=0.585, 0.574, and 0.733, respectively) or anxiety (p=0.668, 0.859, and 0.379, respectively) symptoms.

## Discussion

This study provides a comprehensive overview of the mental health status of residents enrolled in multiprofessional residency programs at a major Brazilian academic institution. The findings reveal alarmingly high rates of



BJP PRE-PROOF

depressive and anxiety symptoms, with 88.7% of participants experiencing moderate to severe depression and nearly half (46.9%) reporting clinically significant anxiety. These rates far exceed those observed in the general population. They are consistent with previous studies conducted among medical residents and healthcare trainees, suggesting a widespread and systemic mental health crisis within health education environments (5, 24). Another explanation is that due to the voluntary nature of our study, residents with lived experience may have participated proportionately more in the study, as the theme particularly speaks to them.

The elevated symptom burden identified in this sample may be attributed to the intense workload, high responsibility, and emotionally demanding nature of residency programs, particularly those in complex public healthcare settings. Limited support structures, long commutes, and evident socioeconomic challenges among participants compound these stressors. Significant associations between depressive and anxiety symptom severity and variables such as psychiatric medication use, body mass index, and prior psychiatric history underscore the role of pre-existing vulnerabilities and potential chronicity of distress.

Notably, the inverse relationship between quality of life, particularly in the psychological and physical domains, and mental health symptomatology suggests that poor well-being may both result from and contribute to the persistence of anxiety and depression. This bidirectional interaction reinforces the need for systemic interventions prioritizing resident well-being beyond isolated clinical support. Additionally, the lack of protective effect of religiosity against anxiety and depressive symptoms adds to the literature in the field, which presents conflicting evidence both linking personal meaning-making and spiritual coping with resilience in high-stress healthcare contexts (25) and that religiosity alone may not suffice as a buffer against mental health distress in this population or reduce the impact of mental disorders in this population (26).

This study presents limitations that must be acknowledged. First, the cross-sectional design precludes any inference of causality between psychological symptoms and associated variables such as quality of life, religiosity, or sociodemographic factors. The use of self-reported questionnaires, although validated, may be subject to response bias,

BJP PRE-PROOF

particularly regarding sensitive topics such as depression and anxiety symptoms. The sample was drawn from a single academic institution, potentially limiting the generalizability of findings to other residency programs or geographic regions. No national sample size calculation was performed due to the voluntary nature of the study. Not all residency programs were equally represented, and the voluntary nature of participation may have introduced selection bias, as individuals experiencing higher levels of distress may have been either more motivated to participate or, conversely, less able to do so.

Overall, these results underscore the urgency of implementing institutional policies aimed at monitoring psychological distress, reducing stigma, and facilitating timely access to mental health services. Moreover, efforts should be directed toward restructuring residency programs to include embedded mental health support, flexible learning models, and environments conducive to self-care. Further longitudinal research is warranted to explore causal pathways and evaluate the impact of targeted interventions.

The findings of this study make a significant contribution to the expanding body of literature concerning non-medical residents, a population frequently underrepresented in mental health research, and emphasize the importance of implementing equitable and comprehensive support strategies across all residency training programs.

## Conclusion

This study highlights a critical and underrecognized mental health burden among residents participating in multiprofessional residency programs in Brazil. The high prevalence of depressive and anxiety symptoms, coupled with significant associations with sociodemographic variables, prior psychiatric history, and diminished quality of life, signals an urgent need for systemic responses. The findings emphasize that the structure and demands of postgraduate training—when not accompanied by adequate support—can severely compromise the psychological well-being of health professionals in training.

This study provides actionable insights for academic institutions and health policymakers by identifying key correlates of psychological distress, such as poor physical and psychological quality of life and lower intrinsic religiosity.

BJP PRE-PROOF

These results advocate for developing and integrating institutional strategies aimed at prevention, early detection, and intervention for mental health conditions within residency programs.

Future research should expand on these findings through longitudinal designs and comparative analyses across institutions and disciplines. Nonetheless, the present results already offer a compelling call to action: promoting mental health in multiprofessional residency settings is not only a matter of individual care, but a structural imperative for sustaining a resilient and effective healthcare workforce.

## Disclosure

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On behalf of all the authors, the corresponding author states that there are no relevant financial or non-financial interests to disclose.

*Competing interests*

The authors declare that they have no competing interests.

*Ethics approval and consent to participate*

The Institutional Ethical Review Board approved this study according to report 4,764,779. All participants provided informed consent prior to participation.

*Authors' contributions*

DAMG: Conceptualization, data curation, formal analysis, investigation, visualization, writing – original draft.
FLN: Project administration, supervision, validation, writing – review & editing.
ECH: Project administration, supervision, validation, writing – review & editing.

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BJP PRE-PROOF

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