

Protective and risk factors for the mental health of medical students from their perspective

Fatores protetores e de risco à saúde mental de estudantes de Medicina na perspectiva deles

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ABSTRACT

Introduction: Many studies have shown the high prevalence of mental disorders among medical students. Several known factors contribute to putting students at risk and protecting them from mental disorders.

Objective: To analyse, from the student's perspective, the factors that influence their mental health, particularly factors associated with the structure of the medical course, and to collect suggestions for interventions that can contribute to reducing suffering and promoting students' mental health.

Methods: A cross-sectional, observational, qualitative, and analytical study was conducted at a private medical school in the interior of São Paulo state (Brazil) in 2019. Since 2006, the course has been structured in active methodologies, with a three-years clerkship program. Participants answered the online questionnaire formulated by the authors.

Results: A total of 263 students participated in the study (41.7% of the total), with a proportional distribution across the six years of the course. Average age 22.9 years (18 to 31 years). Most the participants (66.5%) were female, 25.5% (18.4 – 30.4%; 95% CI) reported having some mental disorder, diagnosed by psychiatrists in 85.5% of cases: anxiety disorders (11.4%); depressive disorders (11.0%); attention deficit hyperactivity disorder (1.9%) and others. The symptoms most mentioned by students were: lack of energy (45.3%); irritability (42.6%); distress (38.4%), and sadness (32.3%). The most mentioned protective factors for mental health were: friends and family relationships (24%); course structure (22.6%); teachers and staff (6.9%); physical activity (6.9%). The most mentioned aggressor factors were: complexity, course pressure and demands (23.7%); issues related to group work (20%); student assessment process (9.7%); oppressive hierarchy and hazing (8.1%), and professional insecurity (6.2%). They suggest interventions: discussions on the topic throughout the course in curricular (47.8%) and extracurricular activities (29.7%); group and individual therapeutic actions (21.7%); integrative practices (12.8%), and teacher training (6.1%).

Conclusions: Although universally observed factors favour the mental health of medical students and others harm it, each educational institution must identify its primary risk and protective factors, correcting weaknesses and strengthening protective attitudes towards students.

Keywords: Mental Health, Medical Students, Anxiety, Depression, Health Education.

RESUMO

Introdução: Muitos estudos têm evidenciado a alta prevalência de transtornos mentais entre os estudantes de medicina. Diversos fatores conhecidos contribuem para pôr em risco e para proteger os estudantes dos transtornos mentais.

Objetivo: Este estudo teve como objetivos analisar, do ponto de vista dos estudantes, os fatores que influenciam a saúde mental deles, em particular fatores associados à estrutura do curso de Medicina, e coletar sugestões para intervenções que possam contribuir para reduzir o sofrimento e promover a saúde mental dos alunos.

Método: Trata-se de um estudo transversal, observacional, qualitativo e analítico realizado em um curso particular de Medicina do interior do estado de São Paulo (Brasil), no ano de 2019. Desde 2006 o curso é estruturado em metodologias ativas, com três anos de internato. Os participantes responderam ao questionário online formulado pelos autores.

Resultado: Participaram do estudo 263 estudantes (41,7% do total), com distribuição proporcional entre os seis anos do curso. A idade média foi de 22,9 anos (de 18 a 31 anos). A maioria dos participantes (66,5%) era do gênero feminino, e 25,5% (18,4 – 30,4%; IC 95%) reportaram possuir algum transtorno mental, diagnosticado por psiquiatras em 85,5% dos casos: transtornos de ansiedade (11,4%); transtornos depressivos (11,0%); transtorno de déficit de atenção/hiperatividade (1,9%) e outros. Eis os sintomas mais mencionados pelos estudantes: desânimo (45,3%), irritabilidade (42,6%), angústia (38,4%) e tristeza (32,3%). Os fatores protetores da saúde mental mais lembrados foram: amigos e relações familiares (24%); estrutura do curso (22,6%); professores e funcionários (6,9%); prática de atividade física (6,9%). Eis os fatores agressores mais mencionados: complexidade, pressão do curso e cobrança (23,7%); questões relacionadas ao trabalho em grupos (20%); processo de avaliação do estudante (9,7%); hierarquia opressora e trote (8,1%); e insegurança profissional (6,2%). Estas foram as intervenções sugeridas: discussões sobre o tema ao longo de todo o curso em atividades curriculares (47,8%) e extracurriculares (29,7%); ações terapêuticas em grupo e individuais (21,7%); práticas integrativas (12,8%); e capacitação docente (6,1%).

Conclusão: Embora existam fatores universalmente observados que favorecem a saúde mental dos discentes de Medicina e outros que a prejudicam, cada instituição de ensino deve identificar seus principais fatores de risco e protetores, corrigindo as fragilidades e tornando mais robustas as atitudes protetoras aos estudantes.

Palavras-chave: Saúde Mental; Estudantes de Medicina; Ansiedade; Depressão; Educação em Saúde.

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INTRODUCTION

The mental health of university students has been the focus of many studies showing a high prevalence of mental disorders¹⁻⁴. According to the World Health Organisation (WHO), 20% of university students have some form of psychiatric diagnosis and only 16% of them have received treatment⁵. In different areas of professional training, university life can be a stress factor, especially in medical courses, where there are high rates of mental health impairment^{6,7}. When compared to university students from different areas, medical students are more likely to attempt suicide⁸.

A number of factors contribute to compromised mental health among medical students: the demands of commitment, responsibility and performance in academic tasks, long hours of study and, frequently, sleep deprivation^{7,9-11}. Emotional exhaustion can affect up to half of medical students at some point and is characterised by a state of emotional numbness and lack of personal fulfilment¹².

Mental health care includes preventing illness, early treatment and encouraging healthy lifestyle habits¹³. There is no consensus in the literature about which strategies are appropriate and effective in caring for students' mental health¹⁴. The choice of actions depends on the knowledge about the mental health of students at each educational institution and its pedagogical project¹⁵.

Considering that the medical course exposes students to curricular activities every day, full time, for six years, and that they are also usually involved in many extracurricular activities within the context of the course itself, the aim of this work was to analyse, from the students' point of view, the factors that influence their mental health, in particular the structure of the medical course, and to collect suggestions for the construction of interventions that can contribute to reducing suffering and promoting student mental health.

MATERIALS AND METHODS

This is a cross-sectional, observational, qualitative and analytical study carried out at a private medical school in the interior of the state of São Paulo. The study was conducted during the second half of 2019 at the Faculty of Medical and Health Sciences of the Pontifical Catholic University of São Paulo (FCMS of PUC-SP), located in the city of Sorocaba.

The structure of the medical course where the study was conducted

The medical course at the FCMS of PUC-SP was restructured in 2006 guided by the 2001 National Curriculum Guidelines for Undergraduate Medical Courses (DCN) and updated in 2018 according to the 2014 DCN^{16,17}. It uses active

teaching-learning methodologies such as problem-based education (PBL), problematization and other education in practice strategies¹⁸. Students also have a mentoring module from the first to the third year, with space for dialogic learning and regular insertions of anthropological and theological themes and work on social and environmental issues in the community^{19,20}. Another difference compared to most medical courses is the three-year clerkship, from the fourth to the sixth year¹⁸.

Questionnaires applied

The participating students were sent a semi-structured, self-administered questionnaire, designed by the authors, and answered electronically using the Google Forms[®] platform. The questionnaire was reviewed by three independent judges (experienced doctors) who made suggestions, which were accepted after review of the changes made. The questionnaire was answered on a preliminary (pilot) basis by 12 (twelve) pre-selected students (two from each year group) to identify possible difficulties in interpreting and answering it. Although few, the suggestions were accepted and the questionnaire adjusted. The data from these students was not included in the set for analysis. The pre-defined questions in the questionnaire were organised into three parts. Firstly, personal and social data was collected (age, gender, year of the course, whether the student had a scholarship or study funding, living conditions and city of origin). The second part of the questionnaire sought to identify whether the students used (or had ever used) psychotropic medication and asked about the determinants of the use of these drugs, data that has already been published²¹. The full questionnaire used in the study can be accessed via the following link: <https://docs.google.com/forms/d/1tkXbzSL3op2auM-7zLbR96floFSwY2fMnDv2NGWTiOY/edit>. The third part of the questionnaire, the content of which shall be analysed in this article, was made up of a structured question (which of the following symptoms have you presented in the last 2 weeks? Followed by a list of symptoms) and 3 (three) open-ended questions, which sought to identify, in the view of the students themselves, the factors that favour and those that harm students' mental health and suggestions of and contributions to activities that could promote mental health. The questions were: 1. Thinking about everything with which you are involved in the medical course, name one factor that has contributed positively to your mental health; 2. Thinking about everything with which you are involved in the medical course, name one factor that has contributed negatively to your mental health; 3. If you are in favour of the inclusion of discussion and/or guidance on student mental health in the PUC-SP medical course, how do you think this could be done within

the timetable of your curricular activities? Make a suggestion. In this part, the answers were open-ended, and the data was tabulated, analysed and categorised using Bardin's method of content analysis²². To ensure confidentiality, the answers were collected anonymously from the Excel® spreadsheet generated by Google Forms® and transcribed into a Word® file for analysis. Three researchers took part in the process. The data was systematised according to the trigger questions. Initially, a pre-analysis was conducted based on repeated floating reading of the material until the content was impregnated. The next step was to explore the discourses, separating them according to content, based on units of meaning (categories). The categorisation of the content that emerged from this analysis is presented as subtitles in italics in the "results" section. Answers that did not deal with the subject of the question were excluded from the analysis and some answers were considered for two or more categories due to their scope, with each question being computed as a different variable in the statistical analysis.

Statistical analysis considerations

The minimum sample size was estimated considering a sampling error tolerance of 5%, with a confidence level of 95% and a high degree of population heterogeneity (50%). According to these criteria, considering the total of 630 students enrolled in the medical course in the second semester of 2019, it was estimated that the representative sample should have at least 244 participants. The chi-squared test (χ^2) was used to identify whether there was an association between pairs of categorical variables. Fisher's exact test was used to analyse associations between pairs of categorical variables when the sample size was small. The Mann-Whitney U-test was used to compare pairs of groups of values without assuming that they had a normal distribution, using the Cliff's delta (dCliff) as the measure of effect size. The numerical results of the questionnaires will be presented as frequencies (%) and their respective 95% confidence intervals (95% CI). The level of statistical significance considered was $p < 0.05$.

The research project and the informed consent form (ICF) were approved by the institutional research ethics committee (CAAE: 11130019.80000.5373).

RESULTS

Characteristics of the sample of participating students

The sample consisted of 263 participants (41.7% of the total number of students on the course), 52 of whom were first-year students, 44 second-year students, 44 third-year students, 40 fourth-year students, 41 fifth-year students and 42 sixth-year students. There was no difference in the number of respondents between the six years of the course ($p=0.833$).

The average age of the students was 22.9 ± 2.7 years (mean \pm SD), ranging from 18 to 31 years. The majority of students (66.5%) self-declared as female, with a higher proportion of women ($p<0.001$), which is the usual profile of the course. Among the participants, 25.5% (18.4 – 30.4%; 95% CI) reported having a mental disorder, diagnosed by psychiatrists in 85.5% of cases²¹. Of these, 11.4% reported anxiety disorders; 11.0% depressive disorders; 1.9% ADHD (attention deficit hyperactivity disorder), 0.8% OCD (obsessive-compulsive disorder) and 0.4% personality disorders²¹.

Table 1 shows the symptoms related to mental health impairment reported by the participants, who were able to select more than one option from the symptoms listed in the questionnaire and, moreover, identified others.

As can be seen, a large number of students reported lack of energy, irritability, distress, sadness, a desire to be alone and insomnia, as well as their symptoms that were not listed previously. Not all the participants answered all the open-ended questions. The answers were categorised according to their main content and some, due to their scope and complexity, were considered in more than one category²². The different categories of answers that emerged from the open questionnaire are analysed below.

Students' considerations on factors with a positive influence on mental health, related to the course

When asked to name a factor that contributes positively to their mental health in medical school, 172 of the 263 participants (64.2%) answered the following question: "Thinking about everything with which you are involved in the medical course, name one factor that has contributed positively to your mental health."

Table 1. Prevalence of symptoms among participants.

Symptom	Frequency % (95% CI) ^a
Lack of energy	45.3 (39.3 - 51.7)
Irritability	42.6 (36.6 - 48.5)
Distress	38.4 (33.0 - 45.1)
Sadness	32.3 (27.1 - 38.2)
Desire to be alone	23.6 (18.5 - 28.9)
Insomnia	22.4 (17.3 - 27.7)
Euphoria	8.0 (4.9 - 11.4)
Excess Energy	4.2 (1.9 - 6.5)
Feeling persecuted or watched	3.4 (1.5 - 5.7)
Others	25.1 (19.7 - 30.4)

Source: Developed by authors. ^a95% CI = 95% confidence interval.

Friends and family relationships

The most frequent responses among participants (24.0%) with a positive impact on mental health were relationships with friends and family. Students who reported distress (χ^2 ; $p=0.019$) and a desire to be alone (χ^2 ; $p=0.032$) were more likely to mention relationships with friends and family as a protective factor.

Feeling welcomed by my friends in times of distress.

Going home at weekends and seeing my family.

Factors associated with the course structure itself

The very methodological structure of the course, the recognition of progressive personal development and knowledge in an area that they enjoy working in, was mentioned by 22.6% of the participants as important positive factors for mental health.

Doing a course that enables me to help other people.

The clerkship made me a little more confident about approaching patients.

The PBL method is co-operative, which reduces tension and anxiety.

Frequent contact with people from the beginning of the course.

Knowing that I'm doing what I love.

Students who reported feeling the symptom of lack of energy were more likely to mention the structure of the course as having a positive impact on their mental health (χ^2 ; $p=0.006$).

Teachers and staff

Good relationships with teachers and staff who have characteristics that facilitate interpersonal relationships were identified as a positive factor for mental health by 6.9% of students. Mentioning these characteristics was statistically associated with participants who reported among the symptoms the desire to be alone (χ^2 ; $p=0.029$), having excess energy (χ^2 ; $p=0.006$) and feeling persecuted or watched ($p=0.04$).

Friendships, some good teachers, interesting discussions on topics that sometimes trouble us.

Feeling welcomed and close to the faculty and staff.

Physical activity and sports

Practising physical activities or sports was mentioned as a positive factor for mental health by 6.9% of the students. The answers about sport were almost always associated with another positive factor.

Having time for physical activity.

Taking part in sports at university.

Relations with patients

Contact with patients was identified as a positive factor for mental health by 5% of the participants. Mention of this protective factor was associated with students who also reported the symptom of wanting to be alone (χ^2 ; $p=0.046$).

The bond with the patient.

Working in hospitals and having contact with patients makes a positive contribution.

Possibility of direct contact with the patient, making the student feel more proactive.

Gratification in helping others.

Personal development of various skills and the opportunity to help other people even before graduating.

Timetable

The timetable was identified as a positive factor by 4.6% of the participants, who valued respect for the time allocated to studies and their own personal activities.

Timetables that start at 8.00 a.m., a reasonable lunch time (1.5 hours because it gives you time to prepare your own food).

Free time to study using the PBL method.

Free time to do extracurricular activities that I enjoy.

Access to mental health activities (outside and inside the academic environment)

Access to activities related to mental health was pointed out as a positive factor by 4.2% of the participants. Mention of this protective factor was associated with students who also reported having a psychiatric diagnosis (χ^2 ; $p=0.032$).

Classes about mental health.

Knowing that students' mental health is debated, not ignored.

League classes with wellness practices.

Studying aspects of the mind and better understanding how this happens.

Doing mindfulness at university.

Extracurricular activities

Extracurricular activities were mentioned as a positive factor for mental health by 4.2% of the participants. The mention of symptoms such as feeling persecuted (χ^2 ;

$p=0.003$), euphoria (χ^2 ; $p=0.012$) and irritability (χ^2 ; $p=0.036$) were positively associated with the mention of extracurricular activities as protective.

Extracurricular activities to shift my focus.

Specific activities promoted by institutions such as the Academic Centre and IFMSA [International Federation of Medical Students' Association] Brazil.

Social projects.

Diversity

The diversity of activities and different people was identified as a positive factor for mental health by 1.9% of the participants.

Living in diverse groups.

Less prejudice.

Activities with different professionals and clerkship rotations, with the possibility of getting to know new teaching methods, teachers' personalities and pathologies.

Factors with a negative influence on students' mental health, related to the course.

When asked to name a factor that contributes negatively to their mental health, 184 of the 263 participants (68.7%) answered the following question: "Thinking about everything with which you are involved in the medical course, name one factor that has contributed negatively to your mental health." It was common for there to be more than one answer.

The complexity, pressure and demands of the course

The pressure of the course, represented by the complexity, volume of information, exam pressure, demands put on oneself, extensive workload, early professional responsibility, continuous exposure to human suffering, among others, were pointed out by 23.7% of the participants as factors that negatively influence students' mental health. This response was associated with those who reported feeling lack of energy (χ^2 ; $p=0.013$).

Pressure to know, heavy workload, never feeling light.

The volume of subjects and the demands of responsibility that the profession requires make me feel more overwhelmed.

Family pressure, self-comparison with others, personal pressure to achieve good results.

The [subliminal] pressure: if you don't know this, you'll end up killing someone.

Having to live close to the suffering of patients, witnessing situations of extreme poverty and abandonment is very difficult for me.

Issues related to working in groups

The need to socialise with colleagues due to work groups was mentioned as having a negative impact on mental health by 20.0% of the participants, and was statistically associated with students who reported feeling sad (χ^2 ; $p=0.001$) and with lack of energy ($p=0.018$).

Always working in a group, even on bad days.

Lack of commitment from some colleagues [in the group].

Interpersonal relationships with certain colleagues can sometimes be extremely draining.

The student assessment process

The student assessment process in the first years of the course and in clerkships was mentioned as having a negative impact on students' mental health by 9.7% of the participants who answered this question. This response was associated with students making less progress in the course in the first few years (χ^2 ; $p=0.031$).

Lack of clarity about what should be covered in the assessments.

Making portfolios, because I already make my summaries to assimilate the content, but in my own way. It overloads me and stresses me out.

I have a lot of anxiety in the run-up to exams; exams are always anxiety triggers for me.

Oppressive hierarchy and hazing

The oppressive hierarchy, represented by certain attitudes of teachers and older students themselves towards younger students, was mentioned by 8.1% of participants as a factor having a negative impact on mental health. This type of report showed a statistically significant association with the symptom of sadness (χ^2 ; $p<0.001$), with having a psychiatric diagnosis (χ^2 ; $p=0.003$) and with specific diagnoses such as depressive disorders (χ^2 ; $p=0.006$) and anxiety disorders (χ^2 ; $p=0.001$). The students who mentioned this oppressive hierarchy were those with the greatest progression within the course (χ^2 ; $p=0.008$).

Sadistic teachers.

Chauvinism in all its forms.

Teachers who demand too much and like to humiliate students to make themselves feel better, rude and arrogant teachers.

Pressure from teachers and students themselves not to show sadness/tiredness, as this is seen as a sign of weakness.

The way teachers treat students, they don't realise when you're not well and even when you ask for help, they don't respect your condition.

Hazing, hierarchisation, both by some students and some teachers.

Professional insecurity

Professional insecurity was mentioned as a factor with a negative impact on mental health by 6.2% of participants, expressed as:

[...] thoughts about training, anxiety and fear of being unprepared.

There's a lot of pressure from the course we've chosen and that makes me feel insecure about whether I'll be able to be a good professional in the future. Sometimes the load is so heavy that the tiredness stops being emotional and becomes physical, leaving you feeling like you can't bear it!

Feeling that I'll never know EVERYTHING and that I might take the wrong action with my patient.

Disorganisation of the school

Lack of organisation of the school was mentioned as a negative impact on mental health by 3.9% of the participants, and was more frequent among those who reported feeling excess energy (χ^2 ; $p=0.012$). A few comments:

Lack of organisation at the school.

[...] socio-economic inequality, disorganisation of the course, lack of academic psychosocial support.

Social and financial issues

Social and/or financial difficulties were reported as having a negative impact on mental health by 3.1% of participants. This factor was associated with students reporting symptoms of sadness (χ^2 ; $p=0.001$) and euphoria (χ^2 ; $p=0.002$). In addition, students who mentioned this stressor were significantly more likely to sleep for fewer hours (χ^2 ; $p=0.049$). The participants expressed these issues as:

Lack of money.

The financial situation due to tuition fees [student without scholarship or funding].

Being a low-income [PROUNI, a Federal Program University for All scholarship] student.

Not being recognised and often not even greeted by my fellow students [PROUNI student].

Little discussion of mental health

Failure to include the topic of mental health in the daily course program was identified as having a negative impact on mental health by 3.1% of the participants. This response was associated with those who reported feeling excess energy (χ^2 ; $p=0.003$).

[...] the lack of discussion about mental health in the medical environment contributes negatively to the mental health of students.

There is a lack of understanding on the part of some teachers and residents that mental illness is a serious matter.

Other aspects of mental health not covered above

When asked to add any aspect of their mental health not covered in the questionnaire, 96% responded. The categories of responses, together with the frequencies of mention, are listed below, except for those discussed above, which will not be repeated here.

Impact of psychotherapy

Psychotherapy was identified as a protective factor by 3.4% of participants and was associated with students who progressed further in the medical course (χ^2 ; $p=0.003$) and those who reported more hours of sleep (χ^2 ; $p=0.046$).

Suicidal thoughts

Having suicidal thoughts was reported by 1.9% of participants and was associated with students who reported having a psychiatric diagnosis (χ^2 ; $p=0.045$), depressive disorders (χ^2 ; $p=0.01$), sadness (χ^2 ; $p=0.039$); distress (χ^2 ; $p=0.008$), insomnia (χ^2 ; $p=0.01$) and lower scores on the sleep scale (χ^2 ; $p=0.02$). Some of the participants' expressions are indicative of suicide risk:

Frequent suicidal thoughts at times of high academic stress.

I feel a lot of pressure when it comes to my studies and my performance at university, which leaves me feeling stressed and often feeling that I won't be able to cope with everything.

Positive impacts of medication

Among the participants, 1.9% reported the positive impact of psychotropic drugs on their mental health once they had received medication and guidance. No significant correlations were found with the other characteristics assessed in the study.

Participants' suggestions for discussion and/or guidance on medical student mental health in medical course activities at PUC-SP

Of the 263 participants, 138 (52.5%) answered the question: "If you are in favour of the inclusion of discussion and/or guidance on student mental health in the PUC-SP medical course, how do you think this could be done within the timetable of your curricular activities? Make a suggestion." Of the proposals made by the students, 47.8% suggested that the topic of mental health should be included from the start of the course among the contents of the vertical and horizontal modules, either by addressing the student's own mental health or by including the topic within the syllabus, which, according to the students, is not the case.

This approach would be extremely important right from the first year, through tutoring or skills teachers and in mentorships, which are closer to the students.

Increase discussion on specific topics such as communicating bad news; dealing with death; depression and anxiety in students. Open up a space for students to talk more about the subject.

Cover this in the Health Care Practice [module]. Because they are broad subjects with different approaches, totally involved with basic health and primary care, [activity] present from the first to the sixth year.

Of the participants, 29.7% suggested that the topic should be addressed through extracurricular activities such as leagues, workshops and experience sharing. On the other hand, 21.7% of the participants suggested therapeutic actions, such as group therapies or psychological counselling, as a way of providing mental health guidance to medical students. These suggestions were given more frequently by older participants (χ^2 ; $p=0.025$), by those who reported to have lack of energy (χ^2 ; $p=0.007$) and by participants who reported feeling persecuted (χ^2 ; $p=0.036$).

Lectures showing that students don't have to know everything, that they don't have to put so much pressure on themselves, that university is the time to learn.

Open up a space for students to talk more about the subject, perhaps even conversation circles or collective therapies to address these issues.

Offer psychotherapy and/or psychoanalysis activities on campus at affordable prices for the community.

Suggestions for integrative practices such as yoga, mindfulness or socialising activities were made by 12.8% of the participants who answered this question, with suggestions for possible times for these activities.

Promotion of activities such as yoga and meditation.

It could be done on an optional basis during distance learning hours [self-directed studies] or in the evening.

Meanwhile, 6.1% suggested actions related to the attitudes of some teachers, blaming them for compromising students' mental health.

The focus should be on teachers, because some of them contribute negatively to our mental health.

Training for teachers, because they destroy our mental health more and more every day with comments like "how can you not know that? PBL doesn't really work".

Rude and arrogant teachers.

DISCUSSION

The participants in the study comprised a representative sample of students on the medical course being analysed, with the additional care of including at least 40 students from each year of the course, i.e. 1/6 of the minimum number required. The sample had a higher number of women, which follows the usual profile of the course being analysed. However, this proportion is higher than that of female doctors aged up to 29 in Brazil, which may contribute to a higher prevalence of some mental disorders, as women are more likely to develop anxiety and depression, which are the most common²³⁻²⁵. Analysing data from this same population on the consumption of psychotropic drugs and the reasons for their use revealed that women are more likely to be diagnosed by doctors with depression and anxiety and it was also observed that, in general, students in the first two and last two years of the course are the most affected²¹. This data needs to be considered in the construction of care, paying attention to the fragilities of being a woman and a medical student at the same time.

Women suffer from gender inequality and an overload of social demands imposed by a society recognised for its structural chauvinism²⁵. Considering that this is a population exposed to greater risk, a care proposal should pay attention to assessing the exposure of female students to individual and gender-specific stressors during longitudinal follow-up²⁶.

Medical education institutions should promote discussion, debate and teaching about mental health, taking into account gender discrepancies and other factors that determine more vulnerable groups, coordinating conversation circles, workshops, tutoring and mentoring to promote teaching and care about student mental health²⁷. The creation or expansion of these spaces can promote reflection on various social conditions that influence the population's mental health, such as gender relations, forms of work, structural chauvinism

and the changes needed in listening and welcoming to adequately develop care strategies^{26,27}.

There is evidence that teaching medical students about self-care, resilience and well-being during their training has benefits for the mental health of future doctors²⁸. One suggestion is resilience training, or the practice of stress reduction based on mindfulness, a type of meditation therapy that shows similar results to the use of psychotropic drugs for mild cases of anxiety and depression^{29,30}.

The high prevalence of symptoms such as lack of energy, irritability, distress and sadness in the study may be related to the low perception of happiness. Leisure activities and valuing free time can increase the feeling of happiness and should be adopted and encouraged by educational institutions. Maintaining a good quality of life increases the feeling of well-being and is related to the perception of happiness. These practices can be carried out during the medical course in the free areas that some curricular matrices provide, allowing students more time to devote to other activities not directly related to their training³¹.

Long days of classes are not capable of providing greater learning; instead, they lead to exhaustion, worsening the fixation of knowledge. Educational institutions that devote fewer hours to formal classroom instruction report better student performance³². According to the DCNs, undergraduate medical courses must have a minimum workload of 7,200 hours and a minimum of six years to complete¹⁷. In various public and private educational institutions in Brazil, there is an excessive workload in medical courses.

Harvard Medical School emphasises on its website that its students are mature adult learners who need the freedom to pursue their personal interests, encouraging them to maintain self-care and other wellness goals unrelated to their university course load³³. There is a positive association between valuing free time for leisure activities and better mental health conditions, while excessive working hours are related to emotional exhaustion and burnout^{34,35}. Training in time management and the development of study skills can help students find a balance between their personal lives and their studies³⁶. Most medical students live apart from their families and recognise family relationships as a protective factor for mental health. When appropriate, educational institutions could move activity-free periods to the first or last day of the week, to favour students "going home" at weekends.

Medical students can also be encouraged to increase their self-compassion, as they are a group of students who put a high level of demand on themselves, taking a course that demands a lot from them. Encouraging them to expand their leisure activities and become aware of their academic goals

can contribute positively to reducing feelings of exhaustion, increasing feelings of satisfaction and reducing emotional exhaustion³⁷. It is up to educational institutions to value the balance between the workload of activities and green areas (free periods), encouraging and extending this philosophy to the entire academic community.

Active teaching methods can also help to reduce stigma, broaden knowledge and improve coping attitudes³⁸⁻⁴¹. In this study, some participants mentioned the PBL teaching method as having characteristics that favour mental health because it allows relationships and help between peers, while others related it as a negative factor, precisely because it "forces" them to socialise at times when they do not feel so disposed. Students at the Rowan-Virtua School of Osteopathic Medicine (New Jersey, USA) can opt for the PBL or traditional method, and those who study the PBL method report a lower risk of emotional exhaustion³⁸. A well-known experience at the Saint Louis University School of Medicine has promoted curricular changes, such as simplifying student assessment results to "pass/fail" (less competition), reducing detail and replacing specific content with longer electives (every six months), instituting mentoring and creating time for learning communities (teachers, students and residents) who share interests in certain areas of knowledge, research and community outreach activities³⁹. Participation in these activities was associated with lower levels of depression symptoms, anxiety and stress symptoms and higher levels of community cohesion³⁹. Role-playing activities improve understanding of mental health, providing skills development, resilience and relief from negative emotions^{40,41}. Workshops can broaden the discussion on the topic and encourage active participation. Activities developed between students and by students can build resilience against suicidal thoughts⁴². And among the topics to be addressed should be the abuse of alcohol and other psychoactive substances, anxiety, depression and suicide prevention⁴²⁻⁴⁴.

The data in this study provokes discussion on a topic of fundamental importance for medical education: teachers acting as ambivalent agents in students' lives, offering both protection and risks. Whereas, on the one hand, they are references and defenders of mental health, creating a supportive and safe environment, on the other, some attitudes and teaching methods that in the past were valued for being demanding and consistent, although they can bring challenges that stimulate students' growth and resilience, represent mental health risk factors in the opinion of many of the study participants. Continuing education and systematic training of teachers should be a strategy to be adopted, using methods such as dramatization and simulation, seeking to sensitise

them to acting as protectors and being able to identify early and prevent student mental suffering^{45,46}.

In addition to prevention strategies, educational institutions must guarantee early and specialised care for students suffering from mental illness through psychological and psychiatric services, which are already found in large educational institutions and have shown success in preventing serious cases such as suicide⁴⁷.

It is interesting to add that a recent study with a significant number of participants found that Brazilian medical students had significantly higher scores for depression, anxiety and stress compared to resident and practising doctors⁴⁸.

This study has obvious limitations, since it was conducted at a private school in the interior of the state of São Paulo, with approximately 80% of the students coming from other cities, but it brings contributions to an important aspect, the view of the student themselves, with little information in the literature on medical education.

In conclusion, the main contribution of this study was to identify, from the students' perspective, the main protective and risk factors for the mental health of medical students at a private teaching institution in the interior of the state of São Paulo and, based on this observation, to propose actions to the institution that can mitigate this vulnerability of students. Although there are universally observed factors that favour the mental health of medical students and others that harm it, it is up to each educational institution to draw up a mental health profile for its students, correcting weaknesses and reinforcing protective attitudes towards this particularly vulnerable group of young people, it is also important to emphasise that actions should be multidirectional, depending on the characteristics of each institution.

CONTRIBUTION OF THE AUTHORS

Clarissa Garcia Custódio, Júlia Santos do Cabo contributed to the design of the project, data collection, data analysis and revision of the text. Nicoli Abrão Fasanella, Maria Valéria Pava and Fernando Antonio de Almeida contributed to the design of the project, data collection, data analysis, writing and revision of the text.

CONFLICT OF INTEREST

We declare no conflict of interest.

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DECLARATION OF DATA AVAILABILITY

Research data is not available

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