Quality of life and mental health of medical students in the Covid-19 pandemic

Qualidade de vida e saúde mental de estudantes de Medicina na pandemia da Covid-19

Fabiano Cassaño Arar[1] ID | fabianoarar@hotmail.com
Thayná de Freitas Chaves[1] ID | thaynaachavess@gmail.com
Maria Aparecida Turci[1] ID | mariaturci@gmail.com
Eliane Perlatto Moura[1] ID | elianeperlatto@gmail.com

ABSTRACT

Introduction: The social isolation adopted in Brazil during the COVID-19 pandemic resulted in the use of remote classes as emergency changes in the teaching methods. In addition to the stressors inherent to the restriction of mobility and interpersonal contact, academic uncertainties generated by changes in the academic schedule, associated with a delay in clinical practice, may have represented risk factors for the development of mental disorders and worsening of the quality of life of students.

Objectives: To assess the quality of life and mental health of medical students at a medical school during social isolation in the COVID-19 pandemic.

Methodology: This is a quantitative, cross-sectional and analytical study, which was conducted through a self-answered questionnaire that evaluated sociodemographic data, quality of life (WHOQOL-bref) and mental health (Goldberg's GHQ-12) of medical students from UNIFENAS-BH from June to October 2020. A total of 565 students from all semesters of the course participated in the study. Descriptive and stratified analysis and Pearson's correlation were performed using the Stata statistical package, version 11.1.

Results: The students perceived their quality of life as good (64.3 ± 0.43), and the mean score was lower in the physical domain (52.22 ± 0.48) and higher in the social relations domain (68 .89 ± 0.79). The prevalence of common mental disorders was high (66.9%) and the worse the mental health, the worse the students' quality of life (r -6126 – p=0.000). The factors that negatively impacted quality of life and mental health were: lower income, attending the basic cycle, being female and using self-reported medication. The support received from friends, relatives and classmates had a positive impact on quality of life. The perception of quality of life and mental health was better among students who answered in August/September/October when compared to those who answered in June/July.

Conclusions: The assessed medical students showed a good perception of their quality of life, and a high prevalence of common mental disorders. The results show the need for qualitative studies to obtain further information about the impact of the pandemic on the students' mental health.

Keywords: Mental health; Social isolation; Quality of life; Covid-19; Medical education.

RESUMO

Introdução: *O isolamento social adotado no Brasil durante a pandemia da Covid-19 ocasionou mudanças emergenciais nas formas de ensino, como a utilização de aulas remotas. Além dos fatores estressores inerentes à restrição da mobilidade e do contato interpessoal, as incertezas acadêmicas geradas pelas alterações no cronograma acadêmico, associado a um atraso na prática clínica, podem ter representado fatores de risco para o desenvolvimento de transtornos mentais e para a piora da qualidade de vida dos estudantes.*

Objetivo: *Este estudo teve como objetivo avaliar a qualidade de vida e a saúde mental dos estudantes de Medicina de uma escola médica durante o isolamento social na pandemia da Covid-19.*

Metodologia: *Trata-se de um estudo quantitativo, transversal e analítico, que foi conduzido por meio de questionário autorrespondido que avaliou dados sociodemográficos, a qualidade de vida (WHOQOL-Bref) e a saúde mental (QSG-12 de Goldberg) de estudantes de Medicina da Unifenas no período de junho a outubro de 2020. Participaram do estudo 565 estudantes, de todos os períodos do curso. Realizaram-se análises descritiva e estratificada, e correlação de Pearson utilizando o pacote estatístico Stata versão 11.1.*

Resultado: *Os estudantes perceberam a própria qualidade de vida como boa (64,3 ± 0,43), e a média de escore foi menor no domínio físico (52,22 ± 0,48) e maior no domínio das relações sociais (68,89 ± 0,79). A prevalência de transtornos mentais comuns foi alta (66,9%), e quanto pior a saúde mental, pior foi a qualidade de vida dos alunos (r -6126 – p = 0,000). Os fatores que impactaram negativamente a qualidade de vida e a saúde mental foram: menor renda, estar no ciclo básico, sexo feminino e uso de medicação autorreferida. O apoio recebido dos amigos, parentes e colegas teve impacto positivo na qualidade de vida. A percepção de qualidade de vida e de saúde mental foi melhor nos estudantes que responderam em agosto/setembro/outubro quando comparados com os que responderam em junho/julho.*

Conclusão: *Os estudantes de Medicina pesquisados apresentaram boa percepção da própria qualidade de vida e alta prevalência de transtornos mentais comuns. Os resultados apontam para a necessidade de estudos qualitativos para aprofundar as informações sobre o impacto da pandemia na saúde mental dos estudantes.*

Palavras-chave: *Saúde Mental; Isolamento Social; Qualidade de Vida; Covid-19; Educação Médica.*

INTRODUCTION

The impact of the COVID19 pandemic on global public health was intense and led to the implementation of several virus transmission containment and mitigation strategies, aimed at delaying large outbreaks of patients in hospitals and protecting the people most vulnerable to infection[1].

In the contingency plan established by the Ministry of Health at the beginning of the pandemic, social isolation was implemented to minimize infection and reduce the spread of the new coronavirus, which created a turning point in the trajectory of education in Brazil. On March 18, 2020, the Ministry of Education (MEC) published Ordinance N. 343, which authorized "on an exceptional basis" the replacement of in-person classes by distance education (DE) classes using information technology and remote communication in ongoing courses[2]. The remote teaching model used then is similar to that of distance learning, in terms of technology-mediated education; however, the principles adopted by remote teaching tend to follow the in-person model, containing synchronous activities, carried out at the same time, in the same discipline and with the same teacher of the in-person class, allowing a direct interaction between the teacher and the student[3,4].

Studies indicate that these measures bring risks to the mental health of individuals, with several psychological consequences, especially among the elderly, children and adolescents[5,6].

Evidence has shown that medical students have a worse perception of quality of life and a high prevalence of psychosocial disorders when compared with the general population and with individuals of the same age[7,8]. A Brazilian meta-analysis carried out in 2017 identified the prevalence of different mental health problems in Brazilian medical students, such as depression (30.6%), common mental disorders (31.5%), Burnout syndrome (13.1%), problems with alcohol abuse (32.9%), stress (49.9%), poor sleep quality (51.5%), daytime sleepiness (46.1%) and anxiety (32.9%). When considering the international literature, these prevalence rates in students from the United Kingdom, Europe and other English-speaking countries in the world, except for North America, is: depression (28%); psychological stress (12.2% - 96.7%) and anxiety (7.7% to 65.5%)[9,10].

Medical students, in addition to being influenced by the stressors inherent to the pandemic - the loss of family and friends, fear of contamination, financial insecurity and worsening in lifestyle - suffered with changes in the course routine, delay in clinical practice and with the uncertainty about their future, which may have contributed to increased levels of stress, depression, mental suffering, anxiety, panic disorder, insomnia, fear and anger[11,12].

A study by Gomes et al.[13], carried out with medical students during the pandemic, identified a negative perception regarding remote classes, as 70% of the students did not like the modality, 95% expressed insecurity about the teaching method and 40% reported a decrease in study time. Additionally, 60% of them reported sleep problems during isolation, 85.5% had concerns about their mental health, self-demands, extensive workload, constant evaluations and fear of failure[14]. The main symptoms manifested by students during the pandemic were constant fatigue, excessive worry, difficulty concentrating, impaired academic performance, frequent irritation, feeling of constant physical exhaustion, depression, anxiety, stress and lack of preparedness for clinical conducts[15,16].

Medical students from Brazilian universities participated in a study that showed that about 75.6% had a moderate level of stress during the pandemic and suffered a negative impact on their lifestyle, reducing physical activity practice and having a worse diet, leaving them more stressed and anxious[12]. The social distancing imposed by the pandemic caused female medical students in the state of Espírito Santo to have a higher prevalence of stress[17].

The knowledge of the factors that negatively and positively impacted the context and mental health of students can help minimize the impacts suffered by this group and plan long-term coping measures. These impacts can affect the students' confidence when returning to in-person activities, their well-being and learning capacity[18].

This study was carried out in the months when social isolation was being adopted as a Covid-19 control measure, during the interruption of in-person course activities. It aimed to assess the quality of life and mental health of medical students at a medical school during social isolation caused by the COVID-19 pandemic.

METHODS

A cross-sectional, quantitative and analytical study was carried out from June to October 2020, in the context of the medical course at Universidade José do Rosário Vellano, campus Belo Horizonte, UNIFENAS, in the city of Belo Horizonte, state of Minas Gerais, Brazil. During those months, all in-person academic activities were replaced by distance education, through synchronous and asynchronous remote classes that started at the end of March 2020.

The study population consisted of all 1,127 medical students enrolled during the recruitment period, considering as inclusion criteria: age over 18 years, participating in remote activities and agreeing to sign the free and informed consent form (FICF). Students under 18 years of age, those who refused to fill out the questionnaire or who did not answer it in full

were excluded. The sample was a non-probabilistic one and was chosen for convenience. Recruitment took place through disclosure in the virtual learning environment used by the institution (Moodle) and invitations were sent via messaging application (WhatsApp) and electronic messages (email). An email address was sent along with the invitation to provide access the online questionnaire.

The questionnaire contained information on the individuals (month of questionnaire completion, gender, age, marital status, family income, semester attended in medical school, use of medication for a psychiatric disorder, people with whom they lived during social isolation) and instruments to assess quality of life and mental health.

The instrument used to assess quality of life was the World Health Organization Quality of Life Group - Abbreviated version (WHOQOL-bref). This instrument was developed by the World Health Organization (WHO) and was translated, adapted and validated for Brazil by Fleck et al.[23]. The questionnaire contains 26 questions, grouped into four domains: physical, psychological, social relations and environmental domains. The answers are given on a Likert scale, ranging from 1 to 5 points, being (1) very bad, (2) bad, (3) neither bad nor good, (4) good and (5) very good. The overall and domain scores are obtained through the averages of the answers, later converted into a scale from 0 to 100 by multiplying them by four, aiming to allow comparisons with the scores obtained with the WHOQOL-100[19]. Therefore, the higher the score, the better the quality of life.

The General Health Questionnaire - GHQ-12 corresponds to an abbreviated version of Goldberg's General Health Questionnaire (1972), adapted for Brazil by Pasquali et al.[20]. Goldberg et al.[21], when comparing the original questionnaire with 60 items with the short version containing 12 items, found that the short version had the same functionality as the original instrument. The short version contains items that include problems with sleep and appetite, subjective experiences of stress, tension or sadness, mastery of daily problems, decision-making and self-esteem, with six negative and six positive questions, with four answer options ranging from 0 to 3. The total score ranges from 0 to 36 and, the higher the general health perception score, the worse one's mental health status.

To identify a positive screening score for common mental disorders (CMD), the following codification was adopted: for answers between zero and one, a score of zero is assigned, and for answers between two and three, a score of one is assigned. It was considered as positive for common mental disorder, respondents who obtained a score ≥4.[20-22].

Data analysis consisted of: 1) descriptive analysis of individual characteristics through means and proportions; 2) calculation of quality of life and mental health variables; 3) univariate analysis by presenting quality of life scores and their domains and mental health stratified by sample characteristics. Student's t test was used to assess the differences between the groups, and 4) correlation analyses between mental health and quality of life and their domains were assessed by Pearson's correlation coefficient. The significance level was set at 5% ($p < 0.05$). Stata software, version 11.1 was used for the statistical analyses.

The project was approved by the Research Ethics Committee of Universidade Jose do Rosario Vellano under CAAE n. 31780520.9.0000.5143.

RESULTS

A total of 565 medical students participated in the study, representing 50.1% of all enrolled students. The participants' mean age was 23.1 (± 9.25) years, most students were female (64.78%), attending the first three years of medical school (73.28%), were single (96.28%) had a family income of more than five minimum wages (79.47%); did not use any psychiatric medication (76.46%) and did not live alone (92.9%) (Table 1).

Table 1. Sample descriptive data.

Variable	Frequency N (%)
Age	23.12 (± 9.25)
Semester	
1st	69 (12.21%)
2nd	68 (12.04%)
3rd	94 (16.64%)
4th	56 (9.91%)
5th	58 (10.27%)
6th	69 (12.21%)
7th	22 (3.89%)
8th	32 (5.66%)
9th	26 (4.6%)
10th	25 (4.42%)
11th	18 (3.19%)
12th	28 (4.96%)
Sex	
Female	366 (64.78%)
Male	199 (35.22%)
Marital status	
Married	13 (2.3%)
Divorced	1 (0.18%)
Separated	1 (0.18%)
Single	544 (96.28%)
With partner	6 (1.06%)

Tabela 1. Continuation.

Variable	Frequency N (%)
Income	
Up to R$ 5,000	116 (20.53%)
> R$ 5,000	499 (79.47%)
Use of psychiatric medication	
Yes	133 (23.54%)
No	432 (76.46%)
Lives	
With others	522 (92.39%)
Alone	43 (7.61%)

Source: Study data.

Chart 1. Mean values of overall quality of life and by domains measured by the WHOQOL-Bref of medical students, 2020.
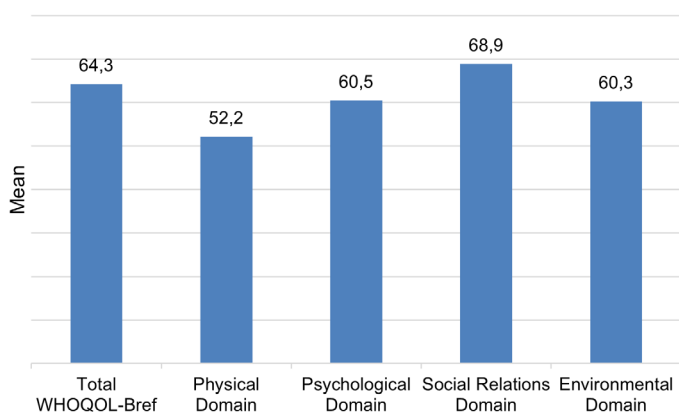
Source: Study data.

Analysis of the Quality-of-Life questionnaire (WHOQOL-bref)

For the total sample of assessed students, the mean values of the overall quality of life was 64.32 (± 0.43) being higher in the domain of social relations 68.9 (± 0.79), followed by the psychological domain, 60.5 (± 0.47), environmental domain, 60.3 (± 0.51) and physical domain, 52.2 (± 0.48) (Chart 1).

The perception of overall quality of life was worse among the students who answered the questionnaires in June-July/2020 when compared to those who answered it in August-October/2020; in those who had a monthly family income of less than five thousand reais and in those who were attending the basic cycle of undergraduate medical school.

When evaluating the domains, it was observed that students who answered the questionnaire in June-July had a lower mean score in all domains. The mean values in the psychological and social domains were lower among students

with an income up to R$ 5,000 reais; those who were attending the basic cycle and those who used psychiatric medication. The mean values in the psychological domain were lower among those with lower income and those attending the basic cycle (Table 2).

The mean mental health score assessed by the GHQ-12 was 22.12 (±0.26). Considering responses > 4 when the scale is dichotomized into 0 and 1, a prevalence of 66.9% of students with common mental disorders was estimated. Similar to what was observed regarding the perception of quality of life, respondents from the period between June-July/2020 had higher scores, which corresponds to a worse perception of mental health when compared to the period of August-October/2020. The following also showed worse scores: female gender, those attending the basic cycle of the course and those using psychiatric medication (Table 3).

The correlation analysis showed an inverse and moderate relationship between the students' quality of life and the mental health scores (Pearson's coefficient -0.6126. p=0.000), demonstrating that the worse the perception of quality of life, the higher the GHQ-12 scores and the worse the mental health. A moderate correlation was also observed between each of the quality of life dimensions and worse mental health (Table 4).

DISCUSSION

The present study verified that the prevalence of common mental disorders (CMD) was high among medical students at UNIFENAS-BH during the social isolation period, although the quality of life perception was good. Factors such as lower income and being enrolled in the basic cycle had an impact on the worse perception of quality of life (QoL). CMD were negatively impacted by being female, attending the basic cycle and using psychiatric medication. It was observed that the worst perception of QoL was correlated with worse mental health conditions.

The literature shows that medical students are more vulnerable to mental illness and have worse QoL when compared to the general population. The reasons most frequently used to justify this scenario are the high workload of the course, the volume of evaluations and the social pressures to which they are submitted. Studies that evaluated the QoL in this population using the WHOQOL-Bref, in the period before the pandemic, found that students perceive their QoL as good, and the domain that most negatively impacts QoL is the psychological domain, which assesses positive and negative feelings, memory, concentration and self-esteem[23-25]. It is also observed that QoL is strongly influenced by sleep quality, leisure opportunities and level of energy[26,27].

Table 2. Mean values of the overall quality of life and by domains measured by WHOQOL-Bref according to the students' characteristics, 2020.

Sample characteristics	Physical domain		Psychological Domain		Social Domain		Environmental Domain		Overall	
	Mean		Mean		Mean		Mean		Mean	
Months of completion										
Jun/Jul	50.03	*	58.70	*	64.28	*	58.35	*	61.87	*
Aug/Sept/Oct	53.45		61.56		71.47		61.31		65.69	
Sex										
Female	51.80		60.12		68.53		59.94		63.95	
Male	52.99		61.30		69.55		60.81		64.99	
Family Income										
< R$ 5,000	50.7		57.72	*	65.73	**	51.72	*	59.31	*
> R$ 5,000	52.6		61.26		69.71		62.45		65.61	
Cycle										
Basic	51.41		59.04	*	67.50		59.24	**	63.20	*
Clinical and Internship	53.05		62.08		70.32		61.29		65.47	
Use of psychiatric medication										
Yes	53.35		58.61	**	64.53	*	60.24		63.24	
No	51.87		61.13		70.23		60.25		64.65	
Lived alone during social isolation period										
Yes	50.74		59.68		67.82		59.81		63.79	
No	52.34		60.60		68.98		60.29		64.36	

Note: The probability of significance (p) refers to the univariate analysis with Student's t test. * p < 0.01   ** p < 0.05. Source: Study data.

Table 3. Mean values of mental health scores measured by GHQ-12 according to individual characteristics of the students, 2020.

Sample characteristics	Mental Health	
	Mean	
Semester questionnaire was answered		
Jun/Jul	**23.73**	*
Aug/Sept/Oct	**21.22**	
Sex		
Female	**23.16**	*
Male	**20.22**	
Family Income		
< R$ 5,000	22.98	
> R$ 5,000	21.90	
Cycle		
Basic	**23.03**	*
Clinical and Internship	21.19	
Use of psychiatric medication		
Yes	**23.92**	*
No	**21.57**	
Lived alone during social isolation		
Yes	22.44	
No	22.10	

Note: The probability of significance (p) refers to the univariate analysis with Student's *t* test. * p < 0.01 Source: Study data.

Table 4. Correlation between quality of life scores and their domains measured by the WHOQOL-Bref and mental health measured by the GHQ-12.

WHOQOL-Bref	r	
Overall QoL	-0.6126	*
Physical domain	-0.4461	*
Psychological domain	-0.5841	*
Social relations	-0.4698	*
Environment	-0.4478	*

Notes: the correlation estimated by Pearson's correlation coefficient (r) and the probability of significance (p) refers to the test for Pearson's linear coefficient
* p < 0.01
Source: Study data.

This study showed that, during the pandemic, the domain that most negatively impacted the students' QoL was the physical domain, which considers pain and discomfort, energy and fatigue, sleep and rest, work capacity and motor functions[28]. The capacity to perform daily activities and work were the items that had the most negative impact on QoL. A study carried out by Silva et al.[29] with medical students during the pandemic, identified the family environment and internet connection as limiting factors for good academic performance, reducing motivation and making it difficult to keep up the

study rhythm. According to Michellis et al.[15], remote teaching, despite ensuring the presentation of curricular content, did not meet the students' expectations, not guaranteeing security regarding its learning.

In this study, the QoL domain that obtained the highest scores was the social relations. The same was mentioned in several studies carried out before the pandemic[8,23,30,31]. This domain assesses questions about personal relationships, sexual activity and social support. It was observed that the support received from friends, relatives and classmates was the aspect with the greatest positive impact on the quality of life perceived by the students during the pandemic. These results are corroborated by Teixeira et al.[32], who identified that a psychosocial support network consisting of social bonds and relationships is crucial in the context of mental health care. The study by Cao et al.[33] describes that living with one's parents during the pandemic was a protective factor for mental illness, which reinforces this better perception of the students' social relations during social isolation. Many of the students participating in this study live far from their families, and the fact that the classes were taught remotely allowed them to return to family life, a factor that may have contributed to improving these students' perception of social relations.

It was observed that 66.9% of students had CMD during the pandemic, with mental exhaustion, inability to concentrate and dissatisfaction with normal activities showing the worst scores, negatively impacting the students' mental health. Before the pandemic, studies on CMD in medical students in Brazil showed a prevalence between 33.6% and 50.9%, and the main associated variables were lack of emotional support, use of medication, previous psychiatric disorder, high workload and attending the initial semesters of the course[27,34-36]. During the pandemic, a study carried out by Teixeira et al.[32] with 656 medical students in Brazil showed a prevalence of CMD of 62.8%, similar to the result found in the present study, and the main associations with the risk of CMD were female gender, attending the first two years of the course, poor adaptation to remote teaching, difficulty concentrating, concern with training time and having a previous diagnosis of mental disorder.

In this study, a worse perception of QoL was observed, both in general and by domain (physical, psychological, social and environmental) and a higher percentage of CMD in respondents who answered the questionnaire in June-July compared to respondents who did it in August-October. These results are similar to the findings of other studies, which identified worse symptoms of anxiety, stress and depression due to quarantine and social isolation, at the beginning of the pandemic[37-39]. Uncertainties about distance education, excessive exposure to alarming information, an uncertain path

regarding one's own graduation, fear of the disease itself, little knowledge about the disease at the beginning of the pandemic, may be factors that contributed to this worse perception in the initial period of the pandemic[11,40].

There was no difference in the quality of life perception between the genders. However, females had a worse perception of mental health than males. These results are similar to those found in other studies that assessed the mental health of medical students during the COVID-19 pandemic, where Teixeira et al.[32] identified the female gender as a risk factor for mental illness. Wang et al.[41] infer that female students and women in general suffered a greater psychological impact and experienced higher levels of stress, anxiety and depression during the pandemic. According to Munhoz et al.[42] women have twice the risk of depression than men, which may be related to the multiple roles played by women in society, as well as the hormonal changes that interfere with mood.

This study showed that students with a family income of less than R$ 5,000 reais had a worse perception of their QoL. These data are in accordance with the findings of Rodrigues et al.[11] and Cao et al.[33] when studying medical students during the pandemic, who state that an unstable income can cause greater impacts on mental health and, consequently, on quality of life.

Students attending the basic cycle had a worse perception of QoL and a higher likelihood of CMD compared to those attending the clinical and internship cycles. These results are similar to those found in other studies[9,32,43,44]. Many characteristics related to the teaching institutions may be related to this finding, such as workload; number of classes and curriculum organization[44]. These characteristics can vary significantly between different institutions. Unifenas-BH uses the problem-based learning (PBL) methodology and the semester is divided into modules lasting 4 to 5 weeks. This curriculum structure demands from the student a greater capacity to adapt to the methodology and time management, to reconcile study, classes and tests. These are possible triggers for anxiety. According to Gonçalves et al.[44], it is possible that more advanced students have already found mechanisms for adapting to the course and are better able to adapt to academic requirements. Moreover, in the clinical cycle, the student's experience is closer to the reality of the profession, increasing identification with the course. These factors can have a positive impact on the students' mental health and QoL.

Students who used medication for psychiatric disorders had a worse perception of QoL in the psychological and social domains, as well as worse mental health. Lasevoli et al.[45] identified that the perception of the level of distress in patients with mental illness is certainly higher than that found in the rest of the general population. A study carried out by Barros

et al.[46] with 45,161 Brazilians during the COVID-19 pandemic showed that respondents with a history of depression had more symptoms of sadness, nervousness and sleep alterations.

QoL and mental health showed a moderate and inverse correlation, since the lower the quality of life score, the greater the chance of mental illness in medical students. Similar results were obtained by Silva, Pereira and Moura[27] with medical students from the municipality of Caratinga, state of Minas Gerais, before the pandemic period, who described the same association between mental health and all domains of quality of life assessment.

These results are important, as they emphasize vulnerable points, indicating the need to create educational strategies aimed at minimizing the impact of the course on the students' mental health and quality of life. Strategies such as encouraging resilience, supporting the student to deal with adverse situations; psychological assistance; valuing interpersonal relationships and everyday phenomena; balance between study and leisure; guidance for time management; encouragement of health care, food and sleep; practice of physical activity and religiosity are mentioned by Zonta, Robles and Grosseman[47] as strategies to reduce stress.

As limitations of the study, we can mention: the sample consisted mostly of students attending the basic cycle of the course (73.28%) - who, according to the literature, have a worse perception of QoL and a greater tendency to common mental disorders; and of students from a single private education institution, which makes it difficult to generalize the data to all Brazilian medical students and the cross-sectional design of the study, which did not allow the long-term follow-up of the students.

CONCLUSION

Our results suggest that social isolation had a negative impact on quality of life, especially in the physical domain, mainly among students with lower family income and those who were attending the basic cycle. The prevalence of CMD was high in students during the pandemic, and female gender, attending the basic cycle and using psychiatric medication influenced the worst perception of mental health.

Considering the results obtained in the resent study, it is essential that debates and discussions be carried out in the academic context on the quality of life and mental health of students, as measures to cope with the psychological suffering caused by the pandemic and to acquire knowledge of its consequences in the personal and academic spheres.

Our results can provide subsidies for the development of strategies that will allow addressing this topic, aiming to minimize the negative effects of the pandemic on the academic environment. More studies are required to better understand the impacts of the pandemic on the students' mental health and quality of life.

AUTHORS' CONTRIBUTION

Fabiano Cassaño Arar actively participated in the study design, data collection, data analysis, discussion of the results, writing of the manuscript, review and approval of the final version of the manuscript. Thayná de Freitas Chaves actively participated in the study design, data collection, and discussion of the results. Maria Aparecida Turci actively participated in the study design, data collection, data analysis, discussion of results, manuscript writing, review and approval of the final version of the manuscript and provided guidance throughout the entire process. Eliane Perlatto Moura actively participated in the study design, data collection, data analysis, discussion of results, manuscript writing, review and approval of the final version of the manuscript and guidance throughout the entire process.

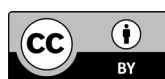## CONFLICTS OF INTEREST

SOURCES OF FUNDING

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