ORIGINAL ARTICLE

COVID-19 and social isolation: implications for undergraduate nursing students' mental health

COVID-19 e isolamento social: as implicações na saúde mental de estudantes de enfermagem

COVID-19 y aislamiento social: implicaciones para la salud mental de estudiantes de enfermería

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ABSTRACT

Objective: to assess the repercussions of COVID-19 and social isolation during the pandemic on undergraduate nursing students' mental health. **Methods:** a descriptive cross-sectional study, carried out in Ceará, Brazil, with 347 students. Data were collected through a questionnaire to obtain sociodemographic data and information on aspects related to the pandemic, in addition to the Mental Health Inventory-38 (MHI-38). **Results:** the amount of 51.9% of students continued studying through remote learning activities and online assessments, and 62.3% accessed the internet essentially via cell phones. For 76.9% of students, the greatest concern was the death of a family member/friend. As for students' mental health, the MHI-38 scores in the Psychological Well-Being dimension were on average 47.9 (± 16.8), and in the Psychological Distress dimension, 52.8 (± 18.5). The mean MHI-38's overall score was 51.0 (± 16.9), with differences between sexes (p = 0.039). **Conclusion:** students had their mental health affected by the COVID-19 pandemic and social isolation, with a greater impact on women. Thus, educational institutions need to develop strategies to monitor and promote this population's mental health when returning to school in the post-pandemic period.

Descriptors: Students, Nursing; Pandemics; Social Alienation; Mental Health; COVID-19.

RESUMO

Objetivo: *avaliar as repercussões da COVID-19 e do isolamento social durante a pandemia na saúde mental de estudantes de graduação em enfermagem.* ***Métodos:*** *estudo descritivo transversal, realizado no Ceará, Brasil, com 347 estudantes. Os dados foram coletados por meio de questionário para obtenção de dados sociodemográficas e informações sobre aspectos relacionados à pandemia, além do Inventário de Saúde Mental-38 (MHI-38).* ***Resultados:*** *percentual de 51,9% dos estudantes continuaram a graduação por meio de atividades de ensino remoto e avaliações on-line e 62,3% acessavam a internet essencialmente pelo celular. Para 76,9% dos estudantes, a maior preocupação era com a morte de um membro da família/amigo. Quanto à saúde mental dos estudantes, os escores na dimensão de Bem-estar Psicológico do MHI-38 foram em média 47,9 (± 16,8) e na dimensão de Sofrimento Psicológico a média foi 52,8 (± 18,5). A média de pontuação global no MHI-38 foi 51,0 (± 16,9), com diferenças entre os sexos (p = 0,039).* ***Conclusão:*** *os estudantes tiveram a saúde mental afetada pela pandemia de COVID-19 e o isolamento social, com maior impacto para as mulheres. Assim, instituições de ensino precisam desenvolver estratégias para monitorar e promover a saúde mental desta população no retorno às aulas no período pós-pandemia.*

Descritores: *Estudantes de Enfermagem; Pandemias; Alienação Social; Saúde Mental; COVID-19.*

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RESUMEN

Objetivo: *evaluar las repercusiones del COVID-19 y el aislamiento social durante la pandemia en la salud mental de estudiantes de pregrado en enfermería.* ***Métodos:*** *estudio transversal descriptivo, realizado en Ceará, Brasil, con 347 estudiantes. Los datos fueron recolectados a través de un cuestionario para obtener datos sociodemográficos e información sobre aspectos relacionados con la pandemia, además del Inventario de Salud Mental-38 (MHI-38).* ***Resultados:*** *el 51,9% de los estudiantes continuó su graduación a través de actividades de aprendizaje a distancia y evaluaciones en línea y el 62,3% accedió a internet esencialmente a través de sus teléfonos celulares. Para el 76,9% de los estudiantes, la mayor preocupación fue la muerte de un familiar/amigo. En cuanto a la salud mental de los estudiantes, los puntajes en la dimensión del Bienestar Psicológico del MHI-38 fueron en promedio 47,9 (± 16,8) y en la dimensión del Sufrimiento Psicológico el promedio fue 52,8 (± 18,5). La puntuación global media en el MHI 38 fue de 51,0 (± 16,9), con diferencias entre sexos (p = 0,039).* ***Conclusión:*** *los estudiantes tuvieron su salud mental afectada por la pandemia de COVID-19 y el aislamiento social, con mayor impacto en las mujeres. Por lo tanto, las instituciones educativas necesitan desarrollar estrategias para monitorear y promover la salud mental de esta población al regresar a la escuela en el período posterior a la pandemia.*

Descriptores: *Estudiantes de Enfermería; Pandemias; Alienación Social; Salud Mental; COVID-19.*

INTRODUCTION

The Coronavirus Disease 19 (COVID-19) pandemic triggered the greatest health crisis ever recorded in the world, significantly changing all aspects of human life, disorganizing health care systems around the world and causing an unprecedented economic and social crisis with planetary dimensions[1].

In order to avoid the spread of the disease, social isolation was determined, which caused abrupt changes in citizens' routines, negatively impacting the population's lifestyle and increasing health risk behaviors, such as decreased physical activity, increased time in front of electronic device screens, increased intake of ultra-processed foods, number of cigarettes smoked and consumption of alcoholic beverages[2].

COVID-19 and the resulting social isolation brought uncertainties, which led to feelings of discomfort (73.1%), anxiety/agitation (66.0%), irritation/stress (66.8%) and sadness/discomfort (66.7%), reiterating the potential repercussions on the population's mental and physical health[3].

The impact caused by this pandemic can have serious consequences, as the psychological distress experienced can exceed individuals' ability to cope[4], with long-term consequences. Social isolation, in turn, even for short periods, can have lasting repercussions, with manifestation of psychiatric symptoms for more than three years[5].

In the last decade, there has been an increase in the prevalence of psychopathological manifestations in students in national and international higher education institutions, which configures a concerning phenomenon, since the risk factors for the intensification of clinical manifestations are understood as the presence of experience that may increase the probability of occurrence of the problem or adverse consequences for psychological development[6].

In this context, the COVID-19 pandemic and social isolation may have represented a situation that aggravated this scenario.

Social isolation and pandemic restrictions have had disastrous effects on undergraduate students, as many have faced numerous difficulties in participating in classes, whether in-person or online, and maintaining academic performance[7].

For undergraduate nursing students, this impact may have been greater, since pre-pandemic studies already indicated coping with situations that were harmful to their mental health, as shown by a study in which abrupt changes in students' routine and the nature of graduation (providing direct care to patients with fragile health) configured as sources of physical and mental stress and generate fear and insecurity, making them susceptible to distress and mental disorder[4]. Another study, which assessed the stress perceived by this group of students, showed that burden and other course-related stressors as well as difficulties in managing stress can affect mental health and perceived stress in this population group[8].

During the pandemic and social isolation, the most prevalent mental health problems in undergraduate nursing students in different countries were depression (54%), fear (41.0%), anxiety (32.0%), stress (30.0%), and sleep disorders (27.0%)[9].

In Brazil, research reveals that, in clinical teaching contexts, the pandemic and social isolation brought feelings to undergraduate nursing students such as fear of failure, fear of contagion, motivation to complete the

course syllabus and concern with the development of competency that would prepare them for the exercise of functions[10].

Although these studies point to the existence of mental health problems among undergraduate nursing students, it is still necessary to better understand the impact of the pandemic on undergraduate nursing students' daily life and mental health, in different scenarios in Brazil, and through the use of standardized instruments, in order to contribute to the advancement of knowledge in this area and support the implementation of measures that minimize this impact.

Given this scenario, this study aimed to assess the impact of COVID-19 and social isolation on undergraduate nursing students' mental health.

METHODS

This is an analytical cross-sectional study, carried out from July to September 2020, in the state of Ceará, Brazil, with undergraduate nursing students from seven higher education institutions, of which five are public, one is private and one is private-philanthropic.

The sample was non-probabilistic. Inclusion criteria were age equal to or greater than 18 years and active enrollment. As exclusion criteria, incomplete completion of the instrument was chosen.

Recruitment was carried out using several strategies. In two universities, an invitation to participate was sent to students through their academic systems. In the others, invitations were sent via social networks (WhatsApp, Facebook, email and Twitter).

Data collection was carried out virtually through an electronic form created in Google Forms. Initially, the digital version of the Informed Consent Form (ICF) was presented, and, after its signature, access to the data collection form was provided. In the first part, questions related to sociodemographic data, teaching conditions and concerns due to the COVID-19 pandemic and social distancing were presented. The second part contained the Mental Health Inventory-38 (MHI-38), a version adapted to Brazilian Portuguese[10,11].

This inventory was prepared by the Health Insurance Study of the Rand Corporation (California, United States of America) to assess the mental health of a general or specific population with or without psychopathological or dysfunctional conditions, addressing positive and negative factors to differentiate levels of mental health; it has been adapted and used in different cultures and populations, both in Europe and in Brazil[11-13].

The MHI-38 contains 38 items divided into five scales, which are grouped into two primary dimensions: "Psychological Well-Being" and "Psychological Distress"[10]. The "Psychological Well-Being" dimension encompasses positive states of mental health, which are divided into two subdimensions:

1. "Positive Affect", measured by the General Positive Affect Scale, with eleven items (1, 4, 5, 6, 7, 12, 17, 26, 31, 34, 37); and
2. "Emotional Ties", measured by the Emotional Ties Scale, which contains three items (2, 10, 23).

In turn, the "Psychological Distress" dimension covers traditional negative states of mental health, which are subdivided into three subdimensions:

1. "Loss of Emotional/Behavioral Control", measured by the Loss of Emotional/Behavioral Control Scale, with nine items (8, 14, 16, 18, 19, 20, 21, 24, 28);
2. "Anxiety", measured by the Anxiety Scale, with ten items (3, 11, 13, 15, 22, 25, 29, 32, 33, 35); and
3. "Depression", measured by the Depression Scale, with five items (9, 27, 30, 36, 38)[10].

In this instrument, Likert-type scales of five to six points are used for responses. The dimensions are calculated from the gross sum of the subitems (subdimensions) and the sum of the two main dimensions (negative and positive), providing at the end the Mental Health Index, where the highest values of the MHI-38 correspond to the best levels of mental health[10].

The global scale (MHI-38)[10] should contain the values calculated by summing the answers. The analysis of the score obtained in the Mental Health Inventory must be carried out following the procedures below:

1. Code each subdimension with the abbreviation "SubDim" followed by the Arabic number (SubDim1 – Positive Affect; SubDim2 – Emotional Ties; SubDim3 – Loss of Emotional/Behavioral Control; SubDim4 – Anxiety; SubDim5 – Depression).
2. Sum the values of each item of the Subdimensions

- SubDim1 – Positive Affect = item1 + item4 + item5 + item6 + item7 + item12 + item17 + item26 + item31 + item34 + item37;
- SubDim2 – Emotional Ties = item2 + item10 + item23;
- SubDim3 – Loss of Emotional/Behavioral Control = item8 + item14 + item16 + item18 + item20 + item21 + item24 + item27 + item28;
- SubDim4 – Anxiety = item3 + item11 + item13 + item15 + item22 + item25 + item29 + item32 + item33 + item35;
- SubDim5 – Depression = item9+ item19+ item30 + item36 + item38.

3. Sum the results of the subdimensions belonging to each primary dimension.
- Positive Well-Being dimension = SubDim1 (Positive Affect) + SubDim2 (Emotional Ties);
- Psychological Distress dimension = SubDim3 (Loss of Emotional/Behavioral Control) + SubDim4 (Anxiety) + SubDim5 (Depression).

4. Finally, sum the two primary dimensions.
- MHI-38 = Positive Well-Being dimension + Psychological Distress dimension

The results are transformed, for comparison purposes, into final scores ranging from '0' to '100', using the algorithm as follows[10]:

$$Score = [\frac{raw\ score - lowest\ possible\ score}{score\ variation}]$$

Where

Score variation = highest possible score – lowest possible score

Data were analyzed using the Statistical Package for the Social Sciences (SPSS)[14] software (version 20.0, International Business Machines – IBM, California, United States of America), and the results were presented using descriptive statistics (simple absolute frequencies, percentages and mean measurements and standard deviations). Pearson's Chi-square test was used to assess behaviors and feelings according to sex, and Student's t, for comparing the means of the mental health dimensions between the two sexes, given that the dimensions have become continuous variables and n is greater than 30, and the Central Limit Theorem can be applied.

This research is part of a matrix project entitled "Repercussions of the new coronavirus pandemic on undergraduate students' mental health" (In Portuguese: *Repercussões da pandemia do novo coronavírus na saúde mental de estudantes do ensino superior*), which was approved by the Research Ethics Committee of the *Universidade Estadual Vale do Acaraú* (UVA) (Certificate of Presentation for Ethical Consideration (In Portuguese, *Certificado de Apresentação de Apreciação Ética* – CAAE) number 32101220.3.0000.5053, Opinion number 4.152.388).

RESULTS

The study included 347 undergraduate nursing students enrolled in one of the seven universities in the state of Ceará. There was a predominance of women (82.4%), single marital status (79.5%), self-declared brown or white (63.7% and 24.2%, respectively) and from Sobral and Fortaleza (25.6% and 16.4%, respectively) (Table 1).

During social isolation, only 5.2% (n = 18) of undergraduate nursing students had all their teaching activities cancelled, with the others remaining with distance learning (DL) modalities with online assessments (51.9%; n = 180) or partially online assessments (42.4%; n = 147). As for the level of satisfaction regarding participation in the pedagogical activities established by the institution, most students (54.5%; n = 189) reported scores ≥ 7. However, it is noteworthy that 13.5% (n = 47) indicated clear dissatisfaction scores

Table 1 - Sociodemographic characteristics of undergraduate nursing students (n = 347) from universities in the state of Ceará, Brazil, 2020

Variables	n	%
Sex		
Male	61	17.6
Female	286	82.4
City of residence		
Caucaia	5	1.4
Fortaleza	57	16.4
Iguatu	7	2.0
Itapipoca	3	0.9
Maracanaú	3	0.9
Quixadá	3	0.9
Sobral	89	25.6
Other	180	51.9
Race/skin color		
Black	23	6.6
White	84	24.2
Brown	221	63.7
Indigenous	1	0.3
Yellow	14	4.0
Rather not answer	4	1.2
Marital status		
Single	276	79.5
Married	42	12.1
Common-law marriage	25	7.2
Divorced	4	1.2
Age (years)	Mean (standard deviation)	Minimum* and Maximum†
	23.71(± 6.37)	Min* = 18 Max† = 52
Family income (*reais* - Brazilian currency))		
	2271.00 (± 2159.00)	Min* = 0 Max† = 20000

Note: *minimum value; †maximum value.

(≤ 3). Conditions and access to the internet during social isolation were assessed by most students (66.3%; n = 230) as good to excellent quality, and the most used electronic device was the cell phone (62.3%; n = 215). Approximately 60% of students declared the maximum level of concern regarding the continuity of the course in-person format (Table 2).

Regarding undergraduate nursing students' perception regarding the implications of the pandemic and social isolation in academic life, most reported a feeling of fear of being infected by COVID-19 (73.8%; n = 256) and concern about leaving from home (85.9%; 298); 74.4% (n = 258) had their routines changed without being able to adapt; and 76.9% (n = 267) were concerned about the possibility of a family member or friend dying due to COVID-19 (Table 2).

In the multivariate analysis, no differences were found regarding undergraduate nursing students' concerns according to sex, as shown in Table 3.

Table 4 presents the means and standard deviation of the primary dimensions and subdimensions assessed by the MHI-38.

In the multivariate analysis, the Global Scale (MHI-38) showed that female students had worse levels of mental health (p = 0.039) when compared to male students. This behavior was also observed in the "Psychological Distress" primary dimension (p = 0.036) and the "Loss of Emotional/Behavioral Control" Subdimension (p = 0.018). On the other hand, male students had better scores in the "Positive Affect" subdimension (p = 0.020) when compared to female students (Table 5).

DISCUSSION

The social isolation instituted during the COVID-19 pandemic brought ruptures, forcing the reorganization of educational institutions through remote teaching to enable the continuity of teaching[3,15]. For this type of teaching to take place, it is necessary to have information technology logistics both in higher education institutions and in students' homes. This situation was not observed in Brazil in the period prior to the pandemic, as shown by a national survey published in 2018 that identified that 155,000 students did not have access to broadband internet at home or via a 4G or 3G cellular mobile network signal, and of these, approximately 40% lived in the Northeast region[15].

These findings were reaffirmed in the present study, as almost 34% of undergraduate nursing students reported that conditions and access to the internet during the pandemic were fair to very poor.

Another study, whose subjects were undergraduate students at the *Universidade Federal de São Paulo*, from different areas of knowledge (Social Sciences, Philosophy, History, Art History, Language and Literature, and Pedagogy), also identified that, during the pandemic, Home Activities Emergency (HAE; *Atividades Domiciliares Emergenciais – ADE*, in Portuguese) were considered by students as harm reduction, given the restrictions of social isolation and the impossibility of in-person classes, with possibilities of considerable delay in completing the courses. However, the HAE did not meet the expectations of the majority, and only a smaller portion considered that the adaptation has been very good[16].

In addition to the impact on the teaching-learning process, the COVID-19 pandemic has also raised concerns among students in general, as indicated by a study conducted in the state of Ceará[17]. Concern with the death of family members and acquaintances due to COVID-19 (77.0%; n = 3,691) and with the cancellation of activities without expectations of return (21.2%) were the most reported aspects[17].

The situations experienced during the period of social isolation, such as the imposition of various restrictions and an uncertain future, may have intensified the manifestations of psychological distress, manifested through symptoms of anxiety and depression[3].

Before the pandemic period, undergraduate nursing students were already facing situations that were harmful to their mental health, identifying academic environments as triggers for source of physical and mental stress, and activity burden as one of the stressors, which could negatively influence mental health[4,8].

In the present investigation, no difference was found in undergraduate nursing students' concern according to sex. However, a study conducted in Brazil, which analyzed the frequency of sadness, nervousness and sleep disorders during the COVID-19 pandemic[18], found that women have more concerns and negative feelings.

One of the concerns found in the present study was in relation to the death of a family member or friend due to COVID-19 (77.0% – male and 76.9% – female), evidencing how this fear was significant during the course of the pandemic. This can have a protective effect on health, since concern alters individuals' perceptions and beliefs, i.e., as they become aware of fatal victims among loved ones and acquaintances, perceptions change, and individuals become favorable to isolation and willing to adopt it for longer periods[19].

It is important to note that concerns and fear may be related, among other aspects, to the level of tolerance for certainty; thus, individuals intolerant to uncertainty have higher levels of fear of COVID-19[20].

Table 2 - Learning conditions and implications of the COVID-19 pandemic and social isolation perceived by undergraduate nursing students (n = 347) from universities in the state of Ceará, Brazil, 2020

Learning conditions		n	%
Type of pedagogical approach implemented in the educational institution during social isolation.	Distance learning with online activities and assessments	180	51.9
	Distance learning with partially online activities and assessments	147	42.4
	All activities have been cancelled, with no return forecast	18	5.2
	Not applicable	2	0.6
Level of satisfaction with participation in pedagogical activities during the isolation period (0 – 10). M* = 6.30; SD† = 2.52 Min‡ = 0 Max§ =10	Very dissatisfied	13	3.7
	1 – 3	34	9.8
	4 – 6	111	32.1
	7 – 9	162	46.7
	Very satisfied	27	7.8
Perception regarding conditions and access to the internet during social isolation.	Excellent	43	12.4
	Very good	73	21.0
	Good	114	32.9
	Fair	88	25.4
	Poor	19	5.5
	Very poor	10	2.9
Type of electronic device used to access the internet during social isolation (n = 345).	Cell phone	215	62.3
	Computer	27	7.8
	Notebook	99	28.7
	Cell phone and notebook	1	0.3
	Another answer	3	0.9
Level of concern about the continuity of the in-person course (0-10) M* = 8.75; SD† = 2.14 Min‡ = 0 Max§ = 10	Not concerned	7	2.0
	1 – 3	5	1.5
	4 – 6	35	10.2
	7 – 9	94	27.1
	Very concerned	206	59.4
Perceived implications of the COVID-19 pandemic and social isolation			
Know someone who has been diagnosed with coronavirus (More than one option is possible).	Yes, a family member	217	62.5
	Yes, a close friend	157	45.2
	Yes, a neighbor	96	27.7
	Yes, a health professional	115	33.1
	Another person	74	21.3
	No	12	3.5
Fear of being infected by the coronavirus.	Yes	256	73.8
	No	38	11.0
	I was infected	53	15.3
Concern about having to leave the house.	Yes	298	85.9
	No	49	14.1
Interference of social isolation in daily routine.	Yes, my routine changed, but I managed to adapt	258	74.4
	Yes, my routine changed and I could not adapt	82	23.6
	No	7	2.0
The greatest concerns during social isolation.	The severity of the disease in my Municipality	196	56.5
	The severity of the disease in my State	163	47.0
	The severity of the disease in Brazil	204	58.8
	The severity of the disease in the world	198	57.1
	The death of a family member or friend due to COVID-19	267	76.9
	Staying away from my family	152	43.8
	Obligation to stay at home	121	34.9
	Others	12	3.5

Note: *mean; †standard deviation; ‡minimum value; §maximum value.

A study[21] that used the MHI-38 in higher education students during the pandemic found a score of 64.3 points, indicating better levels of mental health for students in general, compared to the findings of this study, in which a mean score of 51.0 points was found. It is worth remembering that higher scores correspond to better mental health indices, i.e., less anxiety, depression and Loss of Emotional/Behavioral Control and more Positive Affect and Emotional Ties[11].

This result reinforces the need to formulate and implement policies aimed at promoting mental health in higher education institutions in the state of Ceará.

The negative impact on undergraduate students' mental health has also been identified in other coun-

Table 3 - Type of concerns presented by undergraduate nursing students (n = 347) according to sex during social isolation caused by the COVID-19 pandemic, Ceará, Brazil, 2020

Type of concern	Male (n = 61)		Female (n = 268)		*p*-value*
	n	%	n	%	
Fear of being infected with the coronavirus					
Yes	46	75.4	210	73.4	
No	9	14.8	29	10.1	0.296
I was infected	6	9.8	47	16.4	
Concern for oneself or the family if need to leave the house					
No	8	13.1	41	14.3	0.804
Yes	53	86.9	245	85.7	
Interference of social isolation in routine					
It did not interfere	1	1.6	6	2.1	
My routine changed, but I managed to adapt	43	70.5	215	75.2	0.683
My routine changed and I could not adapt	17	27.9	65	22.7	
Greatest concerns during social isolation					
The severity of the disease in my municipality					
No	23	37.7	128	44.8	0.313
Yes	38	62.3	158	55.2	
The severity of the disease in my state					
No	28	45.9	156	54.5	0.219
Yes	33	54.1	130	45.5	
The severity of the disease in Brazil					
No	25	41.0	118	41.3	0.968
Yes	36	59.0	168	58.7	
The severity of the disease in the world					
No	31	50.8	118	41.3	0.171
Yes	30	49.2	168	58.7	
The death of a family member or friend due to COVID-19					
No	14	23.0	66	23.1	0.983
Yes	47	77.0	220	76.9	
Staying away from my family					
No	32	52.5	163	57.0	0.517
Yes	29	47.5	123	43.0	
Obligation to stay at home					
No	38	62.3	188	65.7	0.609
Yes	23	37.7	98	34.3	

Note: *Chi-square test.

tries. A study carried out with human sciences students at Rovuma University, Mozambique, identified that, in the context of the COVID-19 pandemic, many students experienced stress, anxiety and fear of contamination, which triggered feelings of fear, stress and anxiety in this group[22]. These students reported that they did not receive psychosocial support from the university, since the institution was not prepared to respond to the psychological effects caused by the pandemic[22].

In fact, the unpreparedness to face the immediate health crisis caused by the COVID-19 pandemic was worldwide, as it negatively affected important sectors such as the economy, medical care and the world population's mental health[23].

Table 4 - Means of the indices of the primary dimensions and subdimensions present in the Mental Health Inventory-38 used to assess undergraduate nursing students' mental health (n = 347), Ceará, Brazil, 2020

Primary dimensions	Mean	Standard deviation
Positive Well-Being*	47.9	16.8
Psychological Distress†	52.8	18.5
Global Scale: Mental Health Inventory-38‡	51.0	16.9
Subdimensions		
1 - Positive Affect	46.2	16.7
2 - Emotional Ties	54.2	22.4
3 - Loss of Emotional/Behavioral Control	57.3	19.3
4 – Anxiety	49.1	19.0
5 – Depression	52.3	21.4

Note: *"Positive Well-Being" Primary Dimension = SubDim1 + SubDim2; †"Psychological Distress" Primary Dimension = SubDim3 + SubDim4 + SubDim5; ‡Mental Health Inventory-38 (MHI-38) = "Positive Well-Being" Primary Dimension + "Psychological Distress" Primary Dimension.

The manifestation of inappropriate and negative behaviors may have increased during the social isolation caused by COVID-19, as shown by a study whose objective was to analyze mental health and the use and abuse of psychoactive substances by health students[23]. The results of this study show that most students reported occasional use or suggested abuse of tobacco derivatives, marijuana, hypnotics/sedatives and alcoholic beverages, and those with lower means of mental health were those who had a level of dependence classified as suggestive of abuse, while the highest means were attributed to students who did not use these substances during the pandemic (no use/pandemic)[23].

According to another study carried out during the period of social restriction, with 45,161 Brazilians, there was a worsening of lifestyles and an increase in risk behaviors to the general population's health, and it showed that women deserve special attention because they present some negative behaviors, such as decreased physical activity practices, consumption of ultra-processed foods, increased consumption of cigarettes and alcohol[17].

These results corroborate those found in the present study, in which the mean MHI-38 score for females was lower than for males (50.1 – SD = 17.0; 55.0 – SD = 16.1, respectively; p = 0.039) as well as in the "Psychological Distress" primary dimension (51.9 – SD = 18.7; 57.3 – SD = 17.1; respectively; p = 0.036), indicating worse levels of mental health for this group. Although this study did not aim to emphasize gender inequality, the results may suggest clues about women's conditions in our country. During the pandemic, some women suffered from increased unemployment, domestic burden, domestic violence by their partners[24]. It should be noted that coping with the health crisis caused by

Table 5 - Comparative analysis of the level of mental health of undergraduate nursing students (n = 347) according to sex using the Mental Health Inventory-38, Ceará, Brazil, 2020

Primary dimensions	Male (n = 61) Mean ± SD	Female (n = 268) Mean ± SD	*p*-value*
Positive Well-Being	51.2 ± 17.5	47.2 ± 16.6	0.094
Psychological Distress	57.3 ± 17.1	51.9 ± 18.7	0.036
Global Scale: Mental Health Inventory-38	55.0 ± 16.1	50.1 ± 17.0	0.039
Subdimensions			
1. General Positive Affect	50.7 ± 18.0	45.2 ± 16.3	0.020
2. Emotional Ties	53.0 ± 22.5	54.5 ± 22.4	0.637
3. Loss of Emotional/Behavioral Control	62.7 ± 18.2	56.2 ± 19.4	0.018
4. Anxiety	52.9 ± 17.3	48.3 ± 19.3	0.093
5. Depression	56.9 ± 20.6	51.3 ± 21.5	0.063

Note: SD: standard deviation; MHI-38: Mental Health Inventory-38; *Student's t test.

COVID-19 was not thought through the lens of gender inequalities, potentially producing greater vulnerabilities for groups already vulnerable even before the health crisis, such as women[24].

Coping with the health crisis with a focus also on gender inequality was important, as shown by another study whose objective was to analyze the frequency of sadness, nervousness and sleep disorders during the pandemic in the Brazilian population[18]. The results showed the presence of feelings of sadness and anxiety, in addition to sleep disorders, with prevalence in young adults, women and people with a previous diagnosis of depression[18]. In the pandemic scenario, it is important to recognize gender differences, because, in some contexts, women, due to their specificities, may need differentiated care and attention, with related actions and responses, both for the pandemic period and for the post-pandemic period, aimed at this audience[18].

In this sense, it is a challenge for higher education institutions to implement mental health care strategies for students, in order to monitor their psychosocial conditions when returning to school, to minimize the negative impacts triggered by this type of health crisis on students' mental health in the medium and long term, in order to prevent complications and worsening of installed mental disorders. Some possibilities in this regard include providing professors and administrative technicians with the necessary tools for qualified listening; bringing the university closer to the students' social context, such as family and support network; seeking articulation with the Psychosocial Care Network in the Brazilian Unified Health System (In Portuguese, *Sistema Único de Saúde* – SUS) of the municipality; and promoting spaces for dialogue and interaction between students and professors.

For public managers, in turn, it is necessary to establish closer strategies with universities as well as create or improve psychosocial support centers.

Despite the wealth of information obtained, online data collection, used for the recruitment and participation of students, can be considered a limitation of this study, however this was the safest way to conduct the study during the pandemic period.

CONCLUSION

Social isolation and the COVID-19 pandemic caused uncertainties and concerns for undergraduate nursing students in the state of Ceará, with repercussions on mental health, with greater repercussions among women. This panorama poses a challenge to mental health care provision, both in terms of institutional policy at universities and public policies in the state.

Thus, some mental health care strategies that can be developed within higher education institutions are to provide emotional support resources by making psychological counseling services available both in-person and online so that students can access mental health professionals and obtain emotional support. Another strategy is to create support groups among students, in which they can share experiences, challenges and strategies to deal with stress and anxiety. These groups can be in-person or virtual, allowing students to connect with each other and support each other. Another important initiative would be to institute partnerships with external mental health services, partnering with community mental health clinics and centers to ensure that students have access to adequate mental health services, even off-campus. This may include referrals, partnerships for discounts or agreements with these services.

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CONFLICT OF INTEREST

None.

AUTHORS' CONTRIBUTIONS – CRediT

ENO: conceptualization; formal analysis; funding acquisition; investigation; methodology; project administration; supervision; writing – original draft and writing – review and editing.

MIOV: conceptualization; visualization; writing – original draft and writing – review and editing.

PCA: conceptualization; formal analysis; visualization; writing – original draft and writing – review and editing.

PJAP: formal analysis; methodology; visualization; writing – original draft and writing – review and editing.

FRGXN: investigation; methodology; visualization; writing – original draft and writing – review and editing.

JMNA: investigation; methodology; visualization; visualization; writing – original draft and writing – review and editing.

MSAC: formal analysis; investigation; methodology; visualization; writing – original draft and writing – review and editing.

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