

## MENTAL HEALTH EFFECTS RELATED TO COVID-19 CONFINEMENT IN MEDICAL STUDENTS

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### **Abstract**

The pandemic has caused different effects on the mental health of medical students; new measures were implemented to try to reduce the risk of contagion, which has been helpful. However, mental health has become a public health problem because medical students are vulnerable to mental disorders. This study aimed to analyze the mental health affectations related to COVID-19 confinement in medical students of the Tampico School of Medicine of the Universidad Autónoma de Tamaulipas. The methodology was descriptive, cross-sectional, observational and prospective; the instrument was the mental health questionnaire (GHQ-28) developed by Golberg and Blackwell and applied to 104 students of the medical surgeon degree of the Tampico School of

Medicine of the Autonomous University of Tamaulipas. The results show that the alterations they mainly presented were social dysfunction, somatic symptoms, anxiety, and insomnia. It is concluded that there is currently a significant degree of mental health affectation in students due to the pandemic generated by Covid-19, so it is a priority to rethink medical education to reduce this impact on the trained professionals.

**Keywords:** anxiety, depression, insomnia, stress, pandemic

## Introduction

The pandemic generated by the COVID-19 virus had a great impact on the lives of people worldwide; both isolation and social distancing measures had unpredictable consequences on the social, economic, family and psychological aspects since the population changed from one moment to another their daily, family, academic, work, entertainment and social routines. In addition to these effects, a deterioration of the mental health of individuals was generated since stress, anxiety and panic events were generated as a result of the changes above (Ramirez et al., 2021). Furthermore, the rapidity with which the virus is transmitted led most countries to take sanitary measures to prevent its spread, such as limited mobility, curfews, forced quarantines, use of masks, among others (Cacciapaglia, Cot and Sannino, 2020).

As a consequence of the above, the life of citizens had a radical change having to adapt to new social, labor and educational realities (Apaza et al., 2020), so the higher education sector worldwide was forced to adopt restrictions according to the preventive measures issued by each nation considering the recommendations of the World Health Organization (WHO) to reduce the impact of the virus on the population, in addition to having to stop their face-to-face activities and continue their studies using digital tools, mass media or, in the worst scenario, rescheduling academic semesters, affecting millions of students in our country and the world (Chamberg and Ysla, 2021).

This situation became a major problem for students and teachers because, in addition to facing emotional, physical, economic and labor problems generated by the epidemic, they had to comply with the part of social responsibility to stop the spread of the virus, also generating a worldwide psychological effect with significant repercussions on mental health and consequently the appearance of symptoms of stress, sleep problems, anxiety, depression and post-traumatic stress, among others (Cuestas, 2020; Kontoangelos et al., 2020; Salari et al., 2020), with university populations being the most vulnerable social groups due to the emerging adulthood stage they go through frequently presenting clinical and subclinical psychological symptomatology (Mayorga and Moreta, 2019).

According to Isumi et al. (2020) and Pierce et al. (2020), the confinement caused by the Covid-19 virus has generated conditioning for face-to-face education. In addition, it has caused the development of new study modalities such as tele-education, remote assistance, and home education, among others, which has contributed to the increase in mental health problems during

the pandemic in university students, reporting a significant increase in stress, anxiety levels, severe depression and suicidal ideation (Zolotov et al., 2020), as well as increased substance use, mainly alcohol, sleep problems, impulsivity and post-traumatic stress (Ernstsen and Havnen, 2021).

### **Theoretical references**

According to the field and discipline in which the concept of mental health is studied, there are different views and conceptions. Ramos (2015) combines this diversity in two models or paradigms: the biological model that focuses on the disease and its biological causes in the individual and the biopsychosocial model that establishes that the biological, psychological and social are determining elements of wellbeing in the health-disease process, since daily life, social interactions and lived experiences condition the physical, emotional and social wellbeing of individuals (Ramírez et al., 2021).

WHO defines mental health as “a time of wellbeing in which a person realizes his or her capabilities and can cope with life’s stresses, work productively, and contribute to his or her community. In this authentic sense, mental health is the functioning of individual wellbeing and strong community functioning” (Ramirez et al., 2021, p.60). According to Carrazana (2003), mental health “is the state that allows the optimal development of each individual in the physical, intellectual and affective order, to the extent that it is compatible with the development of other individuals” (p. 10).

As mentioned by Zubiría (2007), mental health allows the management of emotions to overcome the obstacles that arise through tools for controlling and managing the situations of everyday life, allowing human beings to cope with pressures, effectively perform their duties, have better relationships with the people around them, as well as high levels of satisfaction, since a problem in mental health significantly affects the way an individual thinks, feels, behaves and relates to others, as well as high levels of satisfaction, since a mental health problem significantly affects how an individual thinks, feels, behaves and relates to others, since mental health is related to the essential abilities to think, relate, find meaning in life, face changes and handle crises (Ministry of Health, 2011).

The WHO mentions that feelings of sadness, fear, loneliness, anxiety and guilt are the most frequent symptoms of mental disorders (Mendoza and Sanchez, 2022), Bastidas (2019) Mebarak et al. (2009) in their research comment that an individual who enjoys good mental health has sufficient capacity to relate to their environment in a flexible, productive and adaptive manner, in addition to having perceptions of themselves and the environment that are constructive and promote balance. Huarcaya (2020), in his study through a narrative review, points out that research conducted from the beginning of the pandemic until March 2, 2020, shows that from the initial

stage, there was a considerable increase in negative emotions such as anxiety, depression and indignation, as well as a decrease in positive emotions of happiness and satisfaction, generating the presence of anxiety, depression and stress in the world population.

In the educational area, according to the WHO, the pandemic generated problems in students such as attention deficiency, hyperactivity, anxiety, depression, eating disorders and sleep, which hinder their academic performance (Chávez, 2021). In the research conducted by Cobo, Vega and Garcia (2020), they found a significant increase in depression, anxiety and stress symptoms in college students during the pandemic of COVID-19. On the other hand, Martínez (2020), in his study of Chilean students, concluded that there was a considerable increase in family stress, financial insecurity and uncertainty since the pandemic affected not only physical and mental health but also the economy, intensifying the levels of stress, anxiety, depression and the feeling of fear of life, with university students being the population most at risk of presenting mental health problems as a consequence of the adverse reaction to the virtual modality that educational institutions had to adapt to continue the teaching-learning process.

In their research, Cobo et al. (2020) related to mental health in university students exposed to COVID-19, describe that the risk factors that influence the development of anxiety are economic situations and delays in academic activities, identifying an increase in depressive symptoms, stress, anxiety, post-traumatic stress, feelings of external fear, difficulties in sleep duration and an increase in suicidal thoughts. Furthermore, Campoverde and Tornero (2021) observed that confinement and the presence of the COVID-19 virus had caused an increase in student anxiety, which plays a fundamental role in their academic performance.

One of the vulnerable groups are students in the area of health sciences such as medicine, nursing, and psychology, among others, who presented a significant increase in anxiety and depression disorders during the health crisis caused by the global pandemic of the COVID-19 virus (Caycho et al., 2020; Islam et al., 2020; Saravia et al., 2020; Tobon & Saddik, 2020), as they have had to modify the way they become professionals by having to take online classes and cancel practical classes, with medical students being the population at highest risk for anxiety and depression worldwide as shown in Table 1 (Cao et al., 2020; Meo et al., 2020; Nakhostin et al., 2020).

Author	Country	Population	Main findings
Cao et al. (2020)	China	The entire medical student population of Changzhi University	24.9% presented anxiety related to the pandemic. Economic issues, knowing someone infected, educational delay, and being male were considered independent risk factors.

Meo et al. (2020)	Saudi Arabia	King Saud University, School of Medicine, choice by simple randomization at random	44.15% reported being emotionally detached from their social circle, while 38.11% reported feeling hopeless, tired or emotionally down. 56.22% reported feeling strongly diminished in their social circle. Academic ability.
Nakhostin et al. (2020).	Iran	Tehran University of Medical Sciences	35.8% of undergraduate students and 37.2% of clinical students or interns showed anxiety; for depression, 27.5% showed anxiety and 27.6%, respectively. In addition, 74.3% reported sleep problems, 53.6% energy loss and 51.1% concentration problems. Having suffered from Covid-19 and being a woman were considered risk factors.

Table 1. Cross-sectional studies on symptoms of mental illness during the Covid-19 pandemic at three different universities in various countries.

### Methodology

The research has a quantitative approach since determining the behavior of the sample was carried out through data collection and analysis using statistics (Silva et al., 2018). Concerning the design, it is a descriptive, cross-sectional, observational and prospective type of research since the degree of mental health was analyzed by identifying the different affectations. The population is composed of students from 18 to 25 years of age of indistinct sex of the career of medical surgeon of the Autonomous University of Tamaulipas and the sample consisted of a total of 104 students selected by non-random way, of which 67.3 % (70) are female and 32.7 % (34) belong to the male sex.

The technique used was the online survey using the Google Forms platform and the data collection instrument was the General Health Questionnaire (GHQ-28) developed by Goldberg and Blackwell (1970) as a method of initial screening for possible or potential non-psychotic psychiatric cases in the clinical practice of general medicine in the community, whose purpose is to identify the inability to perform regular or adaptive daily activities and the manifestation of disturbing phenomena and psychopathological symptoms in the subject, focusing on very basic psychopathological disturbances and minor maladaptive behaviors at the personal and social level (López et al., 1996). Its profile is composed of 28 items divided into 4 subscales: A (somatic

symptoms), B (anxiety and insomnia), C (social dysfunction) and D (severe depression). The Statistical Package for Social Sciences (SPSS) (SPSS, 2010) version 2022 was used to evaluate the statistical analysis, systematizing the results through frequency and percentage tables.

## Results

The results describe the mental health affectations due to COVID-19 confinement in medical students through the application of the General Health Questionnaire (GHQ-28), in which 104 medical surgeon students participated, which showed age that 17.3 % (18) are between 18 and 20 years old, 68.3 % (71) are between 21 and 23 years old and 14.4 % (15) belong to the group of 24 years old or older.

Concerning the somatic symptoms scale, 51.0 % (53) answered considerably more than usual, followed by no, not at all with 38.5 % (40); on the anxiety and insomnia scale, 34.6 % (36) answered no more than usual, followed by 30.8 % (32) with considerably more than usual; concerning the results obtained in the social dysfunction scale, 49.0 % (51) answered no more than usual and 23.1 % (24) answered no, not at all; finally, in the severe depression scale it was observed that 49.0 % (51) answered no, not at all followed by 26.9 % (28) with no more than usual (Table 2)

	Scale	Frequency	Percentage	Media	DE
Somatic symptoms	No more than usual	4	3.8	2.61	.674
	No, not at all	40	38.5		
	Much more than usual	53	51.0		
	Much more than usual	7	6.7		
	Total	104	100.0		
Anxiety and insomnia	No more than usual	36	34.6	2.21	1.058
	No, not at all	23	22.1		
	Much more than usual	32	30.8		
	Much more than usual	13	12.5		
	Total	104	100.0		
Social dysfunction	No more than usual	12	11.5	2.70	.880
	No, not at all	24	23.1		
	Much more than usual	51	49.0		
	Much more than usual	17	16.3		
	Total	104	100.0		
Severe depression	No more than usual	28	26.9	2.04	.847
	No, not at all	51	49.0		
	Much more than usual	18	17.3		

	Much more than usual	7	6.7		
	Total	104	100.0		

Table 2. The somatic symptoms scale results in anxiety, insomnia, social dysfunction, and significant depression.

The cross analysis carried out between gender and the dimensions showed that in the female sex, the dimension of somatic symptoms was presented in 45.7% (32) the answer no, not at all, followed by 44.3 % (31), much more than usual; on the contrary, in the male sex, the response much more than usual was obtained in 64.7 % (22) and not at all in 23.5 % (8), as shown in Table 3. However, the chi-square test ( $p=.155$ ) found no significant difference between these variables (Table 4).

Table 3. Cross-analysis between gender and the somatic symptoms scale.

	Somatic symptoms				Total
	No more than usual	No, not at all	Much more than usual	Much more than usual	
Male	1 2.9%	8 23.5%	22 64.7%	3 8.8%	34 100.0%
Female	3 4.3%	32 45.7%	31 44.3%	4 5.7%	70 100.0%
Total	4 3.8%	40 38.5%	53 51.0%	7 6.7%	

Table 4. Chi-square test between gender and the somatic symptoms scale.

	Value	gl	Asymptotic sign (bilateral)
Pearson's Chi-square	5.237 <sup>a</sup>	3	.155
Likelihood ratio	5.422	3	.143
Linear by linear association	3.941	1	.047
N of valid cases	104		

In the case of the anxiety and insomnia scale, the results obtained in the female sex were 31.4 % (22) in much more than usual and not more than usual and in the male sex, 41.2 % (14) responded not more than usual and 29.4 % (10) much more than usual (Table 5), no significant difference was found between these variables with the chi-squared test ( $p=0.480$ ) (Table 6).

Table 5. Cross-analysis between gender and the anxiety and insomnia scale.

	Anxiety and insomnia				Total
	No more than usual	No, not at all	Much more than usual	Much more than usual	
Male	14 41.2%	8 23.5%	10 29.4%	2 5.9%	34 100.0%
Female	22 31.4%	15 21.4%	22 31.4%	11 15.7%	70 100.0%
Total		36 34.6%	23 22.1%	32 30.8%	13 12.5%

Table 6. Chi-square test between gender and the anxiety and insomnia scale.

	Value	gl	Asymptotic sign (bilateral)
Pearson's Chi-square	2.474 <sup>a</sup>	3	.480
Likelihood ratio	2.705	3	.439
Linear by linear association	2.018	1	.155
N of valid cases	104		

In the social dysfunction scale, 64.7% (22) answered significantly more than usual and 17.6% (6) in the male sex and in the female sex, 41.4% (29) significantly more than usual and 31.4% (22) did not at all (Table 7), 22.8% (21) in low level, 32.6% (30) in moderate level and 44.6% (41) in high level (Table 6) .8% (21) in low level, 32.6% (30) in moderate level and 44.6% (41) in high level (Table 6), finding significant difference using the chi-square test in these variables ( $p=0.029$ ) (Table 8).

Table 7. Cross-analysis between gender and the social dysfunction scale

	Social dysfunction				Total
	No more than usual	No, not at all	Much more than usual	Much more than usual	
Male	4 11.8%	2 5.9%	22 64.7%	6 17.6%	34 100.0%
Female	8 11.4%	22 31.4%	29 41.4%	11 15.7%	70 100.0%
Total	12 11.5%	24 23.1%	51 49.0%	17 16.3%	104 100.0%



Table 8. Chi-square test between gender and the anxiety and insomnia scale.

	Value	gl	Asymptotic sign (bilateral)
Pearson's Chi-square	9.055 <sup>a</sup>	3	.029
Likelihood ratio	10.595	3	.014
Linear by linear association	2.124	1	.145
N of valid cases	104		

About the severe depression dimension, the results found show that 58.8% (20) answered no, not at all and 23.5 % (8) no more than usual in the male sex and the female sex, 38.6 % (27) answered no, not at all and 30.0 % (21) answered no more than usual and considerably more than usual (see table 9), finding the significant difference of the chi-square test ( $p=0.018$ ) (Table 10).

Table 9. Cross-analysis between gender and the major depression scale.

	Severe depression				Total
	No more than usual	No, not at all	Much more than usual	Much more than usual	
Male	8 23.5%	20 58.8%	3 8.8%	3 8.8%	34 100.0%
Female	21 30.0%	27 38.6%	21 30.0%	1 1.4%	70 100.0%
Total	29 27.9%	47 45.2%	24 23.1%	4 3.8%	104 100.0%

Table 10. Chi-square test between gender and the major depression scale.

	Value	gl	Asymptotic sign (bilateral)
Pearson's Chi-square	10.121 <sup>a</sup>	3	.018
Likelihood ratio	10.596	3	.014
Linear by linear association	.000	1	.996
N of valid cases	104		

In this study, it was found that more than 57% of the students presented some mental health alteration caused by the pandemic of the COVID-19 virus, of which more than 50% presented one or more alterations, among which are mainly social dysfunction, somatic symptoms, anxiety and insomnia, being less frequent severe depression. These results agree with Quitanilla (2011), who mentions that 53.6% of the general population presents symptoms of anxiety and insomnia, 60.0% somatization symptoms, 46.0% social dysfunctions and 28.8% depression, which increase with age and are more frequent in women.

The results of Cruz et al. (2021) in their research on a population of 257 university students, found that women express a greater sensitivity to the horror due to the COVID-19 pandemic related to men, so symptoms of distress are accentuated. According to Jeréz and Oyarzo (2015), in general, psychological problems are more accentuated in women than in men, especially in the anxiety dimension; however, these findings do not agree with those found by Moreta et al. (2021), mentioning that the male sex presented a higher prevalence of mental health problems, increasing anxiety with the female sex.

Orellana and Orellana (2020) and Wang et al. (2020) show in their research that women generate more significant emotional pressure that results in anxiety and stress because they tend to externalize their physiological and emotional reactions with greater vulnerability to psychoemotional problems (Araoz et al., 2021). These results are consistent with the studies conducted by the Economic Commission for Latin America and the Caribbean (ECLAC), which show a reduction in the personal autonomy of the female sex from the male sex (ECLAC, 2020).

Mejía et al. (2020), in their research on 418 university students in Peru, found that women and men have similar anxiety scores, and women predominate in the depression scale, in agreement with the data found by Micin and Bagladi (2011). In addition, general health is affected by the COVID-19 virus infection, with symptoms ranging from mild symptoms such as cough, muscle pain and headache to more severe ones such as difficulty breathing, pneumonia and multiple organ failure resulting in death (Hui et al., 2018; Ramirez et al., 2020; Zhou et al., 2020; Espinosa et al., 2021).

Mental health is alarmingly affected in the general population and in students of different educational levels, especially those in higher education, since, in addition to the typical pressure of the academic degree, the change to the virtual modality prevents them from accessing pre-professional practices in laboratories and face-to-face academic counseling to support them in their preparation for working life; in addition, isolation, social and economic problems generated by the pandemic situation worldwide are also factors that impact on the mental health of this population (Araoz et al., 2021; Zapata et al., 2021).

## Conclusions

The confinement caused by the pandemic derived from the COVID virus19 generated a significant deterioration in the psychological wellbeing of the population worldwide, since mental disorders increased, especially anxiety as a response to the concern about the possibility of contagion and its implications on health, depression as a result of the experiences lived impairing people's mood, sleep disorders due to the routine interruption of the natural cycle and stress disorders as a consequence of episodes of anguish.

In the current context and after a long period of social distancing since the beginning of the pandemic in Mexico, the social impact caused by this virus has affected the mental health of a good part of the medical students since the confinement, as well as the lack of contact with experiences and people caused emotional ups and downs, stress and anxiety, the change of routine in the activities of daily life to adapt to this new lifestyle generated disorientation and frustration. This is why it is a priority to rethink medical education to train health professionals with the necessary competencies and reduce the potential impact on their mental health.

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