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Evaluation of the impact of COVID-19 on the frequency of psychological disorders in medical students at the University of Antofagasta.

Evaluación del impacto del COVID-19 en la frecuencia de trastornos psicológicos en estudiantes de medicina de la Universidad de Antofagasta.

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Summary: The drastic changes caused by the pandemic brought with them psychological disorders, as a result of the measures adopted for its management . University students, in their adaptation, presented difficulties in academic performance and greater university dropout. Therefore, the objective of this study is to evaluate the impact of the COVID-19 pandemic on the frequency of psychological symptoms in undergraduate medical students at the University of Antofagasta. This is a correlational, observational and cross-sectional study with the application of the Goldberg-GHQ-12 sociodemographic and health questionnaires to 85 undergraduate medical students at the University of Antofagasta. In the area of mental health, the overall score was very high (31.7 out of 38), indicating that there is a possibility that the students suffered an emotional disorder that demonstrated a worse state of mental health, with mood being the most affected area. . 31.8% consumed psychoactive substances and 18.8% reported that they had to face conflicts and violence occasionally. In terms of psychological well-being, social functioning and coping, the students in our study obtained results with better mental health status compared to other populations; It is suggested that taking a proactive attitude helped confront the problems associated with the pandemic. However, in the area of mood, they showed worse results than those described worldwide, which reinforces the idea that the university population increases its vulnerability in environmental crises.

Keywords: university students, psychological disorders, COVID-19

Resumen: Los cambios drásticos provocados por la pandemia trajeron consigo trastornos psicológicos, como resultado de las medidas adoptadas para su gestión. Los estudiantes universitarios, en su adaptación, presentaron dificultades en el rendimiento académico y mayor deserción universitaria. Por lo tanto, se plantea como objetivo de este estudio evaluar el impacto de la pandemia por COVID-19 en la frecuencia de síntomas psicológicos en estudiantes de pregrado de medicina en la Universidad de Antofagasta. Este es un estudio correlacional, observacional y transversal con aplicación de cuestionarios sociodemográfico y de salud de Goldberg- GHQ-12 a 85 estudiantes de pregrado de Medicina de la Universidad de Antofagasta. En el área de la salud mental la puntuación global fue muy alta (31,7 de 38) indicando que hay posibilidad de que los estudiantes sufrieron un trastorno emocional que demostró un peor estado de salud mental, siendo el estado de ánimo el área más afectada. Un 31,8% consumió sustancias psicoactivas y un 18,8% refiere

que tuvieron que enfrentar conflictos y violencia ocasionalmente. En cuanto a bienestar psicológico, funcionamiento social y afrontamiento, los estudiantes de nuestro estudio obtuvieron resultados con mejor estado de salud mental comparado con otras poblaciones; se sugiere que tomar una actitud proactiva ayudó a enfrentar los problemas asociados a la pandemia. Sin embargo, en el ámbito de estado de ánimo, mostraron peores resultados que los descritos a nivel mundial, lo cual refuerza la idea de que la población universitaria aumenta su vulnerabilidad en crisis medioambientales.

Palabras claves: universitarios, trastornos psicológicos, COVID-19

1. Introduction

The onset of the COVID-19 pandemic brought drastic changes to society and the economy globally, and the measures implemented to manage it were associated with high reported levels of symptoms of psychological disorders. According to the studies reviewed, it has been observed that, since the beginning of the pandemic, the general population has experienced psychological difficulties, including anxiety, depression and stress (1-8). It has been observed in studies on previous epidemics and pandemics that people, when faced with these types of situations, may experience uncertainty, fear of death, feelings of loneliness, sadness and irritability (9). In this context, discussion has resurfaced about the mental health problems faced by university students, who are forced to stay at home and comply with the confinement and social distancing measures established by the government to stop the spread of the virus. In this scenario, classes have moved to virtual remote mode, resulting in reports of significantly higher levels of anxiety, depression and stress compared to previous normal times for students (10). To this we can add that, in terms of mental health, university students are considered a vulnerable population and this period coincides with a stage in which most mental disorders tend to manifest (11). An association has been established between mental disorders and challenges in academic performance, as well as with higher rates of university dropout (12).

Previous research on the mental health of university students exposed to COVID-19 has pointed out risk factors for the development of anxiety, such as the economic situation, as well as delays in academic activities (13). Furthermore, the symptoms that have been identified most frequently are depression and stress (14-16). Even before the pandemic, a study carried out on university students in Chile suggested a sustained increase in anxiety and depression between 2015 and 2017 (17). Along the same lines, recent research carried out on university students in China, the United States and Switzerland has revealed a high prevalence of depressive and anxious symptoms during the pandemic (18-21). Additionally, some longitudinal studies have reported higher levels of anxious and depressive symptoms compared to the pre-pandemic period, along with the identification of feelings of extreme fear and difficulties with sleep quality (22). A study with Greek students also noted an increase in suicidal thoughts within this population (23). The recent results of the "Longitudinal Survey on Mental Health" (ELSAM), carried out in June and July 2020 among first-year students at the University of Chile, reveal that the pandemic has had a significant impact on various aspects of the life of university students, covering economic, academic and relational aspects. Six out of ten students were described as experiencing at least one adverse event in their family environment during the first months of the pandemic, highlighting the decrease in income. 47% reported difficulties in accessing and continuing with online classes, while 82.5% mentioned having faced concentration problems in studies and daily activities. On the other hand, the same study reports that three out of four students indicate that their mood is worse or much worse compared to the period before the pandemic (17).

All of these findings suggest that the psychological consequences due to COVID-19 could be serious. and that the adverse effects of the pandemic could be affecting the mental health of university students to a greater extent than the general population. Although the state of mental health in the general population has been evaluated during the pandemic period in Chile, and some studies that address the reality of students' mental health have been reported, these are still insufficient to address its complexity, especially in the case of the students of the University of Antofagasta. Given the background, the question arises: What has been the impact of the COVID-19 pandemic on the frequency of psychological disorders or symptoms in undergraduate medical students at the University of Antofagasta? To this end, the general objective proposed is to evaluate the impact of the COVID-19 pandemic on the frequency of psychological disorders or symptoms in undergraduate medical students at the University of Antofagasta.

2. Methods

2.1 Study population:

This study is correlational, observational and transversal, which considers as a population all undergraduate students from the first to the fifth year of the medical degree at the University of Antofagasta, over 18 years of age, who at the time of the study were considered students. regular students making a total of 297 students.

2.2 Procedures:

Two instruments were applied, both self-administered. The first was an online sociodemographic one, with the use of Qualtrics software, including a module on adverse events and negative experiences related to the pandemic. It consists of 22 questions, collected from a survey already published (24) . It contains a submodule A of sociodemographic characteristics that includes 7 items: (1) gender identification, (2) age, (3) number of people living in the household, (4) living situation, (5) father/mother, guardian or caregiver, (6) domestic violence, (7) psychotropic drug use; a submodule B of questions about the occurrence of adverse events in the family unit related to COVID-19, includes 6 items with binary responses [0=No, 1=Yes] such as: (1) death, (2) hospitalization, (3) COVID-19 illness, (4) quarantine due to contagion, (5) loss of work and (6) decrease in income. And a submodule C of questions about negative experiences related to COVID-19 in which five Likert-type items with five levels were included [1=Very frequently, 5=Never]: (1) economic problems, (2) difficulties in family and friends relationships during confinement. (3) problems with academic performance, (4) problems, difficulties accessing and following online classes, (5) difficulties concentrating in classes and daily activities.

The other instrument corresponded to the Goldberg-GHQ-12 health questionnaire, a self-administered screening test that detects non-psychotic psychiatric disorders, validated and used in the environment. It covers four fundamental psychiatric areas: depression, anxiety, social inadequacy and hypochondria (23, 25). A Likert-type scale was used in this study to produce a more acceptable distribution of parametric analysis results (with less skew and kurtosis), as there is evidence to suggest that a Likert-type ordinal score allows for better discrimination between competent factor analysis models. GHQ-12 confirmatory. According to this method, the maximum value obtainable is 36 points and a minimum of 0 points. The total score is calculated by adding the scores obtained in all the statements of the scale, which is indicative of more severe mental disorders, the higher its value. Three states were evaluated:

- Psychological well-being (items 1, 2, 5, 7, 9,12).
- Social functioning and coping (items 3, 4, 6, 8, 10 and 11).
- Mood (items 3, 4, 5, 9 and 12).

Both questionnaires remained accessible online through the University's social networks for two months.

2.3 Ethical considerations:

This study was approved by the Human Research Ethics Committee of the University of Antofagasta. Given the sensitivity of the topics addressed and the right to protection of personal data, the questionnaire and the attached module are in anonymous response format. Prior to the application of the questionnaires, informed consent was obtained from the participants through the Qualtrics software .

2.4 Statistical analysis:

Once the data was transferred to a Microsoft Excel database, an analysis of the response items was carried out and the questionnaires that did not exceed 50% of the responses were excluded. To process the data, a descriptive statistical analysis was carried out and to estimate the association and explore differences between the study variables, t test and analysis of variance were used. Data processing was carried out with the statistical program SPSS version 15.0.

3. Results

Table 1 shows the sociodemographic characteristics of the sample. The response rate was 28.6% of the total questionnaires sent, with the sample consisting of 85 students. The average age was 21.9 years with a variability of ±3.7 years. The highest response frequency was obtained from third-year students with 48.2%, followed by second- and fifth-year students with 23.5% and 20.0% respectively. Women represented 60.2%. According to sexual orientation references, a greater participation of heterosexuals was identified with 74.2%. A high proportion reports not being a father, mother or guardian with 94.1%. When asked about the number of people with whom they lived, the highest proportion reported living in groups of between 4 to 6 people, 58.8%. It is observed that when asked if they had conflicts at home and domestic violence during the pandemic, 61.2% said never, but 18.8% said they had to face conflicts and violence occasionally, while 9.4% He says he did it frequently. When asked if they consumed psychoactive substances during that period, 31.8% reported that they did. When asked if they needed physical or mental health services or both, 42.4% reported not having needed this service, while 20.0% reported having needed both services.

Table 2 shows the average scores according to areas of mental health and it is evident that it was 31.7 points, very close to the maximum of 38, which shows that in all areas there is a possibility that students are suffering. an emotional disorder showing a worse state of mental health, with mood being the most affected area (16.6).

Table 1. Sociodemographic variables

Item	N=85	Item	N=85
Age (mean ± SD)	21.9 ± 3.7		
Year of the degree (N%)		**Are you a father, mother or guardian?**	
Second year	20 (23.5%)	No	80 (94.1%)
Third year	41 (48.2%)	Yeah	3 (3.5%)
Fourth year	7 (8.2%)	Elderly caregiver	2 (2.4%)
Fifth year	17 (20.0%)		
Gender (N%)		**Conflicts at home and domestic violence**	
Female	51 (60.2%)	Never	52 (61.2%)
Male	29 (34.1%)	Occasionally	16 (18.8%)
Nonbinary	2 (2.4%)	Rarely	7 (8.2%)
Transgender	1 (1.2%)	Frequently	8 (9.4%)
Not compliant	2 (2.4%)	Very often	2 (2.4%)
sexual orientation		**Psychoactive substance consumption**	
Heterosexual	63 (74.2%)	Yes	27 (31.8%)
Bisexual	15 (17.6%)	No	58 (68.2%)
Homosexual	7 (8.2%)		
People living in your home		**Use of mental and/or physical health services**	
1-3	35 (41.2%)	No	36 (42.4%)
4-6	50 (58.8%)	Mental	15 (17.6%)
		Physical	17 (20.0%)
		Both	17 (20.0%)
Housing situation (N%)			
Does not pay rent	43 (50.6%)		
Housing Rent	17 (20.0%)		
Housing Owner	21 (24.7%)		
Other	4 (4.7%)		

Table 2. Means obtained from the global score and by area of mental health status (SD, standard deviation).

Areas	Mean	SD	Max Value
Psychological well-being	13.3	7.0	21
Social functioning and coping	15.0	7.0	20
Mood	16.5	5.8	18
Global points general mental health	31.7	1.4	38

Table 3 shows the means of the global score according to the sociodemographic characteristics of the sample. The worst state of mental health was recorded by fourth-year students (33.7 points), transgender (33.6 points), non-binary students (33.0 points), those who live with 4 or more people (32. 3 points), those who do not pay rent (32.1 points), those who consume psychoactive substances (32.0 points), homosexuals (32.0 points) and students who are fathers, mothers or guardians (31.3 points). A statistically significant association was only found between the worst mental health status and the number of people living in the student's home (F= 3.3; $p<0.009$). Being worse among students who report living between 4 to 6 people in the same home. Students who reported frequent conflicts at home and domestic violence showed a worse state of mental health (32.5 points),

but without statistically significant differences with those who reported never having these conflicts.

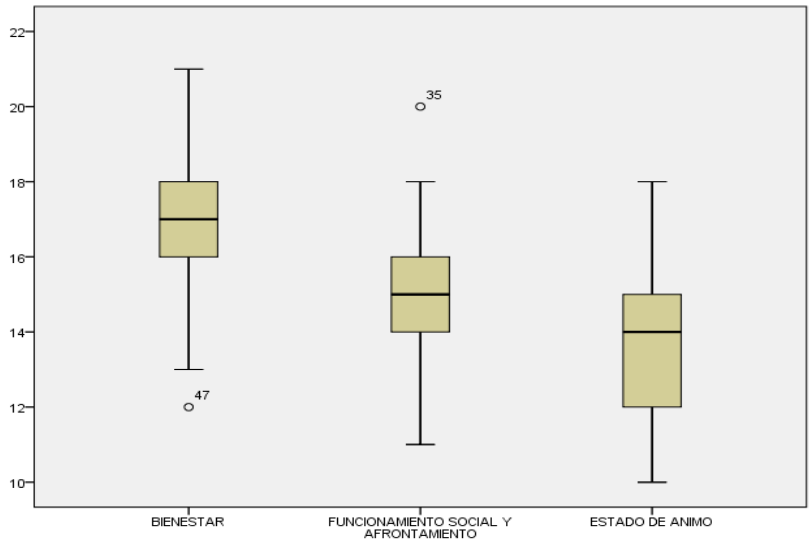

Figure 1. Means obtained from the global score and by area of mental health status

Table 3 . Means of the global score according to sociodemographic variables.

Characteristics	Mental health		p (95%)
	Mean	Standard deviation	
Gender			
Women	29.3	2.8	0.94
Man	31.5	2.2	
Nonbinary	33.0	2.8	
Not compliant	32.0	2.8	
Transgender	33.6	1.8	
Year of the race			
Second year	31.4	2.6	0.021
Third year	31.5	2.5	
Fourth year	33.7	3.4	
Fifth year	31.8	2.2	
sexual orientation			
Heterosexual	31.7	2.6	0.061
Bisexual	31.8	2.9	
Homosexual	32.0	1.5	
People living in your home			
1-3	31.0	2.2	0.009
4-6	32.3	2.47	
Housing Situation			
Does not pay rent	32.1	2.7	0.49
Housing rent	31.0	2.0	
Are you a father, mother or guardian?			
No	30.8	2.6	0.39
Yeah	31.3	2.0	
Take care of the elderly	30.0	2.8	
Psychoactive substance consumption			
Yeah	32.0	2.5	0.49

No	31.6	2.6	
Have you received in-person mental health or physical health care since the COVID-19 pandemic began?			
No	31.9	2.9	0.27
Physical attention	31.3	2.1	
mental attention	32.6	23	
Both attentions	31.0	23	
Conflicts and domestic violence			
Never	31.8	2.6	
Occasionally	31.6	3.1	
Rarely	31.2	2.0	
Frequently	32.5	2.2	
Very often	30.0	1.4	

Table 4 shows the means of the global score of adverse events and negative experiences related to the COVID-19 pandemic. The worst mental health status was found to be significantly associated with references of having had COVID-19 infection (28.8±2.5) (<0.001), with a family member hospitalized for COVID-19 (29.8±2 ,2) (<0.011), with a member of the family nucleus who became ill from COVID-19 (25.0±2.3) (<0.000) and the decrease in income of a family member (21.8± 2.7) (<0.001).

Table 4. Means of the global score according to adverse events and negative experiences related to the COVID-19 pandemic (SD, standard deviation).

Event	Yes		No		p (95%)
	Mean	SD	Mean	SD	
Adverse events					
Did you have a COVID-19 infection	28.0	2.5	31.6	2.6	<0.00*
Has any member of the family nucleus died from COVID-19?	31.1	2.2	31.8	2.6	0.573
Has any member of your family been hospitalized for COVID-19?	29.9	2.2	32.0	2.5	<0.01*
Has any member of your household become ill with COVID-19?	25.0	23	32.3	2.8	<0.00*
Was any member of your family quarantined?	31.5	23	32.2	3.0	0.267
Has any member of your family lost their job?	31.2	2.8	32.0	2.4	0.158
Has any member of your family decreased their income?	21.8	2.7	31.6	2.4	<0.00*

Table 5 shows the distribution of negative experiences related to the pandemic in medical students. When inquiring about the economic problems they have had during the pandemic, the most frequent response was never with 25.9%. When asked about problems with family and friends that they have experienced, the most frequent response was occasionally with 29.4%. While when asked about problems with academic performance, problems accessing and following online classes in distance mode, difficulties concentrating in classes and daily activities, and a greater academic load since the COVID-19 pandemic began, the responses most repeated were frequent and very frequent (32.9%, 28.2%, 60.0% and 41.2% respectively).

Table 5. Distribution of negative experiences related to the pandemic in medical students

Item	Very common (1)	Frequent (2)	Occasional (3)	Rarely (4)	Never (5)
I have experienced financial problems during the COVID-19 pandemic	8 (9.4%)	17 (20.0%)	21 (24.7%)	17 (20.0%)	22 (25.9%)
I have experienced family and/or friend problems during the COVID-19 pandemic	11 (12.9%)	17 (20.0%)	25 (29.4%)	22 (25.9%)	10 (11.8%)
I have experienced problems with academic performance during the COVID-19 pandemic	19 (22.4%)	28 (32.9%)	21 (24.7%)	13 (15.3%)	4 (4.7%)
I have experienced problems accessing and following online or virtual classes during the COVID-19 pandemic.	24 (28.2%)	10 (11.8%)	23 (27.1%)	20 (23.5%)	8 (9.4%)
I have experienced difficulties concentrating in classes and daily activities during the COVID-19 pandemic.	51 (60.0%)	23 (27.1%)	7 (8.2%)	4 (4.7%)	0 (0.0%)
I feel that there is much more academic load since the COVID-19 pandemic began	35 (41.2%)	29 (34.1%)	13 (15.3%)	5 (5.9%)	3 (3.5%)
Total	**1 (1.2%)**	**8 (9.4%)**	**33 (38.8%)**	**30 (35.3%)**	**13 (15.3%)**

4. Discussion

In our study we observed that psychological well-being, social functioning and coping obtained scores associated with a better state of mental health. This suggests that university students, faced with the various psychosocial stressors of COVID-19, possibly adopted a proactive attitude that allowed them to deploy their personal resources and anticipate problems associated with the consequences generated by the pandemic (26). In contrast, Anglim and Horwood (27) found that a sample of university students surveyed during the pandemic obtained significantly lower scores on psychological well-being than those obtained in this study. Furthermore, as suggested by Tugade and Fredrickson (28), psychological well-being has been shown to help people cope with undesirable experiences.

On the other hand, higher levels of affectation were observed in mood states, whose score in the study indicates a more unfavorable state. This is consistent with several studies conducted around the world during the COVID-19 pandemic, especially in the university population (29-31). These results support the idea of the susceptibility and vulnerability of the university population (32-33), which is aggravated in the face of environmental crises, as suggested by Moreira and Telzer (34) and Khodarahimi and Fathi (35). Furthermore, the results are consistent with the findings of the Social Thermometer population survey (36), where 43.9% of participants aged 18 years and older reported a worsening of their mood.

The results of this research indicate that more than half of university students suffered at least one type of adverse event in their family during the pandemic. This finding is consistent with the results obtained in other studies carried out at the beginning of the pandemic in Chile, which highlighted economic uncertainty and fear of decreased income as some of people's most important concerns (36-37). According to the results, a reaction trend in mental health shared by the studies reviewed is observed. It has been shown that fear of

infection and lack of clarity in guidelines during confinement can cause frustration and restlessness, feelings that tend to worsen without adequate access to information. This lack of clarity about necessary behavior during confinement and confusion about its purpose (38) have been corroborated factors in other university populations during the COVID-19 pandemic (39). These findings reveal the unequivocal impact it has had on the mental health of university populations.

In relation to this topic, studies carried out in China, such as that of Liu et al. (40), indicate that university students expressed their concerns, especially regarding the needs of daily life, highlighting the threat to life associated with COVID-19 (63.6%). In this context, it is argued that university students, having achieved a certain independence, tend to worry more about all aspects of COVID-19, which is reflected in higher and more severe somatic symptomatology compared to students at other levels. Based on the findings of the original studies (41) , which aimed to explain how the infection tests the physical and psychological states of people, it is proposed that the associated effects such as isolation, exposure to news about The increasing number of fatalities, remote work demands, living in small spaces and economic uncertainty are aspects that undoubtedly overwhelm people's coping mechanisms. In this case, the triggering event of the coronavirus has become universally stressful and affects various areas of human functioning, which is why confusion and uncertainty is generated; relational conflicts, feelings of anxiety, boredom and frustration, as a result of job and economic losses; the reduction of freedom of mobility, the distancing from other family members. When an event that produces a psychological crisis exceeds the mechanisms and strategies that a person usually uses to manage its effects, psychological symptoms or behavioral reactions of different types usually appear, as diverse as the human being (41) .

The results of this research are consistent with the results observed in other studies carried out in Chile in university populations, which show that during the pandemic there were alterations in mental health in the student population, reflecting being a risk group for the development of symptoms. psychological disorders and that these alterations were more frequent in students who completed the second year of medical school.

5. Conclusions

- The evaluation of the impact of the COVID-19 pandemic on the frequency of psychological symptoms in undergraduate medical students at the University of Antofagasta reveals crucial aspects for care and the design of interventions, such as the identification of a greater incidence of impacts negative results in the second academic year emphasizes the need for specific measures for this group.
- The correlation between a multi-cohabitant family environment and a decline in mental health underscores the importance of considering the context of the environment when addressing students' needs. This finding highlights the need for personalized support strategies that take family dynamics into account.
- The presence of violence and conflicts at home among students highlights the vulnerability of this group to difficult situations. This data reinforces the importance of raising awareness and establishing preventive programs to proactively address domestic challenges that can affect mental health.
- These observations underline the importance of concrete actions. Interventions adapted to the different academic stages, contextualized support strategies and prevention programs are recommended that strengthen the resilience of medical students in the face of the emerging challenges of the pandemic and its impact on mental health.

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