Medical students and mental health: prevalence of psychopathology symptoms and associated factors during COVID-19 pandemic.

Estudiantes de medicina y salud mental: prevalencia de sintomatología de psicopatologías y factores asociados durante la pandemia de COVID-19.

Luis Roberto Aguilar Sandoval [a], Alejandro Alonso Altamirano [b], Ofelia Gómez Landeros [c], José Arturo Granados Cosme [d], Maria Fernanda Bárcenas Torres [e].

Abstract:

Introduction: Medical Students are at elevated risk of suffering a psychopathology and the COVID-19 pandemic has risen the prevalence of such pathologies in the population. Method: We conducted a descriptive cross-sectional study for prevalence determination applying a series of self-applied instruments (BDI-2, BAI, OCI-R, PANSI, and DAST-10) to a representative sample of freshmen to determine possible diagnoses of psychopathology. Data obtained was analysed using SPSS 27 Results: 59% showed symptomatology of at least one of studied psychopathologies. 47.8% showed more than one diagnosis, being the more frequent morbidities depression-anxiety (16.4%) and depression-anxiety-OCD (16.4%). The risk for presenting a psychopathology quadrupled (OR=4.3, p=0.05) in those who had a negative emotional impact by COVID-19. Students living by themselves had four times the risk (OR=4.1, p=0.06) of showing a psychiatric diagnosis than those who live with any kind of companions. Conclusion: the mental health of Medical Students should be closely observed, and mental health interventions directed to social support systems publicized and applied.

Keywords:

Medical students, psychiatry, social support systems, cohabitants, mental illness.

Resumen:

Introducción: Los estudiantes de medicina tienen mayor riesgo de padecer alguna psicopatología y la pandemia por COVID-19 ha incrementado la prevalencia de estas patologías. Material y métodos: Se realizó un estudio transversal, descriptivo, de determinación de prevalencias aplicando a una muestra representativa de alumnos una serie de instrumentos autoaplicables (BDI-2, BAI, OCI-R, PANSI, AUDIT y DAST-10). Se analizaron los datos utilizando el programa SPSS 27.0 Resultados: 59% presentaron sintomatología de una o más psicopatologías estudiadas. 47.8% presentaron más de un posible diagnóstico, siendo las comorbilidades más comunes ansiedad-depresión (10.4%) y depresión-ansiedad-TOC (16.4%). El riesgo de padecer una psicopatología se cuadruplicaba (OR=4.3, p=0.05) en quienes tuvieron un impacto emocional negativo por el COVID-19. Los estudiantes que viven solos cuadruplican el riesgo (OR=4.1, p=0.06) de presentar una psicopatología que aquellos que cohabitan con compañía. Conclusiones: La salud mental de los estudiantes de medicina debe ser vigilada de cerca e intervenciones en salud mental dirigidas a las redes sociales de apoyo deben ser divulgadas y aplicadas.

Palabras Clave:

Estudiantes de medicina, psiquiatría, redes sociales de apoyo, convivientes, enfermedad mental

[a] Universidad Autónoma Metropolitana-Xochimilco, https://orcid.org/0000-0002-7035-044X, Email: luiggikf@gmail.com

[b] Universidad Autónoma Metropolitana- Xochimilco, https://orcid.org/0000-0003-2200-7636, Email: aalonso@correo.xoc.uam.mx

[c] Universidad Autónoma Metropolitana-Xochimilco, https://orcid.org/0000-0003-1050-8126, Email: ogomez@correo.xoc.uam.mx

[d] Universidad Autónoma Metropolitana-Xochimilco, https://orcid.org/0000-0002-0583-1239, Email: jcosme@correo.xoc.uam.mx

[e] Universidad Autónoma Metropolitana-Xochimilco, https://orcid.org/0000-0002-0326-2335, Email: mfernandabarcenas13@gmail.com

Introduction

College students are exposed to an important academic and emotional burden, sometimes resulting in damages to the student's mental health (Gutiérrez Rodas, 2010), especially in careers as competitive as medicine. Universities often ignore the mental health status of their freshmen, for there are few or no programs for early diagnostic for psychopathology. Moreover, the COVID-19 pandemic has been a factor with considerable impact over the general population's mental health in the last months (Martínez Taboas, 2020).

According to data by Medina-Mora (2007), around 26% of the Mexican population 18 years or older has experienced a psychiatric disorder and up to 36% will develop at least one during their lifetime. Nevertheless, in Medical Students the described prevalence is highly distinct with up to 60% of the population showing signs of one or more probable diagnoses (Galván-Molina, 2017), meaning that the students of this career are an especially vulnerable group for developing any of these illnesses.

Simultaneously, psychopathologies are associated with an increment of suicide risk, being reported medium to high suicidal ideation levels in about 48% of patients with a severe psychopathology (López-Vega, 2020), while a severe mental illness can, at the same time, have a bidirectional with problematic alcohol and drugs use, being described that approximately 50% of patients with severe mental health problems will develop a substance abuse disorder in their lifetime (Casas, 2002).

Additionally, studies modelled within college population have showed a prevalence of suicide risk rounding from 11% to 30% prior to the COVID-19 pandemic (Trindade Júnior, 2021) and data suggestive of medium to high suicide risk in college students during the pandemic has been present in 70% of the population (Sanabria-Landeros, 2021) being the lockdown and other stressful events related to COVID-19 a clear risk factor for suicidal ideation.

Moreover, the importance of social relationships in mental health is broadly accepted as one of the three most important constructs in mental health research along with stress and coping (Turner, 2010). We can find four types of social relationships that "integrate one person with his social environment or with other persons with which they develop solidary and communicative bonds to solve specific needs" called social support systems (Instituto Nacional de las Personas Adultas Mayores [INAPAM], 2020). Those four social support systems are: material, cognitive, instrumental, and emotional. Material or tangible support systems refer to those that helps the person through food, money, or housing. Cognitive or informational support system are those that provide counselling, information or exchanging experiences. Instrumental or practical support systems are the ones that satisfy need such as transportation, help with house chores other similar activities. Finally, emotional support systems are those that provide the person with someone that listens, visits, or calls to him, as well as helping to laugh or see things more positively (John Hopkins Medicine, 2022; Acción contra el hambre, 2021).

During COVID-19 breakout, several social support structures were broadly affected with the closure of places such as schools and other gathering spaces, and adding the stigmatization of patients with COVID, this led several people to isolation and mental health problems (Jung, 2020).

With this in consideration, we applied a series of instruments among Medical Students freshmen in a university in Mexico City. Those instruments filled via Internet were used to estimate the prevalence of depressive, anxious, and obsessive-compulsive disorders, as well as conducts such as the abuse of alcohol, psychoactive drugs, and suicide risk among the students. Data obtained, along with various sociodemographic features, was used to determine risk factors associated with the development of these pathologies.

Objective

To determine the association between the COVID-19 pandemic perception and social support systems with the presence of damage to mental health (depression, anxiety, obsessive-compulsive disorder [OCD], alcohol abuse, drugs abuse and suicide risk) in a representative sample of freshmen Medical Students in a Mexican University in Mexico City.

Method

A cross-sectional descriptive study was designed to determine the prevalence of mental illness and their connection with the student's emotional perception on COVID-19 outbreak and their social support systems. Surveys were applied from August 16th to September 3rd of 2022.

Participants: Beginning with the total population of medical students matriculated in the first trimester of the career (N=75) we calculated a sample using a confidence level of 95%, a margin of error of 4% and an expected frequency of 60% obtaining a necessary sample of 67 surveys. Inclusion criteria were being matriculated in medicine course in the university and being a 1st trimester student. Exclusion criteria were studying another career, studying at another institutions, being higher grade students and refusing participation. The survey was personally sent to all 75 freshmen in order to collect more data, nonetheless, only 67 accepted to participate.

Procedure: The utilized instruments were digitalized employing the Google Forms platform. The

students then were provided with the link for them to access and complete the six selected questionnaires (BDI-II, BAI, OCI-R, AUDIT, DAST-10, and PANSI). The first page of the survey consisted of an informed consent the students had to accept in sequence to participate in the study. Along with it, respondents were given the option to answer anonymously or to provide personal and contact information for receiving the results of their tests and with the purpose of canalizing them to mental health services if required or solicited.

Instruments: Beck Depression Inventory second edition (BDI-II) is one of the most popular instruments to measure the severity of depressive symptoms (Sanz, 2014). It consists of 21 items scoring from 0 to 4 and the sum ranges from 0 to 63 points. The results are interpreted in the following way: 0-13 points minimum depression, 14-19 points mild depression, 20-28 points moderate depression and 29-63 points severe depression. This instrument has been validated in Mexican population since the late 1990´s (Jurado et. al. 1998) and has even been used in Medical Student population (González, 2015).

Beck Depression Inventory (BAI) is another instrument consisting of 21 items and it's used to evaluate the severity of anxious symptomatology. Resembling the BDI-II, this test has been validated for Mexican population (Padrós et. al. 2020) and it scores the 21 items in scale from 0 to 4 summing a total around 0 and 63 points. The scores proposed to stablish the severity by Robles et. al. (2001) are: 0-5 absent or minimum anxiety, 6-15 mild anxiety, 16-30 moderate anxiety and 31-63 severe anxiety. The Obsessive-Compulsive Inventory Revised version (OCI-R) is an inventory of 18 items divided in 6 subscales (washing, checking, ordering, neutralizing, hoarding, and obsessing) that scores from 0 to 4. It has been as well validated in Spanish speaking college students (Fullana & cols. 2005) and general population (Malpica & cols. 2009). The score proposed by Foa et. al. (2002) to discern between healthy patients and those with OCD is 21 out of the 72 possible points.

The Alcohol Use Disorders Identification Test (AUDIT) was proposed by the WHO (Babor, 2001) for the detection of excessive alcohol consumption or alcohol dependence. The test consists of 10 items divided in 3 dominions (risky consumption, dependence symptoms and harmful consumption) ranging in score from 0 to 4, except for items number 9 and 10, which scores can only be 0, 2 or 4. The grand total ranges from 0 to 40 and it provides four risk levels: 0-7 low risk consumption or non-drinker, 8-15 risky consumption, 16-19 harmful consumption and >20 points indicates dependence (Donoso, 2015). Validation of this test has been performed in both Spanish speaking population and college population (García Carretero, 2016).

The instrument selected for screening of drugs abuse or dependence wad the Drug Abuse Screening Test-10 (DAST-10). The questionnaire consists of 10 items with dichotomic answers (yes/no) that evaluate affairs related to substance abuse, such as physical, psychological, or social complications derived from the drug use patterns. Each positive answer is equal to 1 point with exception of item 3, in which the negative answer sums 1 point. Total sum varies from 0 to 10 (Yudko & cols. 2007). The categories and scores used were: 0 nonuser or low risk consumption, 1-2 risky consumption, 3-5 harmful consumption and 5-10 drug dependence. The score necessary for asserting a problematic use was 3 points (Skinner, 1982). DAST-10 questionnaire's validity has been demonstrated in Spanish speaking general population (Bedregal et. al. 2006) as well as in Mexican students (Gómez-Maqueo et. al. 2009).

The Positive And Negative Suicide Ideation (PANSI) Inventory is a questionnaire developed by Osman et. al. (1998) composed by 14 items divided in 2 categories (6 items correspond to positive suicide ideation [protective factors] while 8 items are related to negative suicide ideation [risk factors]). Each question is answered referring to the last 2 weeks in a scale from 0 to 5. This instrument has been validated in studies with Latin American college population (Villalobos-Galvis, 2010; Avendaño-Prieto, 2021). High suicide risk is suspected when the total sum of positive and negative points is greater than 9 (Toro-Tobar, 2016).

With the data obtained, statistical analysis was performed using the SPSS 27 software to establish the prevalence of probable diagnoses. Additional to the descriptive statistics, sociodemographic variables such as sex, cohabitants, family history of psychopathology, emotional impact of COVID-19 and the quality of the student's social support systems were analysed to obtain measures of association (OR) and it's corresponding statistical significance ($x2$ and p value).

Results

The sample consisted of 67 informants, of which 76.1% (n=51) were women and 23.9% men. Their average age was 18.8 years, range 17-13 and the standard deviation 1.27 years. 15% of the sample had a history of at least one direct relative with a mental illness diagnose. In addition, 17.9% (n=12) were living by themselves, 43.3% (n=29) lived with roommates or housemates and 38.8% (n=26) lived with their families. Results are summarized in Table 1.

Table 1.
Characteristics of the studied population

Sex	Women	Men	
	51	16	
	(76.1%)	(23.9%)	
Family history	Present	Absent	
	10 (15%)	57 (85%)	
Cohabitants	Alone	Peers	Family
	12	29	26
	(17.9%)	(43.3%)	(38.8%)

Note: own elaboration.

More than half of the respondents (59% n=40) presented symptomatology of one or more of the psychopathologies studied in this paper. The most prevalent individual diagnoses were depression and anxiety (46% n=31 both) and OCD (32% n=22). More details on each diagnose and its distribution between sexes are provided on Table 2.

Table 2.
Results by diagnose and sex

	Women		Men		Total	
	n	%	n	%	n	%
Depression	26	50.9	5	31.2	31	46
Anxiety	26	50.9	5	31.2	31	46
OCD	17	33.3	4	25	22	32
Alcohol abuse	10	19.6	3	18.7	13	19
Drugs abuse	5	9.8	1	6.2	6	8.9
Suicide risk	3	5.8	0	0	3	4.4
COVID influence	33	64.7	10	62.5	43	64.2

Note. Own elaboration

47% of respondents presented more than one diagnose. The most common comorbidities were anxiety-depression (10.4% n=7) for those with two diagnoses. Those with three diagnoses' most prevalent comorbidity was depression-anxiety-OCD (16.4% n=11). At final, the most common associated illnesses with more than three diagnoses were depression-anxiety-OCD-alcohol abuse (4.5% n=3). More profound description of the comorbidity's distribution can be found on Table 3.

Table 3.
Comorbidities by quantity and diagnoses

Quantity of diagnoses	Total (%)	Comorbidities
2	11 (16.4)	D.A.; D.Aa.; A.O.; D.O.; A.Aa.
3	11 (16.4)	D.A.O.
>3	10 (14.9)	D.A.O.Ad.; D.A.Aa.Ad.; D.A.O.Aa.; D.A.O.Rs.; D.A.Aa.Ad.; D.A.O.Aa.Ad.

Note: D: depression. A: anxiety. O: OCD. Aa: abuse of alcohol. Ad: abuse of drugs. Rs: risk of suicide. Own elaboration.

Differences by sex

When comparing the prevalence of these psychopathologies by sex, we found that women had a statistically relevant elevation of more than two times the risk of having depression (50.9% vs 31.2% [OR 2.3 x^2=1.9071, p=0.17]) and the same applied for anxiety (50.9% vs 31.2% [OR 2.3 x^2=1.9071, p=0.17]). Although for the rest of the ailments woman showed a higher percentage of OCD (33.3% vs 25% [OR=1.5]), harmful or problematic alcohol consumption (19.6% vs 18.7 [OR=1.1]), problematic consumption of drugs (9.8% vs 6.2% [OR=1.63]) and suicide risk (5.8% vs 0%), no statistically significant differences were found between sexes for those diagnoses.

Emotional perception on COVID

Of the total sample, 64.2% (n=43) affirmed that the situations derived from the COVID-19 pandemic negatively influenced their feelings and symptoms associated with the psychopathologies assessed in this study. When comparing the impact of the outbreak on the emotional perception with the risk of presenting one of these illnesses, we found that in those who's emotions were negatively affected by COVID, the risk of having one or more diagnoses was more than quadrupled (OR=4.3, x^2=3.841, p=0.05).

Differences by quality of social support systems and cohabitants

When evaluating the quality of social support systems, results were that 89.6% of the respondents had a sufficient material social support system vs only 10.4% whos' was insufficient. The informational social support system was sufficient in 88.1% while only insufficient in 11.9% of the sample. The instrumental social support system was sufficient in 80.6% of students and insufficient for the other 19.4%. The social support system that reported the highest insufficiency was the emotional support system, being inadequate for 23.9% of the respondents and adequate for 76.1%.

The insufficiency of each social support system was analyzed as a risk factor for having at least one diagnose showed no statistical relevance. However, the inadequacy of the emotional support system was a significant risk factor for the comorbidity of more than one psychopathology, duplicating the risk of having two diagnoses (OR=2.2, x^2=1.8, p=0.17) and almost triplicating the risk of presenting more than three diseases (OR=2.9, x^2=3.4, p=0.06).

Estimating the impact of the cohabitation status of the participants as a risk factor, we concluded that living alone could be a relevant risk factor for developing any of

the psychopathologies studied here. By living without any companionship, the risk of presenting any psychopathology vs any type of cohabitation more than quadrupled (OR=4.1, x^2=3.3932, p=0.06). Our results point out that living alone vs living with relatives or family increases the risk by almost six times (OR=5.8, x^2=4.6569, p=0.03) and living alone vs cohabitating with roommates or housemates resulted in three times the risk (OR=3, x^2=1.7724, p=0.18). Although living with peers as roommates or housemates proved to be beneficial, the difference in the risk between those students is still considerable, being almost two times the risk of those living with their families (OR=1.9, x^2=1.4005, p=0.23).

Discussion

The prevalence of psychopathologies present in this study is similar to the reported in other studies prior to the COVID-19 pandemic (Galván-Molina, 2017; Zivin & cols. 2009) and significantly superior that the prevalence described in other papers that place the percentage of students with psychopathologies between 20.3% and 32.5% (Auerbach et. al. 2016; Benjet et. al., 2019).

The main differences found in this study regarding to sex and mental health were consistent with others described in similar articles finding that women are at higher risk of developing psychiatric symptomatology, especially among female medical students (Jafari & cols. 2012). The main disorders that had increased risk of development in women in this study were depression and anxiety, which is also consistent with results reported by Aboalshamat & cols. (2015).

Regarding the outcomes of COVID-19 negative emotional impact in this work, similar results are found where factors associated with the lockdown were positively associated with high levels of anxiety (Cao et. al. 2020) and depression. Although not being approached in this work, main reasons reported in the literature for these increments are often the concerns for their family' and friends' health (Li & cols. 2020). Another study performed during the A A1N1 influenza pandemic showed that outbreaks of airborne respiratory viruses tend to increase hand washing behaviors (Jones, J. h., Salathé, M. 2009). Being washing and neutralizing two of the subscales in OCI-R, this could be a factor that increases the prevalence of OCD in the present work.

The results obtained highlighted the importance of social support systems, especially emotional support. Emotional care is required not only by patients and healthcare workers, but by all population during an infectious disease outbreak (Park, S. C. & Park Y. C. 2020) since perceived social support is recognized as a strong predictor of mental health (Riahi & cols. 2011) the inadequacy of emotional support systems will have a direct impact on the development of psychiatric disorders (Ghafari, R. et. al. 2021).

The importance of the cohabitation status was assessed as well, deducting from our results and those of similar studies that living with parents or family is a protective factor for mental health problems like anxiety (Cao, 2020) and, in opposition, living alone is considered a strong risk factor to develop depression, although perceptions of neighborhood social quality can moderate this effect (Stahl et. al. 2016). Nonetheless, the fact of living with roommates or housemates seemed to be a decent protective factor for mental health outcomes in our population as well, even though not as good as living with family, it is consistent with data presented by other works (Erb et. al. 2014) that suggests that the fact of cohabitating with peers creates opportunity to create meaningful bonds and gain psychological wellbeing.

Conclusion

To conclude, Medical Students are a group with elevated risk of suffering a number of psychopathologies and therefor a close follow up of their mental health would be greatly beneficial, especially considering that only about 45% of college students diagnosed with depression received therapy or medication in the past year (Eisenberg, Golberstein & Gollust, 2007). We consider it necessary to focus efforts on early diagnose as well as promotion and implementation of mental health interventions, especially in female students and those with inadequate social support systems.

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