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Challenges in Mental Health: Anxiety, Depression and Burnout Syndrome during the COVID-19 Pandemic in Mexico

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Abstract

Results of an observational, cross-sectional and prospective study of students from two medical schools, (ESM and ESMH) from Instituto Politecnico Nacional (IPN) Mexico, are presented, 653 respondents to assess depression, anxiety, alcohol and substance use. Physicians who recently graduated doctors and medical students close to graduating were specifically evaluated. Variables (anxiety, depression, suicidal ideation and substance use) were evaluated. Results: 301 students of the total population attended with symptoms of mild level anxiety while 131 presented severe anxiety; Regarding levels of depression in general, 65.8% coursed with some depression, the ESM reported 27.8% with moderate depression and the ESMH with 24.2 in the same type of depression. The incidence of substance use in both schools was 15.2%. The male sex registered a consumption of 7.4% and the female sex 9.7%. Regarding the results of risk of suicidal ideation, the ESM registered 27% and the ENMH registered a risk of 35.5%. The pressures received due to work overload, the COVID-19 pandemic, the lack of supplies and medical equipment.

Keywords

Risk, Anxiety, Depression, Suicidal, Ideation, Medicine Students

1. Introduction

The global phenomenon that the COVID-19 pandemic has caused as synchronous reports, have evidence of some results regarding the treatments used, pa-

tients treated in ICUs (Intensive Care Units), correlations concerning comorbidity, age, and chronic-degenerative diseases. From the diachronic approach, it is more difficult to establish the changes we suffered from 2019 to 2022. It is indisputable that mental health has been compromised under the experiences that each of the families and subjects have experienced in the face of contagion, fear of dying, or the heartbreak of learning that a friend, close relative, or descendant has passed away. The World Health Organization 2020, called attention to the mental health care of the population (WHO, 2001).

Since the beginning of the pandemic in 2019, the professionals most affected were health professionals (Danet, 2021) due to work overload, risk of contagion, fear, isolation, ignorance of the disease, lack of clarity in care protocols and treatments, proximity to symptoms and mortality, lack of medical equipment for self-protection and adequate patient care. Depression was one of the mental disorders registered with the highest incidence (Rodríguez-Hernández et al., 2021). The WHO considered it in 2021 as a public health problem: "Clinically associated with feelings of sadness, guilt, and hopelessness, it also affects concentration, pleasure, and sleep, as well as appetite, which generates fatigue to carry out daily activities (school, work and/or family)" (WHO, 2020).

The causes of depression are multifactorial; published studies point to exogenous factors such as psychosocial aspects (Sadock, Ahmad, & Sadoc, 2018; Durkheim, 1897; Sevilla & Gonzalez, 2021). Depression worldwide generates significant problems of disability, absenteeism, and in severe cases, it has been related to suicide. The WHO considers that worldwide the prevalence of this phenomenon is around 300 million people (PAHO, 2020). The National Health and Nutrition Survey (ENSANUT) in 2018 considered the prevalence of 13.3% depression in adults, young people, and older adults. COVID-19 prevalence monitoring was carried out in 2020, registering a considerable increase of 27.3% (Cerecero-García et al., 2021). It is essential to recognize that the female sex was the one who registered the highest rate of depression in studies of the published literature, compared to the male sex. It is also necessary to consider the Social Determinants in Health (SDH) since they are determinants in prevalence percentages. For example, in the study carried out by (Belismelis, et al., 2021), when correlating the prevalence of depression with a low social stratum, scored 39%, while when correlating the prevalence of depression with subjects belonging to a high social stratum, the prevalence was 9%. The results of the National Survey of Psychiatric Epidemiology [ENEP] (2016, cited in Martínez-Martínez et al., 2016) recorded results where 9.2% of the population suffered from a mood disorder at some stage of their lives and 4.8% a year before this study. Concerning gender, the most affected were women at 10.4% and men at 5.4%, according to the same survey results. Poor diet, almost zero rest, and a very high percentage of professional responsibility make medicine a complex and interesting phenomenon to study.

Since undergraduate training, numerous studies conducted with medical students reflect a high degree of pressure (family, economic and academic). This situation generates tension in students during their training, hospital practices,

and social service. "With long and tiring clinical practices inside and outside hospitals, as well as changes in the quality of sleep and little certainty or confidence when acting in real situations" (Martínez-Martínez et al., 2016).

2. Vulnerability of Medical Students

2.1. In a Comparative Study of Two Medical Schools of the IPN

The scientific literature aims to verify that a medical career compromises a student's mental health. However, these have only been limited to identifying psychopathological issues; unlike other studies, the central objective is risk factors present and associated with mental disorders, with suicidal ideation and even suicide being the last link in the chain. Since interviews were conducted with various specialists in recent years, the cases of suicide among undergraduate students have increased, while the case of resident doctors is even more worrying (Najar, 2010). It is worth mentioning that a comparative study between two medical schools of the same institution with different programs has not been carried out in the IPN. Neither a comparative study has been carried out between the population of the ESM and that of the ENMH, in which the similarities and/or differences that medical students present regarding the presence of anxiety, depression, suicidal ideation, substance use, etc., can be observed (Sevilla Gonzalez, 2021).

2.2. Abbreviations and Acronyms

World Health Organization (WHO); IPN, (Instituto Politécnico Nacional); ESM, (Medicine of School); ENMH (School of Medicine and Homeopathy; Social Determinants in Health) (SDH); National Health and Nutrition Survey (ENSANUT); Beck Anxiety Inventory (IAB); Beck Depression Inventory (IDB); Beck Suicide Ideation Scale (ISB); Alcohol Use Disorders Identification Test (AUDIT); Indice de burnout Malash (MBI).

2.3. Methodology and Objectives

The objectives for the development of this study were: To identify the incidence of anxiety, depression, suicidal risk, and substance use associated with sociodemographic and academic factors in medical students of the ESM and ENMH of the IPN during the first ten semesters.

Type of study: Cross-sectional, prospective, comparative, observational, and correlational. The total sample of respondents was 653 medical students from two schools of medicine at the National Polytechnic Institute. The schools are the ESM (Superior School of Medicine), where allopathic surgeons and midwives are formed, and the ESMH (Higher School of Medicine and Homeopathy), where the academic training is homeopathic and allopathic (Roman & Sevilla, 2021).

During the pandemic in 2019, the study was carried out at the Higher School of Medicine of the National Polytechnic Institute (IPN) during the year 2019. The sample consisted of two IPN Schools of Medicine or Academic Units, and

653 IPN students participated. From the Higher School of Medicine (ESM) and the Higher School of Medicine and Homeopathy (ENMH) 44.5% belonged to the ESM, and 52.7% to the ENMH. The objectives of the study were:

1) Evaluation of depressive symptoms in both schools of the IPN (ESM/ESMH).

2) Evaluation of suicidal ideation or risk practices.

3) Diagnosis of depression associated with psychosocial aspects, consumption of alcohol, and other substances.

The total sample applied the following instruments as shown in Figure 1.

Beck Anxiety Inventory (IAB), a version validated with the Mexican population in 1988 (Robles et al., 2001). It has an internal consistency of α = 0.93.

Beck Depression Inventory (IDB) Beck et al., 1996 version validated with the Mexican population (González, Reséndiz, & Reyes, 2015). It has an internal consistency of α = 0.87.

Beck Suicide Ideation Scale (ISB) Beck, Kovacs, & Weissman, 1979, version validated with the Mexican population (González et al., 2015) internal consistency of α = 0.84.

Alcohol Use Disorders Identification Test (AUDIT), an identification test for disorders related to alcohol use. WHO/MSD/MSB/01.6[a] Questionnaire on substance use.

Indice de burnout Malash (MBI).

3. Procedure and Stages

General characteristics of the academic performance of the studied population, 653 students. 44.5% (n = 299) of the participants belong to the ESM, and 52.7% (n = 354) to the ENMH. From this last set of participants, 24.4% (n = 164) have allopathic training, and 28.3% (n = 190) are homeopathically trained. The sample

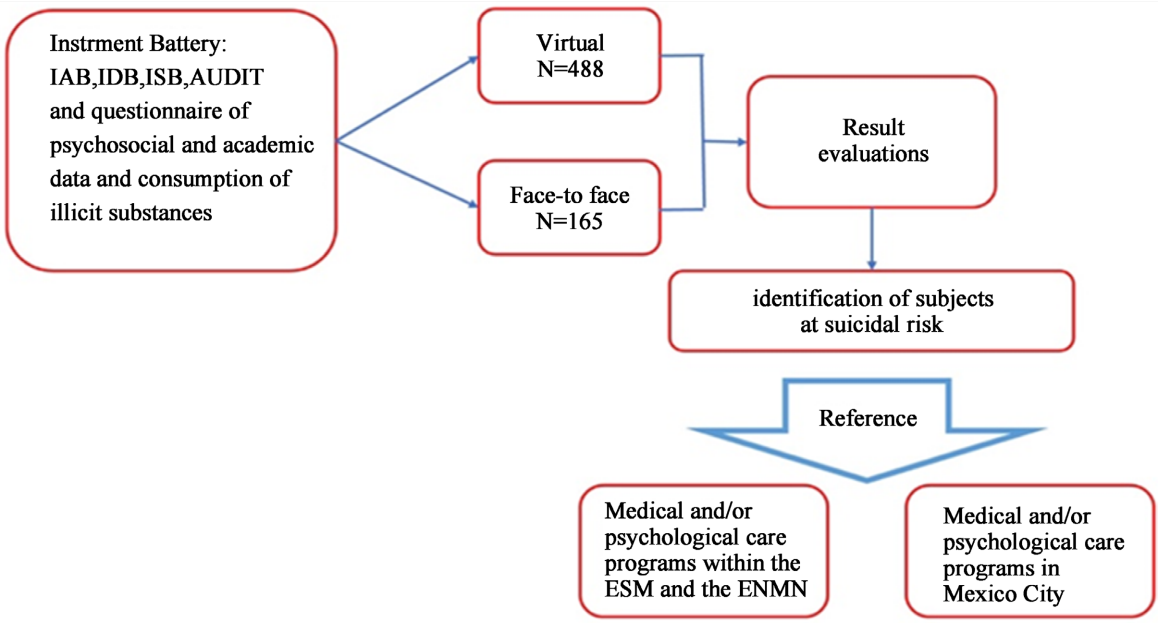

Figure 1. Procedures and instruments applied in research.

comprised 66.5% (n = 434) women and 33.5% (n = 217) men; the average age was 21.4 years, with a range of 17 to 34 years. The total samples of 6 belonging to the two medical schools, the 5 instruments that are detailed below were applied. The study procedure was carried out online and in person because the COVID-19 pandemic determined the conditions of use to avoid further contagion (Figure 1).

4. Results

When comparing the number of subjects passed in both schools (Table 1). ESM students 8.08 (0.64%) and ESMH students 8.08 (0.62); Regarding the number of failed subjects, the ESM students obtained a lower score than the ESMH with 0.43 (0.90). When asking about the degree of satisfaction, the students who had the least number of accredited subjects in the ESM are less satisfied than the students of the ESMH than the students with the worst academic performance.

Alcohol consumption in students of the two medical schools (Table 2) medicine

Table 1. On the characteristics of the academic performance of the studied population.

	ESM	ENMH
	M (DE)	
Academic grade point	8.06 (0.64)	8.08 (0.62)
Number of subjects failed	0.06 (0.24)	0.43 (0.90)
Satisfaction with grade point average	F (%)	
Very Satisfied	7 (2.3)	15 (4.2)
Satisfied	117 (39.1)	147 (41.5)
Unsatisfied	175 (58.5)	192 (54.2)
Academic Status		
Regular	286 (95.7)	281 (79.4)
Irregular	13 (4.3)	73 (20.6)
Self-perceived intellectual ability		
Good	158 (52.8)	176 (49.7)
Regular	135 (45.2)	166 (46.9)
Bad	6 (2)	12 (3.4)

Table 2. Data on alcohol and other substance use.

School	Orientation	Without consumption	Normal consumption	Risky consumption
		F (%)		
ESM		34 (11.4)	183 (61.2)	82 (27.4)
ENMH	Allopath	26 (15.9)	87 (53)	51 (31.1)
	Homeopath	39 (20.5)	100 (52.6)	51 (26.8)

of the ESM of a total of 183 interviewees, 61.2% reported moderate alcohol consumption and 27.4 at risk and from the ENMH moderate consumption was recorded of 53% and a consumption with risk of 31.1%.

Regarding the consumption of (illicit) psychostimulant substances by the participants; cannabis (marijuana) and hallucinogenic mushrooms, cocaine, drugs and other drugs, non-prescription non-drug combination drugs. Scoring a higher percentage of consumption; marijuana with 11.6% followed by 4.7% combined drug use without non-prescription drugs, for both schools. In both schools ESMy ENMH reported a very high percentage of not having consumed other substances (Table 3), ESM 74.6% while ENMH the percentage was higher 83.1%.

The levels of Anxiety in medical students of the ESM register the medical population (Table 4). In the ESM, 30.4% of the population studied registered mild anxiety; 33.8% moderate anxiety and 29.4% severe anxiety; While the National School of Medicine and Homeopathy recorded 26.8% level of mild anxiety, 31.1% at its moderate level and 32.1% at a severe level. Both medical schools recorded higher levels in the moderate level. It should be noted that192 students from the two medical schools scored as severe anxiety.

The prevalence of anxiety levels in the Higher School of Medicine (ESM) and the National School of Medicine and Homeopathy analyzed by sex in all study participants (Table 5). The female sex scored with a higher percentage of anxiety symptoms 70.8% for moderate and severe levels. For their part, men scored 39.6% in the level of mild anxiety.

Table 3. Data on the use of illicit.

	Cannabis	Cannabis (marihuana) Fungus hallucinogens	Cocaine	Medicines + others	Combined	Without medicines without consumption
			F (%)			
TOTAL	76 (11.6)	2 (0.3)	2 (0.3)	24 (3.7)	31 (4.7)	517 (79.2)
ESM	44 (14.7)	1 (0.3)	2 (0.7)	11 (3.7)	17 (5.7)	223 (74.6)
ENMH	32 (9)	1 (0.3)	0	13 (3.7)	14 (4)	294 (83.1)

Table 4. Anxiety levels differentiated by academic unit (ESM/ESMH).

School	Orientation	Minimum	Mild	Moderate	Severe
			F (%)		
ESM		19 (6.4)	91 (30.4)	101 (33.8)	88 (29.4)
ENMH	Allopath	20 (12.2)	49 (29.9)	52 (31.7)	43 (26.2)
	Homeopath	19 (10)	51 (26.8)	59 (31.1)	61 (32.1)
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Of the incidences registered in the levels of depression differentiated by Academic (Table 6) Unit, 65.8% of the sample presented some type of depression; of this percentage, 24.8% correspond to moderate depression, and 20.16% registered severe depression. It is noteworthy that the ESM students scored with a higher prevalence of moderate depression at 27.8%, while the ENMH sample (homeopaths) scored at 24.2% for the same level of depression.

Regarding the risk of suicidal ideation (Table 7), the results with the highest incidence in the suicide risk score are reported, it was the student population that belongs to the National School of Medicine and Homeopathy. The report shows a higher incidence in the National School of Medicine and Homeopathy (ENMH) 35.5 in relation to the Higher School of Medicine (ESM) with 33.3. However, Escuela Superior de Medicina also had a considerable incidence of suicide risk for ESM students, with a score of 27.4%.

The sample comprised 66.5% women and 33.5% men; the average age was 21.4 years. The analyzed variables were anxiety, of which the total sample obtained the highest incidence for the moderate level at 33% and the severe level at 29%. Depression, the entire sample scored higher incidence for the intermediate level at 25% and the severe level at 20%. Alcohol consumption, with 57% regular

Table 5. Anxiety levels, registered by sex.

Gender	Minimum	Mild	Moderate	Severe
		F (%)		
Feminine	23 (5.3)	105 (24.2)	153 (35.5)	153 (35.3)
Masculine	35 (16.1)	86 (39.6)	58 (26.7)	38 (17.5)

In Table 5, in general, in the Higher School of Medicine (ESM) and in the National School of Medicine and Homeopathy (ENMH), both schools of the National Polytechnic Institute, female students scored higher in terms of anxiety level at moderate levels 153 (35.5%) and severe 153 (35.3%); The male students of both IPN schools registered a higher score in the moderate level with 58 (26.7%).

Table 6. Levels of depression by academic unit.

School	Orientation	Minor or absent	Mild	Moderate	Severe
		F (%)			
ESM		94 (31.4)	67 (22.4)	83 (27.8)	55 (18.4)
ENMH	Allopath	64 (39)	36 (22)	33 (20.1)	31 (18.9)
	Homeopath	65 (34.2)	35 (18.4)	46 (24.2)	44 (23.2)

Table 6 analyzed the levels of anxiety by academic unit, the Higher School of Medicine registered the highest level recorded by the level of moderate anxiety with a percentage of 27.8%, followed by the mild level with 22.4% and severe with 18.4%. It is important to note that female students registered depression at all three levels. While in the National School of Medicine and Homeopathy in the two areas of specialization that are allopathy (39%) and homeopathy (34.2%) in both specialties the highest score was for the minimum or absent level.

Table 7. Suicide risk.

School	Orientation	No suicidal risk	Suicidal Risk
		F (%)	
ESM		216 (72.2)	82 (27.4)
ENMH	Allopath	109 (65.5)	55 (35.5)
	Homeopath	123 (64.7)	67 (35.3)

Table 7 related to levels of depression by academic unit, the School of Medicine registered 216 students without suicidal risk (72.2%) and 82 (27.4%) with suicidal risk; In the National School of Medicine and Homeopathy, in the specialty of Allopathy, 109 students scored without suicide risk, that is, (65.5%), and with suicide risk, 55 (35.5), and in the specialty of homeopathy, 123 students, that is, (64.7%), scored in the level without suicidal risk while 67 (35.3%) scored with suicidal risk.

and 28% risky alcohol consumption of the entire sample, and the risk of suicide occurred in 3 out of 10 students.

The burnout syndrome, colloquially associated with "being burned," evaluates the frequency and intensity of work wear: Burnout. Its function is to measure professional burnout. To meet this objective, the Maslach Burnout Inventory (MBI) questionnaire was evaluated, which consists of 22 items on the feelings and attitudes that professionals have regarding their job performance.

The second stage of the project consists of developing an application through classification systems for Anxiety, Depression and exhaustion in health professionals using the instruments MB, IAB, IDB, ISB, AUDIT, Burnout (Malash).

Note: own elaboration based on information obtained from the results of this research

5. Conclusion

The sample comprised 66.5% women and 33.5% men; the average age was 21.4 years. The analyzed variables were anxiety, of which the total sample obtained the highest incidence for the moderate level at 33% and the severe level at 29%. Depression, the entire sample scored higher incidence for the intermediate level at 25% and the severe level at 20%. Alcohol consumption, with 57% regular and 28% risky alcohol consumption of the entire sample, and the risk of suicide occurred in 3 out of 10 students.

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As a justification for the second project in which, a classification system would be developed for the instruments: MB, IAB, IDB, ISB, AUDIT, Burnout (Malash).

This study at the Superior School of Medicine confirms that the population of

students who participated in the study confirms what the medical literature found several years ago. Suicidal behavior, suicidal ideation, risk practices, suicide attempt, and suicidal communication shows different stages or phases of the suicide phenomenon. The objective of this study was to compare two samples of students from the same city in Mexico with similar social determinants (public university belonging to the same institution, Instituto Politecnico Nacional. The Superior School of Medicine has an allopathic orientation, and the National School of Medicine and Homeopathy have two directions: the allopathic and the homeopathic. The results have been relatively similar. The females scored higher percentages than the males in both schools. They also confirmed that there is at least suicidal ideation in the face of academic or school pressure, family pressure, and the social determinants typical of middle-class students with problems specific to youth. The World Health Organization has called attention to carrying out interventions that improve the population's mental health. We are talking about students between 15 and 29 years of age, precisely the age ranges that the World Health Organization (WHO) (2017) recognizes where there is a higher prevalence of deaths by suicide, a situation that is increasing. We consider that this study could provide interesting data since it was carried out with undergraduate students, it was considered to evaluate the abuse of substances, and perhaps an essential point that this study did not think of was determining the psychosocial and economic conditions. The results of this study are valid as a contribution to other studies that must be carried out to determine the protective factors that medical students can have within their reach to improve their quality of life and mental health.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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