

The Impact of Covid-19 Health Crisis on Medical Trainers: Spatial Distancing, Anxiety, and Depression

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Abstract

Medical colleges are renowned for extremely demanding and stressful. Several medical students experience psychological stress that results in burnout and subpar academic results. There was an important concern of medical trainers aimed to provide health facilities. An overall impact revealed in different manners such as sleeping problems, anxiety, and depression, has bad effects on educational overview, professional aspirations, as well as society at large. To stop the spread of the COVID-19 pandemic, strict protocols of social segregation were implemented. In this research, a medical college student dataset was gathered and a cross-sectional investigation was conducted. Every trainer between initial to last year's (N = 186) as well as interns (n = 37) registered at the time of the research was added to the universal collection. The study uses the ANOVA statistical analysis method that helps medical students they gain knowledge about the symptoms of patients. The scope of the analysis was to evaluate the percentage of therapeutic undergraduate strainers along who had internet addictions (IA), depression signs and anxiety as well as reduces intent to sleep, as well as investigate a relationship among anxiety, sleeplessness, and signs of depression during Covid-19 epidemic. Social isolation has an important impact on medical students' lives despite their education of illness monitoring and avoidance. During these stressful times, even well-informed trainers required psychological care.

Keywords: Medical students, anxiety, depression symptoms, internet addiction (IA), Covid-19

1. Introduction

Around the globe, anxiety as well as depression is quite common disorders. The severity of anxiety and depressive disorder amongst medical undergraduates explains the possible variables that may be involved. These diseases affect women more than men. Intellectual and informal elements are distinguished as contributing to various co-morbidities [1]. The two psychological conditions that have the greatest incidence are anxiety and sadness. Since their existence has a detrimental impact on individual ability and willingness to succeed, mental health conditions are receiving more and more focus on a worldwide scale. Being the foundation of healthcare in any nation, healthcare providers experience feelings of sadness or stress due to the state of the hospital where they're employed [2]. It is common for people at all phases of existence, which includes those seeking careers in medicine, to experience anxiety and sadness. Due to the unique needs and pressures connected to a demanding academic path, medical learners face a greater risk of developing depression and anxiety. Prolonged classes, challenging coursework, clinical experiences, and the psychological strain of caring for patients are features associated with one's pursuit of a medical education [3]. The COVID-19 pandemic has unprecedented challenges and disruptions to societies worldwide, affecting every facet of daily life. Medical students, who were already known to be vulnerable even before the pandemic among those impacted by the current health crisis [4]. The outbreak of COVID-19

introduced a new layer of stressors and complexities into the lives of these aspiring healthcare professionals. This essay explores the symptoms of sadness in medical trainers involving the covid 19 pandemic, shedding light on the unique circumstances brought by the virus have exacerbated these mental health challenges [5]. The study [6] demonstrated the cross-sectional online poll with questions and trainers features. Utilizing SPSS version 22.0, multivariate and bivariate statistics were used to examine every one of the information to determine the connection between various factors. The research [7] examined the preliminary physicians who took place at the School of Medical Sciences, Universitas Islam Indonesian the Indonesian city of Indonesia. A complete sample approach was taken. The Depressive disorder and anxiousness, along with the Distress Scale-21 survey, which assesses psychological well-being were the internet-based disclosed surveys that the respondents answered. The article [8] obtained the covid-19 on the human resources standard of living and psychological well-being of Indonesian physicians is highlighted in this research. Findings revealed significant correlations, especially infection with SARS-CoV-2 and comorbidity suffered by trainers, familial wellness, especially grieving after loss, or the pandemic's impact on loneliness. The article [9] evaluated the hazards of anxiety, depression and stress among medical school students. There is a ton of scholarship on this topic, but only a few noteworthy and beneficial investigations have been selected for this overview. The incidences of depression, stress, as well as anxiety amongst medicinal learners in the nation varied and there were several related academic as well as non-academic hazards. The research [10] offered the wellness and Anxious Depression Scores were used to create the survey and it was disseminated Internet. The examination was utilized for examining data using a version 23 application alongside values of 0.05 being deemed significant. The article [11] revealed the Republic of Bangladesh, a sizable number of medical learners struggled with their psychological well-being. Given their potential influence upon the coming healthcare landscape in a low-resource country like the nation of Bangladesh, medical trainers must receive proper treatments as well as encouragement to safeguard their emotional and physical wellness. The study [12] examined the pediatric training graduates and medical professionals had been carried out. There were 132 participants for this longitudinal observed analytical research. The amount of nervousness has been investigated using a Hamilton Anxiety Rating Scale poll, and the degree of dyspepsia has been evaluated using Roman standards. The research [13] presented the comprehension of the health of Indonesian doctors having an emphasis on the trainers. The educational and long-term success of the trainers depends on their current state of happiness. In particular, utilizing informal conversations of 46 rd and fourth-year freshmen from 10 hospitals, obtained via selective and snowball analysis techniques, the health of Indonesian physicians is investigated. The article [14] emphasized the incidence of anxiety, depression and stress among medical trainers had been carried out using Scopus, PubMed and World of Scientists. To assess pool frequency, a random effects model utilizing the opposite variability approach has been employed. To assess the variance in research results based on both the utilized questionnaires and the domains of the World Health Organization analysis of subgroups has been carried conducted. The article [15] represented the bullying events including the psychological trauma they cause were examined amongst Indonesian teenagers with mental health issues. Twenty individuals suffering from behavioral disorders, ages 18 to 25, representing five cities in the nation of Indonesia, were interviewed in depth privately via a WhatsApp conversation as a component of the research's method of qualitative research.

1.1 contribution of the study

- Medical students experience psychological stress, which can lead to burnout and subpar academic results.
- The stress and demands of medical education can have various negative effects on students, including sleeping problems, anxiety, and depression.
- The passage mentions the strict social isolation protocols implemented during the COVID-19 pandemic.
- The study utilized ANOVA (Analysis of Variance), a statistical analysis method. It aimed to evaluate the percentage of medical students and interns.

The rest of the paper is organized as follows; part 2 explains the investigation of medical students, part 3 describes the result and part 4 accomplishes the conclusion.

2. Investigation of medical students in anxiety and depression

2.1 Data acquisition

At a hospital school in Northern New Delhi, longitudinal, questionnaire-based research has been carried out amongst every undergraduate's doctors and internships. A total of fifty internships approximately two hundred trainers at the University of Medicine learning at any given time since fifty trainers are accepted to the school yearly. The required number of participants is 292 respondents to produce the incidence estimation having a five percent margin of error, taking into account the predicted distribution percentage of IA of Twenty-four percent for a medical institution in the country of India Nevertheless, an equitable sampling comprising all first- to fourth-year physicians as well as internships enrolling at the moment of the research was considered [16].

2.2 Medical student psychological levels

On a rating system ranging from 1 to 5, trainers were allowed to assess their degree of anxiety about ongoing COVID-19 outbreak. Trainers are given an assortment of potential factors with a scale of one to five to identify the origins of COVID-19-related anxiety. On a rating system of five. An examination of non-parametric correlations revealed a connection between anxiety and the change to instruction via the Internet. Platforms for assessments, individual illnesses and worries about the health of family members to identify the root sources of tension associated with COVID-19, Trainers had to be asked to rank order of potential authors on a scale of five. A study of non-parametric correlations discovered that the shift to internet instruction and the degree of anxiety were both correlated with evaluation. Residents in medicine were forced to adjust to fast-evolving knowledge, novel practices and the global epidemic's uncertainties. Given these workers are working at the initial ranks both medical care, it has resulted in greater amounts of anxiety and depression.

2.3 ANOVA test

The numerical approach known as analyzing variation referred as ANOVA, is used to split observed variation information into different portions for application in future studies. If we have at least three sets of information, an ANOVA with a single direction is employed to determine the connection among the parameters. The mean summation for square values for the baseline models based on the anthropocentric principles relative to every component of the models makes up the traditional ANOVA. The technique of least-squares is used to determine the values with similar deviations throughout the board as follows;

$$G = NT_{between}/NT_{error} \quad (1)$$

Where

$$NT_{between} = \frac{\sum_{j=1}^h o_j (\bar{Y}_j - \bar{Y})^2}{h-1} \quad (2)$$

and

$$NT_{error} = \frac{\sum_{j=1}^h \sum_{k=1}^{o_j} (Y_{jk} - \bar{Y}_j)^2}{O-h} \quad (3)$$

A Welch's-tests-statistics was determined as

$$X = \frac{\sum_{j=1}^h x_i [(\bar{y}_j - \bar{y})^2 / (h-1)]}{1 + \frac{2(h-2)}{h^2-1} \sum_{j=1}^h [(1-x_i/v)^2 / (o_j-1)]} \quad (4)$$

Where $X_i = \frac{n}{t_1^2}$, $u = \sum_{j=1}^h X_j$ and $Y = \frac{1}{u} \sum_{j=1}^h X_j Y_j$ is defined below:

$$g = \frac{h^2-1}{3 \sum_{j=1}^h [(1-x_i/v)^2 / (o_j-1)]} \quad (5)$$

The Brown's-Forsythe's-tests-statistics was determined below:

$$G^* = \frac{\sum_{j=1}^h o_j (\bar{y}_j - \bar{y})^2}{\sum_{j=1}^h (1-o_j/o) T_j^2} \quad (6)$$

$$1/g = \sum_{j=1}^h d_j^2 / (o_j - 1), d_j = \frac{(1-o_j/o) T_j^2}{\sum_{j=1}^h (1-o_j/o) T_j^2} \quad (7)$$

A calculation of the significance level, which is calculated $p = 1 - r$.

$$r = F \left(I_{h-1, o-h} \left(\frac{o-h}{h-1} \tilde{t}_c \left(\frac{o_1 t_1^2}{c_1 c_2, \dots, c_{h-1}}, \frac{o_2 t_2^2}{c_1 c_2, \dots, c_{h-1}}, \frac{o_3 t_3^2}{(1-c_2) c_3, \dots, c_{h-1}}, \dots, \frac{o_1 t_h^2}{(1-c_{h-1})} \right) \right) \right) \quad (8)$$

The forecast is determined in light of a distinct Beta random procedure that uses F-distributions $h - I, V - h$ dof.

$$C_k \sim \text{Beta} \left(\sum_{j=1}^k \frac{(o_j-1)}{2}, \frac{o_{k+1}-1}{2} \right), k = 1, 2, \dots, h-1 \quad (9)$$

3. Result

3.1 Expertise in prevention, problems with anxiety, & sadness

The understanding problems that had been responded to perform higher for those who are pursuing bachelor's and programs compared to freshmen. This is significant to mention that the Chinese method has first-year physicians who may enter areas of expertise like health promotion, children's medicine, and before graduating; should they opt for a healthcare particularization, there may be additional opt for degrees in epidemics and information, ecology, etc. at university. Stress and anxiousness disorders were more common in women, in males had more anxieties than graduates did. Table 1 depicts the anxiety and depression of students with coronavirus diseases.

Table 1: measurements of medical students in coronavirus diseases

Characteristics	Anxiety Disorder			Depression			Knowledge					
	Prevalence	(%)	p	Prevalence	(%)	p	%	n	Correct Answers	Score (0-4)	(%)	p
Overall	161	17.2		237	25.4		80.9	-	754	3.24	-	-

City	91	15.5		151	25.0		81.9	584	478	3.28	62.6	-
Village	71	20.1		97	27.5		80.0	351	278	3.17	37.6	-
Living residence	-	-	0.074	-	-	0.26	-	-	-	-	-	0.062
HUST	84	22.2		106	29.0		81.6	376	307	3.27	40.3	-
CCMU	78	13.9		132	23.6		80.4	559	449	3.22	59.9	-
University	-	-	0.002	-	-	0.13	-	-	-	-	-	0.35
DrPH graduate students	17	18.9		20	22.5		83.6	86	72	3.35	9.2	-
MPH graduate students	47	20.3		64	27.7		86.0	229	195	3.5	24.5	-
Undergraduates	99	15.9		155	24.9		78.9	621	489	3.16	66.6	-
Grade of medical students	-	-	0.4	-	-	0.58	-	-	-	-	-	0.090
25 or older	28	15.8		41	22.6		84.4	179	151	3.38	19.2	-
17-24	132	17.6		197	27.0		81.0	756	605	3.3	80.10	-
Age in years	-	-	0.59	-	-	0.336	-	-	-	-	-	0.194
Female	126	19.2		190	28.10		83.0	655	537	3.29	70.2	-
Male	36	12.6		48	16.9		79.0	280	219	3.13	29.10	-
Sex	-	-	0.016	-	-	<0.002	-	-	-	-	-	0.176

3.2 Protection Behaviour Comparison

While asked about preventative actions and conduct over social exile, respondents said they wore conceals while outdoors, regularly cleaned their palms in soapy water, cleaned their hands right away after getting home and found it challenging to disinfect their fingers for minimum twenty seconds. Used longer than usual 20-second hand washing method to ensure freshness, adequately conditioned homes and attempted to remain inside as feasible, avoiding needless trips. Table 2 reveals the protective behavior of trainers is kinder to say that they utilized face masks so they weren't rubbing their lips, noses, or eyes with their hands. Remaining inside, maintaining their lodgings neat and airy, and cleansing their palms with detergent as soon as they get back.

Table 2: protective behavior of students

Levels	Behaviors	N (%)						
		CCMU	n	Overall	HUST	n	P	χ^2
Frequently	Keeping the room clean and window ventilated	519	92.9	879 (94.2)	361	97.0	0.045	4.07
Sometimes	-	31	5.5	44(4.7)	14	3.6	-	-
Hardly ever	-	11	1.9	13(1.4)	3	0.6	-	-
0-2	Times of going out per day	543	97.2	915 (99.0)	373	99.3	0.029	4.82
3-4	-	11	1.9	14 (1.5)	4	0.9	-	-
5 or more	-	7	1.2	7 (0.7)	0	0	-	-
Frequently	Washing hands for 20 seconds each time	216	38.6	296 (31.7)	90	21.4	<0.002	30.69
Sometimes	-	236	42.2	400 (42.9)	165	43.8	-	-
Hardly ever	-	109	19.5	240 (25.7)	132	34.10	-	-
Frequently	Washing hands immediately after arriving home	444	79.5	677 (72.6)	234	62.2	<0.002	33.48
Sometimes	-	86	15.3	182 (19.5)	97	25.7	-	-
Hardly ever	-	31	5.2	77 (8.2)	47	12.4	-	-
0-2	Times of hand washing with soap per day	96	18.0	211 (22.6)	116	30.8	<0.002	23.94

3–5	-	258	46.2	420 (44.10)	163	43.3	-	-
6–10	-	157	29.0	242 (25.9)	86	22.8	-	-
11–15	-	28	4.9	36 (3.9)	9	22	-	-
>15	-	24	4.2	29 (3.1)	4	1.4	-	-
0–2	Times of hand washing with water per day	37	6.6	65 (7.0)	29	7.6	0.56	0.37
3–5	-	234	41.9	398 (42.7)	165	43.8	-	-
6–10	-	218	38.10	365 (40.0)	148	39.3	-	-
11–15	-	43	7.6	67 (7.2)	25	6.5	-	-
>15	-	31	5.5	43 (4.6)	13	3.3	-	-
Frequently	Avoiding touching mouth, nose, and eyes with hands	332	59.4	505 (55)	174	46.2	<0.002	-
Sometimes	-	165	29.5	307 (32.9)	143	37.10	-	-
Hardly ever	-	64	11.4	124 (13.3)	61	17.0	-	-
Frequently	Wearing masks when going out	544	97.4	899 (96.3)	356	94.8	0.038	-
Sometimes	-	9	1.5	23 (2.5)	15	3.8	-	-
Hardly ever	-	8	1.4	14 (1.5)	7	1.7	-	-

3.3 Contrasting the incidence of depressive disorders and anxiety disorders

Assessments of disorders anxiety have been separated into four categories: typical, light to moderate, and serious. Trainers were assessed for sadness and given the following diagnoses: typical, moderate medium to serious depressive disorders, and major depression. The incidence of anxiety-related conditions varied across each of the institutions, but it was much greater where COVID-19 had a greater impact. A greater rate of depressive disorders than the other schools, although this could be a coincidence. Proportions of students with depression and anxiety are shown in Figure 1 (a-b).

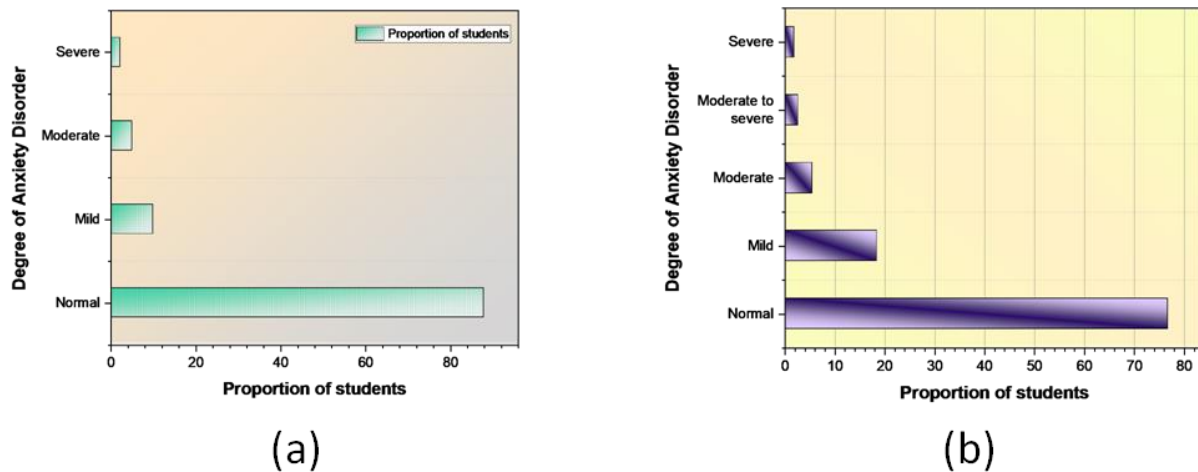


Figure 1: (a-b) Proportion of students

3.4 Path Evaluation and Multivariable Logical Regression for Forecasting Disorders such as Anxiety and Dementia

Anxiousness and depression are common psychological issues that can affect an individual's level of life as well as their health. To implement prompt treatment and focused preventive initiatives, it is essential to determine indicators for such illnesses. Multivariable logistic regression is shown in Table 3. Utilizing a mix of multivariable logistic regression and path analysis to investigate determinants for anxiety disorders or melancholy to provide a knowledge concerning the underlying variables.

Table 3: predictors of depression and anxiety using multivariable logistic regression

Dependent Variable	p	Adjusted Odds Ratio	(95% CI)	Independent Variable
Anxiety disorder(yes or no)	<0.002	6.85	(4.01–11.72)	Depression
-	0.33	1.14	(0.90–1.47)	Less going out
-	0.32	1.06	(0.96–1.17)	Anger and quarreling behaviors
-	0.57	1.05	(0.93–1.17)	Healthy lifestyles
-	0.9	1.03	(0.88–1.21)	Positive thoughts or actions ^b
-	<0.002	1.56	(1.39–1.74)	Negative thoughts or actions
-	0.86	1.02	(0.91–1.14)	Concerns about contracting the COVID-19
-	0.46	1.08	(0.9–1.28)	Concerns about the COVID-19

				epidemic
-	0.050	0.91	(0.83–1.01)	University/site (ref = HUST in Wuhan)
-	0.012	2.04	(1.19–3.50)	Grade (ref = undergraduates)
-	0.05	0.38	(0.15–0.96)	Age (ref = age ≤ 24)
-	0.80	1.10	(0.61–1.98)	Sex (ref = male)
Depression (yes or no)	<0.002	5.82	(3.44–9.87)	Anxiety disorder
-	0.12	1.09	(0.99–1.19)	Anger and quarreling behaviors
-	0.02	0.89	(0.80–0.98)	Healthy lifestyles
-	0.38	1.06	(0.96–1.16)	Longer video screen time
-	0.28	0.94	(0.82–1.07)	Positive thoughts or actions
-	<0.002	1.69	(1.51–1.89)	Negative thoughts or actions
-	0.6	0.98	(0.89–1.08)	Concerns about contracting the COVID-19
-	0.19	1.12	(0.97–1.29)	Concerns about the COVID-19 epidemic
-	0.0010	1.99	(1.20–3.30)	Sex (ref = male)

A graphical representation that visually encapsulates the factors pertinent to the development of anxiety disorders and depression. It provides a holistic overview of the various elements at play in these mental health conditions. In conjunction with this, Table 3 offers valuable insight through standardized coefficient values, shedding light on the strength and direction of the relationships among these factors. One notable finding from this study, those individuals in their senior grade year exhibited a marked increase in symptoms associated with anxiety disorders. This observation underscores the potential influence of academic stress or transition-related factors on mental health during this critical period of education. Additionally, the study revealed a positive association between depression and negative thoughts or actions, emphasizing the significance of one's cognitive and emotional state in the context of depressive symptoms. Conversely, maintaining a healthy lifestyle displayed a negative association with depression, suggesting that adopting positive health behaviors may act as a protective factor against depression. Figure 2 depicts depression disorder along with relevant factors utilizing path evaluation.

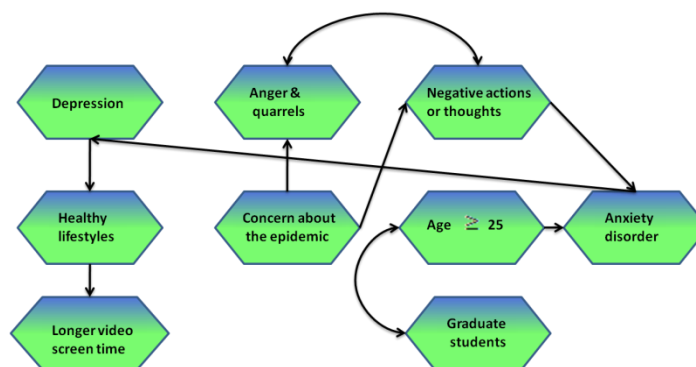


Figure 2: Flow of depression and anxiety

During the epidemic, signs of anxiety became widespread among medical learners as well. The main cause of concern has been a persistent fear of catching the influenza virus or spreading it to close family members who are already in risk. Physical indications of this anxiety, such as trembling, tense muscles, and a rapid heartbeat appear. The inability to focus may impact medicine academic achievement of learners or professional responsibilities. Material overflow and higher levels of stress have continual flood of fresh material and evolving COVID-19 criteria. Figure 3 depicts the signs of depression and anxiety of medical trainers in covid 19.

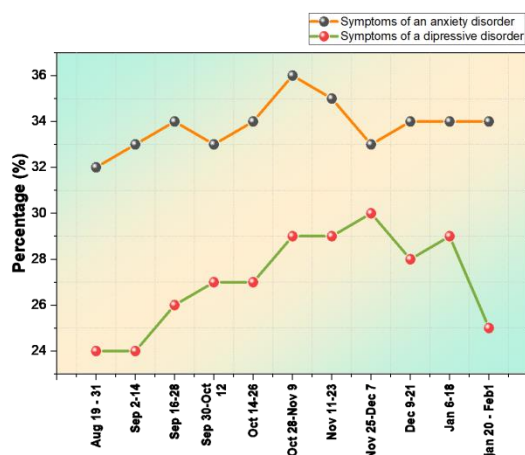


Figure 3: Signs of anxiety and depression disorders

This is important to healthcare colleges and groups to focus on the mental well-being of their trainers due to the effects of high levels of anxiety and stress upon medical trainers. This may be accomplished through expanding the availability of psychological care, offering online support networks, and fostering an environment of unrestricted dialog and compassion between others, workers, and professors. Figure 4 reveals the medical student's psychological levels of depression, stress, and anxiety. Figure 5 depicts depression, stress, and anxiety in four levels such as normal level, mild level, severe level, and extreme level.

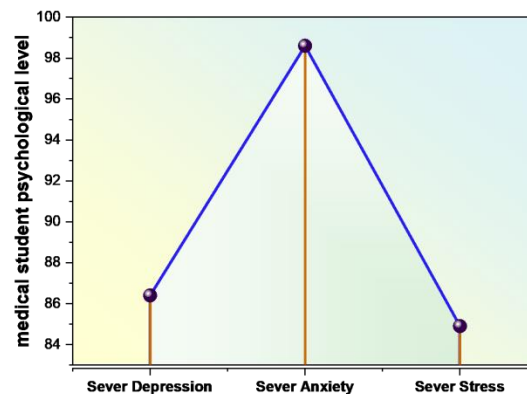


Figure 4: Psychological level of medical students

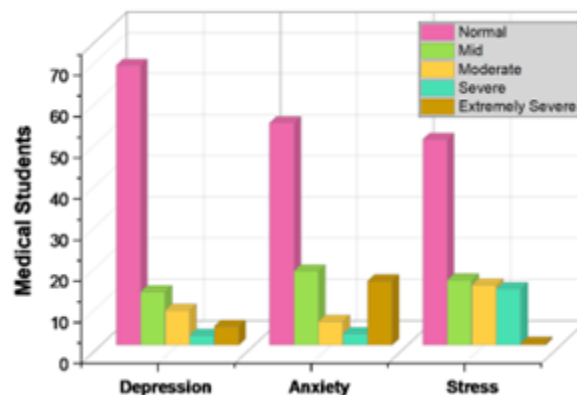


Figure 5: Depression, stress, and anxiety level of medical students

3.5 Discussion

Geographical separation represented one of the main strategies used to stop the disease's transmission, although it presented difficulties to healthcare educators. Practical instructions are common in conventional approaches to instruction include intimate contact between instructors and students. Those processes were disturbed by the need for physical separation, rendering it difficult to deliver efficient instruction whilst upholding security standards. Doctors needed to adjust through switching to internet-based and disengaged educational techniques. It necessitated the creation of fresh instructional approaches and the use of technological devices, both of the sense that although important, came with a variety of related difficulties. It is essential that healthcare organizations and politicians professional trainees' health first, while the epidemic continues to develop. It entails providing psychological offerings, encouraging an enjoyable workplace atmosphere and looking for novel methods to improve medical training while following the rules for geographical separation.

4. Conclusion

As a result, the COVID-19 health crisis has impacted healthcare instructors, having a variety of consequences for their homes, such as geographical alienation, nervousness and even despair. While vital for avoiding infections, the

deployment of such distance techniques has interfered with conventional teaching strategies and relationships between medical educators and trainees. The way medical trainers are delivered that they must be flexible and innovative. Additionally, they added responsibility, worry about getting an infection and mental cost of seeing the worldwide epidemic's devastation on individuals can be linked to the higher rates of stress and hopelessness amongst health trainees. The difficulty with psychological well-being has exposed how crucial it is to give healthcare instructors the tools and guidance they need to handle the rigors of the field of work. Mentoring and private contacts among instructors and their trainers are important components of the medical school experience. Efforts to reduce geographical separation have rendered it tougher for educators to offer individualized assistance and guidance. The medical education community should engage in research to identify the best practices for mitigating the impact of the pandemic on trainers. Sharing successful strategies and interventions through academic journals and conferences can benefit trainers.

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