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Long-term psychological effect on medical students during covid 19 pandemic

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Abstract

Objectives: To know the prevalence of psychological disorders and the level of burnout among Ain Shams University medical students.

Methods: This was a cross-sectional study conducted at Ain Shams University recruiting medical students from grades 1 to 6 facing the multiple stressors' COVID-19 pandemic. Data recorded for the recruited medical students assessed sociodemographic characters, psychological aspects, and the level of burnout during quarantine via a highly validated online questionnaire. After excluding the participants who don't include all-inclusive criteria, 210 students (87 men and123 female) fulfilled the questionnaire.

Results: Most of the students are females (58.6%) aged from 20 to 25 years (59.5%). We found in terms of exhaustion, the majority of ASU medical students were burnout during the pandemic whether it was frequent, sometimes, or rarely felt. Working with other people was the most stressful condition causing strain and stress among our populations. According to Kessler Psychological Distress Scale, feeling nervous and so sad that nothing could cheer you up were the most frequent answers.According to the ISS scale, numbing of responsiveness, avoidance of feelings are the most characteristic answers. Although most students are irritable and angry, but they tried not to think about it, and tried to remove it from their memory. Although they have dreams about it, they arewatchful or on guard.

Conclusion: The pandemic of COVID-19 has an impact on the mental health of ASU medical students, creating some degree of emotional exhaustion, and psychological stress.

Keywords: COVID-19, medical student, mental health, psychological stress.

Introduction

In Wuhan (Hubei Province, China) several cases of pneumonia patients were admitted in hospitals from December 2019. Coronavirus is the etiological agent in the reported cases. The disease has been named COVID-19 by World Health Organization (WHO).[(1)] The most common symptoms in COVID-19 positivity were fever, cough, weakness, myalgia, taste disorder, smell disorder and diarrhea were significantly higher in COVID-19 positive patients.[(2)]

COVID-19 (Coronavirus) has affected day-to-day life and is slowing down the global economy. This pandemic has affected thousands of people, who are either sick or are being killed due to the spread of this disease. It also has affected healthy people mentally due to quarantine and social distancing.[(3)]

During this period, our lives have changed profoundly. A key change brought by the pandemic has been a surge of pandemic-related psychological distress including fear, anxiety, perceived threat, stress, and an anxiety syndrome characterized by avoidance, checking,

worrying, and threat monitoring. Early findings from China have suggested that more than one-quarter of the general population have experienced moderate to severe levels of stress- or anxiety-related symptoms in response to COVID-19.[4]

Also, individuals who already live with mental disorders may be particularly vulnerable to the psychological stress associated with the pandemic. Based on clinical observation and evidence of the psychological effects of both the current and past pandemics, we expected to find examples of "pandemic-related" symptoms of anxiety, obsessive-compulsive disorder, depression, and psychotic disorders (e.g., schizophrenia).[5]

As COVID-19 impacts medical education worldwide, lack of patient contact and in-person courses creates concern for medical students. This commentary presents a call to action from students who want to be educated and prepared for their futures. In terms of clinical rotations, the climate has changed such that rotations around the world have had to remove all forms of patient contact and switch to online learning. Many of us wonder about the impact this has on our education.[6]

Ain Shams University (ASU) medical students were facing all these stressors which surely had a psychological impact on them. They were about to have depression and anxiety disorder which led to burnout so we decided to take a step to know the prevalence of psychological disorders and the level of burnout among ASU medical students.

Materials & methods:

This is a cross-sectional study conducted at Ain Shams University recruiting medical students from grade 1 to 6 facing the multiple stressors' COVID-19 pandemic as inclusion criteria. Data recorded for the recruited medical students assessed sociodemographic characters, psychological aspects and the level of burnout during quarantine via a highly validated online questionnaire. After excluding the participants who don't include all-inclusive criteria, 210 students (87 men and123 female) fulfilled the questionnaire.

By using the Kessler scale for psychological disorders, the Maslach Burnout Inventory scale for the level of burnout, the Impact of Event Scale-Revised (IES-R) scale for the level of emotional exhaustion. ASU medical students were asked to fill it. It is available in two versions (English and Arabic). It is formed of 4 sections: the first section includes 5 items about demographic and social characteristics. The second section includes 2 items of 22 questions about psychological disorders. The third section includes 1 item of 10 questions about being burnt out. The fourth section includes 1 item of 9 questions about emotional exhaustion. Total number of questions is 46.

Questionnaire is available at: https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZtrQAAAAAAAAAAAAO__SKdGzZURTBYWVJITEczRU4zQ0tPMVRYSTVPWlFEVS4u

Sample size and power calculation: According to a previous study by Maunder et al.[7] was 30.4% of patients, shows that the high burnout (MBI-EE score >27) was assumed to be 80%, So it can be relied upon in this study, based on this assumption, using MedCalc® version 12.3.0.0 program "Ostend, Belgium" was used for calculations of sample size, statistical calculator based on 95% confidence interval and power of the study 80% with α error 5%, the calculation resulted in 194 medical student. To compensate for dropout, the sample size was increased to 210 medical students in study group at Ain Shams University.

Statistical method: SPSS Inc., Chicago, Illinois, USA software was used for statistical analysis of the data. Mean± standard deviation (SD) was used for expression of quantitative data and frequency and percentage were used for expression of qualitative data. Independent-samples t-test of significance was used for the analysis during the comparison of two means. To compare proportions between qualitative parameters, we used Chi-square (x2) test of significance. 95% confidence interval was set and 5% error was accepted. P 0.05 was considered insignificant.

Results

Sociodemographic data are demonstrated in Table 1. Most of the students are females (58.6%) aged from 20 to 25 years (59.5%). ***According to the answers to the professional burnout questions,*** most students feel: emotionally drained from the study, used

up at the end of the workday, fatigued when getting up in the morning and having to face another day on the college, burned out from my study (figure 3), frustrated by my study, being working too hard on my study and working with people all day is really a strain for me and directly puts too much stress on me are about (39% never), (38% rarely), (30% never),(32% never),(29% rarely and 28.6% never),(31.4% never), (33% never), (31% never) and (28.1% never), respectively(Table 2).

According to the answer of the ***nonspecific psychological distress questions,*** most students answer how often feel: tired out for no good reason, nervous, so nervous that nothing could calm you down, hopeless, restless or fidgety, so restless and could not sit still, depressed, that everything was an effort, so sad that nothing could cheer you up, worthless are about (35.2% most of the time), (29.5% all the time), (40% all the time),(31% all the time), (29.5% most of the time), (31.9% a little of the time), (27.1% all the time), (24.3% a little of the time), (31% a little of the time) and (26.2% most of the time and 26.2% some of the time), respectively (Table 3).

According to the answer of the traumatic stress response, the most students answer: any reminder brought back feelings about it, having trouble staying asleep, other things kept making the students think about it, feeling irritable and angry, avoiding letting themselves get upset when thinking about it or being reminded of it, thinking about it when doing mean to, feeling as if it hadn't happened or wasn't real, staying away from reminders about it, pictures about it popped into their mind, being jumpy and easily startled, tried not to think about it, being aware that they still had a lot of feelings about it but they didn't deal with them, their feelings about of were kind if numb, finding themselves acting or feeling as though they were back at that time, having trouble falling asleep, having waves of strong feelings about it, tried to remove it from their memory, having trouble concentrating, reminders of it caused them to have physical reactions such as sweating or trouble breathing or nausea or a pounding heart, having dreams about it, feeling watchful or on-guard, tried not to talk about it are about (26.7% not at all), (29% quite a bit), (26.7% a little bit), (29.5% extremely),(29% extemely),(24.8% not at all), (25.7% quite a bit), (23.8% a little bit), (22.9% quite a bit and 22.4% not at all), (23.8% extemely), (26.7% extemely), (30% not at all), (29% ,(24.3% a little bit), (31.4% quite a bit), (25.7% not at all), (24.8% a little bit), (25.2%etemely), (41.9% quite a bit), (37.6% quite a bit), (32.4% extemely), (26.2% not at all and 25.7% moderately), respectively (Table 4).

Table (1): Socio-Demographic data distribution among study group (n=210).

Socio-Demographic data	No.	%
Which language of questionnaire do you prefer?		
Arabic	188	89.5%
English	22	10.5%
Academic Year		
1st year	42	20.0%
2nd years	27	12.9%
3rd years	38	18.1%
4th years	39	18.6%
5th years	36	17.1%
6th years	28	13.3%
Gender		
Male	87	41.4%
Female	123	58.6%
Age (years)		
≤20 years	73	34.8%

>20-<25 years	125	59.5%
≥25 years	12	5.7%
Residence		
Gharbiya	19	9.0%
Qalyubia	30	14.3%
Cairo	145	69.0%
Menoufia	10	4.8%
Giza	4	1.9%
Sharkia	2	1.0%

Table (2): Professional burnout (emotional exhaustion scale of the Maslach Burnout Inventory [MBI-EE]) distribution among study group (n=210).

Table (3): Nonspecific psychological distress (Kessler Psychological Distress Scale) distribution among

Professional burnout (emotional exhaustion scale of the Maslach Burnout Inventory [MBI-EE] [23–25]).	**Frequently**		**Rarely**		**Never**		**Sometimes**		**Always**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
I feel emotionally drained from my study	28	13.3%	56	26.7%	82	39.0%	37	17.6%	7	3.3%
I feel used up at the end of the workday	19	9.0%	79	37.6%	51	24.3%	56	26.7%	5	2.4%
I feel fatigued when I get up in the morning and have to face another day on the collage	48	22.9%	49	23.3%	63	30.0%	30	14.3%	20	9.5%
I feel burned out from my study	46	21.9%	48	22.9%	67	31.9%	33	15.7%	16	7.6%
I feel frustrated by my study	26	12.4%	61	29.0%	60	28.6%	45	21.4%	18	8.6%
Working with people all day is really a strain for me	28	13.3%	45	21.4%	65	31.0%	27	12.9%	45	21.4%
I feel l'm working too hard on my study	37	17.6%	54	25.7%	66	31.4%	41	19.5%	12	5.7%
Working with people directly puts too much stress on me	54	25.7%	36	17.1%	59	28.1%	20	9.5%	41	19.5%
I feel like I'm the end of my rope	34	16.2%	46	21.9%	69	32.9%	37	17.6%	24	11.4%

study group (n=210).

Nonspecific psychological distress (Kessler Psychological Distress Scale [K10] [22]),	Most of the time		A little of the time		None of time		All the time		Some of the time	
	No.	%	No.	%	No.	%	No.	%	No.	%
During the last 30 days, about how often did you feel tired out for no good reason?	74	35.2 %	19	9.0%	32	15.2%	47	22.4 %	38	18.1 %
During the last 30 days, about how often did you feel nervous?	37	17.6 %	43	20.5 %	18	8.6%	62	29.5 %	50	23.8 %
During the last 30 days, about how often did you feel so nervous that nothing could calm you down?	42	20.0 %	16	7.6%	28	13.3%	84	40.0 %	40	19.0 %
During the last 30 days, about how often did you feel hopeless?	44	21.0 %	41	19.5 %	25	11.9%	65	31.0 %	35	16.7 %
During the last 30 days, about how often did you feel restless or fidgety?	62	29.5 %	18	8.6%	34	16.2%	58	27.6 %	38	18.1 %
During the last 30 days, about how often did you feel so restless you could not sit still?	37	17.6 %	67	31.9 %	29	13.8%	32	15.2 %	45	21.4 %
During the last 30 days, about how often did you feel depressed?	45	21.4 %	27	12.9 %	40	19.0%	57	27.1 %	41	19.5 %
During the last 30 days, about how often did you feel that everything was an effort	51	24.3 %	49	23.3 %	25	11.9%	43	20.5 %	42	20.0 %
During the last 30 days, about how often did you feel so sad that nothing could cheer you up?	20	9.5%	65	31.0 %	22	10.5%	45	21.4 %	58	27.6 %
During the last 30 days, about how often did you feel worthless?	55	26.2 %	29	13.8 %	21	10.0%	50	23.8 %	55	26.2 %

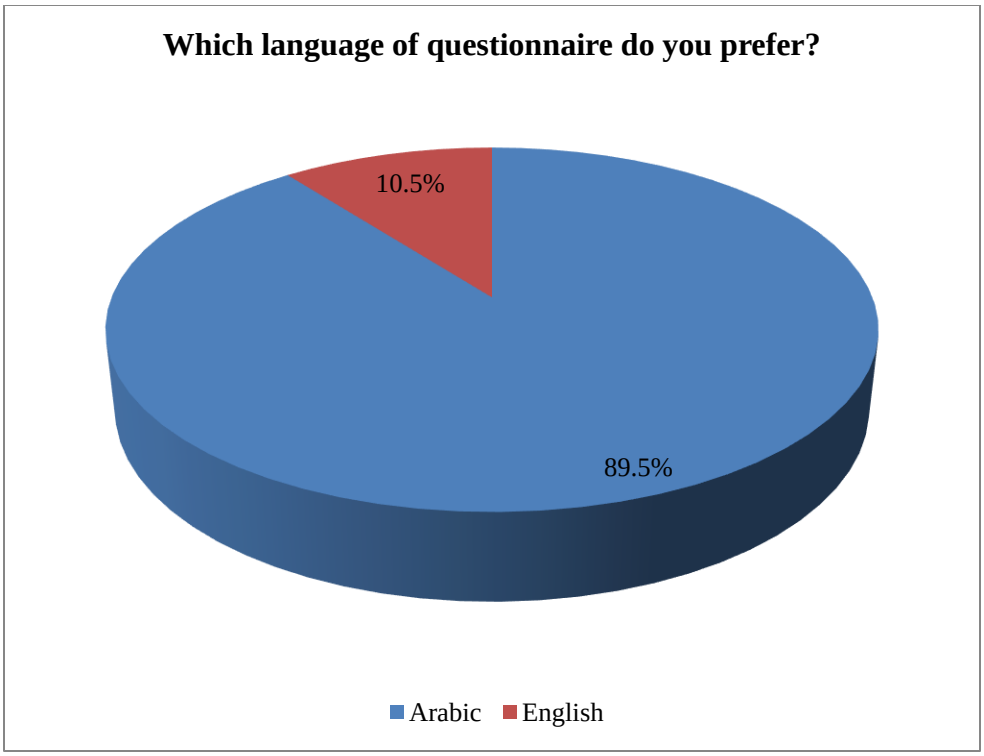

Fig. (1): Pie chart language distribution among study group.

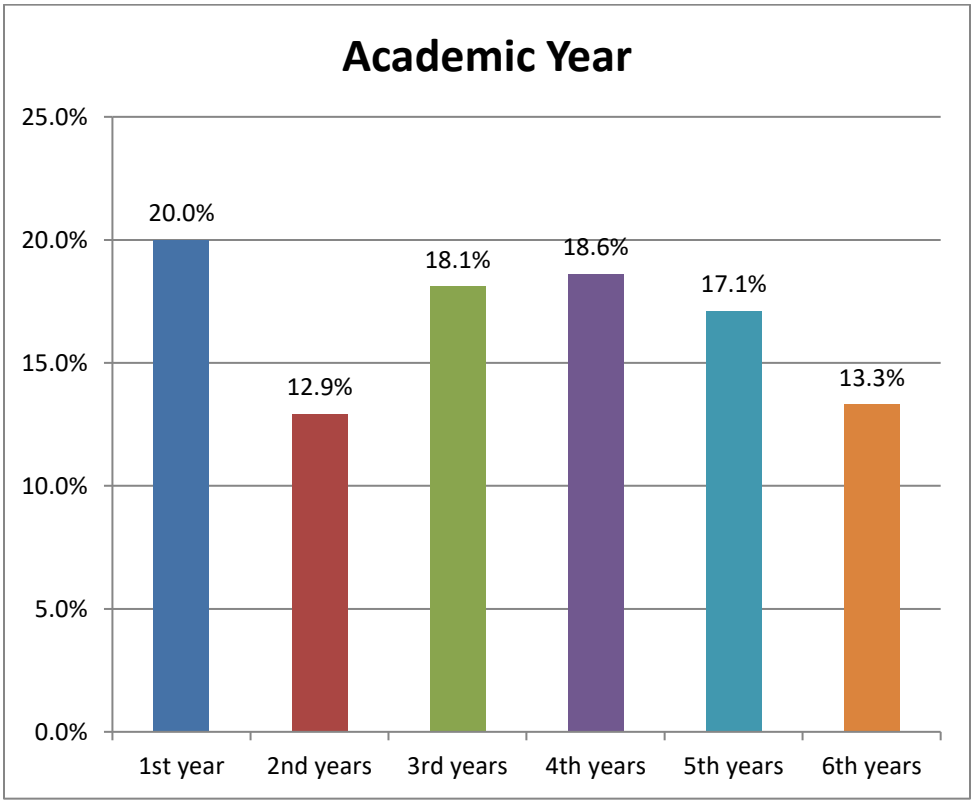

Fig. (2): Bar chart academic year distribution among study group.

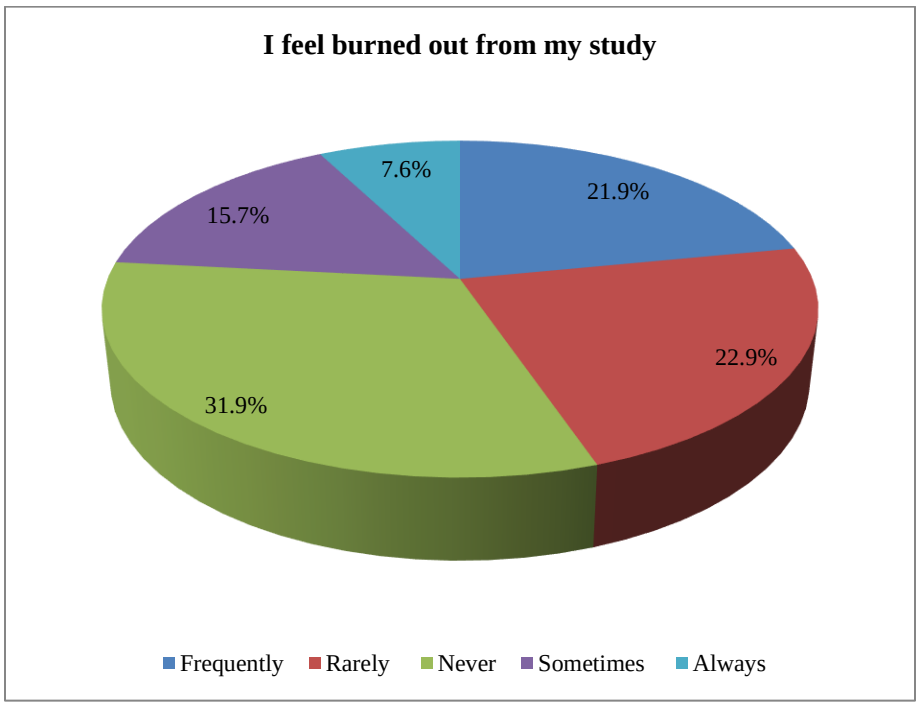

Fig (3): Incidence of I feel burned out from my study among study group.

Discussion:

Prior to COVID 19 pandemic, psychological stress was already reported among medical students,[8] including general restrictions on students' clinical practice and work placements, diminished enthusiasm, and the probability to pass final examinations and work as doctors.[9] Additionally, under continuous pressures during the COVID 19 pandemic, great levels of psychological stress were created, such as tension, anxiety, frustration, and despair.[10] These new challenges revealed high priority of providing help and establishing resilience among susceptible people including medical students.

Our study aimed to highlight the burden of the COVID 19 pandemic on ASU medical students and determine their capability for coping with epidemic-associated distress by identifying the prevalence of psychological disorders and the level of burnout during the pandemic. We used the Kessler scale for psychological disorders, the Maslach Burnout Inventory scale for the level of burnout, the Impact of Event Scale-Revised (IES-R) scale for the level of emotional exhaustion as reliable measures of general and education-related wellbeing.

Burnout is defined as a "psychological syndrome that encompasses an extended response to stressors in the workplace".[11] In the present research study, we concentrated on two dimensions: exhaustion which is the main core of burnout,[12] and pressure created from working with people. In the current study, in terms of exhaustion, the majority of ASU medical students were burnout during the pandemic whether it was frequent, sometimes, or rarely felt. Working with other people was the most stressful condition causing strain and stress among our populations signifying a problem with their ability to sustain or recover mental health while experiencing difficulty such as COVID 19 pandemic. The majority of ASU medical students were tired out for no good

reason, nervous, so nervous that nothing could calm you down, hopeless, so restless and could not sit still, so sad that nothing could cheer you up, and worthless are about, indicating a high level of anxiety and psychological stress which is consistent with previous research.[13-15] Seetan et al.[14] found a growing magnitude of stress and mental health disorders among medical students in Jordan during the COVID 19 pandemic. Also, ***Saddik Et Al.***[15] reported a higher level of anxiety among medical students during the pandemic.

During the pandemic, despite fear of infection, medical students must deal with facing all patients during their medical rotation as a part of medical practice, and some of these patients might be carried or infected by the virus. Facing this emotional drain is one of the hidden challenges to most medical students.[16] A study by ***Lin Et Al***.[17] reported that Emotional Intelligence (the ability to control emotions) is a strong predictor of doctors' well-being.Developing resilience is a possible strategy to help in reducing the stressors' drawbacks, preventing burnout, and providing support to students after tough experiences.[18]Furthermore, some students may find it difficult to adjust to new teaching techniques, such as online classrooms and online meeting applications; they may begin to feel behind their peers, which can contribute to their worry and tension.[14]

IES-R scale expresses different aspects of intrusion, escaping, and hyperarousal.[19]***Li Et Al***.[20] (2020), found that post-pandemic traumatization affected not only the medical team and infected individuals, but also the general population. In a study performed among 309 medical students in Riyadh during COVID 19 pandemic, 47% of students were having a post-traumatic stress disorder event, signifying the great effect of the COVID-19 pandemic on the study population.[21]

According to the ISS scale, numbing of responsiveness, avoidance of feelings are the most characteristic answers. Although most students are irritable and angry, but they tried not to think about it, and tried to remove it from their memory. Although they have dreams about it, they arewatchful or on guard.

Emotional exhaustion must be addressed to maintain good mental health in medical students to cope with life's daily demands and perform efficiently. There is a strong need to support the mental health of ASU medical students and to monitor their well-being during the time of recovery from the pandemic. The ability of medical students (tomorrow physicians) to cope with difficulties is essential for proper patient care.

The major limitation of this study is the objective responses of the participants to the three questioners make it difficult to depend on these data to diagnose mental disorders. The diagnosis of anxiety and depression needs direct clinical assessment. Furthermore, bias may be present as a result of data collection setting, volunteer, and their response.

Conclusion:

The pandemic of COVID-19 has an impact on the mental health of ASU medical students, creating some degree of emotional exhaustion, and psychological stress. A strong need to support the mental health of ASU medical students and to monitor their well-being during and after the pandemic.

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