

Anxiety and Coping Strategies among Medical Students during COVID-19 Pandemic: A Cross-sectional Study

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ABSTRACT

Introduction: Coronavirus Disease 2019 (COVID-19) pandemic has impacted the mental health of medical students due to multiple factors like the fear of getting infected, the stress of maintaining the preventive measures, the demands of the online classes, and the uncertainty of the future.

Aim: To assess the anxiety levels of the medical students and strategies, they used to cope up with the anxiety during the pandemic.

Materials and Methods: A cross-sectional study was carried out among all the first and final year MBBS students of a Women's Medical College and Teaching Hospital in Hyderabad, Telangana, India. The questionnaire contained a total of 25 questions- three questions to collect the demographic data, a 7-item Generalised Anxiety Disorder Scale (GAD), and 15 questions assessing their coping strategies; was distributed to all the study participants as a Google form. Data from completed questionnaires were entered into an excel sheet and analysed using Jamovi software version 1.6.23.0.

Results: A total of 164 students completed the questionnaire of which, 59.1% were first year MBBS students and 40.8% final year

MBBS students. Mean age of the participants were 19.4 years among the first year MBBS students, and 21.7 years among the final year MBBS students. Majority of the participants had mild anxiety (43.2%). There was no statistically significant difference in the anxiety levels of the first year MBBS and final year MBBS students. The most commonly used coping strategy factor was putting trust in the God (59.7% of first year MBBS, and 62.6% of final year MBBS) while the least commonly used coping strategy was substance abuse-use of alcohol or drugs to feel better (0 among first year MBBS and 2.9% among the final year MBBS). There was statistically significant association between one of the coping strategy and anxiety-I can adjust to the situation and deal with the changes and anxiety levels (p -value=0.010).

Conclusion: COVID-19 pandemic has impacted the mental health of medical students by causing anxiety. There is a need to mitigate these negative effects by introducing supportive programs in the form of educational programs, yoga and meditation to relieve anxiety and maintain mental health of medical students.

Keywords: Coronavirus disease 2019, Mental health, Psychological impact, Stress

INTRODUCTION

The World Health Organisation (WHO) defines mental health as the state of well-being in which an individual realises his or her abilities, can cope with the normal stresses of life, can work productively, and can contribute to his or her community [1].

The novel Coronavirus Disease 2019 (COVID-19), declared pandemic by WHO on 11th March, 2020 [2] has given unprecedented experiences to the mankind in the form of home confinement directives- stay at home or quarantine or isolation, use of masks and social distancing. Besides the rising number of cases and fatalities, there has been significant socio-economic, political and psychosocial impact due to the pandemic [3].

The COVID-19 has disrupted even the medical education system. It has triggered the introduction of new learning methods in medical education online education and examinations and virtual clinical learning [4]. Medical students are known to be at a higher risk for developing anxiety disorders than general population even in normal situations [5]. The COVID-19 pandemic has been associated with heavy psychological impact among medical workers and the general public [6]. An Indian study reported that of the 83 final year students and junior doctors, 77% of them had mild anxiety and 9.8% had moderate anxiety [7]. Imposition of unfamiliar public health measures including social distancing and lockdown, social fear related to COVID-19, closure of universities, fear of being infected by the SARS-CoV-2, anxiety for their removal from clinical practice, worry about older relatives and the abrupt swift to a new reality

have negative impact on the psychological well-being of medical students [8,9].

Previous coronavirus epidemics-Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) were associated with significant psychiatric burden in both acute and post illness stages [10]. It is, therefore very imperative to recognise the impact of the novel coronavirus pandemic on the mental health status of the students.

Coping refers to the thoughts and behaviour people use to manage the internal and external demands of stressful events. There are many kinds of coping strategies. Problem-focused coping addresses the problem causing distress using strategies such as information gathering and decision making while emotion-focused coping regulates negative emotion using strategies such as distancing, seeking emotional support, and escape-avoidance. Meaning-focused coping draws on deeply held values and beliefs in the form of strategies such as goal revision, focusing on strengths gained from life experiences, and reordering priorities. An individual may also depend on emotional or instrumental support from others to reduce stress; the strategy termed social coping [11]. The various types of coping often work in tandem to regulate the anxiety, make decisions and review underlying goals and values [12].

A study done on 217 undergraduate medical students in Chennai reported an increase in the prevalence of anxiety and stress during COVID-19 pandemic [13]. There are no reports on the psychological

impact of novel COVID-19 on medical students, especially from Telangana state. The present study was therefore planned to assess the anxiety levels and ways of coping during the period of COVID-19 pandemic and identify association of coping strategies with the anxiety levels.

MATERIALS AND METHODS

A cross-sectional questionnaire-based study was carried out in a Women's Medical College and Teaching Hospital in Hyderabad, Telangana, India, during December 2020. Approval from Institutional Ethics Committee was obtained prior to the initiation of the study. (IEC Project No. MRMCWIEC/AP/02/2020; Approval dated 17/11/2020).

Inclusion criteria: All the 300 MBBS students studying first year and final year MBBS in the college at the time of the study were enrolled. There were only these two academic batches in the college, during the study period.

Exclusion criteria: All non consenting students were excluded.

Study Procedure

The questionnaire used by Savitsky B et al., was adopted and was modified to suit the current applicability (questions in the demographic section were removed like family status, parental status, country of birth, population group, level of religiosity and occupational status, PPE availability as they were irrelevant to the current study population) [14]. The modified questionnaire was prevalidated by departmental faculty. The questionnaire was distributed using Google form and a request to participate in the study was sent to all the students. Filling out of the form was accepted as a consent to participate in the study. The study questionnaire included demographic data like age, year of study, area of residence and a 7-item GAD scale to measure their anxiety. Coping was assessed using 15 common coping strategies like four factors of resilience, four factors of information seeking and consultation, a factor of substance abuse, two factors of spiritual and non scientific support, a factor of humour and three factors of mental disengagement. Students were instructed to choose on a 4-point scale for GAD and on a 5-point scale (not at all, rarely true, sometimes true, often true and true nearly all the time) for coping strategies. The GAD scores of 0-4 were categorised as minimal anxiety, 5-9 as mild anxiety, 10-14 as moderate, and 15-21 as severe anxiety [15]. For analysis, the fourth and fifth Likert scale of coping strategy were combined and considered to be positive and dominant responses.

STATISTICAL ANALYSIS

Data obtained from completed forms was taken up for analysis. Descriptive statistics was used and results were expressed in percentages. Chi-square test of association was used to investigate the association of each coping strategy with anxiety levels. All the statistical analyses were performed with Jamovi software version 1.6.23.0. A value of $p < 0.05$ was considered statistically significant for complete analysis.

RESULTS

Data of 164 students includes 97 (59.2%) students of first year MBBS and 67 (40.8%) students of final year MBBS were taken up for statistical analysis. The response rate was 54.6%. A total 159 (96.9%) of the students were urban residents, while only 5 (3.0%) of them were from rural areas. The age of distribution of the participants is given in [Table/Fig-1].

Anxiety levels among the students based on the scores of GAD are presented in [Table/Fig-2]. There was no statistically significant differences in the levels of anxiety among the first year and final year students ($p = 0.741$).

The dominant coping strategy used by the students is presented in [Table/Fig-3]. Majority of the students put their trust in God to cope

Age in years	First year MBBS (n=97) n (%)	Final year MBBS (n=67) n (%)	Total (N=164) n (%)
18	18 (18.5)	0	18 (10.9)
19	35 (36.0)	0	35 (21.3)
20	37 (38.1)	0	37 (22.5)
21	6 (6.1)	31 (46.2)	37 (22.5)
22	1 (1)	25 (37.3)	26 (15.8)
23	0	11 (16.4)	11 (6.7)
Mean (SD)	19.4 (0.89)	21.7 (0.73)	20.3 (1.43)

[Table/Fig-1]: Age distribution of the study participants (in percentages).

Anxiety levels (GAD score)	First year MBBS (n=97) n (%)	Final year MBBS (n=67) n (%)	Total (153) (n=164) n (%)
Minimal (0-4)	32 (32.9)	27 (40.2)	59 (35.9)
Mild (5-9)	44 (45.3)	28 (41.7)	72 (43.9)
Moderate (10-14)	20 (20.6)	10 (14.9)	30 (18.2)
Severe (15-21)	1 (1)	2 (2.9)	3 (1.8)
Mean Score (SD)	6.4 (3.68)	6.0 (3.7)	p-value=0.741

[Table/Fig-2]: Anxiety scores of the participants.

Factors	No.	Coping strategy	First year n (%)	Final year n (%)	Total n (%)
Resilience or self esteem	1	I can adjust to the situation and deal with the changes	59 (60.8)	32 (47.7)	91 (55.4)
	2	Believing that coping with stress can strengthen me	51 (52.5)	34 (50.7)	85 (51.8)
	3	I can stay focused under pressure	45 (46.3)	33 (49.2)	78 (47.5)
	4	Perceive myself as a strong personality	49 (50.5)	34 (50.7)	83 (50.6)
Seeking information and consultation	5	I try to get advice from someone about what to do	29 (29.8)	40 (59.7)	69 (42.0)
	6	When I have a question about the situation, I search for information	43 (44.3)	38 (56.7)	81 (49.3)
	7	When I have a question about the condition, I use professional sources (articles or medical articles) to get information	39 (40.2)	31 (46.2)	30 (18.2)
	8	When I have a question about the situation, I use social networks to get information	37 (38.1)	36 (53.7)	73 (44.5)
Substance abuse	9	I use alcohol or drugs to make myself feel better	0	2 (2.9)	2 (1.2)
Spiritual and non scientific support	10	I put my trust in God	58 (59.7)	42 (62.6)	100 (60.9)
	11	I turn to work or other substitute activities to take my mind off things	45 (46.3)	31 (46.2)	76 (46.3)
Humour	12	I enjoy the jokes about the situation	41 (42.2)	28 (41.7)	69 (42.0)
Mental disengagement	13	I eat more than usual to calm myself down	49 (50.5)	40 (59.7)	89 (54.2)
	14	I try to get emotional support from friends or relatives	28 (28.8)	26 (38.8)	54 (32.9)
	15	I use alcohol or drugs to make myself feel better	2 (2.0)	2 (2.9)	4 (2.4)

[Table/Fig-3]: Coping strategies used by the study participants.

up with the situation. Significantly, students did not report substance abuse-using alcohol or drugs to reduce stress (1.2%).

A Chi-square test for association between the levels of anxiety and each of the coping strategy was performed. To perform this test, anxiety levels were considered under three categories- minimal, mild and moderate/severe; while each coping strategy was considered under two categories-dominant and non dominant. The results of this test are presented in [Table/Fig-4]. All the expected cell frequencies were greater than five. There was statistically significant association between one of the factor of resilience-“I can adjust to the situation and deal with the changes and anxiety levels”, Chi-square value

had severe anxiety [15]. A meta-analysis of eight studies reported that the prevalence of anxiety among medical students during the COVID-19 pandemic was 28% [16].

The most commonly used coping strategies were putting themselves in the trust of God (60.9%). Religious coping, specifically turning to God, is a means of seeking comfort, support, and/or guidance from a divine being either within the domain of an organised religion, or on a more informal path through one's own spirituality [17]. Javed S and Parveen H reported that among the 475 male and female participants from various backgrounds, positive attitude and trust in God to be most frequently used coping strategies [18]. Similarly,

No.	Coping strategy		Minimal	Mild	Moderate and severe	Chi-square value	Cramer's V value	p-value
1	I can adjust to the situation and deal with the changes	Dominant	46.8	23.5	47.1	9.29	0.238	0.010*
		Non dominant	53.2	76.5	52.9			
2	Believing that coping with stress can strengthen me	Dominant	40.3	38.2	50.0	1.35	0.510	0.090
		Non dominant	59.7	61.8	50			
3	I can stay focused under pressure	Dominant	24.2	14.7	14.7	2.32	0.313	0.119
		Non dominant	75.8	85.3	85.3			
4	Perceive myself as a strong personality	Dominant	40.3	33.8	52.9	3.45	0.179	0.145
		Non dominant	59.7	66.2	47.1			
5	I try to get advice from someone about what to do	Dominant	66.1	51.5	61.8	3.01	0.135	0.223
		Non dominant	33.9	48.5	38.2			
6	When I have a question about the situation, I search for information	Dominant	61.3	72.1	58.8	2.44	0.122	0.296
		Non dominant	38.7	27.9	41.2			
7	When I have a question about the condition, I use professional sources (articles or medical articles) to get information	Dominant	3.2	1.5	0	1.36	0.090	0.508
		Non dominant	96.8	98.5	100			
8	When I have a question about the situation, I use social networks to get information	Dominant	51.6	55.9	64.7	1.53	0.096	0.465
		Non dominant	48.4	44.1	35.3			
9	I use alcohol or drugs to make myself feel better	Dominant	48.4	51.5	64.7	2.46	0.123	0.292
		Non dominant	51.6	48.5	35.3			
10	I put my trust in god	Dominant	33.9	41.2	52.9	3.31	0.142	0.191
		Non dominant	66.1	58.8	47.1			
11	I turn to work or other substitute activities to take my mind off things	Dominant	30.6	44.1	38.2	2.51	0.124	0.286
		Non dominant	69.4	55.9	61.8			
12	I enjoy the jokes about the situation	Dominant	24.2	22.1	26.5	0.253	0.03	0.881
		Non dominant	75.8	77.9	73.5			
13	I eat more than usual to calm myself down	Dominant	32.3	42.6	32.4	1.84	0.106	0.399
		Non dominant	67.7	57.4	67.6			
14	I try to get emotional support from friends or relatives	Dominant	30.6	48.5	38.2	4.37	0.163	0.112
		Non dominant	69.4	51.5	61.8			
15	I use alcohol or drugs to make myself feel better	Dominant	0	0	0	-	-	-
		Non dominant	100	100	110			

[Table/Fig-4]: Chi-square test of association between anxiety levels and the coping strategies.

* p<0.05,significant.

being 9.29 and $p=0.010$ and the strength of association was moderate (Cramer's V value=0.23).

DISCUSSION

The results of the present study showed that majority of the students had mild levels of anxiety (43.8%). The reasons for mild levels of anxiety can be expected to be due to number of factors like the fear of contracting COVID-19 infection by them, facing unusual circumstances during the pandemic in the form of social distancing and using masks, challenges of online learning, uncertainty about future.

Similar study done among 215 nursing students of Israel revealed that 43% of them had moderate anxiety and 13% had severe anxiety [14]. Cao W et al., reported that among 7,143 undergraduates of a medical college in China, 2.7% had moderate anxiety while 0.9%

a cross-sectional community survey in India and Nigeria reported that, during the COVID-19 pandemic, a significant number of people adopted religious coping measures to combat their difficulties [19]. Chow SK et al., reported that majority of healthcare workers in Malaysia reported to have positive religious coping and associated reduction in anxiety [20].

In contrast to the results of the present study, Baloran ET reported that the students from two colleges of South Philippines practiced safety measures during this great threat of global health security as a personal coping strategy [21]. Another study done among students of six Jordan medical schools reported that cooking, baking, and hobby practicing were the most popular methods used to improve their mental well-being [22].

Resilience is a dynamic process wherein individuals display positive adaptation despite experiences of significant adversity or trauma

(Goldberg and Williams, 1988) [23]. The present study found statistically significant association of a factor of resilience- "I can adjust to the situation and deal with the changes" with anxiety levels. Haddadi P and Besharat MA evaluated the relationship between resilience, psychological well-being, psychological distress, depression, anxiety and general health and found negative correlation of resilience with vulnerability indexes including psychological distress, depression and anxiety [23].

Limitation(s)

The present study is limited by the facts, that, it is a single site study carried out in only females and with a limited sample size. Changes in the state of anxiety and their use of coping strategies over a period of time were also not measured.

CONCLUSION(S)

In conclusion, the prevalence of anxiety among the students indicates the need to introduce student supportive programs at times of uncertainty like the COVID-19 pandemic. Faculty of the Medical colleges can be in touch with students, and can use some time during the online classes to provide emotional support and boost their confidence to face the situations. Programs which involve talks from the experts or even peers, yoga and meditation will also help to relieve anxiety of the students.

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