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Correlation of type of Personality and Perceived Stress during COVID-19 Lockdown Period among Students of a Medical College in Tamil Nadu – A Cross Sectional Study

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ABSTRACT

Background: On March 11 2020, WHO declared “the novel coronavirus” outbreak as a global pandemic affecting millions of lives. Past observations during previous pandemics showed a substantial negative impact on mental health especially students. Evaluation of personality and other traits can be useful in understanding the psychodynamics during such challenging times. **Objective:** To correlate the type of personality and the amount of perceived stress during COVID-19 lockdown period among medical students. **Methods:** A cross-sectional study was conducted among medical undergraduate students in a private Medical College in Tamil Nadu between July to December 2020. A total of 400 MBBS (Bachelor of Medicine and Bachelor of Surgery) students from 1st year to final year were involved in the study. Perceived Stress Scale was used to correlate the type of personalities among medical students. **Conclusion:** With the COVID-19 outbreak, medical students were shown to have higher levels of stress, anxiety, and depression than other courses. Despite the present situation, mental health of majority of the medical student were shown to be well within the moderate stress level, showing their optimum stress handling abilities and this study also highlights the significance of stress management among medical students.

Key word: COVID - 19, Medical students, Perceived stress scale, Personality test, Tamil Nadu.

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INTRODUCTION:

Coronavirus is a single stranded enveloped RNA virus that affects both humans and animals. In 1966 Tyrell and Bynoe first discovered corona virus from the people affected with the common cold⁽¹⁾. In December 2019, there was a sudden increase in severe cases of pneumonia in Wuhan, China, which was found to be caused by the “novel strain of coronavirus”. Eventually it spreads to the rest of the world and affected millions of people. On March 11

2020, WHO declared “the novel coronavirus” outbreak as a global pandemic⁽²⁾. Initially the virus was named as “SARS Cov-2”, later the disease was named as “COVID-19” on February 11 2020⁽³⁾. In view to curb the spread of the disease several governments across the world imposed various protective methods including lock down. A lockdown is an emergency measure imposed on public to prevent the spread of COVID-19. Lockdown involves shutting down of all activities except essential services like healthcare, police

station, fire stations, grocery shops, etc. Shopping malls, cinema halls, educational institutions, public transport, religious places were shut down, family functions involving mass gathering, religious functions, sports events etc, were strictly prohibited⁽⁴⁾.

Stress is defined as ‘any form of transition that induces physical, mental, or psychological tension’⁽⁵⁾. It may cause several medical problems such as depression, anxiety and other psychiatric conditions. These may have a long-lasting effect and can also take a serious toll on the mind and body of an individual. Stress perception is influenced by the personality type, existing support system and environment of the individual⁽⁶⁾. In general pandemic may cause elevated levels of stress and affect mental wellbeing especially due to the steps taken to curtail transmission, such as quarantine, social distancing and lockdown. The observations of other epidemics or pandemics in the past (e.g., the 2003 Severe Acute Respiratory Syndrome (SARS), the 2009 H1N1 pandemic, and the 2014 Ebola epidemic) showed a substantial negative impact on mental health⁽⁷⁾.

Medical Education is often compared to be an ocean with a need for constant updation of knowledge among medical students. This is already a stressful challenge for the students and to top it off with the COVID-19 lockdown it created a new inexperienced phase in their lives. Indeed, the entire world entered into a new dimension of survival. Evaluation of personality and other traits can be useful in understanding the psychodynamics during such challenging times. However, there are only very few studies to highlight the effect of lockdown on students and henceforth to get a deeper insight we have decided to correlate the type of personality and the amount of perceived stress during COVID-19 lockdown period among medical students.

MATERIAL AND METHODS:

A cross-sectional study was conducted among medical undergraduate students in a private Medical College in Chengalpattu District, Tamil Nadu between July to December 2020. A total of 400 MBBS (Bachelor of Medicine and Bachelor of Surgery) students from 1st year to final year were studying in this college. All the undergraduate medical students from 1st year to final year were

invited to participate in the study. Those students who were willing to participate were included in the study and non-consenters were excluded. The purpose of the study was explained to the participants and an informed consent was obtained from them.

We have a mixture of students from various states of India with different sociodemographic profiles varying on the basis of gender, age, year of study, mother tongue, etc. We have selected this Medical College from Chengalpattu District out of seven Medical Colleges by simple random sampling method after line listing all the medical colleges in the District. The student’s college registration numbers were enumerated separately for each batch in the medical college. From each batch, a random sample of students were selected by using the table of random numbers until the required sample size was achieved. Data was collected from 400 students. The sampling procedure adopted above may be treated as a two-stage sampling procedure with simple random sampling at each stage.

The sample size was calculated on the basis of assuming 50% as proportion, using the formula $n = 4pq/l^2$. The required sample size was estimated to be around 400 participants. The study was done by using a pre-tested, pre-validated semi-structured questionnaire to collect data from the participants. The study questionnaire was divided into three parts as follows: Part I- Students Basic details such as age, gender, year of studying, mother tongue etc., Part II – Perceived Stress Scale and Part III is Personality test. Data collected was entered into MS Excel and then analyzed using SPSS 23.0 software. Descriptive statistics like frequency, percentage, mean and standard deviation were used and Chi square test was applied to find the association between the categorical variables considering the P value < 0.05 as statistically significant.

RESULTS:

The study included 400 medical students from a private Medical College of Chengalpattu district, Tamil Nadu. The basic details of the students are tabulated in Table 1. It was observed that 59.8% (239) were female and 40.2% (161) were male in the study. Among the study participants, 47% (188) were in the age group of less than 20 years, 43% (172) were in the age group between 20-22 and the remaining 10% (40) were above 22 years. Among

the study participants of the MBBS students 30% (120) were studying in III year, 28% (112) were in I year, 21.3% (85) in IV year and the remaining 20.7% (83) students were in II year.(Table: 01)

Table 01: Distribution of the Basic details

Variables	Frequency (n=400)	Percentage
Gender		
Male	161	40.2
Female	239	59.8
Age		
Less than 20	188	47
20-22	172	43
More than 22	40	10
Year of Studying		
I MBBS	112	28
II MBBS	83	20.7
III MBBS	120	30
IV MBBS	85	21.3
Mother Tongue		
Bengali	22	5.5
Gujarati	5	1.2
Hindi	42	10.5
Kannada	11	2.8
Malayalam	81	20.2
Manipuri	1	0.3
Marathi	6	1.5
Meitei	1	0.3
Odiya	9	2.2
Punjabi	1	0.3
Tamil	130	32.5
Telugu	89	22.2
Urdu	2	0.5
Place of Residence		
Andhra Pradesh	43	10.8
Bihar	8	2
Chhattisgarh	3	0.8
Delhi	5	1.3
Gujarat	7	1.8
Jharkhand	5	1.2
Karnataka	13	3.2
Kerala	79	19.8
Manipur	2	0.5
Maharashtra	9	2.2
Madhya Pradesh	3	0.8
Odisha	8	2
Pondicherry	1	0.3
Punjab	1	0.3
Rajasthan	1	0.3

Tamil Nadu	148	37
Tripura	2	0.5
Telangana	30	7.5
Uttar Pradesh	12	3
West Bengal	20	5

Have you ever been diagnosed to be having any mental health disease?

Yes	14	3.5
No	386	96.5

Are you afraid of facing COVID- 19 patients?

Yes	118	29.5
No	282	70.5

Among the study participants, majority of the student's mother tongue was Tamil (32.5%), followed by Telugu (22.2%), Malayalam (20.2%) and other linguistic details. The place of residence of the study participants were distributed among various states in India with the majority coming from Tamil Nadu (37%), followed by Kerala (19.8%), Andhra Pradesh (10.8%) and other states. Among the study participants, about 3.5 % have been diagnosed with mental health disorders and 29.5% of the students are afraid of facing COVID-19 patients (Table: 01). The mean age of the study participants is 20.70 ± 1.46 the mean of personality test score is 71.68 ± 13.53 and the mean of perceived stress score is 18.20 ± 6.03 respectively.

Perceived Stress Scale was a classic stress assessment instrument widely used for measuring the perception of stress by taking into account the feelings and thoughts of the individual related to various events that occurred in the last month. In this study we found that out of the 400 medical students, about 5% of them have very often been upset because of something that happened unexpectedly and 43.3% of the students have been nervous and stressed out occasionally. It was also found that about 5.2% of them could not cope up with the things that they were supposed to do and about 50% of them have been angered because of things that happened outside of their control indicating the amount of stress and pressure that these students were facing during the lockdown (Table 2).

Table 3 shows the distributions for Perceived Stress Scale and different personalities for the study participants. About 71% (284) were in moderate perceived stress, 20.8% (83) were low perceived stress and 8.2% (33) were high perceived stress in

Karnaboopathy R. Type of Personality and Perceived Stress among Medical Students during COVID-19 Lockdown Period. the study. Among them 52.8% (211) were in type B personality (<70) and 1.7% (07) were in balanced personality (70 – 100), 45.5% (182) were in type A personality (>100).

Table 02: Distribution of frequency for Perceived Stress Scale (PSS)

Variables	Frequency n= 400 (%)				
	Almost Never	Fairly often	Never	Sometimes	Very often
In the last month, how often have you been upset because of something that happened unexpectedly?	61 (15.2)	55 (13.8)	64 (16)	200 (50)	20 (5)
In the last month, how often have you felt that you were unable to control the important things in your life?	84 (21)	60 (15)	76 (19)	156 (39)	24 (6)
In the last month, how often have you felt nervous and stressed?	76 (19)	59 (14.8)	64 (16)	173 (43.2)	28 (7)
In the last month, how often have you felt confident about your ability to handle your personal problems?	30 (7.5)	120 (30)	28 (7)	149 (37.3)	73 (18.2)
In the last month, how often have you felt that things were going your way?	61 (15.3)	80 (20)	45 (11.3)	192 (48)	22 (5.4)
In the last month, how often have you found that you could not cope with all the things that you had to do?	100 (25)	56 (14)	56 (14)	167 (41.8)	21 (5.2)
In the last month, how often have you been able to control irritations in your life?	58 (14.5)	122 (30.5)	31 (7.8)	153 (38.2)	36 (9)
In the last month, how often have you felt that you were on top of things?	78 (19.5)	46 (11.5)	59 (14.8)	209 (52.2)	8 (2)
In the last month, how often have you been angered because of things that happened that were outside of your control?	81 (20.2)	67 (16.8)	53 (13.2)	168 (42)	31 (7.8)
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	105 (26.3)	48 (12)	62 (15.5)	165 (41.2)	20 (5)

Table 03: Distributions for Perceived Stress Scale (PSS) and Type of Personality test score

Variables	Frequency (n=400)	Percentage
Perceived Stress Scale		
0 – 13 (Low Perceived Stress)	83	20.8
14 – 26 (Moderate Perceived Stress)	284	71
27- 40 (High Perceived Stress)	33	8.2
Type of Personality		
Less than 70 (Type B)	182	45.5
70 to 100 (Balanced Personality)	211	52.8
More than 100 (Type A)	7	1.7

In Table 4, it was observed that age group (χ^2 -5.664; p- 0.222), mental health disease (χ^2 -2.189; p- 0.296) and fear of facing COVID-19 patients (χ^2 -2.449; p- 0.294) were not significantly associated with perceived stress score. Whereas gender (χ^2 -5.864; p- 0.045) and year of study were (χ^2 -15.925; p- 0.013) significantly associated with perceived stress score.

In Table 5, it was observed that gender (χ^2 -1.262; p- 0.523), age group (χ^2 -3.535; p- 0.447), year of study (χ^2 -5.019; p- 0.532), mental health (χ^2 -0.845; p- 0.555) and fear of facing the COVID-19 patients (χ^2 -2.157; p- 0.367) were not significantly associated with personality score. It was also noted that the perceived stress score (χ^2 -2.144; p- 0.687) was not significantly associated with personality score respectively.

DISCUSSION

The COVID-19 Pandemic has brought about a detrimental effect on students. Though these young adults may be at a low risk of COVID-19-related health complications, they were more prone to stress. The results of our study showed that about majority of them were females (59.8%) and about 47% of the medical students were less than 20 years of age. So, presence of more females and young adult participants may explain the possible reason for increased stress scores.

Table 04: Chi Square test to find association of socio demographic variables and perceived stress scale

Variables	Perceived Stress Scale (PSS) Score (n=400)			Chi square (p - value)
	0 – 13	14 – 26	27 – 40	
Gender				
Male	29 (7.25)	124 (31)	8 (2)	5.864
Female	54 (13.5)	160 (40)	25 (6.25)	-0.045
Age				
Less than 20	37 (9.25)	133 (33.25)	18 (4.5)	5.664
20 – 22	32 (8)	127 (31.75)	13 (3.25)	-0.222
More than 22	14 (3.5)	24 (6)	2 (0.5)	
Year of studying				
I MBBS	14 (3.5)	83 (20.75)	15 (3.75)	15.925
II MBBS	22 (5.5)	58 (14.5)	3 (0.75)	-0.013
III MBBS	24 (6)	90 (22.5)	6 (1.5)	
IV MBBS	23 (5.75)	53 (13.25)	9 (2.25)	
Have you ever been diagnosed to be having any mental health disease?				
Yes	1 (0.25)	11 (2.75)	2 (0.5)	2.189
No	82 (20.5)	273 (68.25)	31 (7.75)	-0.296
Are you afraid of facing COVID- 19 patients?				
Yes	21 (5.25)	90 (22.5)	7 (1.75)	2.449
No	62 (15.5)	194 (48.5)	26 (6.5)	-0.294

Table 05: Chi Square test to find association of socio demographic variables and personality test score

Variables	Personality test score (n=400)			Chi square
	Less than 70	70 – 100	More than 100	(p - value)
Gender				
Male	69 (17.25)	90 (22.50)	2 (0.5)	1.262
Female	113 (28.25)	121 (30.25)	5 (1.25)	-0.523
Age				
Less than 20	94 (23.5)	90 (22.5)	4 (1)	3.535
20 – 22	71 (17.75)	98 (24.5)	3 (0.75)	-0.447
More than 22	17 (4.25)	23 (5.75)	0 (0)	
Year of studying				
I MBBS	57 (14.25)	53 (14)	2 (0.5)	5.019
II MBBS	42 (10.5)	40 (10)	1 (0.25)	-0.532
III MBBS	47 (11.75)	71 (17.75)	2 (0.5)	
IV MBBS	36 (9)	47 (11.75)	2 (0.5)	
Have you ever been diagnosed to be having any mental health disease?				
Yes	8 (2)	6 (1.5)	0 (0)	0.845
No	174 (43.5)	205 (51.25)	7 (1.75)	-0.555
Are you afraid of facing COVID- 19 patients?				
Yes	48 (12)	67 (16.75)	3 (0.75)	2.157
No	134 (33.5)	144 (36)	4 (1)	-0.367
Perceived Stress Scale (PSS)				
0 – 13	38 (9.5)	44 (11)	1 (0.25)	2.144
14 – 26	125 (31.25)	153 (38.25)	6 (1.5)	-0.687
27 – 40	19 (4.75)	14 (3.25)	0 (0)	

Similar gender significance was also observed in Lilly Shanahan et al study⁽⁸⁾ however other studies did not show such gender changes.⁽⁹⁾

Different individuals try to cope stress in different ways. Some channelize their thoughts and emotions to a favorable perspective whereas for some it may be difficult. In our study the mean of perceived stress score was observed to be between moderate to high levels which was quite similar to Raja et al study.⁽¹⁰⁾ This result shows the gravity of the effect of pandemic on students.

With the ease of spread of COVID-19 among people without precautionary measures and traumatic aspects of this pandemic like separation from their friends or death of a loved one adds up to the emotional turmoil. Moreover, introduction of digital learning through various platforms for students has also added more pressure on students. The fear of acquiring the infection from their institutions post lockdown may also affect the stress levels of these students. In our study about 30% of the medical students were afraid of seeing COVID-19 patients which was similar to Ahmed et al study.⁽¹¹⁾

Type of personalities also plays an important role to find out the association of perceived stress. In our study, 1.7% of them belonged to Type A personality and 45.5% of them belonged to Type B personality and 52.8% belonged to balanced personality. Another study done to find the relationship between personality types and stress handling ability concluded that Type A personalities were more prone to myocardial infarction when compared to others.⁽¹²⁾ Generally it is observed that Type A personalities were high strung and Type B personalities are easy going in nature⁽¹³⁾. In our study majority of the students fall under Type B personalities. This may be due to the fact that medical students tend to be more organized and exposed to different kind of study and work environment when compared to other streams of education. This study emphasizes the need to render importance of mental health among medical students. However, this study was limited only to medical college students but students from all age groups and other educational streams are prone for severe mental stress which should be given importance to analyze their mental state.

CONCLUSION:

COVID-19 has taken a toll on all lives of people. The pandemic has brought with it a new range of problems that countries are attempting to solve. With the COVID-19 outbreak, students and healthcare providers were shown to have higher levels of stress, anxiety, and depression than other professions. This study has highlighted the need for addressing the mental health status of medical college students. In our study majority of the students fall under Type B personalities. In order to combat the mental health disorders among medical students, the universities must make sure that they are given timely psychosocial rehabilitation measures such as yoga, meditation, sports and extracurricular activities and other such similar programmes must be implemented as part of their curriculum as well. This will also make sure that effective education is delivered to students and these policies must also target students from different backgrounds, including rural areas, marginalized and minority groups.

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