

Perceived Stress and its Association with Ruminations in Students during COVID-19 Pandemic

Urvi Manchanda¹, Tahoor Ali², Bhushan Chaudhari³,
Suprakash Chaudhury⁴, Daniel Saldanha⁵

ABSTRACT

Background: COVID-19 pandemic posed as a major health related as well as day to life stressor which changed almost everything in our lives. Students were at high risk in this changed educational scenario. We planned this study with aim to evaluate perceived stress level in students and to evaluate the probable association of rumination with COVID related stressors and perceived stress levels. **Method:** A cross-sectional survey was conducted online in students with help of google form during COVID-19 pandemic. A semi-structured proforma was used to collect information about sociodemographic details, ruminations with the help of Ruminative Response Scale and perceived stress levels with help of short version of Perceived Stress Scale. **Results:** Total 507 students completed the online form. The analysis showed high scores of ruminations (56.05 ± 11.07) and perceived stress (8.50 ± 2.24). Rumination was significantly higher in students who have witnessed death of a close person, have felt more peer pressure, having difficulty in talking to opposite gender person, have stayed in hostel during school and had desire to change their school life. Ruminations and perceived stress were positively correlated. **Conclusion:** Young adults had increased levels of perceived stress during COVID-19 pandemic and rumination was associated with this perceived stress. Psychological support to students and particular interventions aimed at ruminations may help this population.

Keywords: Rumination, Perceived Stress, College students, COVID-19 pandemic.

¹Undergraduate student, ²Junior Resident, ³Professor, ⁴Prof & HOD, ⁵Professor Emeritus, Department of Psychiatry, Dr. D. Y. Patil Medical College, Hospital & Research Centre, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India

Corresponding Author: Dr. Suprakash Chaudhury, Dept of Psychiatry, Dr D.Y. Patil Medical College, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India

e-mail: suprakashch@gmail.com

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Introduction

COVID-19 pandemic that arose in China in December 2019 became a global crisis within a short period of time. With no specific effective antiviral treatment and vaccine to prevent spread along with high morbidity and mortality, it posed a major health disaster in twentieth century. To prevent its spread, countries all over the world-imposed lockdown which restricted movements of people strictly. This affected economy, trade and commerce, employment as well as supply of day to day needed things including food. Fear of getting infected, uncertainty about life, deficiency in health sector resources, scarcity of day to day living things, social isolation,

financial issues and overall changed lifestyle caused major impact on people's psychological health [1-4].

As expected, education system was affected adversely due to pandemic [5]. Lots of challenges were faced by student population in continuing their education. Shift to total online mode of education, no direct interaction with educators and colleague students, difficulty in internet connectivity, disturbance due to home environment, social media overuse, uncertainty about syllabus, uncertainty about examination and completing course were all major problems faced by students in their education. Medical students were exposed to extra pressures in this pandemic. They were engaged in

managing patients by many medical institutes along with other frontline workers. So they were exposed to additional stressors like exposure to infections and increased workload in this pandemic. All this situation led to adverse impact on psychological health of students all over world [6,7]. Many researchers showed high levels of stress, anxiety, depression levels in students pursuing courses in different fields [7,8].

Los of research has concentrated on impact of pandemic on inducing psychological problems in different population but very few researchers have attended mental process mediating this process that how these negative stressors led to increases levels of stress and other psychopathology. A plethora of factors have been implicated by diathesis-stress theory to moderate this relationship. One such factor, rumination, has been shown to be important one. Rumination is a way of coping with negative event and negative mood which involves continuous self-focused thinking about the causes and outcome of their conditions of distress [9]. According to Nolen-Hoeksema rumination involves both self-reflection as well as brooding [10]. Brooding and reflection have diverse effects on depression and have different coping strategies. Treynor et al. found associations of higher levels of brooding with the feeling of depression while those with higher incidences of reflection felt self-assured and optimistic in their lives [11]. So, it is person's ruminative response to stressor which will decide the negative psychological outcome. Researchers have pointed out this relationship between ruminations and perceived stress wherein increased ruminations following negative life stressors have followed by increase symptoms of psychopathology [12].

Considering the paucity of research in this area particularly in Indian setting we undertook this research in Indian students. In India first cases of COVID were noted in January 2020 and Indian government announced nationwide lockdown in March 2020. We planned this research during the same year of 2020 when the pandemic was at its peak and routine educational system for all students was disturbed. We conducted this study with aim to evaluate perceived stress in students and its relationship with rumination during COVID-19 pandemic.

Material and Methods

Participants

Young adults (Aged between 18-30 years) studying in different institutions and pursuing their graduation and post-graduation courses were included in the study with their written informed consent. A total of 600 respondents participated in study. However only 507 participants were included for final analysis after screening their forms for completeness of filling.

Inclusion Criteria

1. Students pursuing their full-time graduation or postgraduation in an institute.
2. Students within the age limit of 18-30years
3. Students who participated voluntarily

Exclusion Criteria

1. Presence of current or past psychiatric disorder.
2. Presence of chronic medical illness
3. Family history of serious mental illness.

Procedure

A cross-sectional study was conducted with the help of online survey by Google form after obtaining Institutional Ethics Committee approval. Participants were contacted through emails and social media for the purpose of study. All participants were briefly introduced about the study and asked to participate voluntarily in the study. Participants were ensured about the maintenance of confidentiality about their identity and their responses to questionnaire. Specially made online google form was shared with participants to fill for the study. The procedure was carried out over a period of 2 months during year 2020 when COVID pandemic wave was at its peak in India.

Tools Used

An online semi-structured google form questionnaire containing questions about demographical data of the participants and questions in Rumination Response Scale and Short Form of Perceived Stress Scale was used to collect data.

The Ruminative Response Scale (RRS)

The RRS, a self-report measure of ruminative responses to negative emotions, consists of 22 items and three subscale factors (Depression, Brooding and Reflection). The scale has good internal consistency reliability and test-retest correlation [11].

The Short Form Perceived Stress Scale (PSS 4)

The PSS 4 was used to measure perceived stress in study sample. It assesses how often the respondents experience stressful situations in last month and asks them to rate those situations on Likert scale 0 = never to 4 = very often. This shorter version has been shown to be reliable and valid [13].

Statistical Analysis

The data was entered in Microsoft Excel and analyzed by SPSS Software. Statistical analysis was carried out with the help of both descriptive and inferential statistics. Descriptive statistics was done by data summarization in percentages,

mean, range and standard deviation. Inferential statistics was carried out with the help of Spearman's correlation and. Multiple regression analysis. A p-value of <0.05 was considered as significant.

Results

Total 507 students were considered for final analysis considering completeness of filling up the google forms. Out of 507 students 193 (38.07%) were males and 314 (61.93%) were females. The mean age of sample was 20.45 ± 1.55 (Range – 18 to 26). 295 (58.19%) students were pursuing their MBBS while 212 (41.81%) were pursuing other professional graduations and post graduations. The students attending college in their hometown were 390 (76.92%) and those attending college away from their home were 117 (23.08%) while 295 (58.19%) students had their schooling while staying at home and 212 (41.81%) students had their childhood schooling in boarding hostel. About personal experiences in their life, 237 (46.75%) were affected by death of a close one while 270 (53.25%) had no such experience. 408 (80.47%) students responded saying that they would like to spend festivals with family while 99 (19.53%) students said they would like to spend festivals with their friends. 197 (38.86%) students were bullied by someone in their lifetime while 310 (61.14%) students had no such experience. If given a chance would like to change school life was a response from 240 (47.34%) students while 267 (52.66%) students had no such wish. 220 (43.39%) students felt affected by peer pressure while 287 (56.61%) students had no peer pressure. Alcohol was consumed regularly by 6 (1.18%) students and smoking was done almost every day by 19 (3.75%) students (Table 1).

RRS score of the students was 56.05 ± 11.07 and PSS-4 score of study population was 8.50 ± 2.24 . Both values had significant positive correlation (Table 2).

Table 3 shows multiple regression analysis for predictors of rumination (RRS score) as a dependent variable. It shows that perceived stress (PSS-4 scores), difficulty in talking to opposite gender, death of a close person, desire for change in school life, peer pressure, and stay in hostel during school predicted rumination. Similarly, another regression analysis was done for predictors of perceived stress (PSS-4 score) as a dependent variable and we found rumination (RRS score) predicted perceived stress (B-0.064, Standard Error-0.009, Regression coefficient-0.315, p value-0.000).

Discussion

The study was planned to evaluate the stress levels in students during COVID-19 pandemic situation. The results of study showed that the level of perceived stress was high in students. The study found that the students scored 8.50 ± 2.24 on PSS-4 while norms provided by Cohen and Williamson [14] were 4.2 ± 2.8 indicating that pandemic has affected

perceived stress levels of students. Similar kind of findings have been reported by researchers exploring stress in students all over the world [8,15,16]. Considering the disturbances caused by pandemic in day to life and overall education system, negative impact of pandemic on student psychological health is understandable. COVID-19 pandemic did not only cause stress due to fear of infection and change in daily routine due to lockdown but also there were many education-related stress or sfaced by students during pandemic including difficulties in online education, uncertainty about completion of course, and disturbances at home environment [7,17].

Ruminations were high in students during pandemic which was logical due to uncontrolled and unavoidable stressful situation of COVID. Ye et al. [18] in their study also found high ruminations in Chinese students during COVID pandemic. Higher ruminations in uncontrollable life stressors may be due to difficulty to achieve the ideal goal state in face of reality state [19]. In our study we also found that ruminations were higher in students who have witnessed death of a close person, have felt more peer pressure, having difficulty in talking to opposite gender person, have stayed in hostel during school and had desire to change their school life. All these factors can be considered either precursors or consequences of negative emotional state. Given that rumination is a negative cognitive coping strategy, persons who have difficulties in proper emotional management may get disturbed due to perceived sudden lack of sense of control over their environment leading to more ruminative response [20].

The correlational and regression analysis showed that ruminations were positively associated with and predicted perceived stress in students. Our finding was in line with previous research studying mediating role of rumination between life stressors and psychological problems [18,21,22]. Rumination is characterized by repeated thoughts and recollection of feelings associated with negative event. This will hinder individual adaptive problem-solving capacity leaving the issue at hand unresolved [23]. It is also associated with decreased ability to suppress negative information and this cognitive mechanism will exacerbate negative emotions and thinking [24]. This sustained negative cognitive pattern will lead to negative psychological health consequences including increased perceived stress, anxiety and depression [18,21,22].

Limitations

Firstly, this study was conducted in Indian student population so generalization to other cultures and demographics should be done cautiously. Further the information regarding COVID related health status of individual or his family was not enquired. As COVID status

Table 1: Demographic characteristic of students.

Variable		Total Sample (N=507)	Male (n=193) (38.07%)	Female (n=314) (61.93%)
Age	In years	20.45 ± 1.55	20.87 ± 1.67	19.94 ± 1.43
Course pursued	MBBS	295 (58.19%)	83 (16.37%)	212 (41.81%)
	Others	212 (41.81%)	110 (21.70%)	102 (20.12%)
Home and college in same city	Yes	390 (76.92%)	139 (27.42%)	251 (49.51%)
	No	117 (23.08%)	55 (10.85%)	62 (12.23%)
Schooling	Home	295 (58.19%)	114 (22.49%)	181 (35.70%)
	Boarding	212 (41.81%)	80 (15.78%)	132 (26.04%)
Affected by death of close one	Yes	237 (46.75%)	80 (15.78%)	157 (30.97%)
	No	270 (53.25%)	114 (22.49%)	156 (30.77%)
Likes to spend festivals with	With family	408 (80.47%)	133 (26.23%)	275 (54.24%)
	With friends	99 (19.53%)	61 (12.03%)	38 (7.50%)
Bullied by someone	Yes	197 (38.86%)	93 (18.34%)	104 (20.51%)
	No	310 (61.14%)	101 (19.92%)	209 (41.22%)
If given chance, would ever change the school life	Yes	240 (47.34%)	101 (19.92%)	139 (17.42%)
	No	267 (52.66%)	93 (18.34%)	174 (34.32%)
Felt Affected by Peer pressure	Yes	220 (43.39%)	73 (14.40%)	147 (28.99%)
	No	287 (56.61%)	59 (11.64%)	228 (44.97%)
Alcohol consumption	Regularly	6 (1.18%)	5 (0.99%)	1 (0.20%)
	Often	38 (7.50%)	13 (2.56%)	25 (4.93%)
	Occasionally	138 (27.22%)	57 (11.24%)	81 (15.98%)
	Never	325 (64.10%)	119 (23.47%)	206 (40.63%)
Smoking	Almost everyday	19 (3.75%)	17 (3.35%)	2 (0.39%)
	2-3 times in a week	11 (2.17%)	7 (1.38%)	4 (0.79%)
	Rarely	49 (9.66%)	20 (3.94%)	29 (5.72%)
	Never	428 (84.42%)	150 (29.59%)	278 (54.83%)
Finds it difficult to talk to opposite gender	Yes	42 (8.28%)	27 (5.33%)	15 (2.96%)
	No	235 (46.35%)	81 (15.98%)	154 (30.37%)
	Depends	129 (25.44%)	47 (9.27%)	82 (16.17%)
	Sometimes	101 (19.92%)	39 (7.69%)	62 (12.23%)

Table 2: Correlation of RRS score and PSS-4 score

Variable	Mean	Sparman's correlation	Significance (Two tailed)
RRS score	56.05 (11.07)	0.238	<0.000
PSS-4 score	8.50 (2.24)		

and quarantine status may change the psychological status of individual this was considered as limitation. Lastly, the present study was cross-sectional so mediational role of ruminations between stressors and perceived stress remains the topic to be further explored in longitudinal study.

Conclusion

The present study established negative psychological consequences of COVID-19 pandemic in terms of increased perceived stress levels. It also revealed the association of

Table 3: Multiple regression analysis for predictors of rumination

Variables	B	Standard Error	Regression Coefficient	p value
PSS-4 score	1.462	0.197	0.296	0.000
Difficulty in talking to opposite gender	3.798	0.889	0.171	0.000
Death of a close person	3.448	0.880	0.156	0.000
Desire for change in school life	3.154	0.886	0.142	0.000
Peer pressure	2.896	0.911	0.130	0.002
Stay in hostel during school life	1.936	0.894	0.086	0.031

ruminations with this increased perceived stress. These findings imply the need to implement the measures which will protect psychological health of young individuals during pandemic. It also stresses the need to address ruminations as a part of therapy of psychological distress. Particularly, Mindfulness-based techniques which teaches individual to accept the thoughts without remaining attached to their meaning may be helpful to deal with rumination and hence psychological distress.

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