

Research article

Assessment of post-traumatic stress disorder symptoms during COVID-19 pandemic among medical studentsPritika Dutta¹, Shomi Anand², Shankar Gupta³, Rajeev Kumar Kanchan⁴, Kamala Kanta Parhi⁵¹Department of Physiology, All India Institute of Medical Sciences, New Delhi, India²Department of Physiology, Government Medical College & Associated Hospital, Rajouri, J&K, India³Department of Physiology, ⁴Anatomy, ⁵Biochemistry, Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, India

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Corresponding author: **Shankar Gupta**. Email: mr.shankar.gupta@gmail.com**ABSTRACT**

Introduction and Aim: Post traumatic stress disorder is known to be a usual response to distressing experiences. Common symptoms include recurrent events of anxiousness, emotional insensibility and escape mechanism. The COVID-19 pandemic is one such recent occasion that is likely to have an enormous psychological impact on medical student based on extreme social restrictions worldwide. This study therefore aims to investigate the post pandemic PTSD symptoms among first year medical students

Materials and Methods: Department of Physiology, Lord Buddha Koshi Medical College, Saharsa, conducted this observational study for a period of four months starting from September 2020 to December 2020. One hundred and forty-six students completed the most advanced Impact Event Scale -Revised (IES-R) questionnaire. Student's t-test was performed to analyze the strength of association between PTSD symptoms among the participants.

Results: The study concurs high level of PTSD between age-matched medical students after the occurrence of COVID-19 pandemic. The IES-R method of PTSD scoring system was used to arrive at this conclusion. However, this area of research requires multi-centric results to verify the outcome measures.

Conclusion: Post pandemic PTSD symptoms were high among the first year medical students.

Keywords: Avoidance; COVID-19; hyperarousal; Impact Event Scale-Revised (IES-R); intrusion; mindfulness; pandemic; post traumatic stress disorder (PTSD).

INTRODUCTION

Post-traumatic stress disorder (PTSD) is an extensive formation of nervousness and anxiety which emerges because of disturbing, traumatic circumstances and successive discordances. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, the diagnosis of PTSD requires an individual to undergo a specific traumatic episode along with certain additional features (1 -3). The American Psychiatric Association (APA) has defined PTSD in the year 2013 as a presentation of distinctive characteristics followed by a direct contact of an event or a head-on episode that implies actual death or threatened death or severe damage to oneself or others (4). It is considered to be one of the most common psychological disorders that has a direct effect on emotional disturbances and de-synchronization. Occasional flashback experiences, frequent emotional desensitization, traumatized triggers, severe depression, uncontrolled and unrestrained emotional imbalance, lack of performing systemic daily routines are some of the important characteristics that an individual develops. The symptomatic manifestations can vary in terms of time span, extremity, and outcome. Previous studies have

reported that people who witnesses recurrent traumatic events in their life tend to develop a long-term, complex PTSD (4-6). National Institute for Health and Care Excellence (NICE) has formulated conventional guidelines for children, adults and healthcare professionals who have either developed or at a risk of developing PTSD symptoms in the near future (7).

The Impact of Events Scale-Revised (IES-R) is employed as a component to assess long-standing subjective discomfort and to screen for PTSD (8). In 1979, Horowitz, Wilner and Alvarez jointly formulated the IES to self-quantify traumatic tension. Horowitz's perspective primarily reflected two subscales namely intrusion and avoidance. The participants are asked to provide the frequency by which certain mentioned symptoms have occurred over the past week. To avoid any uncertainty or confusion, a system of scoring scheme is provided to the respondents wherein one can mark their symptoms as 'not at all', 'rarely', 'sometimes' and 'often'. The IES scaling system has been utilized over a range of children and adult population and had gained massive efficacy over drug trails (9,10). Even

though this scaling system gained worldwide acceptance, it lacked one of the major components of PTSD and therefore required an advancement. This deficiency was eventually addressed by Weiss and Marmar in 1997 wherein a third subscale hyperarousal was inculcated to the actual scale. This revised version of IES accommodated six new items of hyperarousal and is known as the IES-Revised or IES-R. With respect to the primary subscales intrusion and avoidance, minimal alterations were done in the original IES. Additionally, focus was given on the severity of the distress than its frequency and the system of scoring was upgraded for the respondents' benefit. One of the utmost advantages of the IES-R is that it reflected major internal constancy. Literature has been published that confirmed IES and IES-R to be effective tools for evaluation of emotional distress and disturbances (11).

One such traumatic event that is faced by all the people worldwide is the corona virus disease which was first identified in Wuhan, China in December 2019 from where it acquired the name COVID-19. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is solely responsible for the spread of this disease and in no time World Health Organization (WHO) declared it as a pandemic in March 2020 (12). Not only is it extremely contagious and potentially fatal in nature but also very less is known about this newly spread disease. Moreover, in the presence of lockdown and quarantine and in the absence of a cure to the disease, it has the potential in creating havoc in human minds. Nevertheless, the sudden changes in lifestyle modifications due to the pandemic which involves restriction of freedom and movement could significantly impact the mental health of healthcare workers and medical students.

This study primarily aims to assess the post-traumatic distress that has been experienced by the medical students after the peak of the pandemic has subsided. Based on the results of the study, effective mental health practices and constructive primary-care can be carried out to support the future healthcare front liners and to provide healthy psychiatric services for a peaceful mind (13).

The rapid spread of COVID-19 had limited the normal social and community interaction which was bound to impact the human race psychologically. A northern village in Italy was the first to get affected by the corona virus after it got spread from China. Report has suggested immediate negative psychological distress among the Italian people due to complete confinement enforced by government (14). A study in Canada have suggested that healthcare workers have suffered the greatest

psychological distress especially the severity of anxiety and depression including the PTSD symptoms as compared to the other workers thereby denoting that one must imply utmost care and understanding towards overall well-being and the development of quality mental assistance (15).

MATERIALS AND METHODS

The entire study was conducted in Department of Physiology of a renowned medical college from September 2020 to December 2020 after getting approval from the Institutes ethics committee. It is an observational study in which inclusion criteria involves first-year medical students between the age group of 17 to 20 years who voluntarily participated in the study.

Exclusion criteria included individuals who were under psychiatric medications or under any mental therapeutic treatment. One hundred forty six age matched participants voluntarily signed up for the study. Basic understanding regarding the aim of the study were delivered and all the queries from the participants were addressed. Participation Information Sheet (PIS) was given out and written informed consent was signed before the commencement of the study. All the students who took a keen interest in this study were asked to fill the Impact of Events Scale-Revised (IES-R) questionnaire at one sitting, ensuring that the details filled in the form would be kept completely confidential.

IES-R is a scaling system that scans post-traumatic disorders and stressful episodes that one might face at any point in life. IES-R mainly functions under three important headings such as intrusion, avoidance and hyperarousal. Symptoms of intrusion includes the undesirable memories of disturbing experiences, that of avoidance involves keeping away from any person, place or thought that triggers the incident or that is closely related to the traumatizing episode. Indicators of hyperarousal implies physiological demonstrations such as irritability, lack of concentration, sleeping disturbances and frequent random alarming reactions (10).

This questionnaire consisted of a list of problems that students might have faced during the COVID-19 pandemic scenario. It consists of twenty two questions which are headed under 'not at all', 'a little bit', 'moderately', 'quite a bit' and 'extremely' and the respondents were asked to mark every sentence according to their current emotional and psychological status to the best of their knowledge (16). The forms once filled are to be noted down in an excel sheet for offline analysis.

RESULTS

In this study, 146 age matched first-year medical students actively participated wherein 70 (47.94%) were male subjects and 76 (52.05%) were female candidates. We aimed to find a correlation between generalized IES-R subscales with gender. Student t-test confirms there is a significant difference between

the three major subscales of the revised scoring scale as and when correlated with the gender (one-tail p-value<0.05), in which the mean value of males were 20.93 whereas that of female is 25.47 as displayed in fig. 1.

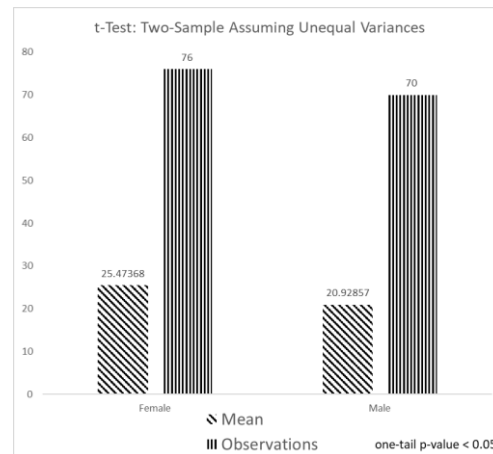
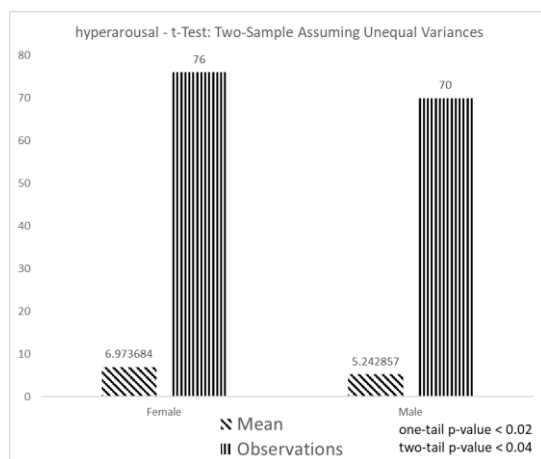
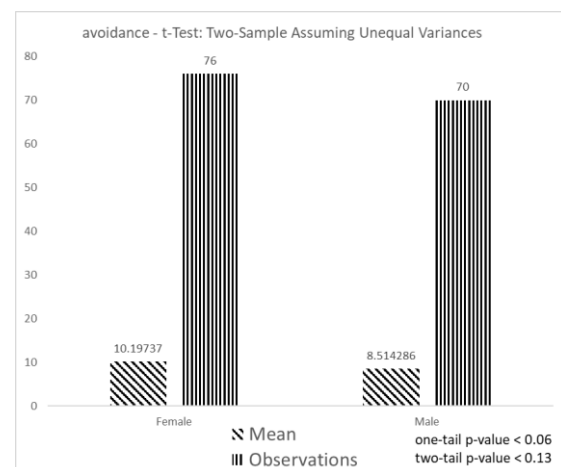


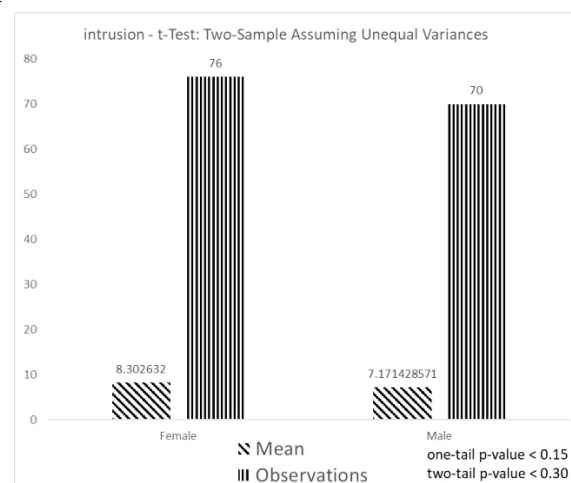
Fig. 1: Association of generalized IER-S subscales with gender



a. Hyperarousal



b. Avoidance



c. Intrusion

Fig. 2: Association of three major IES-R subscales with gender (a,b,c)

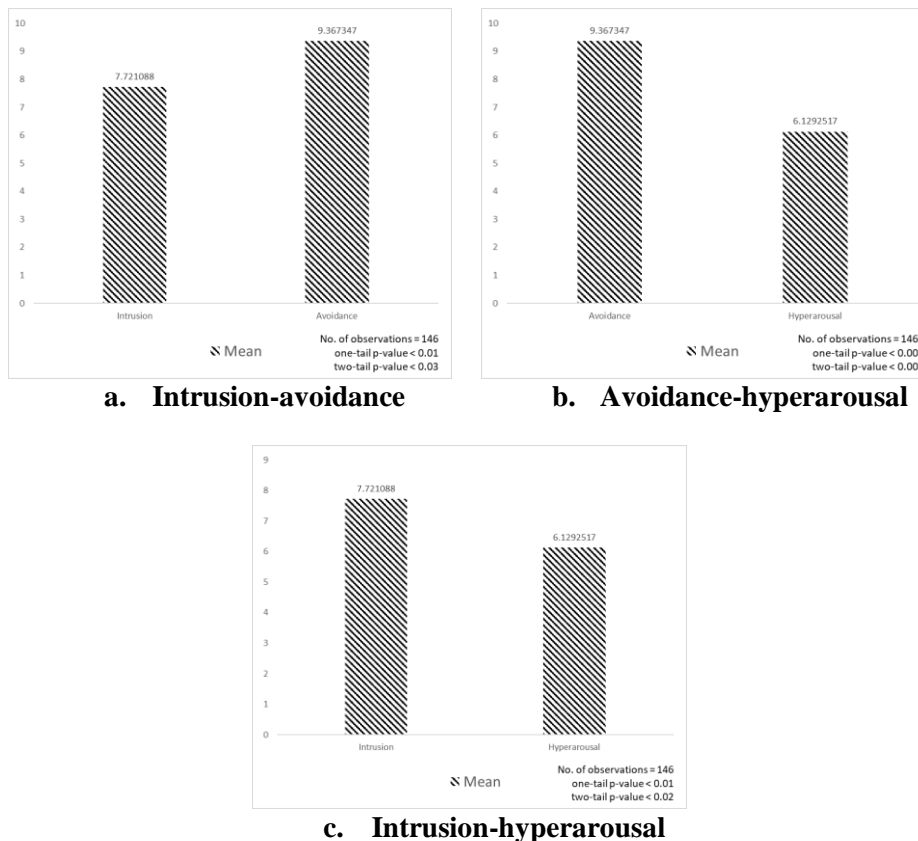


Fig. 3: Correlation among IES-R subscales among medical students (a,b,c)

This result was further classified to find whether there is any correlation between one of the paramount scaling components with gender. Fig. 2 expresses that hyperarousal has a significant difference when compared to gender (one-tail p-value<0.02, two-tail p-value<0.04) unlike intrusion and avoidance wherein the mean values for males and females are quite different but fails to provide a significant difference. Mean value for intrusion among males and females are 7.17 and 8.30 respectively and that of avoidance is 8.51 and 10.19 respectively. Furthermore, fig. 3 depicts the correlation between the major parameters of the scaling system is done taking both age-matched male and female students into account. Statistical analysis has established that there is a significant difference between intrusion and avoidance (one-tail p-value<0.01), (two-tail p-value<0.03) and between intrusion and hyperarousal (one-tail p-value<0.01), (two-tail p-value<0.02). However, an association between the subscales hyperarousal and avoidance have shown extremely high significance (one-tail p-value<0.000), (two-tail p-value<0.000).

DISCUSSION

A review of literature suggests that there are a limited number of research articles that have focussed on the prevalence of pandemic related psychological disorders among health workers and patients with chronic clinical diseases. Recently, a survey-based cross sectional study was conducted among health care workers of North-West Italy with the primary

objective to investigate the incidences of anxiety and associated disorders among healthcare workers. They have claimed to achieve similar results like us wherein females have reported higher level of distress during COVID pandemic (17). Another study was carried out in a cohort of medical front-liners immediately after the rise of the first peak in corona pandemic to evaluate the PTSD symptoms in UK and they have concluded higher rate of clinical mental-related symptoms such as anxiety, depression and PTSD symptoms among the hospital workers. Interestingly, the availability of personal protective equipment (PPE) and social support lessened the anxiety and anxiety-associated symptoms (18). Similar to our report, there are other papers with indistinguishable results. In the acute clinical settings of South-East Ireland, an identical multi-centric cohort study was conducted with the sole purpose of detecting the cognitive impact of workers in a hospital during the corona virus disease. They studied the outcome measures of psychological disorders and PTSD symptomatology using IES-R and DASS-21. Alike to our study consequence, their results reflected positive scores in all the three main sub-scales namely hyperarousal, avoidance and intrusion (19). Same conclusions were also drawn by eminent scientists who aimed to find an association between PTSD symptomatology during the COVID scenario in a cross-sectional outline study done in USA (20).

Contradictorily, a published research article claims that a cohort study was conducted in France to primarily assess the risk factors linked with COVID-

19 patients using the IES-6 scale for the evaluation of PTSD symptoms. They have concluded that even though most of their participants have displayed an elevated mental distress during the initial phase of the disease but compared to the previous pandemic, the measured stress symptoms were not significant enough (21). A literature also pointed out that a pandemic situation like corona virus disease is most likely to affect more gravely among subjects with an underlying chronic disorder. This calls in more room for research among patients, as our study is solely based on healthy volunteers (22). The limitation of our study lies in the fact that our observation of psychological distress and anxiety among medical students during pandemic situation can be used in screening of high-risk individuals and needs to get validated over a larger sample size with a one-on-one interaction with the participants with a robust study design.

CONCLUSION

After the completion of a four month observational study by employing the IES-R scoring system, it can be concluded that there is a significant increases in the PTSD symptoms in first-year medical students following the spread of COVID-19 pandemic.

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CONFLICT OF INTEREST

All the authors hereby claim that there are no conflicts of interest.

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