

## Original Article

# Assessing Impact Event Scale of Post-traumatic Stress Disorder of COVID-19 Pandemic among Postgraduates Working at Tertiary Care Hospital — A Cross-sectional Study

Rekha S Udgiri<sup>1</sup>, Sunil G Biradar<sup>2</sup>, Mohd Shannawaz<sup>3</sup>

**Background** : COVID-19 is an infectious disease caused by the most recently discovered Corona Virus. The pandemic is having a significant psychological impact worldwide as evidenced by continued reports of panic and fear along with heightened anxiety and depression reported in the literature and news. The Indian Psychiatry Society (IPS) has noticed a steep rise in the number of patients suffering from mental illness after the outbreak of the Novel Corona Virus in India. Post-traumatic stress disorder (PTSD) is a psychiatric disorder that can result from the experience or witnessing of traumatic or life-threatening events such as disasters.

**Objectives** : (1) To know the impact of COVID-19 among postgraduates working at medical college. (2) To give counseling based on the score of the impact event scale.

**Methodology** : This was a cross-sectional study conducted among postgraduates (PGs), within one month after the event of the COVID-19 case was diagnosed in the selected medical college. After taking institutional ethical clearance and consent from the PGs the study was conducted. The data was collected by semi-structured questionnaires and using a structured format of The Impact Event Scale-Revised (IES-R). Proform was sent to them through email and requested them to reply within a week.

**Results** : The total IES-R score of more than 37 were found in all the PGs, but the severity was more in final year PGs. more than 24 IES-R scores were observed more in first year PGs.

**Conclusion** : The finding of the present study concludes that the COVID-19 pandemic was associated with severe stressful impact on postgraduates working at tertiary care hospital.

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**Key words** : COVID-19 pandemic, Postgraduates, Impact event scale of PTSD.

COVID-19 is an infectious disease caused by the most recently discovered Coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019<sup>1,2</sup>. The pandemic is having a significant psychological impact worldwide as evidenced by continued reports of panic and fear along with heightened anxiety and depression reported in the literature and news<sup>3</sup>. The Indian Psychiatry Society (IPS) has noticed a steep rise in the number of patients suffering from mental illness after the outbreak of the Novel Coronavirus in India<sup>4</sup>. Post-traumatic stress disorder is a psychiatric disorder that can result from the experience or witnessing of traumatic or life-threatening events such as disasters<sup>5,6</sup>. Studies from India have shown the presence of psychiatric morbidity after various natural

### Editor's Comment :

- In the present study, COVID-19 pandemic was associated with severe stressful impact on postgraduates working at tertiary care hospital.
- Regular counseling sessions are required for everyone as COVID-19 pandemic as it is still ongoing and increase in peak stage.
- It is a novel coronavirus and published literature is not much available in general. These findings would need to be verified in a larger sample size and follow up of the study participants to see the effect symptoms of psychological disorders.
- Both health professionals and community people are panicked about the COVID-19 pandemic. It may take few more months to know the epidemiological determinants of disease.

as well as man-made disasters, PTSD in post-disaster on the affected population has been useful in identifying people in need of psychosocial interventions<sup>7</sup>, WHO Director-general declared COVID-19 outbreak as a public health emergency of international concern (PHEIC) on 30th January 2020<sup>8</sup>.

Many times the Health care providers have to face an increased workload and they have been quarantined when they come in contact with infected patients<sup>9</sup>.

Shri B M Patil Medical College Hospital & Research Centre, BLDE (Deemed to be University), Vijayapura, Karnataka 586103

<sup>1</sup>MD, Professor, Department of Community Medicine and Corresponding Author

<sup>2</sup>MS, Processor & Head, Department of Ophthalmology

<sup>3</sup>PhD, Assistant Professor, Department of Community Medicine

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Fear of infection will be very common during the outbreak, worries about caring for such patients, adequacy of protection, taking infections to their families, long working hours, inadequate access to food, liquids and rest, and separation from families can lead to severe psychological distress among health professionals.

Researchers found that worrying a lot about the illness was associated with worse mental health in the long run. Healthcare workers had worse long-term mental health outcomes than other groups. The present study was attempted to know the impact PTSD of COVID-19 pandemic among postgraduates (PGs) who are frontline workers in the institution.

In the above context, the main objectives of this study were:

1. To know the impact of COVID-19 among postgraduates working at Medical College.
2. To give counseling based on the score of the impact event scale.

#### MATERIALS AND METHODS

This was a cross-sectional study conducted among postgraduates working at tertiary care hospital. The data was collected one month after the event of the COVID-19 case was diagnosed at selected medical college. After taking consent from the PGs, the study was conducted. Those who gave the consent only has filled the self-reported form. The semi-structured questionnaire was used to collect data regarding socio-demographic details and using a structured format of The Impact Event Scale-Revised (IES-R)<sup>10</sup>. Proform will be sent to them through email and requested them to reply within a week. A total of 80 PGs participated in the study. The sample size was sufficient to validate the results with a 95% confidence level and margin of error of  $\pm 10\%$ . Data were collected by the Purposive Sampling method. All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean  $\pm$  standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries and diagrammatic presentation. Chi-square ( $\chi^2$ ) test was used for the association between two categorical variables. The difference between the means of analysis variables between two independent groups was tested by unpaired t-test. The difference between the means of analysis variables between more than two independent groups was tested by ANOVA and F test of testing of equality of Variance. Data were analyzed using SPSS software v.23.0, and Microsoft office 2007. Differences in proportions and means were assessed by  $\chi^2$  test.

**The impact event scale –revised (The IES-R) tool :**<sup>10</sup> Posttraumatic stress disorder (PTSD) is the development of characteristic symptoms after exposure to one or more traumatic events. It is very helpful in measuring the effect of routine life stress, everyday traumas, and acute stress. Participants were asked to rate the level of distress for each component during the previous seven days of their interview. The IES-R is a self-report measure designed to assess current subjective (COVID -19 ) distress for a specific traumatic life event. Responses to 22 items are scored and summed to a maximum score of 88.

#### Score Interpretation (IES-R) :

**24 and more :** PTSD is a clinical concern. Those with scores this high who do not have full PTSD will have partial PTSD or at least some of the symptoms (Asukai & Kato 2002)<sup>11</sup>.

**33 and more :** This represents the best cutoff for a probable diagnosis of PTSD (Creamer *et al* 2002)<sup>12</sup>.

**37 and more :** This is high enough to suppress your immune system's functioning (even 10 years after an impact event) (Kawamura *et al* 2001)<sup>13</sup>.

The IES sub-scores were derived by dividing the total score in a subgroup by the total number of items in it. The subscales measure different dimensions of a stress response. It is helpful to measures the subscale in the response sets of intrusion (intrusive thoughts, nightmares, intrusive feelings, and imagery, dissociative-like re-experiencing), avoidance (numbing of responsiveness, avoidance of feelings, situations and ideas) and hyperarousal (anger, irritability, hypervigilance, difficulty concentrating, heightened startle), subscale scores which was calculated for the intrusion (consisting of the following items : 1,2,3,6,9,14,16,20), avoidance (consisting of the following items : 5,7,8,11,12,13,17,22), hyperarousal (consisting of the following items : 4,10,15,18,19,21). The score range from 0 through 4. A mean score of 2 on a specific subscale was indicated as the appropriate cut-off<sup>14</sup>.

#### RESULTS

A total of 80 PGs participated in the study. 54% of them had mild PTDS symptoms followed by moderate (20%) and the mean range of their age group was  $27.4 \pm 2.4$ . The majority of them were female (54%) and belongs to Clinical Departments (93%). 46% of the PGs were in the first year followed by second-year (33%) and 21% of them were in the third year.

Among them, 34% of them were subjected to secondary contact and are self-quarantined followed by 24% of them were subjected to primary contact

and were quarantined at the institution. 44% of them were not exposed to either primary or secondary contact. 88% of the PGs were staying away from home. 89% of residents didn't have any habits. According to their subjective response regarding nutritional status, 49% of them said their nutritional status was fair during quarantine, followed by good was 40%. Only 9% of them coated it was poor.

The total IES-R score of  $\geq 37$  was found in all the PGs, but the severity was more in final year PGs.  $\geq 24$  IES-R score was observed more in first year PGs. A significant difference was found between the study year of their professional years at  $P=0.028$ . The overall mean IES-r subscales observed in our study for the intrusion scale was  $(6.8\pm 6.4)$ . Avoidance scale  $(6.9\pm 6.6)$  and hyperarousal scale was  $(4.2\pm 5)$ . An analysis of impact event scale of PTSD shows, overall mean range of the IES-R subscale was  $19.2\pm 20.2$  among male PGs, and in females, it was  $16.8\pm 14.8$ . No significant difference was found between male & female. Similarly, there was no difference in IES-R subscales scores between the genders (Table 1).

A statistically significant difference was observed between the different years of their year of the profession related to the IES-R subscale. The significant difference was observed with regards to the avoidance subscale at  $P=0.034$  and  $P=0.024$  for the hyperarousal subscale between the professional years.

The IES-R score severity of symptoms was observed more in the subject of primary contact compare to secondary contacts. But no statistical difference between subjects of primary and secondary contacts for the overall IES-R subscale (Table 2).

Overall IES-R score level was found more among those who are staying away from family but no statistically significant difference between staying with family or not with regards to overall both IES-R subscale and also for IES-R score.

Only 5% of them have mentioned they need counseling to overcome the situation in the present study and counseling facilities were provided to all of them by expert opinion.

Table 1 — Distribution of postgraduates according to IES-R score and subscale score by Gender and PG Year

|  | Males         | Females       | p-value        |         |
|--|---------------|---------------|----------------|---------|
| <b>IES- R SCALE N(%) by Gender :</b>                         |               |               |                |         |
| Nil  | 3(8.1)        | 10(23.3)      | 0.184          |         |
| Mild ( $\geq 24$ )   | 23(62.2)      | 19(44.2)      |                |         |
| Moderate ( $\geq 33$ )                                       | 6(16.2)       | 10(23.3)      |                |         |
| Severe ( $\geq 37$ & above )                                 | 5(13.5)       | 4(9.3)        |                |         |
| <b>Subscales (Mean<math>\pm</math>SD) by Gender :</b>        |               |               |                |         |
| The Intrusion subscale                                       | 7.1 $\pm$ 7.4 | 6.6 $\pm$ 5.6 | 0.744          |         |
| The Avoidance subscale                                       | 7.7 $\pm$ 7.3 | 6.3 $\pm$ 5.9 | 0.33           |         |
| The Hyperarousal subscale                                    | 4.4 $\pm$ 6.0 | 4.0 $\pm$ 4.0 | 0.69           |         |
| <b>IES- R SCALE N(%) by PG Year</b>                          |               |               |                |         |
|  | I Year        | II Year       | III Year       | p-value |
| Nil  | 4(10.8)       | 7(26.9)       | 2(11.8)        | 0.028*  |
| Mild ( $\geq 24$ )   | 23(62.2)      | 10(38.5)      | 9(52.9)        |         |
| Moderate ( $\geq 33$ )                                       | 7(18.9)       | 8(30.8)       | 1(5.9)         |         |
| Severe ( $\geq 37$ & above )                                 | 3(8.1)        | 1(3.8)        | 5(29.4)        |         |
| <b>Subscales (Mean<math>\pm</math>SD) by PG Year :</b>       |               |               |                |         |
| The Intrusion subscale                                       | 6.4 $\pm$ 5.4 | 5.3 $\pm$ 5.1 | 9.9 $\pm$ 9.2  | 0.063   |
| The Avoidance subscale                                       | 6.6 $\pm$ 5.2 | 5.1 $\pm$ 5.3 | 10.4 $\pm$ 9.5 | 0.034*  |
| The Hyperarousal subscale                                    | 3.5 $\pm$ 3.7 | 3.2 $\pm$ 3.7 | 7.1 $\pm$ 7.8  | 0.024*  |
| Note: * significant at 5% level of significance ( $p<0.05$ ) |               |               |                |         |

Table 2 — Comparison of Mean IES-R Scale and Subscale with Subject to Primary & Secondary Contact

| IES- R SCALE N(%)                         | Nil (NA)      | Primary contact | Secondary Contact | p-value |
|---|---------------|-----------------|-------------------|---------|
| Nil                                       | 7(20.6)       | 3(15.8)         | 3(11.1)           | 0.828   |
| Mild ( $\geq 24$ )                        | 17(50)        | 11(57.9)        | 14(51.9)          |         |
| Moderate ( $\geq 33$ )                    | 7(20.6)       | 2(10.5)         | 7(25.9)           |         |
| Severe ( $\geq 37$ & above )              | 3(8.8)        | 3(15.8)         | 3(11.1)           |         |
| <b>Subscales (Mean<math>\pm</math>SD)</b> |               |                 |                   |         |
| The Intrusion subscale                    | 6.4 $\pm$ 6.6 | 6.6 $\pm$ 7.3   | 7.6 $\pm$ 5.8     | 0.748   |
| The Avoidance subscale                    | 6.2 $\pm$ 6.1 | 8.2 $\pm$ 8.3   | 6.9 $\pm$ 5.9     | 0.600   |
| The Hyperarousal subscale                 | 3.4 $\pm$ 4.2 | 5.6 $\pm$ 7.2   | 4.1 $\pm$ 4       | 0.322   |

### DISCUSSION

The literature related to the impact of COVID -19 was available only a few of the affected countries, presently there are not many studies have published in the literature on how severe the impact of COVID-19 pandemic is on mental health<sup>15</sup>. As much of the available data were not present for the novel coronavirus, many of the cross-references were taken from SARS & MERS. Because Studies conducted on the psychological impact of previous infectious outbreaks, the Severe Acute Respiratory Syndrome (SARS) was similar to the COVID-19 pandemic<sup>16</sup>.

The present study shows that the event of a major disaster of 2020, the so-called COVID-19 pandemic

has definitely made changes in mental health conditions among postgraduates (PGs) working at a Tertiary Care Hospital at selected Medical College.

A total of 84% of the PGs had one or the other symptoms of psychological in the present study. The severity range from mild to severe according to the IES-R score. The study was done by Lai J *et al*<sup>17</sup> found a significant proportion of participants experienced anxiety, depression, and insomnia symptoms, and more than 70% reported psychological distress, similarly Chua SE *et al*<sup>18</sup>. In his study during the acute SARS outbreak, 89% of health care workers who were in high-risk situations reported psychological symptoms.

In this study, the mean score of IES-R was 17.9±17.5. there was no difference IES-R score between gender, similar results were observed in the study conducted by Zhang Y *et al*<sup>19</sup> shows there was no difference in mean IES scores between females and males (14.2 *versus* 12.8, respectively) (P = 0.173). This could be due to the fact that infectious disease outbreaks are known to have a psychological impact on healthcare workers as well as the general population and everyone has experienced the same impact of the outbreak in their life.

The overall mean IES-r subscales observed in our study for the intrusion scale was (6.8±6.4). Avoidance scale (6.9±6.6) and hyperarousal scale was (4.2±5). The study conducted by Lee, Sang Min *et al*,<sup>20</sup> in his first survey, studied on healthcare workers who performed MERS-related tasks had significantly higher total IES-R scores and subscore which was higher than the present study. Similarly, a study conducted by Chew *et al*<sup>21</sup> observed IES-R and subscore lesser than our study. The difference could be due to the study participants were apart from doctors other health workers were also involved in other studies.

The finding of the present study shows IES-R score severity of symptoms was observed more in primary contact PGs compare to secondary contacts. Report of other studies also shows a high prevalence of symptoms of psychological distress and disorder among hospital staff during the initial period of quarantine<sup>22</sup>. Severity was more during quarantine period because Quarantine is often an unpleasant experience for those who undergo it. Separation from loved ones, the loss of freedom, uncertainty over disease status, and boredom can sometime, create dramatic effect.

Analysis of our finding shows a Significant difference was found between different years of professionals the severity of IES-R score was observed more in final

year PGs. It could be due to the reason that they are the first to come in contact with patients and more experience for taking care of patients. But in another study, as such no difference of Work experience affected IES-score<sup>23</sup>.

### CONCLUSION AND RECOMMENDATIONS

Findings of the present study concludes that the COVID-19 pandemic was associated with the severe stressful impact on postgraduates working at tertiary care hospital, even though the COVID-19 pandemic is still ongoing. These findings would need to be verified in larger sample size and follow up of the study participants to see the effect symptoms of psychological disorders. Because PTSD will have a long term effect on the individual, it may sometimes persist or vanish after a long period.

Based on the finding of the resulting counseling is required for everyone. Especially to those whose IES-r score was more. Institute has made provision for Psychosocial cells to approach a subject expert for counseling. Toll-free number (24x7) and personal contact numbers are displayed at the hospital so that they can contact at any time.

### Limitations of the study :

The study was conducted during the initial phase of the incidence of COVID-19 pandemic, so need a follow-up study to see the persistence of the impact of PTSD among PGs. Also, the sample size was less, therefore, we can't generalize the statement.

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**Conflict of Interest :** None

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**“A mind all logic is like a knife all blade. It makes the hand bleed that uses it.”**

**— Rabindranath Tagore**

Quotations courtesy : **Dr C S Rajan, Bangalore**