Measurement of risk and stressors of post-traumatic stress disorder during the first lockdown period of COVID-19 among Industrial workers, Hyderabad, India

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ABSTRACT

Introduction: Post-traumatic stress disorder usually occurs after a traumatic event and the COVID-19 pandemic has affected mental health to a great extent. While there is extensive research being conducted about this aspect among the general population, the most neglected were the industrial workers during the first lockdown period. The aim of the study was to assess the risk of post-traumatic stress disorder symptoms using the impact of event scale-revised (IES-R), their main stressors and coping measurements among the industrial workers of Hyderabad.

Methods: A telephonic interview schedule was adopted to fill the online questionnaire among industrial workers of age group 20-55 years during the lockdown period. Hundred and seventy-four participants were included in our study and data was collected using standardized tools IES-R and a brief resilient coping scale. Various stressors and also their coping strategies were elucidated.

Results: At the risk of post-traumatic stress disorder, symptoms were found among 20.6% and at risk of suppressed immune system functioning which is presumed to have its effect for the next 10 years was13.8%. The main stressors of Covid -19 with increased IES-R score were staying away from family members, the influence of social media, Any acquaintance with COVID-19 infected person effects daily life and white-collar group. Coping measurements with a brief resilient coping scale found 17.4% as low resilient copers.

Conclusion: This identification of high-risk post-traumatic stress disorder symptoms needs to be addressed earlier to bring up preventive strategies such as counseling services in the occupational health care centers of our industries.

Key words: Brief Coping scale score, IES-R, Industrial Workers, PTSD, Stressors

INTRODUCTION

SARS COV-2 which emerged as a pandemic has drastically changed the situation and life of people living in a matter of experiencing an unpredictable and rapidly evolving situation. Lockdown had posed many problems where most of them are staying at home, lost their jobs, suspension of productivity, travel restriction, without a social life, insufficient preparation with the high level of fear and concern about the pandemic and its consequences.[1]

Studies related to the previous pandemic such as Ebola, Swine flu, or MERS all have revealed that they have a negative impact on mental health. Common reactions were fear of contracting the virus, falling sick, dying, separation from family and relatives with a stigma attached to it.[2,3] Chinese also experienced

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anxiety (7.5% mild, 20.4% moderate, and 8.4% severe), stress (24.1% mild, 8.1 moderate or severe level), and prevalence of post-traumatic stress disorder [PTSD] among 4.6%.[4] In Liaoning province of China also found 7% of the participants suffered from post-traumatic stress disorder of score >26.[5]

PTSD arises as a delayed or protracted response to a stressful event or situation (of either brief or long duration) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost all.[6] The risk of developing PTSD depends on the nature of the critical incident, the individual's personality and past history, economic status, routine lifestyle with their daily activities, social media, family and social support.[7] Most of these reactions will diminish within a short period without any interventions but those exposed to some severe stressors will be developing neuroticism and personality changes.[8]

There are various self-reported instruments to measure the preliminary diagnosis of PTSD, such as Davidson trauma scale, Impact of event scale- Revised (IES-R), Mississippi scale for combat-related PTSD for veterans, etc.[9]

The majority of studies are concerned with hospital-based with more emphasis on clinical characteristics, diagnostics, and treatment. However, there are significantly fewer scientific studies conducted on the impact of COVID-19 on the mental health of people working in the industrial sector. In such a context, there is a need for research on mental health among industrial workers is essential to ensure mitigation measures at the earliest. So an attempt has been made to conduct this study to assess the risk of Post-traumatic stress disorder symptoms using the impact of event scale-revised (IES-R), their main stressors and coping measurements among the industrial workers of Hyderabad.

METHODS

A Cross-sectional study was conducted at three Industries located in Hyderabad during the first lockdown period from April to June 2020. Participants were selected based on the criteria that they were working adults belonging to the age group of 20-55 years who were free from COVID-19 infection and given consent and willingness to participate in the study. Those affected with COVID-19 infection and the health care staffs working in industrial set up were excluded to avoid the bias resulting from the varying

occupation. The snowball sampling technique was adopted due to the avoidance of direct contact with the workers based on the Covid appropriate behavior guidelines. So a total of 185 were contacted, of them, only 174 had given their consent and willingness to participate in the study. Data was collected using an Interview questionnaire schedule which was taken up as telephonic conversation, communicating it to the known contact details of the HR representing the Industry. This conversation was based on the questions framed on google forms and was directly downloaded from the datasheet.

The Questionnaire consisted of a consent form, 4 parts divided as Socio-Demographic Variables (Part 1) with age, gender, education, and the working group as blue-collar for those performing skilled or unskilled labor and white-collar as those who perform work in an office environment sitting at computer or desk. Impact of event scale – revised (IES-R) as part-2 was used to measure the risk of PTSD symptoms.[10] The IES-R is a self-reported tool to measure preliminary diagnosis of post-traumatic stress disorder. This consists of 22 questions rated on a 5 item- Likert scale from 0 (not at all) – 4 (extremely) during the past 7 days. These were subdivided into 3 subscales- intrusion, avoidance, and hyperarousal. The Intrusion subscale is the mean item response of items 1, 2, 3, 6, 9, 14, 16, 20; The Avoidance subscale is the mean item response of items 5, 7, 8, 11, 12, 13, 17, 22; Hyperarousal subscale is the mean item response of items 4, 10, 15, 18, 19, 21. The hyperarousal subscale has good predictive validity about trauma,[11] while the intrusion and avoidance subscales detect relevant differences in the clinical response to traumatic events of varying severity. A total score of 24 or more indicates partial PTSD or some symptoms of it, a score of 33 and more represents the best cut-off score for the diagnosis of PTSD and a score of 37 and above depresses the immune system functioning which would leave an impact for next 10 years ahead. The internal consistency between the items in the scale was calculated using reliability analysis and Cronbach's alpha. Value for intrusion subscale was 0.878 with an inter-item correlation of 0.489; avoidance subscale with 0.862 with an inter-item correlation of 0.958 and hyperarousal subscale with 0.687 with an inter-item correlation of 0.685.

Part -3 consisted of information regarding COVID 19 stressors which included individual and organizational factors such as socio-demographic characteristics, the influence of social media on daily life and social

support, and worry about economic influences. Part-4 included coping strategies which were quantitatively measured using a brief resilient scoring scale having 4 questions rated on 5 items Likert scale from 0 (does not describe me at all) - 5 (describes me very well). These were interpreted as Low resilient copers with 4-13 as score, Medium resilient copers with the score of 14-16, and High resilient copers with the score of 17-20.[12] The Cronbach's alpha test value was found to be 0.871.

Online consent was taken from the head of the industries, participants, and ethical approval was taken from institutional ethical committee clearance-ESICMC/SNR/IEC-F0176/04/2020. Descriptive statistics such as number, percentage, mean+ SD were used. One-way ANOVA was used to calculate and compare the mean scores of subscales in the categorized classification of PTSD. Correlation between COVID Stressors and PTSD scores was also assessed.

RESULTS

This study included 174 participants from various industrial setups located in Hyderabad. There were 108(62.2%) from solar energy plants, 33(18.9%) from the aviation industry, and 33(18.9%) from the pharma industry; consisted 114(65.5%) males and 60(34.5%) females. The mean age of the participants was 40+12.5 years with age classified as 20-30 years having the highest 69(40.1%), 31-40 years 45(26.2%) and above 41 years of age were 58(33.7%). Based on their educational status, those who have completed middle school were 3(1.7%), high school 10(5.7%), intermediate and diploma 47(27%), graduate 56(32%), and postgraduate 58(33.6%). Depending on their working status white-collar workers were 76(43.6%)

and blue-collar workers were 88(56.4%). About 161(92%) of them were getting their steady income during the lockdown period.

According to IES-R Scale the clinical concern at the risk of partial PTSD was found among 17(9.8%), at the risk of a probable diagnosis of PTSD among 36(20.6%), and risk of suppressed immune system functioning among 24(13.8%) which is detailed in fig 1.

The mean scores were found statistically significant with the avoidance subscale scoring reflecting the mean response of items at various levels of severity followed by mean item response of intrusion and hyperarousal subscales. (Table 1)

There was a statistically significant association of age with higher IES-R Scoring being more in the age group of 31-40 years and also among the white-collar group; whereas, with other socio-demographic variables, there was no statistically significant association. (Table 2)

Correlation analysis depicted a significant positive association of stressors such as daily life affected, influence of social media on daily life, any relative or acquaintance being affected, and not staying with parents. It was also noted that ,there was no correlation of brief resilient coping score with increased IES-R scoring. (Table 3)

As per the brief resilient coping scale – low resilient copers were 35(20%), medium resilient copers were 59(34%) and high resilient copers were 80(46%). (Fig 2)

Their coping strategies were mainly watching movies on TV 90(52%), praying god 42(24%) and substance abuse 35(20%).
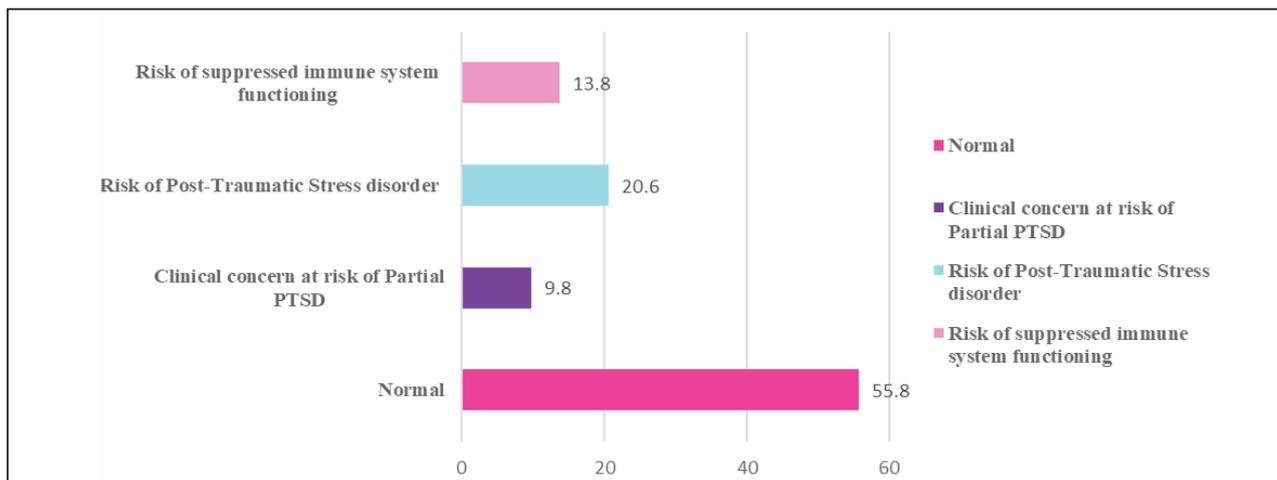
Figure 1: Distribution of study subjects according to IES-R Classification
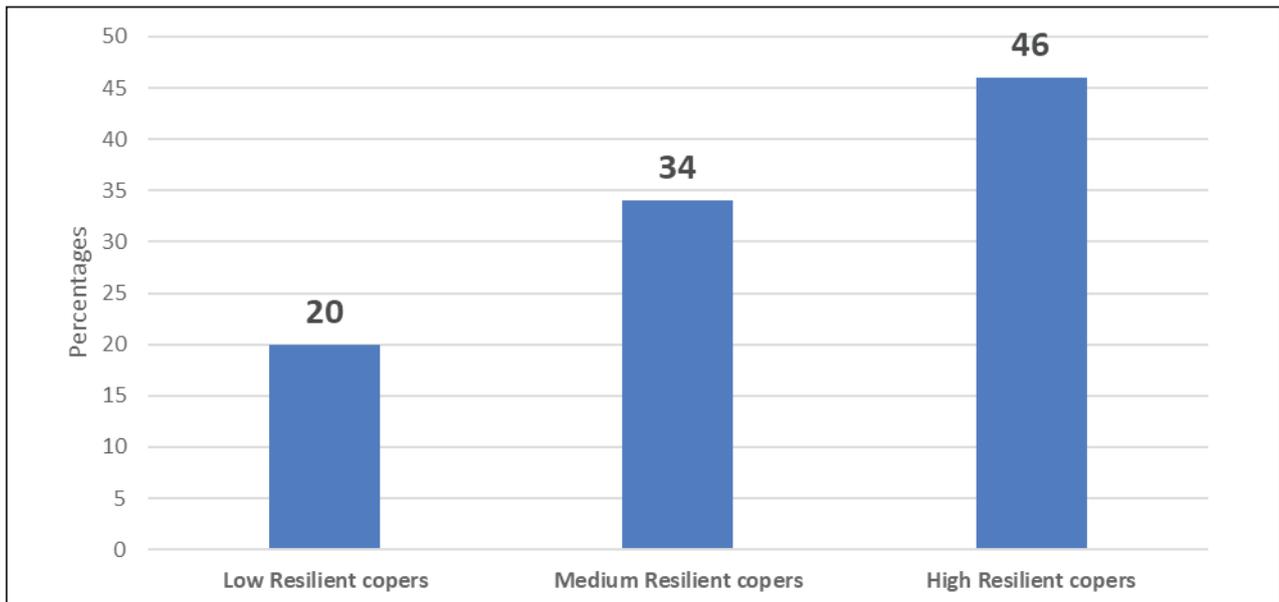
Figure 2: Prevalence of coping strategies according to brief resilient coping scale

Table 1: Mean item scores of subscales and IES-R

Subscales	Mean item scores of IES-R	p-value
Intrusion		
IES Score <24(Normal)	3.77+3.73	
24 -32	9.00+1.27	
33 -36	11.66+2.22	0.001
37- 88	19.50+9.43	
Avoidance		
IES Score <24	4.86+4.27	
24 -32	10.58+3.24	
33 -36	15.22+3.45	
37- 88	21.75+7.23	0.0003
Hyper arousal		
IES Score <24	2.82+2.83	
24-32	5.82+1.84	
33-36	7.00+2.05	0.002
37- 88	10.91+4.18	

Table 3: Correlation between COVID-19 stressors and PTSD Screening tool (IES-R)

Stressors	r	p value
Daily life effected	0.494	0.0001*
Influence of Social media	0.167	0.028*
Any relative or acquaintance getting affected	0.290	0.0003*
Not Staying with parents	0.169	0.026*
Brief resilient coping score	0.086	0.259

*Statistically Significant

Table 2: Association between socio-demographic variables and IES- R Scoring

Variable	Mean scores of IES-R	p-value
Age group		
20-30yrs	13.43+12.85	
31-40yrs	23.44+ 21.01	0.001*
>40yrs	21.12+10.65	
Gender		
Males	19.45+12.31	0.233
Females	16.51+19.98	
Industrial set up		
Solar energy plant	18.03+17.44	
Aviation Industry	19.10+11.39	0.658
Pharma industry	19.01+7.52	
Occupational status		
White collar	22.47+17.40	0.002*
Blue collar	15.31+12.81	
Educational status		
Middle school	19.286+13.18	
High school	14.40+17.76	
Intermediate/diploma	14.74+15.28	0.098
Graduates	16.33+12.78	
Post graduate	22.33+16.95	

*p value <0.05 is statistically significant

DISCUSSION

Scientific data related to this matter among industrial workers are scarce. To fill this gap in the literature, this study focused on the impact of COVID-19 on the

mental health of industrial workers. Our results included participants from solar energy plants constituting 62.2%, aviation industry 18.9%, and pharmaceutical industry 18.9%. This consisted of 65.5% males and 34.5% females with a predominant 40% belonging to the age group of 20-30years with the highest attained the educational status of post-graduation among 33.6% and graduation 32%. The prevalence of clinical concern at the risk of partial PTSD was found among 9.8%, risk of PTSD 20.6%, and risk of suppressed immune among 13.8%. The Highest mean score was found with the avoidance subscale of IES-R and statistically, significant association was found with an age group of 31-40 years and among the white-collar group of workers with the highest scores. Significant positive correlated stressors were daily life being affected, the influence of social media on daily life, any relative or acquaintance being affected, and not staying with parents. Resilient copers who were at higher risk constituted 54% of our findings. There was no effect of the economy in our study as they were getting steady income during the crisis period too and were thinking more of avoidance of the situation. White-collar groups were laid the higher responsibility for their worker's safety in the future and more expectations from their management due to the unprecedented event which could have increased their stress scores in our study.

In contrast to our study, Rocio Rodriguez Rey et al. in their psychological impact study among the Spanish population during the early stages of the COVID-19 pandemic reported an IES-R Score >37 among 30.4%, 33-36 among 6.2%, and a score of 24-32 among 14.4% and <23 among 49%. The strongest negative psychological symptoms were found among women, young, and those who lost their job during the health crisis, and the majority were only worried about the economic consequences.[13] Liu and et al. have also reported the prevalence of post-traumatic stress symptoms to be 7% in the hardest-hit area of China using the PTSD Checklist and women reported significantly higher PTSS in the domains of re-experiencing negative alterations in cognition or mood and hyperarousal subscale.[14] Zhang and et al. used a revised 23 item Stanford acute stress response questionnaire to assess post-traumatic stress disorder symptom clusters where they found the incidence of PTSD has increased from 7% to 10.4% between first and second surveys. Significant stressors were contact history, high death anxiety level, non-medical occupation, and history of life-threatening experiences.[15] These variations could be due to differences in their occupation, various scales used for measurement of impact, period of data collection after the pandemic, and the conditions in which they live.

Abel and et al. in a study among adults with chronic disease in southwest Ethiopia reported a mean perceived stress score of 19.31+7.21 using perceived stress scale-10 during this COVID-19 pandemic. Moderate stress was perceived among 68.4% and 13.9% as severe COVID-19 related stress. There were no statistically significant differences with gender and urban/rural distribution but significantly lower score among 18-29 years of age. On multiple linear regression active coping, denial, behavioral disengagement, self-blame and religion were positively predicted except for acceptance with perceived stress score.[16] This could be mainly because health care for chronic diseases was disrupted and this was the main source of their increased stress.

Indian studies by Action aid India among an informal sector of workers found that half of them had not received their wages and 17% received partial wages.[17] Ranjana Choudhari in their study on mental health challenges of internal migrant workers of India reported in detail their experience of adverse psychological consequences of multiple stresses associated with various factors such as chronic poverty, malnutrition, cultural bereavement, loss of religious practices, and social protection systems, misalignment with a new culture, coping with language difficulties, changes in identity, substance abuse and poor access to healthcare in addition to the poor living conditions.[18]

Breman J in his qualitative study among footloose workers in Gujarat found the migrant workers were even more afraid of the hunger awaiting them than of catching the virus. They have spent their earned money only on traveling and were concerned more about the basic physiological needs of life.[19]

All these studies focused on migrant workers where we found that the base of Maslow's hierarchy of needs was more affected with importance about meeting their physiological needs such as food, water, shelter, and rest. Whereas our study found that our industrial workers were a step ahead with avoidance subscale mean scores to be the highest concentrating on safety and security needs. The main reason for this could be that they all had steady incomes with no worries about the economy.

CONCLUSION

As per IES-R about 44.2% were at the risk of PTSD symptoms with the highest avoidance subscale mean scores. The most important stressors among them were mainly daily life being affected and relatives/acquaintances affected with COVID. Other factors were the influence of social media, not staying with parents and the white-collar profession. 20% were low copers and 34% were medium copers with coping strategies being adopted such as watching movies on television, religious practices, and substance abuse.

Limitations of the study are mainly the snowball sampling method adopted, so we may not include the representative sample, and only those who had access or were educated had more chance of participation. Thereby generalization of results cannot be done unless further studies are taken up covering all sectors.

This study enables to provide early intervention for covid-19 related PTSD and the coping strategies which need to be addressed to bring up preventive strategies by intensifying counseling services (online) with the main focus on the mental health of workers which has to be integrated into workplace occupational safety to respond the crises which would remain for a longer duration.

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