RESEARCH ARTICLE

TO COMPARE PSYCHOLOGICAL DISTRESS, INTOLERANCE TO UNCERTAINTY, AND RESILIENCE IN INDIVIDUALS QUARANTINED FOR COVID-19 PANDEMIC AND IN HEALTH CARE PROVIDERS IN A TERTIARY CARE HOSPITAL

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Manuscript Info	*Abstract*
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Introduction: In December 2019, novel coronavirus (2019-nCoV) was recognized in Wuhan, China, and since then has caused serious illness and death. As on May 16, 2020, a total of more than 4.5 million cases of the novel coronavirus disease (COVID-19) have been reported globally and a total of more than 86000 confirmed positive cases in India alone. This has led to significant medical and psychological morbidity, both, in India as well as globally.

Aim: To compare psychological distress, intolerance to uncertainty and resilience in people quarantined for COVID-19 pandemic and in health care providers in a tertiary care hospital.

Material and methods: Data was collected from suspected COVID-19 individual evacuated from abroad and quarantined in wards, and health care providers in SGT Hospital, SGT university, Gurugram using anonymous online questionnaires for socio demographic details and psychological assessment using Depression Anxiety and Stress Scale 21 (DASS-21), Intolerance of Uncertainty Scale (IUS), General health questionnaire-12 stress scale (GHQ- 12 stress scale) and Connor-Davidson Resilience Scale (CDRISC).

Results: A statistically significant mean difference in total DASS-21 score, GHQ-12 score, IUS score was observed between quarantined patients (Group1) and health care providers (Group 2). Psychological stress and intolerance to uncertainty was found to be more in healthcare providers. Resilience had an inverse correlation with Psychological stress and intolerance to uncertainty.

Conclusion: COVID 19 has affected people from all domains. It has not spared even the Healthcare Providers. Therefore, special attention must be given to Mental Health of all including Healthcare Providers.

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Introduction:-

The novel coronavirus disease (COVID-19), first detected in Wuhan, China in mid December 2019, has since then been spreading across the world rapidly. It was declared as a pandemic by World Health Organization (WHO) on March 11 2020. Since then countries across the world have taken stringent measures in an attempt to curb the spread of the virus. This included quarantining people coming from abroad, for a period of at least 14 days. While many were asked to quarantine themselves at their own homes, many were quarantined in designated hospitals. Quarantine

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refers to the separation of those exposed individuals who are not yet symptomatic for a period of time (usually the known incubation period of the suspected pathogen) (Manuell et al., 2011). The word quarantine was first used in Venice, Italy in the year 1127 with respect to leprosy. Quarantine is one of the strategies developed by public health authorities to apply at a population level to control the spread of communicable diseases. Whereas quarantine is considered as a blunt instrument to control the diseases, it brings along with itself ill effects on the mental health and psychological wellbeing. Studies have shown high prevalence of psychological distress and disorder in quarantined population (Tianet al., 2020),(Cavaet al., 2005) .A study on hospital staff showed that the quarantined staff were significantly more likely to report exhaustion, detachment from others, anxiety, irritability, insomnia, poor concentration and indecisiveness, deteriorating work performance and reluctance to work or consideration of resignation (Bai et al., 2004).

Resilience is defined as an evolving process influence by a variety of biological, social and environmental factors (Norris et al., 2009). Several studies have noted the role that resilience plays on the individual's capacity to form a healthy response while going through a trauma (Sarchiapone et al., 2009). Human beings have as innate capacity to protect themselves from adverse life events that may challenge their psychosocial wellbeing. It is in this regard that resilience emerges as a protective factor. Resilience is a contruct that may be involved in psychopathological process for mental disorders (Bonanno et al., 2004). It also mediates stress response of trauma (Diehl et al., 2012). Therefore, high level of resilience act as a protective factor and lower level of resilience makes an individual susceptible to developing psychological distress as a consequence of adverse environmental events (Jeste et al., 2013). Resilience as a protective factor is important not only for people undergoing quarantine but also for healthcare workers working in adverse conditions.A literature review on resilience in health care providers found resilience combined with personal traits and experience leading to positive adaptation (Tranet al., 2013). Studies have also shown that resilience as an attribute in healthcare workers also helps in avoiding burnouts (Hankins et al., 2008).

Aim and Objectives:-
Aim:
To compare psychological distress, intolerance to uncertainty, and resilience in individuals quarantined for COVID-19 pandemic and in health care providers in a tertiary care Hospital.

Objectives:-
1.   To document socio-demographic profile of the people in quarantine and health care providers.
2.   To evaluate and compare psychological distress and intolerance to uncertainty in the 2 groups.
3.   To evaluate and compare the level of resilience in the 2groups.

Methods:-
The study was a cross sectional, anonymous, non-interventional in design conducted on 66 suspected COVID-19 individuals evacuated from abroad and quarantined in SGT Hospital, SGT University, Gurugram, and 62 health care providers working in the same hospital, using an anonymous online questionnaire.

Inclusion Criteria:
Individuals and health care providers who were willing to participate in the study were included in the study.

Exclusion Criteria:
Nil

Study Procedure:
197 quarantine individuals were briefed in small groups regarding the study. To minimize face to face interaction, they were asked to fill online questionnaires through an online survey platform, GoogleDocs., the link for which was forwarded to their personal mobile numbers provided by them. Out of the 197 quarantined individuals, 66 responded back within 3 days. The same procedure was followed for 104 health care workers (all doctors), out of whom 62 responded within 3 days. Expedited ethics approval was obtained from the Institutional Review Board of SGT Medical College, Hospital and Research Institute, SGT University, Gurugram, Haryana, India. Socio demographic data were collected on gender, age, marital status, medical comorbidities, and substance use. Psychological evaluation was done using the four followingquestionnaires:

Depression Anxiety Stress Scale (DASS 21)(Connor et al., 2003)is made up of 21 self-report items to be completed over 5-10 minutes each reflecting a negative emotional symptom. The scores ranged from 0 meaning that the client believed the item "Did not apply to them at all" to 3 meaning that the client considered the item "Apply to them most of the time". The depression scale has sub scales assessing dysphoria, hopelessness, de- evaluation of life, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety and subjective experience of anxious affect. The stress scale's subscales highlight levels of non-chronic arousal through difficulty relaxing, nervous arousal and being easily upset, agitated, irritable, over reactive and impatient. The reliability scores of the scales in terms of Cronbach's Alpha rate the depression scales at 0.91, the anxiety scale at 0.84 and stress scale at 0.90.

The general health questionnaire-12 stress scale (GHQ-12 stress scale) (Hale et al., 2016)is used to detect psychiatric disorder in general health population and within community. It assesses the respondent's current state and ask if that differs from his/her usual state. There are various versions with 12, 28, 30 and 60 questions. Cronbach's Alpha for GHQ 12 is0.90.

Connor Davidson Resilience Scale (CD RISC)(Southwick et al., 2014)is a test that measures resilience or how well one is equipped to bounce back after stressful events, tragedy, or trauma. Resilience gives us the ability to thrive in the face of adversity. Those who are resilient are better able to move through the traumas of life.

The Connor Davidson Resilience Scale measures several components of resilience:
1. The ability to adapt tochange.
2. The ability to deal with what comesalong.
3. The ability to cope withstress.
4. The ability to stay focused and thinkclearly.
5. The ability to not get discouraged in the face of failure.
6. The ability to handle unpleasant feelings such as anger, pain, orsadness.

Intolerance of Uncertainty Scale(Kumar.,2016)assesses emotional, cognitive, and behavioral reactions to ambiguous situations, implications of being uncertain, and attempts to control thefuture.

Statistics:
Statistical analysis was performed using IBM, SPSS Statistics version 25 (IBM Inc.). Chi- square tests were used for proportions. Continuous variables were compared using t-test. Wherever necessary, the student t-test was altered to compare variances that were unequal. A paired-samples t-test was used to determine whether there was a statistically significant mean difference in age, total DASS-21 score, GHQ-12 score, IUS score and CD-RISC score betweenquarantinedindividuals(Group1)andhealthcareproviders(Group2).Dataaremean± standard deviation, unless otherwise stated. The assumptions for performing t-tests were met. The assumption of normality was not violated, as assessed by Shapiro-Wilk's test (P=0.780). P-value less than 0.05 was considered statistically significant. A Pearson's correlation analysis was done to see the correlation between resilience (CD RISC) and DASS 21, IUS12 and GHQ 12 scores, respectively. Pearson's correlation coefficient, r was compared between the twogroups.

Results:-
Psychological distress and resilience in 66 quarantined individuals (Group1) were compared with 62 health care providers during the COVID-19 pandemic. The mean age in Group 1 was 39±16.4 (range, 18-74 years) and the mean age in Group 2 was 36±9.61 (range, 24-64 years), respectively, shown in Figure I. The difference in age between the two groups was not statistically significant (paired t-test.P=0.234).

There were 37 males and 29 females in Group 1 and 35 males and 27 females in Group 2, respectively. The gender difference between the two groups was not statistically significant (Chi-square test, P=0.251). The demographic profile of subjects is depicted in Table I.

Therewere 44 married and 22 unmarried subjects in Group1 and 20 married and 40unmarried subjects in Group 2, respectively. The difference in marital status between the groups was not statistically significant (Chi-square tests, P=0.234).

There were 28 nuclear families and 38 joint families in Group 1 and 42 nuclear and 20 joint families in Group 2. The difference between the groups was not statistically significant (Chi-square tests, P=0.163).

The difference in co-morbidities (Diabetes, hypertension, etc.) between the two groups was not statistically significant (Chi-square tests, P=0.823). There was a significant difference in smoking status between the two groups (Chi-square tests, P=0.036). The difference in alcohol consumption between the two groups was not statistically significant (Chi-squaretests,

P=0.880). However, cannabis intake differed significantly between the two groups (Chi-square tests, P=0.07).

Table II shows association of socio- demographic profile, co- morbidities and substance use with psychological distress, intolerance to uncertainty and resilience. It shows association of DASS 21 with age and alcohol use in Group 1. It also shows association of intolerance to uncertainty with age in group 1 and cannabis use in group 2. GHQ 12 is associated with gender in group 1.

The depression anxiety and stress scale (DASS 21) score was higher in Group 2 (24.2±12 versus 14.6±12.1. The difference in scores between the two groups was statistically significant (paired t- test, P=0.001).

The general health questionnaire (GHQ-12) score was higher in Group 2 (10.2±4.9 versus 8±4.3). The difference in GHQ12 score between the groups was statistically significant (paired t- test, P=0.003).

Intolerance of uncertainty scale (IUS) and loneliness scale score was higher in Group 2 (29.8±6.9 versus 27.1±11.1). The difference in IUS scale score between the two groups was statistically significant (paired t-test, P=0.05).

The resilience score was higher in Group 1 (66.9±19.8 versus 63±13). However, the difference in resilience score between the groups was not statistically significant (paired t-test, P=0.135).

Table III compares DASS 21, IUS, GHQ 12 and CDRISC score for the two groups.

On Pearson's correlation analysis, a significant (P<0.05) and inverse (negative) correlation was seen between resilience (CD RISC), DASS21 and IUS scores in both the groups. However, correlation between CD RISC and GHQ 12 was not statistically significant (Table IV).

Table I:- Frequency Distribuion:

N=128	Group 1 (n=66)	Group 2 (n=62)
Gender		
Male	37	35
Female	29	27
Marital status		
Married	44	20
Unmarried	22	42
Family type		
Nuclear	28	42
Joint	38	20
Co-morbidity		
Present	12	1
Absent	54	61
Smoking		
Yes	6	17
No	48	29
Past	12	16
Cannabis		
Yes	1	6
No	59	44
Past	6	12

Alcohol		
Yes	7	31
No	43	20
Past	16	11

Table 2:- Analysis With Sociodemographic Profile ,Comorbidities And Substance Use With Stress, Intolerance To Uncertainty And Resilience.

Variable	Dass-21 P-value		Ius P-value		Ghq-12 P-value		Cd-risc P-value	
	Group 1	Group 2	Group 1	Group2	Group 1	Group 2	Group 1	Group 2
Age	**0.003**	0.865	**0.001**	0.068	0.367	0.248	0.249	0.378
Gender	0.906	0.229	0.862	0.489	**0.020**	0.557	0.581	0.774
Marital Status	0.630	0.424	0.393	0.330	0.549	0.186	0.207	0.444
Family Type	0.438	0.719	0.980	0.258	0.885	0.408	0.502	0.855
Comorbidities	0.506	577	0.208	0.382	0.337	0.112	0.817	0.990
Alcohol	**0.038**	0.872	0.956	0.785	0.716	0.608	0.408	0.558
Smoking	0.726	0.833	0.496	0.456	0.644	0.630	0.464	0.817
Cannabis	0.707	0.192	0.722	**0.001**	0.532	0.739	0.374	0.286

Table 3:- Comparison and analysis.

Variable	Group 1	Group 2	P value (Paired t-test)
DASS 21	14.6±12.1	24.2±12	**0.001**
GHQ 12	8±4.3	10.2±4.9	**0.003**
IUS	27.1±11.1	29.8±6.9	**0.05**
CD RISC	66.9±19.8	63±13	0.135

Table 4:- Correlation and analysis of resilience with psychological distress, intolerance to uncertainty and physical health.

CD RISC SCORE				
	GROUP 1		GROUP 2	
	Correlation Coefficient (r)	P-value	Correlation Coefficient (r)	P-value
DASS21	-0.482	**0.001**	-0.634	**0.001**
IUS 12	-0.349	**0.004**	-0.340	**0.007**
GHQ12	0.188	0.131	0.195	0.136

Discussion:-
The study comprised of two groups consisting of 66 quarantined individuals (Group 1) and 62 health care providers (Group 2).

The difference in the mean age and the gender difference between the two groups were not statistically significant. Therefore, the groups were comparable.

Socio-demographic profile:
In this study, an inverse correlation was seen between age and stress levels in both the groups, but it was statistically significant only in group 1. This finding of inverse correlation between age and stress is supported by a study in which it was found that the older adults were less affected by recent occurrence of stressor (Scott et al., 2013). The strength and vulnerability integration (SAVI) model states that aging is related to increased strength in the frequency and successful use of strategies to attend selectively to limited set of cues, appraisals and behaviors to regulate everyday emotional experiences. These strategies often allow people to circumvent or minimize the experiences of negative emotions and stabilize or even enhance positive emotional experiences after initial exposure to setbacks (Charles et al., 2010).

Also, in this study an association was seen between age and intolerance to uncertainty.

In this study, no significant association was seen between gender and stress levels. This was unlike the finding seen in a study done in the general population of China for psychological response to COVID-19, which revealed that the female gender had higher levels of stress (Wang et al., 2020). Possible reasons for this difference could be that our study was done on quarantined individuals as compared to general population in the above mentioned study. Another possible reason could be that the sample size of our study population was less in comparison to the previous study.

In this study, no significant association was seen between marital status and stress. This was comparable to the earlier mentioned study conducted in China (Wang et al., 2020).

Also, there was no association seen between the family type (nuclear/ joint family) and psychological stress and intolerance to uncertainty. In one of the previously mentioned studies relation between stress and household size was studied and no significant association was seen (Wang et al., 2020).Family type is to a certain extent comparable to the concept of household size as nuclear families are generally smaller in size.

Analysis of medical co-morbidities with psychological distress and intolerance to uncertainty did not reveal any significant association. This was contrary to the findings seen in a study done on general population of China during COVID-19 pandemic. Poor self rated health status was significantly associated with higher levels of stress, anxiety and depression. The difference in the findings could be attributed to the fact that the quarantined individuals and the health care workers in the present study, though having co-morbidity, were on treatment and were medically stable.

One of the findings in the study was that an association was seen between cannabis use and intolerance to uncertainty in health care workers. This finding was supported by a study conducted on undergraduate psychology students which revealed that cannabis use was more in anxious people if they perceived that they would be unable to tolerate uncertain situation (Jefferies et al., 2015). Another study suggested that intolerance to uncertainty is associated with drinking to manage or avoid negative emotions (Kraemer et al., 2015). In the present study a significant association was indeed seen between alcohol use and psychological stress in group 1.

Overall, the comparison between the psychological stress scores between the two groups showed a rise in the score in group 2, which was found to be statistically significant. This was unlike the findings seen in a recent study conducted on health care workers in Singapore following COVID-19 pandemic, which showed lower stress levels among health care workers when compared with the non-health care workers (Chew et al., 2020; Rajkumar et al., 2020; Li et al., 2020). Possible reason for this difference could be less firsthand information on the outbreak, less intensive training on use of personal protective equipment and infection control measures.

The intolerance to uncertainty (IUS) score was also seen to be higher in group 2 and the difference was statistically significant. Possible explanations for this could be the underlying anxiety in healthcare workers as was highlighted in one study involving 69 healthcare workers during the first week of COVID-19 pandemic that found certain reasons for anxiety among healthcare workers. Some of the worries included, being exposed to COVID-19 at work and taking the infection home to their family, not having rapid access to testing if they develop COVID-19 symptoms, uncertainty that their organization will support/take care of their personal and family needs if they develop infection, support for other personal and family needs as work hours and demands increase (food, hydration, lodging, transportation) (Shanafelt et al., 2020). Although association between psychological distress and IUS was not directly analyzed, a correlation could be seen indirectly, where in group 2 which had higher intolerance to uncertainty (IUS) also had higher psychological distress. This finding is supported by a study which was conducted on 100 medical students in Ireland to ascertain if intolerance to uncertainty and ambiguity were associated with distress. Students with higher psychological distress had higher intolerance to uncertainty, leading to a conclusion that a relative lack of tolerance for uncertainty may be an important predictor of psychological distress (Lally et al., 2014).

The present study also showed rise in GHQ-12 scores in group 2 in comparison with group 1 and this too was statistically significant. This is consistent with the findings of a study done on medical students which showed that individuals with higher stress had higher GHQ 12 scores (Doijad et al., 2015). A comparison of resilience between the two groups showed fall in CD-RISC score in group 2 against group 1. However, this was not statisticallysignificant.

Conversely, as shown in table IV, when resilience of both groups was compared with psychological stress and intolerance to uncertainty it showed an inverse correlation of resilience with the two variables which was statistically significant. Yet another study conducted on 100 rescue workers in Pakistan showed that resilience was significantly negatively correlated with psychological distress (Yasienet al., 2016). The scores show that resilience is a protective factor against stress and intolerance to uncertainty. This is supported by the finding in a study done on Psychology and medical students, which revealed a significant association between higher resilience levels and lower psychological distress levels (Bacchi et al., 2017). Another study, done on nursing university students showed an inverse relation between resilience and intolerance to uncertainty (Lee JS., 2019).

The limitation of this study was that the survey was administered at a single point such that the stability of the responses is unknown.

There is a clear message for policy makers, that not only the general public needs to be prepared mentally for such pandemics but the frontline healthcare providers, especially doctors and nurses need to be counseled comprehensively and peremptorily.

Conclusion:-
Worldover, the COVID-19 pandemic has led to significant mental health morbidity, in both, the general public as well as the health care system. Fear of uncertainty, stress and anxiety are common themes seen during natural calamities. Timely mental health care facilities need to be developed urgently. Multidisciplinary mental health teams, comprising of psychiatrists, psychiatric nurses, clinical psychologists and other mental health care workers need to be established by health authorities at both state and federal level to deliver mental health support to the society.

Interventions aimed at reducing intolerance to uncertainty might be helpful for reducing distress. At this crucial juncture, we require a treatment modality which could cater to a large population in a quick and effective manner. Teleconsultation in that regard seems to be a promising concept.

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Conflict of Interest:
No conflict of interest

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