Comparative Study of Psychological Impact of COVID-19 on Healthcare and Non-Healthcare Worker using WHO-QOL BREF and PHQ-9 Scale- Nationwide Cross-sectional Study

ABSTRACT

Background: The world population has been greatly affected by the Sars-Cov-2 pandemic and the related financial, civil, psychological and mental health consequences. Considering the significance of QOL, it is imperative to consider the effects of the pandemic for the population. The study was designed to compare the psychological Impact of Covid-19 on healthcare and non- healthcare Workers during Covid-19 pandemic.**Materials &Methods**:A cross-sectional survey was conducted among healthcare and non-healthcare workers and a structured questionnaire was circulated in goggle forms via emails and social networking sites. **Results:**The mean score for four QOL domains was 58.82 ±15.56, 56.45 ±15.52, 59.08 ±19.03 and 51.42 ±15.51, respectively. Among participants, (31.3%) had Minimal Depression,(33.4%) Mild depression, (24.7%) Moderate depression, (8.8%) moderate-severe depression .Healthcare workers were found to be more depressed (34%) at a moderate level of depression and (11%) at severe depression while (11%) of non-Healthcare workers show moderate depression and 12 (5%) show moderately severe depression.**Conclusions**: The study depicted the detrimental impact of the pandemic on the population, with healthcare workers being more affected by the pandemic and this study calls for use of appropriate psychological intervention to address the mental health needs of the population.

Keywords: Quality of Life [QOL], Depression, Covid-19, Healthcare workers .

INTRODUCTION

The severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), quickly spread throughout the world from its origin in Wuhan, China [1]. Coronavirus is an RNA virus in size from 60 to 140 nanometres in diameter and has spike-like projections that give it an appearance of a crown under the microscope. The common corona viruses that infect people and produce mild to moderate upper respiratory tract illness are 229E,NL63, OC43 and HKU1,[2].

In the last 20 years, there was serious sickness in two cases due to the transmission of animal beta corona viruses to humans .The first incident occurred in 2002–2003 in China, where civet cats were shown to serve as intermediary host for the transmission of novel coronavirus from bats to humans. In the year 2003 in China and Hong Kong, the severe acute respiratory syndrome COV2 had affected 8422 persons and caused 916 fatalities (mortality rate of 11%)[3].In the year 2012 in Saudi Arabia in 2012, the Middle east respiratory syndrome coronavirus had infected 2494 individuals resulting in 858 deaths (a 34 percent fatality rate)[4].

In 2020, the World Health Organization classified the COVID-19 outbreak caused by the severe acute respiratory syndrome COV2 as a public health emergency of International concern on March 11, 2020.[5,6]. Because the virus is propagated by direct or intimate contact between persons, strict social distancing preventative measures have been implemented to prevent the infection from spreading further. Various nations have implemented extensive lockdowns to slow the spread of the virus and ease pressure on healthcare services .In March of last week, the government of India (GOI) enforced a total lockdown, with only vital services operating. Many multinational corporations have encouraged their staff to "work from home," but no similar arrangements have been made for healthcare professionals (HCWs)[7].

On January 30, 2020, the first laboratory-confirmed case of the new coronavirus was reported in India [8].Following in time, there has been a significant growth of Covid cases in India with 46% of mortality rates by the ending of June 2020. This sudden rise in the number of instances with

reported deaths has caused widespread worry, dread, and restlessness in HCPs.With higher patient loads, extraordinary interruptions to normal life, the Coronavirus disease pandemic has put all the healthcare professionals (HCPs) in a difficult situation where COVID-19 has been detected in over 200 HCPs in India, including doctors and nurses. Both the epidemic and the seclusion measures have the potential to cause significant worry, dread and stress.Fear of infection, worry about sickness, workplace stress, social isolation, mortality,anxiety about their health in future and economic instability are all expected to rise due to the current COVID-19 epidemic[9]and have contributed to high levels of anxiety, stress, negative feelings and depression in the general population in a study conducted in Chinese population in March 2020, and HCPs are more affected due to a lack of health-care services, long and stressful job hours, poor remittance, isolation from loved ones and as frontline healthcare workers, they are afraid of becoming infected from patients who may be carriers of the virus, and they also infect other people in their surroundings.

World Health Organization defines mental health as a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, work productively and is able to make a contribution to the community"[10].

Health Care professionals

The duty of health care providers is to preserve human health by implementing core principles and plans of action based on evidence-based medicine and compassionate care. Human disease, injury, and other physical disabilities and psychological impairments are examined, identified, diagnosed, medicated, and prevented by health care professionals in line with the needs of the people they serve. They educate patients on preventative, health-giving, therapeutic methods and promote population health, with the ultimate objective of meeting health needs, increasing population confidence and certainty, and improving people' own health outcomes .They also supervise and perform research, as well as improve or extend concepts, theories, and operational procedures in order to promote or promote evidence-based health care. Health care professionals may be

responsible for supervising other health workers as well as providing information to the public on how to live a healthy lifestyle.

Health care professionals' occupations are divided into many smaller groups in this sub-class. The literature will stress the following to encourage the WHO recommendations for re modelling and to elevate the teaching and training of health professionals, as described by the WHO.

Occupations are classified according to the International Standard Classification of Occupations.

Medical Doctors - comprise one Generalist and two Specialist Practitioners, as well as Public Health Physicians.

Public Health Nurses from the nursing profession.

Public Health Midwives from the midwifery profession.

Dentists

Pharmacist's

As the COVID-19 epidemic has reached India, the HCPs and Non-HCPs mental health status in India was not formally assessed. There is also a paucity of research among HCPs and Non HCPs on their quality of life during an epidemic globally. As a result of the epidemic in India, we wanted to look into the prevalence of depression among HCPs and Non-HCPs as well as their quality of life. This study of ours is the first of its kind in India to assess the prevalence of depression and the quality of life in both the Healthcare and Non-Healthcare professionals during Covid-19 pandemic.

METHODOLOGY

Sample Size Calculation:

The numbers of participants to be included was calculated using the formula below[11]

$$\textbf{Sample Size (n)}=\frac{(Z1-\alpha/2)2(\sigma)^2}{d^2}$$

$\mathbf{Z_{1-\alpha/2}}$- Standard normal variate for 95% level of significance is **1.96.**

SD or σ: Standard deviation of the variable. Value standard deviations can be taken from previously done studies or a pilot study. **[σ =2.82]**

d: Absolute error or precision **(0.05).**

$$\textbf{Sample Size (n)} =\frac{(Z1-\alpha/2)2(\sigma)^2}{d^2}=\frac{(1.96)^2\times(2.82)^2}{0.05}= \textbf{611(}\text{approximated}\textbf{)}$$

611 participants were included for the study.

Study Design: Cross-sectional Study

Study Period : 6 months

Study Setting: Participants all over India were included; Data was obtained by questionnaires through online Google forms.

Inclusion Criteria:

Population aged above 18 and below 65 years who provided informed consent and working in the health-care and non-Healthcare sectors were enrolled in the study.

Exclusion Criteria:

Individuals with a disability or who could not understand the study schedule due to sickness were excluded from the study.

Population aged < 18 and >65 years were not included.

Population who did not agree to provide their informed consent.

Measures:

Apart from demographic information, an array of characteristics was considered when collecting data on the participants for depression screening and other quality of life assessments.

WHO QOL- BREF:

The WHOQOL-BREF, consists of twenty-six questions assessed on a 5-point scale for QOL evaluation in domains such as physical, psychological, social relationship, and environment factors.All of the domains were measured in an order of one to ten, with higher scores indicating a greater QOL.The average score for each domain was calculated and compared in order to determine the participant's overall quality of life[12].

Patient Depression Questionnaire (PHQ-9):

The Patient Health Questionnaire (PHQ-9) was utilized to test for depression,which is a test with 9 items, graded on a 4-point Likert scale (0–3), and the participants were asked to tick the response on how they felt. On the PHQ-9, 0-4 is considered "minimal depression," 5-9 is considered "mild depression," 10-14 is considered "moderate depression," 15-19 is considered "moderately severe depression," and 20-24 is considered "severe depression"[13].

RESULTS

Demographic profile:

750 participants were requested to attempt the standard questionnaire, out of which 611 attempted the questionnaire resulting in 81.4% response rate. From the 611 participants, 306(50.1%) were female and 305(49.9%) were male. The population (611) was relatively young age group, the mean age group of participants is 27.94 ± 7.11 SD, of whom majority 278 (45.50%) were in the age limit of <25 years, 260 (42.55%). The Healthcare workers composed of 61%, of which Pharmacists were (20%), Nurses (16%), Doctors (13%) and Paramedics (12%) and Non-Healthcare workers composed of 39% of the total population respectively. Among the Healthcare workers, 76.2% were Unmarried divorced 1.1% and(31.3%) married whereas in non-Healthcare workers 71.25%were unmarried, divorced (1.25%) and (27.5%) married. The study population was divided into three income groups based onNCAER-2010 classification i.e., Low income [<1.5-3.4 lakhs], Middle income [>3.4-17 lakhs] and High income [>17lakhs]. 79.2% of the respondents belonged to Middle Income Groups followed by High Income Group10.8% and Low Income Group at 9%.

Statistical Analysis:

The study was evaluated using WHOQOL-BREF version, according to which the questionnaire contains 26 questions categorized into four domains [Physical Domain, Psychological Domain, Social Domain, and Environmental Domain].

For statistical analysis, IBM SPSS Statistics version was utilized. The root mean square deviation was used to determine the Individual's QOL**.** The independent student t-test was utilized to determine the association between population characteristics and quality of life, while the paired t-test was utilized to determine the inter-domain relationship. The predictors of depression were analysed using multivariate regression analysis.

The mean score of the four domainswere 58.82 ±15.56, 56.45 ±15.52, 59.08 ±19.03, and 51.42 ±15.51, respectively. Participants marital status was an important factor contributing failure in their social relations domain ($P = 0$) and Environment domains ($P = 0.027$).

Prevalence of Depression-Statistical Analysis:

While analyzing depression among study subjects,204 experience symptoms of(33.4%) Mild depression, 151 (24.7%) Moderate depression, 54 (8.8%) who were suffering from moderately severe and 11 (1.8%) severe depression. Multivariate Regression Analysis was used to identify the pointers for participant's depression. Females were more depressed in comparison to males. Healthcare workers were more depressed 125 (34%) at moderate level of depression and 42 (11%) at severe depression while 26 (11%) of non-Healthcare workers show moderate depression and 12 (5%) show moderately severe depression. The mean depression grade was estimated to be 7.94 and it exhibited that healthcare workers had a greater prevalence of depression with mean depression grade of 8.04 when contrasted to non-healthcare workers who had a mean depression grade of 7.96.

DISCUSSION

This study indicates the QOL and prevalence of depression among healthcare and non-healthcare professionals during covid pandemic.

During the study the data was collected over 2 months via online mode. Since it's a nation-wide study, the responses were collected from all over nation that includes South India (40.75%), North India (20.5%), West India (16.3%), East India (13.09%), North –East India (8.5%) and Union territory (0.8%). Out of 750 population, 611 participants agreed to take part and gave their consent. The total response rate was 81.4%

Out of 611, 49.9% were females and 50.1%were males and the study population consisted majority of young adults (18-35) years. Giventhe lack of certainty of the covid pandemic, social isolation, loss of wages and limited access to basic services, decrease in psychological support especially in population at risk. The collapse in economy caused by covid -19 lead to job deprivation , financial superabundance and poverty which restricted access to healthcare causing negative outcomes on QOL of individual's income, and many people required hypnotics because they couldn't sleep.

QOL was detected with WHO QUALITY OF LIFE BREF version scale,[14] according to which the questionnaire contains 26 questions categorized into physical health (SD=15.56), mental health (SD=15.52), social health (SD=19.03), environmental interaction (SD=15.51), was determined using paired t test and domains had a significant correlation at $p < 0.05$. All domains were strongly associated with age, occupation, worry about covid 19, chronic disease condition, ($p<0.05$) and gender was in association with the domains. Physical domains show significant association domain with participant's family income ($p<0.05$). Mean score depending on different significant features of participants were determined by using one-way ANOVA test. Pharmacist and paramedics having middle level of income compare to others were more worried about covid 19

Covid-19 placed HCPs, who were the soldiers of this battle, in stressful circumstance with increased patient load, lack of bed availability unprecedented disruption to normal life, high risk of exposure. Shortage of vaccines, decrease oxygen cylinders, absence of co-ordination, stigmatization, lack of sufficient healthcare workers, covid related coverage in social media making HCPs emotionally troubled, worry about the death rate, and wearing PPE kit for a long time was a great challenge to all the HCPs who dealt with the covid patients. Promotion pressure, medical disputes and even violence based on previous studies, inadequate personal protective equipment kit (PPE).HCPs worked more than eight hours a day, some were discontent with their pay and they required hypnotics as they couldn't sleep[15].

Comment [MP1]: This paragraph is confusing, I suggest rewriting it more clearly

Pharmacist (58%) and Nurses (57%) where the soldiers of this battle were more worried about covid compared to non-Health care professionals.

Depression is a disorder; the essential feature is characterized by one or more major depressive state without a history of maniac or hypo manic episodes. According to DSM 5th edition, a person is diagnosed with depression if he is having five or more following symptoms which must be present every day during the same2-week period i.e. psycho motor agitation, depressive mood, insomnia or hypersonic, loss of energy, feeling worthlessness, suicide attempt etc[16].

Multivariate regression model and IBM SPSS Statistics version were used for investigating depression among study participants, among 611 total participants, 191 (31.3%) experience symptoms of Minimal Depression, 204 (33.4%) Mild depression, 151 (24.7%) Moderate depression, 54 (8.8%) moderate severe depression and 11 (1.8%) severe depression.

Females were more depressed in comparison to males, which was consistent with previous study by Yu-Fen MA, (2020). Females had more chances of suffering from stress-related mental conditions such as depression, concerns about family, children and grandchildren, housekeeping, hospital work, child care, and lastly inadequate money.[17].Occupation status showed strong correlation with depression levels. our study correlates with the study of Sanja Budimir al (2019).

Relationship quality vs. Relationship status also affects the individual mental status: Individuals with good relationship quality showed better mental health than individuals with poor relationship quality or no relationship and provided evidence based on few studies that there is a link between marital discontent and depressive symptoms, according to Pieh C et all's research (2020).Married couples with poor mental health and relationships had higher depressive symptoms than unmarried couples with good mental and relationship status .Covid 19 can be spread through respiratory droplets and direct touch, through urine, stool, and saliva because it is an infectious disease,the nurses were at a higher risk and worried about the chance of infection. Due to the significant risk of infection generated by the HCPs themselves, respondents were concerned for their families. The information from social media about the Covid 19 outbreak was tied up to a lower risk of depression in non-healthcare professionals. [18].

According to the protection/distress QOL model (Vorgantietal, 1998), QOL was closely associated between distressing factors (e.g. physical and mental distress) and protective factors (e.g. good economic status) Singleton, 2021.As evidenced by our study, depression is likely to be associated with a lower quality of life.[19].

The healthcare professionals have an urgent need to reduce work-related pressures, including mental health intervention. This can be accomplished by changing schedules, expectations, and so on [20].

CONCLUSION

The study clearly depicts the negative effects of COVID-19 on the mental health status of the Indian population, with statistical analysis showing that worry about COVID-19 was higher among healthcare workers than non-healthcare workers, which also affected Quality of Life, with healthcare workers having lower mean scores across all domains than non-healthcare workers. Participants' occupation status has a significant impact on their perception of quality of life. Healthcare workers were found to be depressed at a higher rate than non-healthcare workers. Indeed, other demographic characteristics such as income level, marital status, and chronic disease condition had an impact on the overall quality of life of participants across all four domains, with occupation being the most significant factor influencing quality of life. The study depicted the detrimental impact of the pandemic on the population, with healthcare workers being more affected by the pandemic and this study calls for use of appropriate psychological intervention to address the mental health needs of the population.

Comment [MP2]: It is interesting to highlight the weaknesses and possible limitations of this study

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Comment [MP3]: Check the possibility of introducing more current references, from 2022

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TABLE 1: DEMOGRAPHICS OF THE STUDY POPULATION

DEMOGRAPHIC PARAMETER	FREQUENCY[N=611]	PERCENTAGE[100%]
GENDER		
MALE	305	49.9
FEMALE	306	50.1
AGE		
18-25	278	45.5
26-35	260	42.55
36-45	52	9
46-55	15	2
56-65	6	1
OCCUPATION		
Healthcare	371	61
DOCTOR	80	13
NURSES	98	16
PHARMACIST	120	20
OTHER PARAMEDICS	73	12
Non- Healthcare	240	39
MARITAL STATUS		
Healthcare		
MARRIED	107	31.3
UNMARRIED	260	76.2
DIVORCED	4	1.1
Non-Healthcare		
MARRIED	66	27.5
UNMARRIED	171	71.25
DIVORCED	3	1.25
INCOME		
LOW INCOME	61	9.98
MIDDLE INCOME	484	79.2
HIGH INCOME	66	10.8
CHRONIC DISEASE		
NO CHRONIC DISEASE	491	80.36
ONE CHRONIC DISEASE	107	17.51
TWO OR MORE CHRONIC DISEASE	13	2.12
INDIAN REGIONWISE RESPONDENTS		
NORTH INDIA	125	20.46
SOUTH INDIA	249	40.75
EAST INDIA	80	13.09
WEST INDIA	100	16.37
NORTHEAST INDIA	52	8.51
UNION-TERRITORIES	5	0.8
WORRY ABOUT COVID?		
VERY LOW	25	4.2
LOW	128	21
HIGH	323	53
VERY HIGH	135	22

TABLE 2: DESCRIPTIVE STATISTICS OF DOMAIN SCORES

DOMAIN	N	Minimum	Maximum	Mean	Std. Deviation
DOMAIN 1 (Physical Health)	611	3.57	100.00	58.82	15.56
DOMAIN 2 (Psychological)	611	3.00	100.00	56.45	15.52
DOMAIN 3 (Social Relations)	611	8.33	100.00	59.08	19.03
DOMAIN 4 (Environment)	611	9.38	100.00	51.42	15.51

TABLE 3: PAIRED T-TEST STATISTICS FOR INTER DOMAIN ASSOCIATION

DOMAIN		Mean	N	Std. Deviation	Std. Error Mean	Sig.
Pair 1	DOMAIN 1	58.82	611	15.56	.63	
	DOMAIN 2	56.45	611	15.52	.63	<0.001
Pair 2	DOMAIN 1	58.82	611	15.56	.63	
	DOMAIN 3	59.08	611	19.03	.77	<0.001
Pair 3	DOMAIN 1	58.82	611	15.56	.63	
	DOMAIN 4	51.42	611	15.51	.63	<0.001
Pair 4	DOMAIN 2	56.45	611	15.52	.63	
	DOMAIN 3	59.08	611	19.03	.77	<0.001
Pair 5	DOMAIN 2	56.45	611	15.52	.63	
	DOMAIN 4	51.42	611	15.51	.63	<0.001
Pair 6	DOMAIN 3	59.08	611	19.03	.77	
	DOMAIN 4	51.42	611	15.51	.63	<0.001

TABLE 4: ONE WAY ANOVA TEST -TO FIND ASSOCIATION OF DEMOGRAPHIC VARIABLES WITH QOL.

Demographic Statistics	Mean ± SD			
	Physical Domain	**Psychological Domain**	**Social Domain**	**Environmental Domain**
GENDER				
Female	58.88±0.85	55.65±0.87	59.42±1.04	50.99±0.87
Male	58.76±0.93	57.25±0.91	58.74±1.13	51.84±0.91
p	0.922	0.202	0.659	0.497
AGE				
<45	58.63	56.45	59.06	51.32
>45	63.05	56.41	59.62	53.49
p	<0.001	<0.001	<0.001	<0.001
MARITAL STATUS				
Unmarried	59.6±14.82	56.62±15.56	57.52±18.9	52.2±14.74
Married	57.1±17.38	56.45±15.11	63.63±18.66	49.96±17.12
Divorced	53.57±7.72	45.83±20.97	42.86±12.2	38.84±13.6
p	0.137	0.189	0*	0.027*
OCCUPATION				
Healthcare	57.01±16.11	54.07±15.54	56.83±20.37	49.15±16.41
Non-Healthcare	61.62±14.27	60.14±14.77	62.57±16.17	54.92±13.29
p	<0.001	<0.001	<0.001	<0.001
CHRONIC DISEASE CONDITION				
No chronic disease	61.45±14.63	58.42±14.71	60.49±18.75	53.79±14.46
With one chronic disease	48.1±14.02	48.71±16.01	53.66±18.99	41.36±15.29
With two or more chronic diseases	47.8±19.97	45.83±18.16	50.64±21.1	44.47±20.89
p	0	0	0.001	0
FAMILY INCOME				
Low	57.08±15.6	52.87±17.22	58.2±22.8	50.31±15.78
Medium	59.56±15.57	56.94±15.37	58.75±18.7	51.68±15.27
High	55.03±15.03	56.19±14.71	62.37±17.49	50.52±17.05
p	0.056	0.154	0.324	0.716
Worry about COVID				
Low	63.31±14.82	62.47±15.16	60.84±19.22	56.76±14.23
High	57.32±15.54	54.44±15.12	58.5±18.95	49.63±15.52
p	0	0	0.188	0

TABLE 5: FREQUENCY AND PERCENTAGE OF PARTICIPANT'S DEPRESSION

Demographic Characteristics	Severity of Depression					
	Minimal Depression	Mild Depression	Moderate Depression	Moderately severe Depression	Severe Depression	Grand Total
GENDER						
FEMALE	74 (24%)	111 (36%)	89 (29%)	24 (8%)	8 (3%)	306
MALE	117 (38%)	93 (30%)	62 (20%)	30 (10%)	3 (1%)	305
AGE (YEARS)						
<45	182 (31%)	195 (33%)	146 (25%)	52 (9%)	10 (2%)	585
>45	9 (35%)	9 (35%)	5 (19%)	2 (8%)	1 (4%)	26
MARITAL STATUS						
DIVORCED	1 (14%)	3 (43%)		3 (43%)		7
MARRIED	60 (35%)	53 (31%)	47 (27%)	11 (6%)	2 (1%)	173
UNMARRIED	130 (30%)	148 (34%)	104 (24%)	40 (9%)	9 (2%)	431
OCCUPATION						
NON-HEALTHCARE	147 (61%)	53 (22%)	26 (11%)	12 (5%)	2 (1%)	240
HEALTHCARE WORKERS	44 (12%)	151 (41%)	125 (34%)	42 (11%)	9 (2%)	371
DISEASE CONDITION						
NO CHRONIC DISEASE	147 (30%)	178 (36%)	120 (24%)	37 (8%)	9 (2%)	491
WITH ONE CHRONIC DISEASE	41 (38%)	22 (21%)	28 (26%)	14 (13%)	2 (2%)	107
WITH TWO OR MORE CHRONIC DISEASE	3 (23%)	4 (31%)	3 (23%)	3 (23%)		13
FAMILY INCOME						
HIGH	28 (42%)	21 (32%)	9 (14%)	6 (9%)	2 (3%)	66
LOW	11 (18%)	20 (33%)	18 (30%)	8 (13%)	4 (7%)	61
MIDDLE	152 (31%)	163 (34%)	124 (26%)	40 (8%)	5 (1%)	484
WORRY ABOUT COVID-19						
LOW	78 (51%)	35 (23%)	30 (20%)	9 (6%)	1 (1%)	153
HIGH	113 (25%)	169 (37%)	121 (26%)	45 (10%)	10 (2%)	458

FIGURES

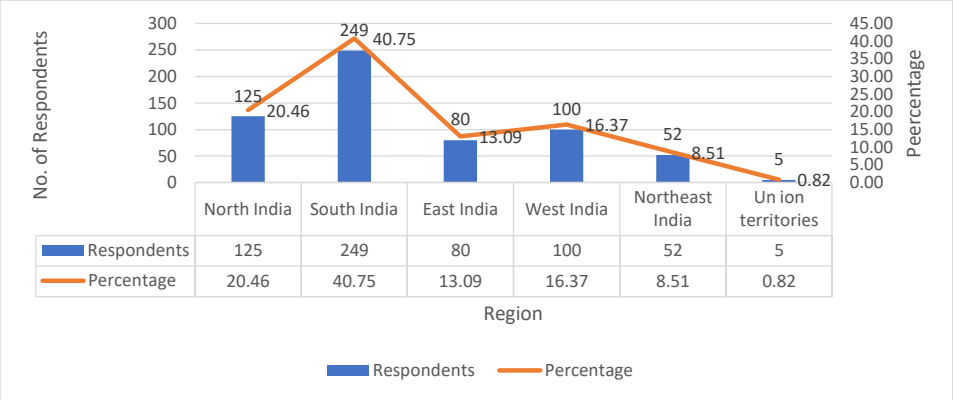

FIGURE 1: COUNTRY WIDE REGION WISE DISTRIBUTION OF PARTICIPANTS

FIGURE 2 :SEVERITY OF DEPRESSION AMONG HEALTHCARE AND NON-HEALTHCARE WORKERS