



**LEVEL OF STRESS & PERFORMANCE OF EMPLOYEES IN  
MANUFACTURING INDUSTRY - AN IMPACT STUDY DURING  
COVID 19 PANDEMIC PERIODS**

**Research article**

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**ABSTRACT**

COVID 19 declared pandemic by the World Health Organization caused by a new strain of corona virus which was raised out of Wuhan city of China in December 2019. Nobel Corona Virus infected people may have different symptoms, the common symptoms have cough, fever, sputum, breathing difficulty, loss of smell and loss of taste. COVID – 19 was mainly transmitted to each other when people breathe in air contaminated by droplets / aerosols particles containing the virus. It has created an unstable environment for individuals, business activates like manufacturing, trading, transporting and resources of employees, communication in multiple ways. Covid – 19 caused a loss of business activities and increase professional stress of employees. Because of its infectious nature it has affected a large number of economic activities. There are around 51, 39, 55,910 cases globally out of which 62, 49,700 lost their lives, In India only 43094938 cases are reported out of which 524002 lost their lives till April 2022. The present study aims to analyzing those factors which affect the productivity in the corporate model of private sector industries, study the mental health of employees, level of stress and performance level of employees pre and during COVID 19 pandemic periods. Employees C were assessed through standard performance and Stress appreclial Scale Covid 19 situation. The result was assessed statically and find significant that Covid 19 has Impact on Performance and Stress level.

**Key Words:** Covid- 19, Pandemic, Stress, Psychological, Performance

**INTRODUCTION:** First case of COVID-19 surfaced in India on January 30, 2020, following out-break the lock down was announced on 24th March for a period of 21days in the entire country. Transportation got stopped, factories, shops, restaurants and all type of the economic activities were shut, borders

were sealed, and only the essential services were allowed. Result hundreds of thousands of migrant workers, who lost their livelihoods overnight and became homeless. The challenges faced by these workers were related to food, shelter, loss of wages, fear of getting infected and anxiety. 42% were left with no ration, one third

was stuck at destination city with no access to food, water and money, 94% don't have worker's identity card (Jan Sahas, 2020). Large quantity workers started fleeing from various cities to their native places. Hundred of migrants lost their lives either due to hardship on the way, hunger, accident or co morbidity and some even committed suicide. This was one of the biggest streams of mass return migration in the country. The very effort to stave off the pandemic turned into one of greatest human tragedy in India's recent history.<sup>1</sup> Manufacturing industries are the victim of Covid -19 such as low production, due to lower off take. Employees break work continues in to work due to government directives, thereby reducing the scale of operations with effect on quality, cost and production values, these effects on the turnover which leads to lower performance level and professional stress of employees to Industry sector and effect on economy. COVID-19 was a global public health crisis, which severely affected the global economy starting sub-national to national. The consequences of the pandemic were significant reductions in income, rise in unemployment and disruptions in transportation, service and manufacturing industries. Supply chain disruptions due to the cease/slowdown of economic activities were lead to further impact on economic growth in the near-term future. World's economy was severely affected by COVID-19 crisis. The lockdown has differential impact on different sectors like agriculture; manufacturing and service sectors. The economy of a state was one of the determining factors in the extent of economic losses. In this present time, the India faces many challenges with the advent of strengthening the global economy

due to Covid- 19, India's GDP for the first quarter (Q1) of 2020-21 contracted by 23.9% and the manufacturing sector share 17.5% in Q1 of 2019-20 shrunk to 13.8% in this quarter. Decrease in growth rate of manufacturing sector has plunged to -39.3% in 2020-21 first quarter. For consecutive eight quarters manufacturing growth rate has declined, indicating a lack of demand and a deeper structural crisis in the sector worsened by the pandemic-induced lockdowns<sup>2,3</sup>

The centre's no choice notice for lockdown created 23.9% GDP growth crash. India's GDP shrank 7.3% in 2020-21. This was the worst performance of the Indian economy in any year since independence as of now, India's GDP growth rate is likely to be below 10 per cent.<sup>4</sup> As indicated by recent reports MSMEs (The micro, small and medium enterprises) a whole form a significant share of manufacturing in India contribute 30% in India's GDP and 50% in the employment of industrial workers. But due to the pandemic, this sector is badly hit due to reduced cash flows, supply chain disruptions, shortage of migrant workers due to reverse migration, less demand, and so forth. Chidambaram 2020 said that re-starting of MSMEs was not easy once they are shut down. It is difficult survive small industries without financial assistance said G20. They also said that they are most vulnerable as they are incapable to deal sudden disruptions.<sup>4,5</sup>

*Chittodvega* (Mood Swing) is *manas roga* and develops due to vitiation of *raja* and *tama* along with *vata* and *pitta*. It can be defined as a *chitta* (mind) + *udvega* (anxiety) i.e. „Anxious status of a mind” It can be correlated with generalized Mood swing disorder or Generalized anxiety dis-

order (GAD) on the basis of etymology of *chittodvega*, i.e. *asatmyendriyarthasamyoga, pragyaparadha* and *parinama* (Result) can be considered as *nidana* (Diagnosis) of *chittodvega*. *Poorvaruapa* (prodromal sign and symptoms) of *unmada* (Insanity) can be considered as the *lakshana* (Symptoms) of *chittodvega* which are *shirah shoonyata, udvega, dhyana, hridgraha, ayasa, unmattchittatvam*, which is similar to excessive anxiety and worry, restlessness, being easily fatigued, difficulty in concentration, irritability, sleep disturbance etc found in GAD. Moreover, they often have adverse side effects including dependency, drowsiness, impaired cognition and memory and sexual dysfunction. So the present study deals with systemic review of *chittodvega* from all the classics of Ayurveda and its management.<sup>6</sup>

Stress is considered to be negative only in the day to day life. Stress is more important from the subject point of view for the sake of simplicity we will use only negative connotation. If one knows the stressors or sources of stress can be got over better. According to Lawrence, 1995 the challenge for the organizations are to manage work stress in order to reduce health-care costs and improve productivity. Occupational stress is a significant and costly problem. It may increase health problems leading to higher rate of absenteeism and turn over, poor job performance and more accidents. During COVID 19 managing Mental Health at work is a undoubtedly a chronic global stressor which has interfered with elements of each of the above. On the individual it puts increased demands from many areas of our lives and invades many angles. It reduces our control over our self and our loved

ones, alters our financial wellbeing, lives and our health, and changes how we work; it decreases our access to regular social support from activities enjoyed with family and friends. It strains our relationships, continues to change our lives, and alters our roles.<sup>7,8</sup>

## SOURCE MATERIALS

Stress level of 42 employees from Vardhaman trading Private Limited which is a Trading company of Vardhaman Steel Ropes and wire Private Limited Company situated at Durg Chhattisgarh was selected for the study before and during the Covid 19 period. It should be impracticable, If conditions in order to arrive at principles. Some populations are so large that study would have been hectic and pain staking in terms of money, time, space, efforts, management and manpower.

## OBJECTIVES OF THE STUDY

1. To study the mental health of employees pre and during COVID pandemic.
2. To study the level of stress of employees undergone by the employers.
3. To appraise the performance of employees pre and during COVID 19 pandemic.

## METHODOLOGY:

### PROCEDURE FOR DATA COLLECTION

For the collection of data Stress Scale and Performance Appraisal scale were prepared by the investigator. After adequate preparation and printing of the tools, the investigator selected the sample of the study. According to the previous planning, the investigator met the concern General Manager (HRD) of the industry and get permission for administration of the above tests among the Employees of the industry. Proper data and time for administration of the tools were made. After consultation

with the G.M. (HRD) of the Industry Performance Appraisal Scale and Stress Scale were administrate over the sample of 10 Industries. Before Administration of these tests over the employees in every industry, proper motivation and direction were provided to the Employees. The G.M. (HRD) and administrative staff of concerned industries extended their co-operation during

the collection of data. After administration of the test in each industry the answer sheets were collected from the Employees for Scoring, Scoring of the two tools were made according to the direction given in the tools and raw scores were converted to standard scores. The standard scores for each tool were used for the analysis of data according to the objectives.

**Table No. -01 Indices of Mental Health of high and low Occupational Stress Group**

Sl. No	Symptoms of Mental ill Health
1	Free floating anxiety
2.	Obsessive traits and symptoms
3.	Phobic anxiety
4.	Somatic Complaints
5.	Neurotic depression
6.	Hysterical neurosis

#### **Analysis & interpretation**

Since the questionnaire consists of both true-keyed and false keyed items two different patterns of scoring have to be

adopted for types of items. The following table provides guide line to score the responses given to two categories of items.

**Table No. 02 Scoring Response**

Categories of Response	Scores	
	True- keyed Items	False- Keyed Items
Strongly disagree	1	5
Disagree	2	4
Undecided	3	3
Agree	4	2
Strongly agree	5	1

#### **Norms:**

Norms have been prepared for the scores on occupational Stress Index as a whole as well as for its twelve sub-scales separately on a representative sample of 30 employees of Vardhaman Trading Private Limited organizations. The distribution of scores on the O.S.I. was found to be slightly skewed in negative direction. For the preparation of the norms three methods were adopted.

The scores were divided into three categories i.e. high, moderate and low. Following the principles of normal probability distri-

bution, the scores falling above + IN, between +- IN were categorized, respectively as to indicate high moderate and low levels of occupational stress.

#### **Professional Stress Scale**

To construct a professional stress scale to assess the level of stress of employee in public and private sector industries in Chhattisgarh is the second objective of the present Investigation.

#### **Features of the Scale**

This scale consists of 12 items. Each item has been rated on the 5 point scale like strongly agree (S.A.) Agree (A), Unde-

cided (UD), Disagree (D) and strongly disagree (SD). All the items related to almost all relevant components of job life which cause stress in some way or the other such as role over-load role ambiguity, role conflict, group and political pressures, responsibility for person, under participation,

powerlessness, poor peer relation, intrinsic impoverishment, low status, strenuous working conditions and low level of profit. The following table is given an account of the items constituting various subscales of Occupational Stress Index (O.S.I.) along with their indices of internal consistency.

**Table No.- 03 Subscale of O.S.I.**

SR. No.	Sub scale (Occupational Stressors)	t value	
		DC I	DCII
1	Role Overload	2.11	1.27
2	Role Ambiguity	1.15	2.08
3	Role Conflict	5.86	3.18
4	Unreasonable group and political pressures	0.017	2.05
5	Responsibility for persons	1.27	6.97
6	Under participation	8.13	3.53
7	Poor Peer relations	1.66	6.55
8	Intrinsic impoverishment	5.52	5.34
9	Low status	6.45	5.2
10	Strenuous working conditions	0.437	3.53
11	Unprofitability	4.5	2.83
12	Powerlessness	1.67	6.55

#### **Need for construction of stress scale for Employees**

The occupational Stress Scale purports to measure the extent of stress which employee perceives arising from various constituent and conditions of their job. The tool may conveniently be administered to the employees of supervisory level and above.

**Reliability:** The reliability index ascertained by split (odd even) method and Cronbach 's alpha- Coefficient for the scale. The reliability indices of the 12 subscales were also computed through split-half Method. The Table contains records the obtained indicators of Reliability.

**Table No. 04- Reliability Indices**

Sl. No.	Sub-scales	Reliability Index
1.	Role Overload	.684
2.	Role Ambiguity	554
3	<b>Role Conflict (Chittodvega)</b>	696
4	Unreasonable group and political pressures	454
5	Responsibility for persons	840
6	Under participation	630
7	Powerlessness	809
8	Poor Peer relations	549

9	Intrinsic impoverishment	556
10	Low status	789
11	Strenuous working conditions	733
12	Unprofitability	767

### Need for Construction of Performance Appraisal Scale for Employees

Quantitative and qualitative aspect of the job which are the variables to evaluate the behavior of the employees in the workplace. Performance Appraisal is an objective analysis. How the employee is performing, how the employees can develop, what the superior can do to make it happen and how the job is going are the questions associated with man management. It provides information about the performance ranks, decision regarding salary revision, confirmation, promotion and demotions. It provides feedback about level of achievement and behavior of the subordinate. It provides information that helps to counsel the employees. It provides information to diagnose the deficiency of the employees. It provides training and development needs of the employees.

### Procedure of construction of performance Appraisal Scale for Employees.

This scale is meant to measure the level of performance of the employees of public and private sector industries. For development of this scale the investigator searched for related literature and found that several scales were developed by several investigators to measure the level of different variables. For the present study the investigator selected Likert Method of Scale of construction.

#### Selection criteria:

**A. Inclusion criteria:-** 42 workers from Vardhaman Trading Private Limited which is a Trading company of Vardhaman Steel Ropes and wire Private Limited Company situated at Durg

Chhattisgarh, out of 30 workers selected for study.

**B. Exclusion criteria:** - 1. workers those were not co operative for study 2. Worker those left their job during Covid 19 period.

### PARAMETERS FOR ASSESSMENT

**A. Subjective Parameter** 1. Role Overload 2. Role Conflict (*Chittodvega*) . Role Ambiguity 4.Unreasonable group and political pressures 5.Responsibility for persons 6.Under participation 7.Powerlessness 8.Poor Peer relations 9.Intrinsic impoverishment 10.Low status 11.Strenuous working conditions 12.Unprofitability

**B. Objective parameters:** -1.Production 2. Sale

All the selected workers fulfilling the criteria of selection were randomly divided into 3 groups.

**GROUP – A: (Before Covid 19 Period)** - 30 Employees were selected for the study from Factory **Follow up:** During Covid 19 period phase 1& 2

**GROUP – B: (During Covid 19 Phase 1 period)** - 30 Employees were selected for the study from Factory **Follow up:** During Covid 19 period phase 1& 2

**GROUP – C: (During Covid 19 Phase 2 period)** -30 Employees were selected for the study from Factory **Follow up:** During Covid 19 period phase 1& 2

#### Research Methodology:

The response sheets were scored as per the scoring key prepared by the investigator for performance Appraisal scale for Employees and the scoring key prepared by Dr. Vivek Mahalwar and Dr. Heerachand

Patel for Professional Stress Scale. The raw scores obtained from the employees were converted to Standard Scores ('t' Score), then Mean, Percentage, Quartile Deviation, Standard deviation, 't' test were used for the analysis of data.

### PROBLEM ENCOUNTERED

While doing any studies every researcher face some problems and accordingly they find out his solutions to achieve their objectives. It is important to describe the problems encountered by any investigator, so that future researchers can learn from the same and adopt measures accordingly for doing the similar study in future more effectively

In this study the researcher also faced a number of problems. The main problems encountered by the researcher include:

- a. Obtaining permission from the industrial authorities to procure data.
- b. Respective Managers and supervisors were not willing to leave their work place for data collection.
- c. Arranging of the schedules of data collection as per the availability of the Managers and Worker of the industry.

The data are collected, edited, classified, tabulated, analyzed and interpreted with help of various statistical techniques and tools depending upon the nature of the investigation.

### Criteria for Assessment of Statistical Significance

$P > 0.05$  is – NS (Non Significant)  
 $P < 0.05$  and  $> 0.001$  – S (Significant)  
 $P < 0.001$  – HS (Highly Significant)

### RESULTS

**Table No. 05 showing of 42 Employees According to sex wise distributions**

Group	Number	Percentage
Male	39	92.857 %
Female	3	7.1429 %
Total	42	100%

From the above table, it is observed that the 92.8 % employees were from male side and 7.1 % employees were from female

side. It proves that now a day's also male employee's dominancy are still persist in this type of industries.

**Table No. 6 Age mix of Employees**

Age (Yrs)	No. of Employees	Percentage
20 – 30	2	6.6667 %
30 – 40	18	60 %
40 -50	6	20 %
50-60	4	13.33 %
<b>Total</b>	<b>30</b>	<b>100 %</b>

From the above table, it is observed that the 30 to 40 year age group percentage was 60% which is highest in all age group em-

ployees. It proves that the main labors are middle of the age of their life span in the industries.

**Table No 7 showing of 30 Employees According to experience**

Group	Number	Percentage
More Experience	14	47 %
Less Experience	16	53 %
<b>Total</b>	<b>30</b>	<b>100 %</b>

From the above table, it is observed that the 53 % employee have less experience and 47% employees have more experience. More than 10 years working experience

was considered as more experience for the purpose of which study proved that experienced workers is difficult to manage in the Industries.

**Table No 8 showing of 30 Employees According to salary**

Group	Number	Percentage
High Salary	11	37 %
Low Salary	19	63 %
<b>Total</b>	<b>30</b>	<b>100%</b>

From the above table 3 it is observed that the 63 % employees belong to low salaried group and 37% employees belong to high salaried. More than Rs. 8500 pm was con-

sidered as high salary in this study. It seems that the number of low salary group workers were more in the industries.

**Table 9 Role Conflict (Chittodvega) before Covid 19 and During Covid 19**

No. of Employee	Before Covid 19		During covid 19 phase 1		During covid 19 phase 2	
	Score	Percentage	Score	Percentage	Score	Percentage
30	57	38%	83	55.3%	106	70.7%

From the above table, before covid 19 it was observed that the 38% employees has role conflict of work which was increased

due to lock down during covid 19 phase 1 i.e. 55.3% and during covid 19 phase 2 it was 70.7%.

### **STRESS LEVEL ON ROLE CONFLICT (CHITTODVEGA) OF EMPLOYEES**

scale scores of before and during covid period employees in the industries, keeping it in mind the standard scores were analyzed with the help of 't' test to study the significant difference between role Conflict (Chittodvega) of employees working in the Industries. The results are presented in table.

To study the stress level on Role Conflict (Chittodvega) of employees in the industry is one of the subjects of the present investigation. The finding states that there is no significant difference in the Mean stress

**Table 10. Statistical Analysis of Employees Role Conflict (Chittodvega)**

Criteria	B.C. (Mean ± SE)	Period	D.C. (Mean ± SE)	%	df	SD	'td'	P	Remarks
Role Conflict (Chittodvega)	1.9 ± 0.01	BC	1.9 ± 0.01	38%	29	0.597	-	-	-
		DC-I	2.76 ± 0.154	55.3%	29	0.843	5.86	>0.05	HS
		DC-II	3.53 ± 0.168	70.7%	29	0.921	3.18	>0.05	S

From the above table, it is observed that the 't' value is significant. It indicates that the mean stress Scale scores of Role Conflict of Employees were differing significantly from each other. There is no significant difference in the Mean stress scale

scores of role overload employees is rejected. Again it may be stated that the Mean stress scale scores role Conflict (Chittodvega) employees are **1.9**, **2.76** and **3.533** respectively.

**TABLE 11 . EFFECT ON PRODUCTION**

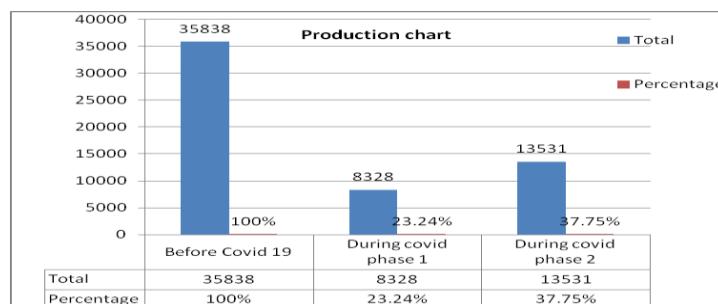
PRODUCTION IN METER			
Date	April-20	April-21	April-22
1	1128	207	456
2	1234	154	686
3	3081	365	312
4	502	129	431
5	1031	456	345
6	4501	123	231
7	1301	231	421
8	2101	236	234
9	1401	365	345
10	1209	213	324
11	1509	432	245
12	1230	308	432
13	1238	245	578
14	944	124	676
15	865	504	645
16	876	241	883
17	1167	367	689
18	1212	567	245
19	1231	237	657
20	876	124	776
21	657	109	235
22	1231	248	657

23	1209	564	124
24	987	789	677
25	645	213	546
26	768	129	674
27	456	261	123
28	189	112	456
29	356	209	324
30	703	66	104
<b>Total</b>	<b>35838</b>	<b>8328</b>	<b>13531</b>
<b>Percentage</b>	<b>100%</b>	<b>23.24%</b>	<b>37.75%</b>

From the above table, it was observed that before Covid 19 during financial year 2019-2020 rope production in meter was 100 % employees which was decreased due to lock down and other related factors

during Covid 19 phase 1 for the month of April 20, become 23.24% and during Covid 19 phase 2 April- 21 it was 37.75 % due to fear, mass causality and lockdown.

**Graph.1 Comparative bar graph showing Production before Covid -19 and During Covid - 19**



## PERFORMANCE ON ROPE PRODUCTION IN METERS

To study the performance rope production in the industry is an objective of the present investigation. It is found that there is no significant difference in the Mean per-

formance scale scores of before and during covid period employees in the industries, keeping it is view the standard scores were analyzed with the help of 't' test to study the significant difference between rope production in the Industry. The results were given in table.

**Table.12 of Statistical Analysis of Rope Production in Meter during Covid-19 month wise**

Criteria	B.C. (Mean ± SE)	Period	D.C. (Mean ± SE)	%	df	SD	'Itl'	P	Remarks
<b>Production in Meter</b>	<b>1194.6 ± 150.39</b>	BC	<b>1194.6 ± 150.39</b>	100%	29	809.8	-	-	-
		DC-I	<b>277.6 ± 30.63</b>	23.23%	29	164.99	7.24	>0.05	S

	DC-II	451 39.25	±	37.75%	29	211.4	4.54	>0.05	S
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From the above table, it is observed that the 't' value of rope production is significant during Covid 19 phases. It indicates that the mean production of rope differs significantly, The Mean production Rope are 1194.6, **277.6** and 451 respectively.

## DISCUSSION

It is interesting to investigate whether the extent of experienced ambivalence is similar, higher, or lower for employees in same industry, occupying different jobs, holding different positions, with different ethnic or cultural backgrounds, etc, Moreover, future research should aim at understanding the cause of job ambivalence. It might be informative to study with more diverse, large samples and samples from other types of work, industries racial , ethnic or cultural backgrounds etc. It is worth noting that the present homogenous sample has allowed for specifically, restrictions on the quantum of sample with respect to predictor in which the two variables may correlate. It is concluded that to do the quantitative analysis to study the level of stress and performance management of the employees.

There prevailed a confusion among the employees during COVID,19 period. The mode of managing the pandemic situation was unknown to the employees.

## CONCLUSION

Role Conflict (*Chittodvega*): before Covid 19 period 38% employees had Role Conflict on work which becomes 55.3 % during 1st phase of Covid 19 period and 70.7 % during 2<sup>nd</sup> phase of Covid 19 period. Due to Pandemic fear and lockdown the role conflict (*Chittodvega*) has increased. Employees don't know how to work in Covid 19 situation. The *Chhittodvega* con-

dition on their mind was developed hence production was also decreased.

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