Original Research

A Cross Sectional Study to Assess the Depression, Anxiety, and Stress among the Construction Workers of Gadag, North Karnataka

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Abstract

Background: The construction workers all over the world faces health related concerns due to high job demand, long working hours, and unrealistic deadlines. The mental health problems of construction workers cause productivity losses and also raises safety concerns and the construction industry reports higher levels of mental health issues than other industries in general. **Methods:** A Cross-Sectional study was conducted for three months from April 2022 to June 2022 among Construction workers of construction site of Gadag Institute of Medical Sciences, Gadag, Karnataka, India. **Conclusion:** The study concluded that the proportion of depression, anxiety and stress among construction workers were 49.3% (101), 73.2% (150) and 25.4% (52) respectively. It shows that depression, anxiety and stress was more common in age group between 31 to 40 years, male, laborer, completed high school education and belonging to socio-economic status Class IV.

Key Words: Anxiety; Construction workers; DASS-21 Depression; and Stress;

Introduction

The construction workers all over the world faces health related concerns due to high job demand, long working hours, and unrealistic deadlines (Beswick et al., 2007).[1] The construction industries in India is the second largest unorganized sector forming major part of the workforce.[2]

The mental health problems of construction workers cause productivity losses and also raises safety concerns[3] and the construction industry reports higher levels of mental health issues than other industries in general[4]. It is not limited to any demographic region but is a part of global trend[5]. Common mental health problems in the working population include anxiety and depression[6].

The most common psychological disorders are depression and anxiety with a prevalence of 10%–20%/year in the general population[7]. It is more in construction workers due to occupational stress and can lead to physical, psychological, and behavioral complications for the individuals and endanger their health[8,9].

Occupational stress as a common problem over the world as declared by World Health Organization (WHO), which is supported by family physicians' association report stating that approximately twothirds of cases examined at work had symptoms of stress and it the cost around 1%–3.5% of the gross

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domestic product in the countries[10]. A study about workers at the Tehran Oil Refinery reported that depression symptoms of workers are 43%[11]. Result of a study in Bangalore, stated that anxiety and stress were 36% and 18%, respectively[12]. Hence the study attempts to assess the depression, anxiety, and stress among the construction workers and to determine the association of depression, anxiety, and stress with socio-demographic factors.

Material and Methods

A Cross-Sectional study was conducted for three months from April 2022 to June 2022 among Construction workers of construction site of Gadag Institute of Medical Sciences, Gadag, Karnataka, India. Construction workers in GIMS Gadag willing to participate in the study was included and who were chronic absentees and temporary workers were excluded. Sample size was calculated using the formula

$$n = \frac{(1.96)^2 \times pq}{d^2}$$

where p is the prevalence rate 38% which was taken from the study done by K. Jayashree et.al[13].

q= 100-p = 100-38 = 62

Sampling error (d) = 7 % with 95% confidence interval.

$$n = \frac{(1.96)^2 \text{ x } 38 \text{ x } 62}{(7)^2}$$

$$n = \frac{9050.81}{49} = 184.7 \approx 185$$

After adding 10% non-response error, n= 203.5≈ 205

After obtaining the permission from the Institutional Ethics Committee and the Chief Engineer, 205 study subjects were selected using the lottery method. Written informed consent was taken in local language from the study subjects and confidentiality of information was maintained. The study participants were interviewed on pre-informed date using semi-structured questionnaire consisting of socio-demographic factors and DASS-21 which contained 21 questions(7 assessed depression, 7 assessed anxiety, and 7 assessed stress). Data was coded and entered in excel sheet and analyzed by proportion and chi-square test using Statistical Package for Social Sciences (SPSS trial version 21 Inc., Chicago, IL, USA). A p value ≤0.05 (two-tailed) was considered statistically significant.

Results

Out of 205 construction workers, majority 52.2% (107) of them belonged to the age group of 31 to 40 years, 69.8% (143) were Males, 95.1% (195) were laborers, 36.1% (74) were completed high school and 55.6% (114) were class IV according to Modified B G Prasad Socio-economic classification. (**Table 1)** Among all construction workers majority 75.1% (154) were smokers, 78.5% (161) were tobacco chewers and 56.6% (116) were alcoholics.

In our study the proportion of depression among construction workers was 49.3% (101), with 28.8% (59) mild depression, 18.5% (38) moderate depression, and 2% (4) severe depression. The proportion of anxiety was 73.2% (150), with 10.7% (22) mild, 41.5% (85) moderate, 9.8% (20) severe and 11.2% (23) extremely severe anxieties. Out of 25.4% (52) stressed study subjects, 11.7% (24) had mild, 7.3% (15) had moderate, and 6.3% (13) had severe stress. **(Table 2)**

Out of the 205 study subjects 49.3% (101) were depressed, the majority 52.2% (107) of them belong to the age group of 31 to 40 years. The majority 69.8% (143) of them belong to the male gender. The majority 55.6% (114) of them belonged to the socio-economic status Class IV.Among study subjects who consumed alcohol 15.12% (31) had mild, 3.95% (9) moderate, and 0.49% (1) had severe depression which were statistically significant (p-value <0.05). **(Table 3)**

Among the 205 construction workers 73.2% (150) were anxious, the majority 52.2% (107) belongs to the age group of 31 to 40 years. The majority of them were educated up to high school 36.1% (74). The study subjects who consumed alcohol 7.26% (16), which were statistically significant (p-value <0.05). **(Table 4)**

Among all the study subjects the majority of them belong to the age group of 31 to 40 years. Statisticallysignificant association was present between stress and history of smoking cigarettes or beedi, consuming tobacco and alcohol (p-value <0.05). **(Table 5)**

Table 1: Distribution of study subjects according to their Socio-Demographic factors.

Socio-Demographic factors	Frequency	Percentage
Age group		
<20 years	2	1%
21-30 years	70	34.1%
31-40 years	107	52.2%
41-50 years	26	12.7%
Total	205	100%
Gender		
Males	143	69.8%
Females	62	30.2%
Total	205	100%
Religion		
Hindu	188	91.7%
Muslim	17	8.3%
Total	205	100%
Marital Status		
Married	199	97.1%
Unmarried	6	2.9%
Total	205	100%
Occupation		
Engineer	7	3.4%
General Manager	3	1.5%
Labor	195	95.1%
Total	205	100%
Education		
Lower Primary	69	33.7%
Upper Primary	45	22.0%
High School	74	36.1%
Higher Secondary	5	2.4%
Graduate	10	4.9%
Post Graduate	2	1.0%
Total	205	100%
Socio-Economic Status		
Class-I	1	0.5%
Class-II	12	5.9%
Class-III	70	34.1%
Class-IV	114	55.6%
Class-V	8	3.9%
Total	205	100%

Table 2: Distribution of study subjects according to the DAS scale

DASS	Frequency	Percentage
Depression		
Not Depressed	104	50.7%
Mild	59	28.8%
Moderate	38	18.5%
Severe	4	2.0%
Total	205	100%
Stress		
Not Stressed	153	74.6%
Mild	24	11.7%
Moderate	15	7.3%
Severe	13	6.3%
Total	205	100%
Anxiety		
Not Anxious	55	26.8%
Mild	22	10.7%
Moderate	85	41.5%
Severe	20	9.8%
Extremely Severe	23	11.2%
Total	205	100%

Table 3: Distribution of study population according to the association between depression and socio-demographic factors.

Socio Demographic factors	Depression						Pearson Chi-Square Value
	Mild		Moderate		Severe		
	n	%	n	%	n	%	
Age group							$\chi2$=5.215, df = 9, p= 0.815
<20 years	1	0.49%	0	0%	0	0%	
21-30 years	16	7.80%	13	6.34%	1	0.49%	
31-40 years	35	17.07%	18	8.78%	3	1.46%	
41-50 years	7	3.41%	7	3.41%	0	0%	
Gender							$\chi2$ = 6.682, df = 3, p= 0.083
Males	42	20.49%	26	12.68%	3	1.46%	
Females	17	8.29%	12	5.85%	1	0.49%	
Occupation							$\chi2$=4.451, df = 6, p= 0.616
Engineer	2	0.98%	0	0%	0	0%	
General Manager	2	0.98%	0	0%	0	0%	
Labor	55	26.83%	38	18.54%	4	1.95%	
Education							$\chi2$=9.471, df = 15, p= 0.852
Lower Primary	22	10.73%	14	6.83%	2	0.98%	
Upper Primary	12	5.85%	6	2.93%	1	0.49%	
High School	19	9.27%	18	8.78%	1	0.49%	
Higher Secondary	1	0.49%	0	0%	0	0%	
Graduate	4	1.95%	0	0%	0	0%	
Post Graduate	1	0.49%	0	0%	0	0%	
Socio-Economic Status							$\chi2$=14.127, df = 12, p= 0. 293
Class-I	1	0.49%	0	0%	0	0%	
Class-II	5	2.44%	1	0.49%	0	0%	
Class-III	25	12.20%	15	7.32%	3	1.46%	
Class-IV	27	13.17%	21	10.24%	1	0.49%	
Class-V	1	0.49%	1	0.49%	0	0%	
Smoking							$\chi2$=8.390, df = 3, p= 0.039.
Yes	39	19.02%	25	12.20%	3	1.46%	
No	20	9.76%	13	6.34%	1	0.49%	
Tobacco							$\chi2$=8.599, df = 3, p= 0. 035
Yes	45	21.95%	24	11.56%	3	1.15%	
No	14	6.65%	14	6.65%	1	0.49%	
Alcohol							$\chi2$=28.971, df = 3, p = 0.000
Yes	31	15.12%	9	3.95%	1	0.49%	
No	28	13.25%	29	14.15%	3	1.05%	

Table 4: Distribution of study population according to the association between anxiety and socio-demographic factors.

Socio Demographic factors	Anxiety								Pearson Chi-Square Value
	Mild		Moderate		Severe		Extremely Severe		
	n	%	n	%	n	%	n	%	
Age group									$\chi2$=19.777, df = 12, p= 0. 071
<20 years	0	0%	1	0.49%	1	0.49%	0	0%	
21-30 years	12	5.65%	31	14.95%	3	1.45%	4	1.82%	
31-40 years	9	3.85%	42	20.49%	10	4.98%	16	7.18%	
41-50 years	1	0.49%	11	5.15%	6	2.75%	3	1.45%	
Gender									$\chi2$=2.414, df = 4, p= 0. 660
Males	17	8.15%	57	27.80%	15	7.35%	18	8.65%	
Females	5	2.25%	28	13.65%	5	2.25%	5	2.25%	
Occupation									$\chi2$=6.511, df = 8, p= 0. 590
Engineer	2	0.98%	3	1.35%	0	0%	0	0%	
General Manager	0	0%	1	0.49%	0	0%	0	0%	
Labor	20	9.26%	81	39.51%	20	9.26%	23	10.68%	
Education									$\chi2$=25.856, df = 20, p= 0. 171
Lower Primary	8	3.42%	27	12.76%	9	4.25%	7	3.35%	
Upper Primary	3	1.35%	20	9.38%	4	1.81%	4	1.81%	
High School	5	2.25%	32	15.16%	7	3.15%	11	5.15%	
Higher Secondary	3	1.35%	1	0.49%	0	0%	1	0.49%	
Graduate	2	0.98%	4	1.76%	0	0%	0	0%	
Post Graduate	1	0.49%	1	0.49%	0	0%	0	0%	
Socio-Economic Status									$\chi2$=8.642, df = 16, p= 0. 927
Class-I	0	0%	1	0.49%	0	0%	0	0%	
Class-II	2	0.98%	5	2.25%	0	0%	1	0.49%	
Class-III	7	3.15%	34	16.46%	8	3.64%	7	3.15%	
Class-IV	12	5.36%	41	20%	11	5.15%	15	7.25%	
Class-V	1	0.49%	4	1.80%	1	0.49%	0	0%	
Smoking									$\chi2$=6.902, df = 4, p= 0. 141
Yes	17	8.15%	64	31.22%	11	5.25%	16	7.56%	
No	5	2.25%	21	9.85%	9	4.25%	7	3.15%	
Tobacco									$\chi2$=15.663, df = 4, p= 0. 004
Yes	20	9.26%	70	34.15%	10	4.98%	15	7.15%	
No	2	0.98%	15	7.15%	10	4.98%	8	3.65%	
Alcohol									$\chi2$=25.368, df = 4, p = 0.000
Yes	16	7.26%	54	26.34%	4	1.80%	6	2.76%	
No	6	2.66%	31	14.15%	16	7.62%	17	8.45%	

Table 5: Distribution of study population according to the association between stress and socio-demographic factors.

Socio Demographic factors	Stress						Pearson Chi-Square Value
	Mild		Moderate		Severe		
	n	%	n	%	n	%	
Age group							χ2=11.295, df = 9, p= 0. 256
<20 years	0	0%	0	0%	1	0.49%	
21-30 years	6	2.35%	5	2.25%	2	0.98%	
31-40 years	14	6.83%	7	3.25%	9	4.21%	
41-50 years	4	1.84%	3	1.15%	1	0.49%	
Gender							χ2=6.682, df = 3, p= 0. 083
Males	17	7.48%	10	4.98%	5	2.25%	
Females	7	3.28%	5	2.35%	8	3.85%	
Occupation							χ2=3.573, df = 6, p= 0. 734
Engineer	0	0%	0	0%	0	0%	
General Manager	0	0%	0	0%	0	0%	
Labor	24	11.71%	15	6.75%	13	6.25%	
Education							χ2=12.268, df = 15, p= 0. 659
Lower Primary	11	4.55%	5	2.25%	8	3.40%	
Upper Primary	5	2.25%	3	1.15%	1	0.49%	
High School	7	3.15%	7	3.15%	4	1.60%	
Higher Secondary	1	0.49%	0	0%	0	0%	
Graduate	0	0%	0	0%	0	0%	
Post Graduate	0	0%	0	0%	0	0%	
Socio-Economic Status							χ2=7.642, df = 12, p= 0.812
Class-1	0	0%	0	0%	0	0%	
Class-2	1	0.49%	2	0.98%	2	0.98%	
Class-3	10	4.45%	5	2.15%	4	1.80%	
Class-4	11	5.37%	8	3.56%	7	3.24%	
Class-5	2	0.98%	0	0%	0	0%	
Smoking							χ2=25.735, df = 3, p = 0.000
Yes	19	9.27%	8	3.56%	3	1.40%	
No	52	52.15%	7	3.24%	10	4.98%	
Tobacco							χ2=23.438, df = 3, p = 0.000
Yes	17	8.29%	8	3.25%	5	2.15%	
No	7	3.15%	7	3.15%	8	3.65%	
Alcohol							χ2=31.532, df = 3, p = 0.000
Yes	11	5.37%	2	0.98%	1	0.49%	
No	13	5.85%	13	5.85%	12	5.54%	

Discussion

Out of 205 construction workers, Most of them 52.2% (107) belonged to the age group of 31 to 40 years, 69.8% (143) were Males, 95.1% (195) were laborers, 36.1% (74) were completed high school and the proportion of depression, anxiety and stress among construction workers were 49.3% (101), 73.2% (150)

and 25.4% (52) respectively whereas study done by Saberi H R et al[14] in which majority of the individuals were older than 57.2% (40), 77.3% (119) were male, 81.2% were married, 63% (97) had a diploma and the others had a university degree and symptoms of depression, anxiety, and stress were 18.83%, 33.12%, and 18.74%, respectively and according to the study conducted by Jeyapal DR et al[15] the prevalence of stress, anxiety, and depression among call handlers employed in international call centers in Delhi NCR was 46.7%, 57.1%, and 62.9% respectively

Depression symptoms more in study subjects of age group of 31 to 40 years 52.2% (107), males, completed high school education and belonging to socio-economic status Class IV.A statistically significant relationship was found between depression and substance abuse (P<0.05).

The study subjects of age group of 31 to 40 years, males, completed high school education and belonging to the socio-economic status Class IV were more prone to anxiety and stress symptoms. A statistically significant association was found between anxiety and substance abuse (p-value <0.05).

The limitations of the study were that coping strategies were not included due to time constraint and since it is a cross-sectional study the study subjects with depression, anxiety and stress were referred to psychiatry department and follow-up was not done.

Conclusions and Recommendation

The study concluded that the proportion of depression, anxiety and stress among construction workers were 49.3% (101), 73.2% (150) and 25.4% (52) respectively. It shows that depression, anxiety and stress was more common in age group between 31 to 40 years, male, laborer, completed high school education and belonging to socio-economic status Class IV. It was strongly associated with substance abuse which can be prevented by healthy coping strategies to combat above mental disorders.

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Conflicts of Interest: None

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