Original Research Article

To Assess the Level of Workplace Stress among 18-45yr Patients Admitted with Myocardial Infarction

Shubhangi Jadhav[1], Ashok Kalyamshetty[2], Prabha Dasila[3], P.G.Kerkar[4], S Kaul[5]

[1]PhD Scholar, MGM Institute of health sciences, Navi Mumbai, Maharashtra, India
[2]Professor, HOD, General Surgery, MGMIHS, Navi Mumbai, Maharashtra, India
[3]Professor, Principal, College of nursing, MGMIHS, Navi Mumbai, Maharashtra, India
[4]Professor, HOD, Cardiology, KEM Hospital, Mumbai, Maharashtra, India
[5]Professor, Pro Vice Chancellor, MGMIHS, Navi Mumbai, Maharashtra, India

Corresponding Author: Shubhangi Jadhav

ABSTRACT

Introduction: Work-related stress is a growing problem around the world that affects not only the health and well-being of employees, but also the productivity of organizations. Multiple risk factors are involved for the causation of MI but it is unclear that a particular professional has more risk of MI.
Material and methods: A study aims to find the myocardial infarction among 18-45 yrs patients in relation to their occupation and workplace stress. The study was carried out between July 2016 to July 2017 in selected teaching hospitals in Mumbai. For cases (n=100) patients between the age group of 18-45yrs admitted with first episode of myocardial infarction without any complications like heart failure and no history of coronary congenital abnormality were selected, for controls(n=200), age±2 and residence was matched and without history of any cardiac disease were selected. A pre-validated 8item Occupational Stress Scale by American Institute of Stress was used in the study. Samples were categorized according to age, occupation and analyzed the statistical significance with reference to chi-square along with frequency and percentage.
Results: The age of the study participants were categorized among cases and controls respectively 18-21yrs (3%, 2.5%), 22-25yrs(1%,7%), 26-29yrs(5%,6%), 30-33yrs(5%,21%%),34-37yrs(21%,19.5%), 38-41yrs(27%,25.5%), 42-45yrs(38, 18.5%). As per the occupation, (Kuppuswamy scale) among cases and controls were, professionals (5%,0%), semiprofessionals (7%, 3%), clerical, shop owners (10%, 11.5%), skilled workers (31%, 28.5%), semi-skilled workers (20%, 19.5%), unskilled workers (22%, 22.5%), unemployed (5%, 15%). The stress score among the cases (n=100) and controls (n=200) were Stress is not much issue (20%, 10%), fairly low (14%, 40%), moderate stress (27%,40%), severe stress (34%, 10%), potentially dangerous stress (5%, 0) respectively. Chi square test p value 0.038 which is statistically significant. There is a relation between occupation and MI.
Conclusion: Occupation could be one predisposing factor for MI. it is observed that compared to unemployed/housewives/students, those who are employed in gainful employment or business are more prone to MI. So there is a need for interventions at the workplace to reduce the risk.

Key words: workplace, stress, Myocardial infarction

INTRODUCTION

Workplace stress is a harmful reaction that people have undue pressure and demand placed on them at work. Stress is actually difficult to measure. Systematic review and longitudinal studies have indicated that stress at work is largely driven by psychosocial factors and is associated with common conditions such as heart disease, anxiety, depression and

certain musculoskeletal disorders. The writer Annie Dillard famously said that the average person will spend 90,000hrs at work over lifetime. [12] One of the study finding published in Economic times suggested that 80 percent of employees complain of stress at work to the extent that nearly 60percent want to quit their jobs because of high stress levels. [13] Various national and international bodies are responsible for ensuring the health and safety of employees, with a focus on identifying physical, chemical and biological hazards in the workplace. Increasingly, attention is also being paid to the psychosocial work environment, with a major focus on work stress. The role of work stressors in generating adverse chronic health conditions has been subject to considerable debate. [1] The cost in occupational terms of cardiovascular disease (CVD) is, however, harder to quantify but is likely to be similarly high. Heart disease can claim the ultimate cost as the most common cause of death. A recent study of self reported work related illness in 2001–2 [1] shows that record numbers of workers feel that they have an illness that was caused by or made worse by their work, equating to 2.3 million people and 33 million working days lost. These figures show a prevalence estimate for CVD caused or made worse by work of 80 000 during the study year, with each person reporting work related illness taking an average of 23 days off through sickness in the year. This equates to 1.84 million days lost to work related CVD, with associated costs to industry of approximately £120 million. In essence, the issue of heart disease and work is a very significant one in terms of individuals affected, industry, health service resource, and national resource. [2] A study conducted among male chemical plant employees (n=389) concluded that among smokers, those in higher-strain jobs smoked more heavily than those in lower-strain positions (OR 1.70, 95% CI = 1.10, 2.61) and were more likely to have increased the amount they smoke (OR 3.72, 95% CI = 1.92, 7.17)

[3] Stress from challenging situations and events plays a significant role in cardiovascular symptoms and outcome, particularly heart attack risk. Depression, anxiety, anger, hostility, and social isolation also affect cardiovascular health. Many studies have documented that various forms of stress can take a toll on the heart [4] during moments of high stress; body releases hormones such as nor-epinephrine, which the researchers claim can cause the dispersal of bacterial bio-films from the walls of arteries. This dispersal can allow plaque deposits to suddenly break loose, thereby triggering a heart attack. [5] Indians have heart attack almost a decade earlier than the west. In a recent study done in a large tertiary care centre in Chennai, 22 per cent of heart attacks occurred in patients less than 40 years of age and 5 per cent occurred in patients still in their twenties. The early incidence of heart attacks is attributed to the increased prevalence of diabetes in India. In the past two decades, however, there has been a notable increase in heart attacks in women. While scientists are still debating the exact cause, main reasons are considered work stress, early hysterectomy with oophorectomy (removal of uterus with ovaries) and change in eating and exercise habits. [7]

Objectives
To assess the level of workplace stress among 18-45yr patients admitted with myocardial infarction.

MATERIALS AND METHODS
A cross sectional case control exploratory survey approach was used. The multicentre study was conducted in teaching hospitals of Mumbai, Maharashtra, India from July 2016 to July 2017. Total 100 cases and 200 controls were selected for the study using purposive sampling. Samples were selected as per the laid down criteria. For cases patients admitted with first episode of documented MI aged 18-45 yrs and without any complications like heart
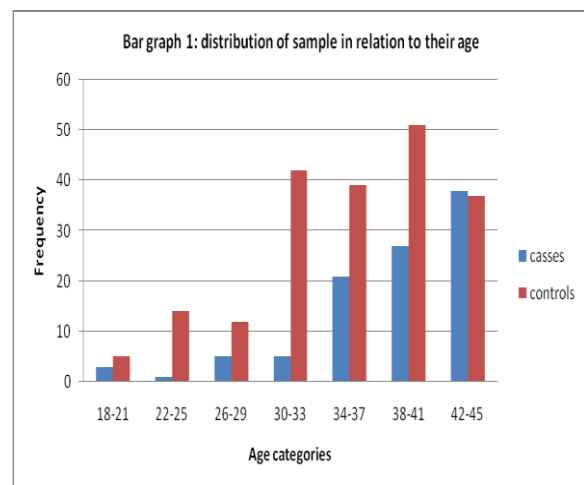
failure, on mechanical ventilator and with congenital coronary abnormality were selected and controls age and residence matched, and those who are willing to participate in the study were selected as study participant. Permission from the respective authorities and Ethical committee approval was obtained prior to study. Written informed consent from study subjects was obtained. To assess the workplace stress a pre-validated Workplace Stress Scale by American Institute of Stress (AIS) was used with prior permission. [6] Structured interview method was used to measure the study variable. The data was analyzed using descriptive and inferential statistics. Chi-square test was used to analyze the association between stress score and MI with software SPSS 23.0.

RESULTS

Data was analyzed using descriptive and inferential statistics. For analysis of data SPSS 23.0 was used. The mean age for cases and control was 37.96±5.855 years and 37.72±5.562 years respectively. Study participants were categorized among cases and controls respectively 18-21yrs (3%, 2.5%), 22-25yrs (1%,7%), 26-29yrs (5%,6%), 30-33yrs (5%,21%%), 34-37yrs (21%,19.5%), 38-41yrs (27%,25.5%), 42-45yrs (38, 18.5%). As per the occupation, (Kuppuswamy scale) among cases and controls were, professionals (5%, 0%), semiprofessionals (7%, 3%), clerical, shop owners (10%, 11.5%), skilled workers (31%, 28.5%), semi-skilled workers (20%, 19.5%), unskilled workers (22%, 22.5%), unemployed (5%, 15%). The stress score among the cases (n=100) and controls (n=200) were Stress is not much issue (20%, 10%), fairly low (14%, 40%), moderate stress (27%, 40%), severe stress (34%, 10%), potentially dangerous stress (5%, 0) respectively. Chi square test p value 0.038 which is statistically significant. There is a relation between workplace stress and MI.

Table 1. Distribution of sample in relation to their demographic characteristics

Demographic variables	Cases (n=100)		Controls (n=200)	
Age (yrs)	f	%	f	%
18-21	3	3	5	2.5
22-25	1	1	14	7
26-29	5	5	12	6
30-33	5	5	42	21
34-37	21	21	39	19.5
38-41	27	27	51	25.5
42-45	38	38	37	18.5
Gender				
Male	90	90	170	85
female	10	10	30	15
Education				
Illiterate	10	10	39	19.5
upto 5th standard	14	14	12	6
6 to 10 standard	42	42	80	40
11 to 12th standard	20	20	45	22.5
diploma / degree	13	13	24	12
post graduate	1	1	0	0
Occupation				
Professionals	10	10	3	1.5
Semiprofessionals	8	8	6	3
Clerical, shop owners, farmers	8	8	19	9.5
Skilled	26	26	53	26.5
Semiskilled	18	18	41	20.5
Unskilled	25	25	47	23.5
unemployed	5	5	31	15.5

Figure 1. Distribution of sample in relation to age

As per the table 1 the age group of the cases and controls respectively 18-21 (3%, 5%), 22-25(1%, 7%), 26-29(5%, 6%), 30-33(5%, 21%), 34-37(221%, 19.5%), 38-41(27%, 25.5%), 42-45(38%, 18.5%) i.e. majority of sample is 34-45. Majority of the study participants were males (90%, 85%) in cases and controls respectively as compare to females (10, 15%). Among the study subjects illiterate (10%, 19.5%), upto 5th std (14%, 6%), 6th to 10th std (42%, 40%), 11th to 12th std (20%, 22.5%), diploma or degree (13%, 12%),

postgraduate (1%, 0%). This suggest that majority of the participants had at least primary education. In the occupation of the subjects professionals (10%, 1.5%), semiprofessionals (8%, 3%), clerical, shop owners and farmer (8%, 9.5%), skilled (26%, 26.5%), semiskilled (18%, 20.5%), unskilled (25%, 23.5%), unemployed (5%, 15%) among the cases and controls respectively.

Table 2. Distribution of workplace stress level

Workplace stress	Cases (n=100)		Controls n=(200)				
	f	%	f	%	Chi square	p	df
Stress is not much issue	14	14	20	10	0.038	0.05	
Fairly low	17	17	80	40			
Moderate stress	30	30	80	40			
Severe	34	34	20	10			
Potentially dangerous stress	5	5	0	0			

Table 2 illustrates the level of workplace stress among the cases and controls was, stress is not much issue (14%, 10%), fairly low (17%, 40%), moderate stress (30%, 40%), severe (34%, 10%), potentially dangerous (5%, 0%) respectively. Workplace stress seems to be more among the cases as compared to controls. There is a significant association between workplace stress and myocardial infarction (p 0.05)

DISCUSSION

The role of psychosocial work stress as a risk factor for chronic disease has been the subject of considerable debate. Many researchers argue in support of a causal connection while others remain skeptical and have argued that the effect on specific health conditions is either negligible or confounded. [1] Job stress evaluated by the ERI model significantly increased the risk of CHD, and it may be an important risk factor independent of the traditional risk factors of CHD in the Chinese population. [8] There are very few studies regarding workplace stress and myocardial infarction among 18-45yrs patient. Low control in the work environment is associated with an increased risk of future coronary heart disease among men and women employed in government offices. [9] Prominent work environmental stressors were poor departmental reorganization, lack of cohesiveness in department, difficult superiors and juniors ($P \leq 0.001$, Pearson correlation). Stressors associated with work organization and work nature were:

noninvolvement in departmental decision making and lack of proper feedback; along with; work load, lack of clarity in job, and a erratic work schedule ($P \leq 0.001$ on Pearson correlation). Harassment, favoritism, discrimination, and lack of self-expression ($P \leq 0.003$) were other factors responsible for work dissatisfaction. A high stress level was detected in the study population. The principal stressors were work environment related. [10] Researchers found that people's risk of heart disease and stroke varies with their industry. In the present study occupation of the subjects professionals (10%, 1.5%), semiprofessionals (8%, 3%), clerical, shop owners and farmer (8%, 9.5%), skilled (26%, 26.5%), semiskilled (18%, 20.5%), unskilled (25%, 23.5%), unemployed (5%, 15%) among the cases and controls respectively.

But a recent study suggests that, those working in wholesale came in at top of the list, as 2.9 percent of the people in that industry had suffered heart disease or a stroke. Those working in finance and insurance had the lowest rate of heart disease, at 0.8 percent. Among employed people, workers in service and blue-collar occupations were more likely than those in white-collar occupations to report having had heart disease or a stroke. [11] These results show somehow similar results.

In the present study among the heart attack patients 5% were unemployed (n=100) and in a study done by Bahar Ghoulipur suggests that Looking at employment status, the researchers found

that 1.9 percent of employed people had experienced heart disease or stroke, compared with 2.5 percent of unemployed people who were looking for work, and 6.3 percent of people not in the labor force, the result reflects similar findings. Among unskilled workers 25% had a history of heart attack and among majority were working as a waiter or assistants to cook in the hotel and the results are matching with another study which suggests that Another factor may be working alternative shifts, which is more common among those employed in Accommodation and Food Services

CONCLUSION

The obligation of minimizing excessive stress at workplaces is a moral principle which is not dependent on the effects of work stress on cardiovascular health. Those who are working are at higher risk of developing myocardial infarction. Such kind of studies needs to be done on a very large scale to find out the association between workplace stress and myocardial infarction. There is a great need to update the employment policies and worker health needs to be focused along with preventive aspects to be stressed to reduce workplace stress. Periodic health checkups can be organized for the employees and stress reducing measures like yoga and meditation can be promoted at the workplace for the young generation specially

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