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RESEARCH ARTICLE

WORK RELATED STRESS – A MAJOR OCCUPATIONAL HEALTH ISSUE

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ABSTRACT

Background: Psychological stress is a major cause of lost working days in the world and can lead to stress related disorders among the productive age group. Knowledge on the impact burden of work related stress and the stressors like physical, psycho social environment is important in improving the mental health of the working population.

Objectives: This study was done with the objectives of assessing the burden of work related stress and its risk factors among various working population.

Methods: This study was carried out as a community based cross sectional study among different occupations like doctors, police personnel, IT professionals, bank employees and teachers in the field practice area of department of community medicine using standardized questionnaires USDAW and PSS – 10 item questionnaires by personal interview after getting informed consent.

Results: This study was done among 415 working population from different occupations and the study revealed moderately high prevalence of work stress among all occupations but medical and paramedical professions showed more than other occupations which was statistically significant. The stressors significantly associated with work related stress were physical environment, shift work, inadequate break times, lack of control on their work, repetitive work and overcrowding.

Conclusion: The findings of the study suggest that the physical and psychosocial environment is not conducive in many of the occupations. There is an urgent need for the employers to take care of the felt needs of the working population an increase the awareness to reduce the future burden of stress related disorders and to promote the mental health of the workers.

What this paper adds??

1. Increasing trend of Workplace related stress
2. To assess and compare the burden and risk factors associated with workplace related stress among different occupations
3. Surprisingly Software professionals had less stress and teaching and nursing professionals had maximum stress in this study
4. This study included various occupations which was very less done by other Indian studies
5. Awareness on stress management is the basic requirement in all occupations.

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INTRODUCTION

The term "stress", as it is currently used was coined by Hans Selye in 1936, who defined it as "the non-specific response of the body to any demand for change". Stress from any source may affect an employee's health and their performance at work. Work-related stress is a major cause of ill-health in our society. According to the health and safety evidence Self-Reported Work-Related Illness Survey (*Self-reported*

Work-related, 1995), in 1995 half-a- million people were suffering from illness caused by work-related stress and six million working days are lost each year as a result of people taking time off with stress-related illness. As with the health and safety survey stress was the second commonest cause of illness after musculo-skeletal disorders. Evidence from the Health and Safety Executive suggests that 20% of workers feel 'very' or 'extremely' stressed at work, with the proportion rising to 49% in some occupational groups² whereas Indian study among police men revealed that 70% of them experienced stress with a significant association was found

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between age group, marital status, education and working hours and the level of stress among police personnel (Selokar *et al.*, 2011). The causes of workplace stress can be associated with a wide range of factors like working hours, workload, poorly designed workstations, inadequate or inappropriate heating, ventilation or lighting, inadequate holidays, long hours, even performance-related pay can be major sources of stress. Although many studies were done in various developed countries, the research studies in India are inadequate. So this study was done to assess the burden of work related stress and its associated risk factors causing stress.

Aims and Objectives

- To estimate the magnitude of work related stress among various occupations
- To assess the association of certain risk factors (work related stressors) causing work related stress

MATERIALS AND METHODS

Study design

This study was conducted as a Community based - Cross-sectional study

Study area

Field practice area (Kelambakkam) under the Department of Community Medicine, Tagore Medical College and Hospital.

Study period: May and June 2014

Study population

All working adult male and female population from nearby working establishments in our field practice area under the Department of Community Medicine. The study population was selected from different professions (occupations) to assess the level of stress among different occupations. They were selected from professions (different occupations) like medical and paramedical professionals, software professionals, policemen, bank employees and teaching professionals.

Inclusion criteria

Working adult population of men and women aged 20 years and above were included.

Exclusion criteria

With history of drug intake for any psychiatric illness, family history of psychiatric illness, histories of chronic diseases like diabetes, hypertension, ischemic heart disease, etc.

Sample size

The prevalence of work related stress among different professions ranges from 32% to 70% among Indian population (Selokar *et al.*, 2011; Saini *et al.*, 2010). So taking the average of 50%, the sample size calculated was around 400 with 10% of allowable error (10% of prevalence). Sample size = $4 p \times q / d^2 = 4 \times 50 \times 50 / 5 \times 5 = 400$. Keeping the sample size as 400, approximately 100 study participants was selected from different occupations.

Sampling technique

The study participants were selected by multistage sampling method. The list of organizations from the field practice area was selected by simple random sampling method. The chief authority of individual establishments was approached for official permission for conducting the study. After getting the official letter of permission from the concerned authorities, the study participants were selected by systematic random sampling method from the existing list of working men and women by calculating sampling interval. After ensuring the confidentiality and getting the informed consent, the study participants were personally interviewed with the questionnaire and interview method. Most of the establishments were interested in the research topic and the participants replied to the investigator enthusiastically.

Study tool: Questionnaire and interview method

- Questionnaire – general socio-demographic profile
- The Work related stress questionnaire (Saini *et al.*, 2010)
- Standardized PSS – 10 Questionnaire ([www.usdaw.org.uk/healthandsafety/work related stress questionnaire](http://www.usdaw.org.uk/healthandsafety/work%20related%20stress%20questionnaire), 2015)

Data collection method: (Questionnaire and Interview method)

The questionnaires which were used for assessing stress levels is PSS (Perceived Stress Scale) – 10 item questionnaire. The PSS is brief and easy to administer measure of the degree to which situations in one's life is appraised as stressful. It has been proven to possess substantial reliability and validity. The work related stress factors and outcomes will be measured using the USDAW questionnaire. After getting written informed consent, the study participants were interviewed using the above said questionnaires.

Outcome measure: The outcomes were measured with help of the scoring system given for PSS – 10 item questionnaires. Finally the study participants were classified into those who have work related stress and those who do not.

Statistical technique

Data were entered in excel sheet and the outcomes were measured in means scoring, then Student t test or ANOVA were performed to test the hypothesis.

Observations and Results

The study was done among 415 study participants among various occupations viz policemen, teachers, software professionals, bank employees and medical and paramedical workers. Mean age of the study participants was 34 years with the mean hours of work per day was 10.31 hours.

Socio demographic profile of the study participants

Among 415 study participants 68.4% were males and 31.6% were females. Majority 50% (207) study participants were educated up to degree or diploma and the remaining majority was professional education like engineering, doctors, paramedical professionals, software professionals. Approximately the participants from different occupation were teaching professionals 114 (27.5%), Bank employees 101

(24.3%), Information technology professionals 100 (24.1%) and the remaining 50 (12%) and 50 (12%) from police profession and medical profession.

Table 1. Socio-demographic profile of the study participants

Variable	Number (415)	Percentage
Gender		
Male	284	68.4
Female	131	31.6
Education		
Degree	207	49.9
Professional	172	41.4
Higher secondary	36	8.7
Occupation		
Teaching professional	114	27.5
Bank employee	101	24.3
Software	100	24.1
Police personnel	50	12.0
Medical professional	39	9.4
Paramedical professional	11	2.7
Marrital status		
Married	258	62.2
Unmarried	157	37.8

Most of them were married which constituted 258 (62%) among the total study participants (Table 1).

Work related stressors (USDAW standardized questionnaire variables)

Physical environment: Approximately 5 to 13% of the study participants replied that physical climatic / environmental conditions cause problems at work like noise, poor lighting, poor ventilation, overcrowding and excessive dust and fumes. Work life balance/overload: Shift work was the major factor for most of the study participants followed by long hours of work with inadequate break times, unsocial hours of work. Meeting deadlines (13.5%) and work overload (13.3%) causing stress was less among this study participants. Approximately 10% of them replied they have got job insecurity due to various reasons. Work relationships: While questioning on work relationships like Poor relations with supervisor, Poor relations with workmates, Harassment or discrimination, Impersonal treatment, Lack of communication from management, the study participants responded with 3% to 10% of them had at least one of the work relationships

Table 2. Work related stressors - USDAW variables

Variable / Question	Never	Often	Sometimes
1. Do any of the following cause any problems at work?			
Noise	203 (48.9%)	23 (5.5%)	189 (45.5%)
Poor lighting	236 (56.9%)	23 (5.5%)	156 (37.6%)
Excessive heat	193 (46.5%)	55 (13.3%)	167 (40.2%)
Excessive cold	208 (50.1%)	30 (7.2%)	177 (42.7%)
Overcrowding	225 (54.2%)	46 (11.1%)	144 (34.0%)
Poor ventilation	231 (55.7%)	43 (10.4%)	141 (34.0%)
Poor maintenance of equipment	205 (49.4%)	44 (10.6%)	166 (40.0%)
Dust or fumes	228 (54.9%)	37 (8.9%)	150 (36.1%)
2. Do you find any of the following cause problems?			
Shiftwork	286 (68.9%)	20 (4.8%)	109 (26.3%)
Inadequate breaktimes	237 (57.1%)	26 (6.3%)	152 (36.6%)
Unsocial hours	243 (58.6%)	43 (10.4%)	129 (31.1%)
Very heavy workload	149 (35.9%)	55 (13.3%)	211 (50.8%)
Unfair distribution of work	194 (46.7%)	60 (14.5%)	161 (38.8%)
Repititive work	185 (44.6%)	67 (16.1%)	163 (39.3%)
Meeting deadlines	152 (36.6%)	56 (13.5%)	207 (49.9%)
Job insecurity	254 (61.2%)	41 (9.9%)	120 (28.9%)
Poor supervision	246 (59.3%)	25 (6.0%)	144 (34.7%)
Under-utilisation of skills	193 (46.5%)	48 (11.6%)	174 (41.9%)
3. Regarding Working relationships, do any of the following cause you problems?			
Poor relations with supervisor	274 (66.0%)	37 (8.9%)	104 (25.1%)
Poor relations with workmates	264 (63.6%)	22 (5.3%)	129 (31.1%)
Harassment or discrimination	307 (74.0%)	13 (3.1%)	95 (22.9%)
Impersonal treatment	286 (68.9%)	21 (5.1%)	108 (26.6%)
Lack of communication from management	210 (50.6%)	31 (7.5%)	174 (41.9%)
Working with the public	233 (56.1%)	41 (9.9%)	141 (34.0%)
4. How much control do you feel you have over your job?			
You are able to plan your own work	95 (22.9%)	190 (45.8%)	130 (31.3%)
You can participate in decision making for your own job	102 (24.6%)	165 (39.8%)	148 (35.7%)
You have some control over the pace of your work	71 (17.1%)	162 (39.0%)	183 (43.9%)
You have no control at all	246 (59.3%)	26 (6.3%)	143 (34.5%)
5. Do you feel you			
Are underpaid	196 (47.2%)	63 (15.2%)	156 (37.6%)
Are undervalued	215 (51.8%)	37 (8.9%)	163 (39.3%)
Receive appreciation for good work	75 (18.1%)	163 (39.3%)	177 (42.7%)

Note – Total will not add up to 100% because of multiple answers given by the study participants

problems of which personal harassment / discrimination and impersonal treatment constituted for 8% which seems to be high. Control: 6% of the study participants responded that they have no control on their work at all while only 45% replied that they are able to plan and execute their work accordingly. Pay and Benefits: Around 24% of them said that they are undervalued in their workplace and under paid than to their expectations, whereas 18% of them do not receive appreciation for good work (Table 2).

Distribution of work related stress (scoring among different socio demographic groups)

The figure depicts the mean scoring among gender, educational status and marital status. In this study men had more work related stress than women. Among educational groups professionals had less work related stress compared to Degree holder and those who studied up to higher secondary. Married persons had more work related stress than unmarried group in this study (Figure 1).

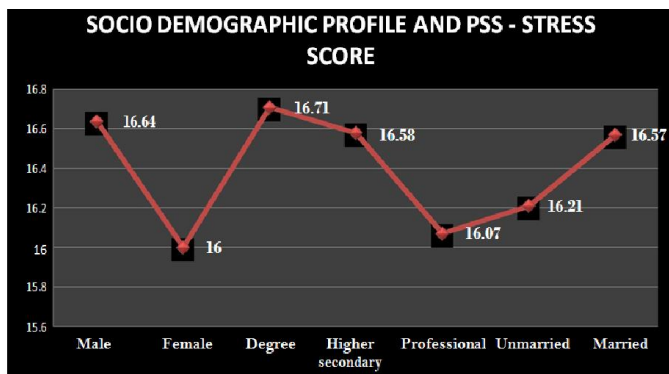


Figure 1. Occupational grouping versus PSS (Perceived stress scale) mean score

Overall mean stress score of the study participants was 16.44 and the occupational groups which showed maximum stress score was paramedical workers followed by teaching professionals, bank employees, policemen, medical professionals and IT workers (Figure 2).

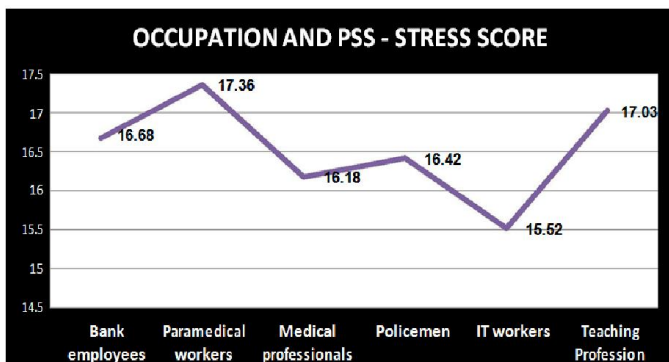


Figure 2.

Analysis

Data were entered in the MS excel sheet and the analysis was performed using SPSS – 17 software. The hypothesis testing was done using ANOVA mainly because most of the variable

was more than two groups. The groups were compared with mean stress scoring of PSS (perceived stress scale) – 10 item scale. The variables which showed statistical association with p value less than 0.05 were occupational status (paramedical and medical professionals) followed by teaching professions, poor meteorological environment (overcrowding), shift work, lack of control on work, long hours of work (Table 3).

Table 3. ANOVA Table showing association among socio demographic variables, Work environment versus Mean stress score (PSS – 10 item stress score)

Variable	F value	df	P value
Gender	3.387	413	0.066(NS)
Education status	1.856	412	0.158(NS)
Occupation status	2.677	409	0.021(S)
Marital status	1.193	413	0.275(NS)
Meteorological environment	4.409	412	0.013(S)
Overcrowding	4.036	412	0.018(S)
Shift work	4.116	412	0.017(S)
Inadequate break times between work	4.153	412	0.016(S)
Repetitive or boring work	6.877	412	0.001 (S)
Unable to plan the work	3.453	412	0.033 (S)

Statistical significance was not found with certain variables like gender, educational status, marital status, work relationship problems, job insecurity, under paid and undervalued.

DISCUSSION

This research study had estimated the moderately high burden of work related stress among different occupations. Among the occupations chosen for the study, medical and paramedical professionals showed more work related stress, but surprisingly IT professionals reported less stress compared than other occupations. At the same time, we cannot deny the over reporting of the negative working conditions which is also possible. Our study had explored the important work related factors like poor physical environment, shift work, inadequate break times, lack of control on their work, repetitive work and overcrowding associated with work related stress. Similarly a systematic review done in Netherlands by K. Nieuwenhuijsen *et al.* 2010, found out a strong evidence that high job demands, low job control, low co-worker support, low supervisor support, low procedural justice, low relational justice and a high effort reward imbalance predicted the incidence of stress related disorders. Studies on various other occupations in India especially among residential doctors showed 16% prevalence of moderate stress among clinical doctors than pre-clinical doctors (Khan *et al.*, 2013). Similarly a research study done on stress among police personnel by Collins *et al.* 2003 revealed high prevalence of stress and the predicted stressors were lack of control over work, poor work relations and urgent requests preventing planned work. A study on occupational stress among higher secondary school teachers by Lokanandha Reddy *et al.* 2013 revealed high stress of 18% and associated factors were long hours of work, insufficient salary, lack of independency in work, bullying and frightening by the students. Most of the studies both in developing and developed countries are showing the moderate to high prevalence of work related stress and some of the stressors were common to most the occupations. The common stressors were lack of control on work, poor relationships with seniors and colleagues, long

working hours, work life imbalance, work overload and job insecurity. The working population irrespective of geographic locations throughout the world is facing a lot of work related stress which demands that the health and safety of work force has to be first priority for the employers and also the government's policy. There were also studies showing that the work related stress will result in reduction in job performance and also lead to the development of stress related disorders (Kazi and Haslam, 2013). So it becomes mandatory that creating awareness on stress management among different occupations will also be helpful in protecting the mental health of work force.

Conclusion

Our study had explored the various aspects of ergonomics (occupational environment) including physical and psychosocial environment using a standardized questionnaire and measured the stress with PSS stress scale. The study showed the work related stress was moderately high among the different occupations and major factors (stressors) associated were meteorological environment and work life balance which suggests that we are far away from implementing the principles of ergonomics and keeping the work force stress free is mandatory to save them from developing stress related disorders.

Recommendations

There is a need for more research studies especially prospective studies rather than the cross sectional studies and referral of the persons showing high stress levels to the psychiatrist to diagnose the work related stress levels which can be attributed only or mainly to the physical or psycho social environment of the work place or the role of personality in development of stress

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