

Research Article

Study of prevalence of work related stress and co-morbidities and its effect on work performance in KSRTC workers of Dakshina Kannada district, Karnataka, India

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ABSTRACT

Background: Occupational stress is becoming a universal concern. It is no longer taken as a private problem that should be managed alone. Since it affects all categories of workers, it is currently considered an issue that needs to be tackled by the employer, industry and nation as a whole in order to not face a compromise in manpower and occupational productivity.

Methods: The present study was a cross sectional, community based descriptive study. A total of 248 KSRTC employees of Dakshina Kannada district were included as part of the study. A Pre structured and pre tested and validated questionnaire for socio-demographic details, the Indian Diabetes Risk Score (IDRS) questionnaire and the AIS (The American Institute of Stress) Workplace Stress Survey questionnaire were used for data collection.

Results: Majority of the employees were male and in the age range of 23-59 years. Using the Indian Diabetes Risk score, screening was done for diabetes and 19 cases were identified among the population. 55 cases of Hypertension were also identified and were referred to higher centers and started on treatment for the same. Almost all the study have stress of varying levels subjects had irregular eating habits, lack of exercise and lack of sleep. All the workers were found to have stress, with a majority of them using alcohol and tobacco as a means of coping with stress.

Conclusions: Very few studies have been conducted to assess stress levels in organized sectors in India and Karnataka. Hence the present study was undertaken to assess the stress levels and associated health disorders amongst the KSRTC workers of Dakshina Kannada district and to suggest suitable measures to improve occupational health, if necessary.

Keywords: Occupational health, Stress, Drivers, Cardiovascular disease, Obesity

INTRODUCTION

Occupational stress can be defined as “harmful physical and emotional responses that occur when job requirements do not match the capabilities, resources or needs of the worker”.¹

When an individual faces an imbalance in psychological and behavioral response needed to cope with stress, it can become a detrimental risk factor for health. Thus, stress can affect physical, mental and social well-being, with consequences for both the person and the society. Work related stress occurs most commonly when there is a disproportion between the workload and the productivity of the individual to meet those demands. Improper work

environment, management problems, relations with colleagues all contribute to the stress factor.

Associations between occupational stress and mental health are commonly made, despite the inability to show a direct association between the two. This is because; a majority of the diseases commonly ascribed to stress have multiple other causes. The effects of occupational stress on ill-health may be physiological, cognitive, emotional, behavioural or a combination of all four.

People employed in the road transport department, such as Karnataka State Road Transport Corporation (KSRTC) which is the largest public transport corporation in Karnataka, no matter which category they belong to, have specific obligations under the road transport legislation. The legal obligations placed on the different groups in the road transport industry vary. Depending on the type of work, workers in this sector stand the risk of developing musculoskeletal defects from long periods of sitting, injury while loading/unloading or through falls from heights while handling loads and also the risks of road traffic accidents.¹

Furthermore, irregular work timings may contribute to work-related stress along with bad eating habits, lack of adequate or continuous sleep, insufficient breaks for rest between shifts. Long working hours, separation from family and friends, inability to attend family and social events are among characteristic occupational drawbacks of most occupations, notably of the road transport sector.

The most common health problems faced by drivers are exhaustion, back pain, obesity, cardiovascular, musculoskeletal and respiratory diseases, stress owing to work factors, lack of exercise, unhealthy diet etc. Studies on occupational health are gaining importance as a significant tool in assessing the overall health of the society. There is paucity of data on stress factors and other morbidities among KSRTC workers in Karnataka. Hence this study was conducted in order to develop a better understanding regarding the working patterns of KSRTC workers and to determine the nature and extent of occupational stress and morbidity (if present) as there is lack of data related to it and it can act as a precursor for appropriate health programs and future studies on occupational health hazards.

Research question

Is there work-related stress in KSRTC employees, if yes, what's the nature and proportion?

Objectives

1. To evaluate stress and other risk factors in KSRTC workers
2. To study the working pattern and co-morbid conditions and its association with job related stress.

3. To evaluate the behavioural outcomes in these workers.

METHODS

The present study was a cross sectional, community based descriptive study. A total of 248 KSRTC employees of Dakshina Kannada district were included as part of the study. The purpose of the study was explained to the participants and written consent obtained from them before enrolling them in the study on a fixed camp day.

A pre structured and pre tested and validated questionnaire was used to obtain data on demographic profile, working condition, work related morbidity pattern and behavior profile including addictions.

The Indian Diabetes Risk Score (IDRS) questionnaire² was used to assess risk factors for Diabetes and Hypertension based on four simple questions and one anthropometric measurement i.e. waist circumference.

The AIS (The American Institute of Stress) Workplace Stress Survey questionnaire³ was used to assess the level of stress faced by each of these subjects and to know the degree of how well it is managed or not.

Patients with type I diabetes mellitus or any pre-existing neurotic disorders were excluded from the study.

The data collected was entered in Microsoft excel and analyzed on IBM SPSS statistics version 23.0. Descriptive statistics was used to determine mean and standard deviation for continuous variables like age while frequency and percentage were used for qualitative variables (gender, religion, education, marital status etc.). Fisher exact test was used to find out if there was any association between duration of working hours and stress levels among employees.

RESULTS

The present study was a cross sectional study conducted among KSRTC workers in Dakshina Kannada district.

Socio-demographic details

Majority of the employees were male (n=240, 96.7%) and they were in the age range of 23-59 years (Mean age=36 years) as shown in Table 1.

77.82% of our subjects were married. Hindus comprised 94.62% of the study sample. Most of the subjects had completed their secondary education (32.25%). Our study included all types of workers, yet drivers formed the majority (68.14%). About 32.68% of our study subjects had been working in their same respective profession for past 6 to 10 years.

Table 1: Age and sex-wise distribution of subjects.

Age group	Males	Females	Total
20-30 years	69	7	76
31-40 years	102	1	103
41-50 years	51	0	51
>51 years	18	0	18
Total	240	8	248

Daily working hours

83.06% of these workers had works shifts for not beyond 12 hours a day, with the remaining having shifts extending 12 hours per day on at least two occasions per week.

Among these workers, 49.19% had day shifts alone, 9.27% had night shifts alone and the remaining had to alternate between the two.

Indian diabetes risk score

IDRS is a screening questionnaire for diabetes which uses four risk factors: age, abdominal obesity, family history

of diabetes and physical activity. The score thus obtained is a simple way of identifying new, previously undiagnosed cases of diabetes in India and in a very cost effective manner.

Random blood sugar was assessed in those individuals having an IDRS score of >60. The cut-off of blood sugar was as according to the ADA guidelines, i.e. random blood sugar ≥ 200 mg/dl was considered significant.⁴

The study subjects were classified based on body mass index⁵ and the data was categorized.

As seen in Table 2, 61 (24.59%) out of 248 people screened for IDRS, had score >60. Among those screened positive for IDRS, 32 (52.45%) had normal BMI and 24 (39.34%) were overweight. 19 people were newly screened positive based on IDRS and elevated GRBS, of whom 18 (94.73%) were overweight. 22 out of 61 subjects with elevated IDRS had normal GRBS reading.

As seen in Table 3, 55 (22.17%) people screened positive for hypertension (3 separate readings taken 30 minutes apart). Among the newly diagnosed cases 27 (49.09%) were overweight. 16 of the newly diagnosed cases were having isolated systolic hypertension.

Table 2: Classification of diabetes status of subjects based on BMI and IDRS.

BMI		Underweight (<18.5)	Normal (18.5- 24.9)	Overweight (25-29.9)	Obese - I (30-34.9)	Obese - II (35- 39.9)	Total IDRS >60
Number screened		17	139	83	8	1	248
IDRS >60	Self-reported DM cases on treatment	-	5	6	0	0	11
	Pre-diabetic state	-	6	24	0	4	9
	Newly detected DM	-	1	18	0	0	19
	Normal GRBS	-	20	0	1	1	22

Table 3: Classification of hypertension status of subjects based on BMI.

BMI	Underweight (<18.5)	Normal (18.5- 24.9)	Overweight (25-29.9)	Obese - I (30-34.9)	Obese - II (35- 39.9)	Total
Number screened	17	139	83	8	1	248
Normotensive	17	110	51	4	1	183
Self-reported HTN cases on treatment	0	4	5	1	0	10
Newly detected HTN	0	25	27	3	0	55

Stress screening

The AIS (American Institute of Stress) Workplace Stress Survey questionnaire was used to assess whether stress was prevalent among the workers and if present, to find out how it was being handled by the workers. The study participants were asked to rate stress based on a 10-point scale ranging from 'strongly disagree' to 'strongly agree'. Each question was scored between 1 and 10. A total score

between 10 and 30 indicated good handling of job stress; between 40 and 60 indicated moderately well-handled job stress, and between 70 and 100 indicated that an employee was encountering problems that needed to be addressed and resolved.³ Accordingly we found that even though all of the subjects faced mild to moderate degree of stress, a majority (94.75%) were able to handle their stress well. The remaining 5.24% were doing so

moderately well. None of the subjects had severe problems that needed to be resolved.

Table 4: Daily working hours and ability to cope up with stress.

		Stress management		
Number of working hours per day		Effective stress coping ability	Moderate stress coping	Total
	<12 hours	199 (96.6%)	7 (3.4%)	206
	>12 hours	36 (85.7%)	6 (14.3%)	42
	Total	235 (94.6%)	13 (5.2%)	248

Fishers exact p value - 0.011, statistically significant

Behavioural outcomes

Dietary habits: 72.58% of our study subjects ate more often at eateries, hotels or food stalls outside and rarely consumed home-cooked food. A total of 70.96% of these reported that they had irregular eating habits and suffered from gastritis.

Substance abuse: 21.77% of the study participants admitted that they consumed alcohol regularly. 26.16 % used tobacco either in the chewable form or smoked it. 9.24% used a combination of the three (alcohol, tobacco, and cigarette/beedies).

Table 5: Substance abuse among the study subjects.

	Once a week	3-4 times a week	Daily	Occasionally	Total (n %)
Alcohol	2	20	8	24	54 (21.77)
Smokeless tobacco	0	4	35	2	41 (16.53)
Cigarette/Beedi	0	0	25	0	25 (10.08)

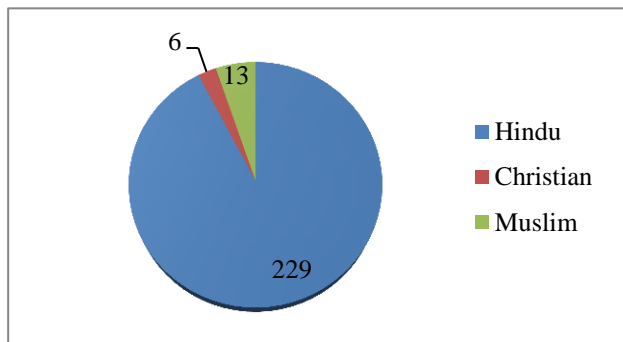


Figure 1: Distribution of subjects based on religion.

Figure 2: Distribution of study subjects according to educational status.

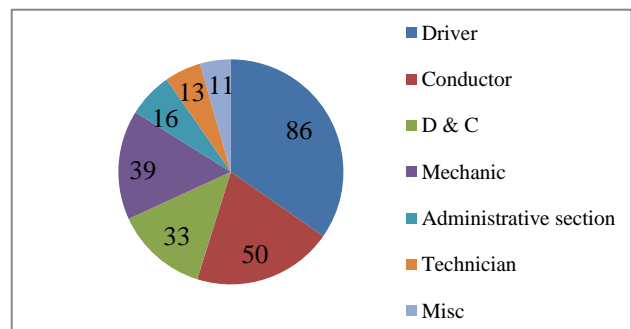
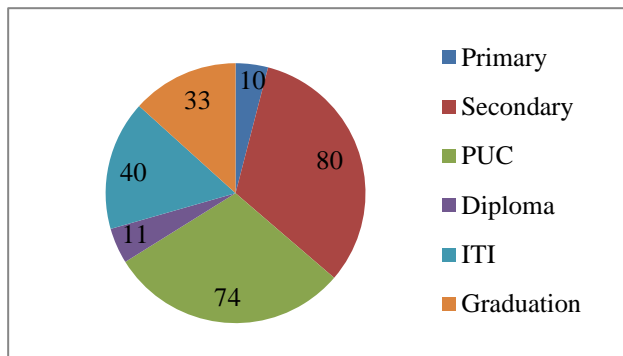


Figure 3: Distribution of subjects based on occupation.



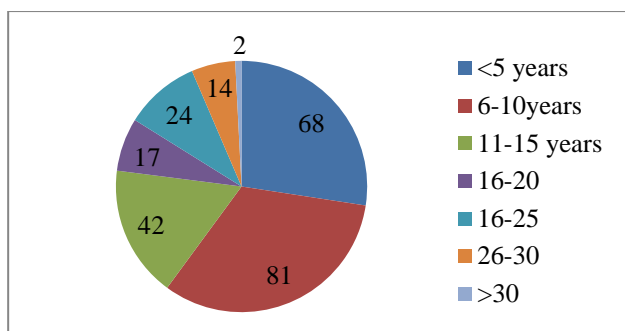


Figure 4: Duration served in their respective occupation.

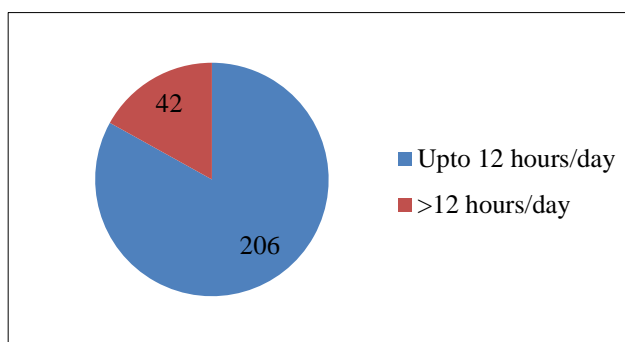


Figure 5: Working hours of study subjects.

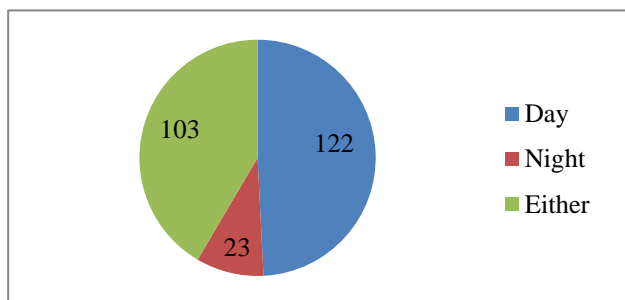


Figure 6: Work shift of study subjects.

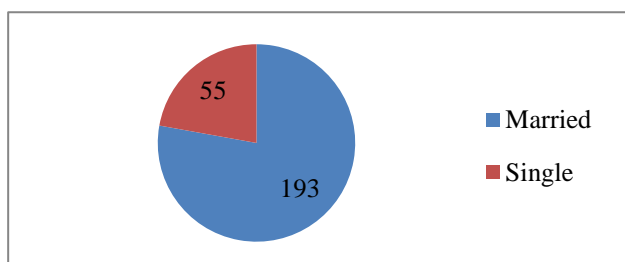


Figure 7: Marital status.

DISCUSSION

Workplace stress whether continuous or repetitive can become a trigger for many diseases be it cardiovascular disorders, obesity, asthma, gastritis, peptic ulcers, joint problems and certain psychological and psychiatric manifestations.

Among the workers, 49.19% had day shifts alone, 9.27% had night shifts alone and the remaining had to alternate between the two. Hence most of our study subjects ate outside more often than at home. Our study also found that these individuals suffered from gastritis due to their irregular eating habits. Many cases of stomach and duodenum disease in drivers and conductors have been found in a study done by Norman et al., which might be due to the exhausting working conditions and irregular schedules of bus drivers.⁶ Another factor which may be contributory is the seated posture for long duration. This relaxes the abdominal muscles which along with the spine curvature, is unfavorable for digestion.

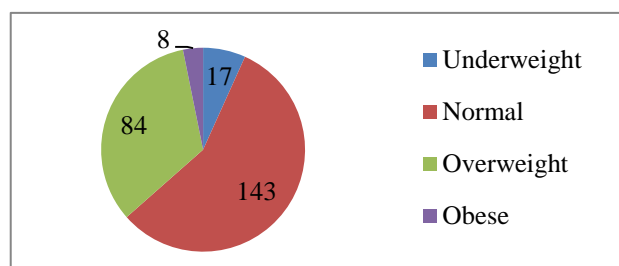


Figure 8: BMI of the study subjects.

Psychological health

Worse is, when stress is followed by behavioral changes such as the use of alcohol and drugs and a decrease in work performance.^{7,8} This is in accordance with the findings of Anisman H et al. and Tansey TM et al. in two different settings. In our study we found that even though all of our subjects faced mild to moderate degree of stress, none of them had severe problems, or at least they did not admit it probably due to fear of losing their job if the authorities ever came to know.

Health factors, along with personal and job-related characteristics can influence productivity of the employee.⁹⁻¹³

Co-morbidities

57.66% of the subjects were in the range of normal BMI, followed by 33.87% in the overweight category. Obesity as a risk factor for cardiovascular disease is a major concern among workers in the transport sector due to irregular dietary habits, sedentary nature of work, which is usually accompanied with substance abuse. According to a study done by Morris et al. drivers were twice more likely to die from cardiovascular disease due to mental strain and the sedentary nature of work.¹⁴ Other contributory factors include shift work, increased exposure to traffic and noise, tight time schedules and extended contact to noxious exhaust from other vehicles like carbon monoxide, sulphur dioxide and nitrogen oxides. Ragland et al in their study on drivers showed that the incidence of hypertension was more among drivers than the general population.¹⁵

Behavioural outcomes

Alcohol use - Alcohol use is prevalent among most of the population as a means of coping with work-related stress. Ragland et al reported in their study that they found a positive association between the number of years in the profession and the average weekly alcohol use.¹⁶

Tobacco use - It has been shown that for most people, smoking is a way of relieving stress. But, studies show that increased smoking is followed by increased levels of strain depending on the working conditions.¹⁷

21.77% of our study participants admitted that they consumed alcohol regularly as a means of coping with job related stress. 26.16% used tobacco either in the chewable form or smoked it. Only 9.24% admitted to using a combination of the three (alcohol, tobacco, cigarette/beedies).

CONCLUSION

Studies on occupational health, especially those on drivers, even though varying in nature, are fairly similar with respect to their findings. The factors causing stress are age, occupation, marital status, socioeconomic status, alcohol consumption or other substance abuse and associated health problems owing to fatigue, tension and lack of sleep.

Implementation of stress prevention programs at workplace is the need of the hour. These are largely dependent on proper planning and communication between the employees and the employer. The organizational staff (management) should employ means to ensure that the workers are able to manage their work stress effectively so that the occupational productivity, but more importantly the workers' health is not compromised.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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