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Impact of Land Transportation Systems on Health and Well-being: Challenges for Public Transport Bus Drivers

[1]Dr. Ritesh P Kundap, Associate Professor, Department of Community Medicine, Great Eastern Medical College, Ragol (AP)

[2]Dr. Bhagwant Payghan, Professor, Department of Community Medicine, Dr Vitthalrao Vikhe Patil Foundations Medical College, Ahilyanagar, Maharashtra

[3]Dr. Swapna S Kadam, Professor, Department of Community Medicine, Dr Vitthalrao Vikhe Patil Foundations Medical College, Ahilyanagar, Maharashtra

[4]Dr. Vijay B Patil, Professor & HOD, Department of Forensic Medicine, Dr Vitthalrao Vikhe Patil Foundations Medical College, Ahilyanagar, Maharashtra

Corresponding Author: Dr. Swapna S Kadam, Professor, Department of Community Medicine, Dr Vitthalrao Vikhe Patil Foundations Medical College, Ahilyanagar, Maharashtra

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Abstract

Background: Bus driving as a profession is associated with unique health challenges, including physical, psychological, and lifestyle-related issues. The sedentary nature of driving, coupled with exposure to traffic congestion, air and noise pollution, and the stress of adhering to demanding schedules, poses significant risks to drivers' physical and mental health.

Objectives: To study the health and morbidity pattern in bus drivers and to study the proportion of depression, anxiety and mental stress among bus drivers.

Methodology: An observational cross-sectional study with universal sampling was conducted at the State road transport corporation depot in a district headquarter. Total 175 ST drivers were interviewed and examined using validated proforma, Mental health assessment (depression, anxiety, stress) using the DASS-21 scale. Data obtained was analysed.

Result: Bus drivers ranged from 25-58 years (mean age 43.59, SD=8.62 years) . All were literate, and a majority worked 48 hours per week, with 60% having night shifts and a significant number spending extended periods away from home. The most prevalent morbidity was Obesity, chronic lumbar pain (33.14%), followed by hypertension (32%) and acid peptic disease (27.42%). Many were addicted to chewing tobacco, with some also using alcohol and smoking. Mild to severe depressions (21%) & mild to moderate anxiety and mental stress (33%) observed here. A statistically significant association was found between year of service with hypertention, low back pain and depression.

Conclusion: Working as bus drivers has several health risks. A large proportion of these health risks are

attributable to stress related disorders. In depth research, using cohort study design, is needed to confirm results and recommend interventions targeting the most tedious and harmful working conditions.

Keywords: Musculoskeletal defects, bus drivers, low back pain, DASS scale, occupational hazards

Introduction

The development of land transportation systems has been pivotal in revolutionizing social and economic interactions, facilitating faster communication and efficient movement of goods and people. Despite their benefits, these systems have also brought significant drawbacks, such as air and noise pollution, urban stress, declining air quality and increased road accidents. These issues are particularly pronounced in developing nations like India, where rapid urbanization and a surge in vehicle numbers exacerbate the situation.

Due to these workplace and environmental risks, Globally, bus drivers are recognized as one of the most diseased occupational groups[1,2]. These risks encompass organizational factors such as irregular and extended work hours, weekend shifts, night shifts, and split shifts[3]. Additionally, the physical demands of the job include repetitive motions, prolonged periods of awkward seating, and the need to assist passengers with disabilities[4,5]. The work environment is also stressful due to the demands of driving, as well as varying traffic and weather conditions, which further contribute to safety concerns, including the risk of accidents and conflicts with other road users or passengers. Furthermore, bus drivers are exposed to multiple physical, chemical, and biological hazards, including noise, vibration, air pollution etc[1]. These occupational exposures can lead to a variety of health issues, such as respiratory conditions like lung cancer, cardiovascular diseases, gastrointestinal problems, hearing loss, musculoskeletal disorders, mental health challenges, sleep disturbances, and fatigue[3,4,5]. For bus drivers, who form a critical part of the public transport sector in countries like India, these challenges are compounded by occupational hazards and health risks, many of which remain under-addressed in public health and occupational safety policies.

Health Risks Associated with Bus Driving

Bus driving as a profession is associated with unique health challenges, including physical, psychological, and lifestyle-related issues. The sedentary nature of driving, coupled with exposure to traffic congestion, air and noise pollution, and the stress of adhering to demanding schedules, poses significant risks to drivers' physical and mental health. Commonly reported health problems among bus drivers include:

1. **Cardiovascular Diseases**: literature indicate a higher prevalence of cardiovascular conditions, including hypertension, among professional drivers. Factors such as low physical activity, poor dietary habits, smoking, tobacco chewing and obesity contribute to this higher risk. Many drivers could not get nutritious food due to limited access to nutritious meals during long work hours.
2. **Musculoskeletal Disorders**: Prolonged sitting, poor posture, and exposure to vibration in vehicles are the major contributors to back pain, neck pain, and other musculoskeletal issues. These conditions often go untreated due to the demanding nature of the job, exacerbating discomfort and disability over time.
3. **Psychological Stress and Mental Health Issues**: The high levels of occupational stress faced by bus drivers make them vulnerable to mental health problems, including anxiety, depression, and substance abuse. Stress arises from managing traffic, meeting tight schedules, and dealing with passengers, which can lead to burnout and psychological distress.

The lack of access to mental health resources further worsens these issues.

4. **Lifestyle Challenges**: Long hours on the road mean that drivers often sacrifice exercise and healthy eating. Many spend extended hours away from home, relying on roadside food outlets and sleeping in their vehicles, leading to irregular routines and unhealthy habits.
5. **Substance Abuse**: In some cases, drivers resort to smoking, alcohol consumption, or other substances to cope with the pressures of the job. Studies have shown a high prevalence of tobacco and alcohol use among this group, further increasing the risk of chronic diseases.

Occupational and Systemic Challenges

The health risks faced by bus drivers are exacerbated by systemic issues within the transportation sector. These include:

1. **Poor Working Conditions**: The working environment for bus drivers has deteriorated over the past two decades, due to increasing traffic congestion, tighter schedules, and inadequate infrastructural support. These factors lead to higher stress levels and increased health risks.
2. **Lack of Preventive Measures**: Preventive health strategies, such as routine medical check-ups and workplace wellness programs, are often lacking. Drivers rarely have access to health promotion initiatives that could help mitigate the risks associated with their occupation.
3. **Limited Access to Healthcare**: Due to the nature of their work, drivers often find it challenging to access traditional healthcare services. This results in delayed diagnosis and treatment of chronic conditions.
4. **Insufficient Research**: Despite the significant health challenges faced by bus drivers, limited research has been conducted on their occupational health, particularly in developing countries like India. Mental health, in particular, remains an area of neglect.

Broader Impacts on Society

The health problems of bus drivers have far-reaching implications, not just for the individuals affected but also for public safety and societal well-being. Cardiovascular events or mental health crises among drivers can endanger passengers, other road users, and pedestrians. Furthermore, absenteeism, loss of productivity, and premature retirement due to health issues impose significant economic costs on society.

Hence the study was planned to review the evidence on the health problems of bus drivers and to make recommendations for a significant improvement in the health status of this group of professionals. The present cross-sectional study was aimed to investigate the morbidity patterns, with a specific emphasis on mental health, among bus drivers employed by a State Transport Corporation.

Methodology

This observational cross-sectional study with universal sampling technique was planned and conducted at the Maharashtra State Road Transport Corporation bus depot in a district headquarter. The study objectives were to study the health and morbidity pattern in bus drivers and to study the proportion of depression, anxiety and mental stress among bus drivers.

An approval for conducting the study was obtained from Institutional ethics committee. Permission was obtained from the state road transport authority and a list of all registered bus drivers at the selected depot was acquired. After explaining the study protocol, drivers were invited to participate. All registered bus drivers who provided informed consent were included, while those unwilling to

participate or unavailable due to extended leave during the study period were excluded. Ultimately, 175 male bus drivers were included and 16 excluded.

A pilot study was conducted to pretest and refine the proforma. Data collection involved personal interviews and clinical examinations by using the pretested validated proforma, approved by the Institutional Ethics Committee. Primary predictors included driving duration, night duties, driving hours, addictions, and dietary habits. Detailed information was gathered on demographic variables, socioeconomic status, medical history, and psychosocial factors. Demographic details such as age, gender, religion, and literacy were documented, with literacy categorized from illiterate to postgraduate levels based on educational attainment. Physical signs such as pallor, icterus, cyanosis, and clubbing were assessed. Health parameters such as height, weight, blood pressure etc measured and specific morbidities assessed. Height was measured in a standing position without shoes, rounded to the nearest 0.5 cm, and weight was recorded using a portable weighing scale, standardized weekly, with results noted to the nearest half kilogram. Nutritional status was evaluated using Body Mass Index (BMI), calculated as weight in kilograms divided by height in meters squared. Blood pressure was measured thrice, following standard procedures, with the lowest reading recorded. Blood pressure was measured on the right upper arm in a seated position using a sphygmomanometer, following standard procedures to ensure accuracy. Systolic and diastolic blood pressures were recorded, and individuals were classified as hypertensive based on WHO criteria.

Each participant also underwent a detailed systemic examination using standard clinical methods, including inspection, palpation, percussion, and auscultation. Observations of morbidities were recorded for various systems. Mental health assessment included evaluating depression, anxiety, and stress using the DASS-21 scale, which measures emotional states across three domains. The scale, translated into local language and validated, was administered to assess levels of dysphoria, autonomic arousal, and chronic stress. Scoring categorized severity into normal, mild, moderate, severe, or extremely severe levels[6].

Participants identified with mental health or physical morbidities were referred to specialized outpatient services for further management.

Outcome indicators were the prevalence of hypertension, low back pain, depression, anxiety, and stress. Statistical analysis used percentages and the chi-square test, considering a p-value of ≤ 0.05 as significant. The study highlighted cumulative morbidities observed in the bus drivers, contributing to insights into occupational health.

Results

The research comprehensively examined the demographic profile, work conditions, health status, and associated risk factors among bus drivers. Observations were categorized based on various parameters.

The study population comprised male bus drivers aged 25 to 58 years. The mean age was 43.59(SD=8.62) years. The majority (20.57%) were aged 50-55 years, followed by 19.43% in the 45-50 years group, while the youngest group (6.29%) was aged 25-30 years. All 175 bus drivers were literate. Most (61.69%) had completed secondary education, while 26.28% had studied up to high school. A smaller proportion had attained graduate-level education (8%) and middle school education (4%).

As per table no 1, on an average, 60% of drivers worked up to 48 hours per week. A significant proportion (22.28%) worked 48-60 hours, while 17.71% exceeded 60 hours per week. Regarding night shifts, 30.86% of drivers reported no night duty during the preceding week,

while 20.57% worked night shifts twice a week, and 20% worked three times a week. A smaller group (5.14%) had night shifts six times a week. The frequency of job-related absences revealed that 58.29% of drivers spent 11-15 days away from home monthly. A further 14.86% spent 16-20 days away, and 13.71% were away for 21-25 days per month.

Out of 175 drivers, 46 (26.18%) were hypertensive based on examination, and an additional 10 drivers were known hypertensive and on treatment. Including treated individuals, the total prevalence of hypertension was 32%. Hypertension rates increased with obesity, as 59.75% of pre-obese and 80.96% of Class 1 obese drivers had hypertension. Drivers with a BMI ≥25 had a 3.3 times higher risk of developing hypertension compared to those with a BMI <25.BMI analysis showed that 3.43% of drivers were underweight, 44% were pre-obese, and 12% were classified as Class 1 obese. Only 1.14% were in the Class 2 obese category, while 39.43% had normal BMI. (Table2) The prevalence of obesity was associated with increased rates of hypertension. Among the bus drivers having normal BMI, 31(44.93%) have hypertension while among pre obese bus drivers, 36(59.75%) were having hypertension. 17 (80.96%) of class 1 obese patients were having hypertension.

A significant proportion of drivers (35.42%) chewed tobacco, while 16.57% consumed both tobacco and alcohol. A smaller group (5.14%) reported using tobacco, alcohol, and smoking. (Table2). Among tobacco users, 45.45% consumed one packet daily, and 39.09% consumed half a packet daily.

Depression, Anxiety and Mental Stress levels of drivers as per DASS scale are shown in table no 4. Out of 175 bus drivers ,139 (78.98%) were not having depression. 20 (11.36%) bus drivers were having mild depression. 13(7.39%) bus drivers had moderate depression while 1 (0.57%) had severe depression. 3(1.70%) were suffering from extremely severe depression. Most drivers (80.57%) showed no signs of anxiety, while 10.28% had mild anxiety, and 6.28% experienced moderate anxiety. Severe and extremely severe anxiety were reported in 1.14% and 1.71%, respectively. Regarding mental stress, 58.28% of drivers were stress-free, while 17.14% had mild stress and 19.42% showed moderate stress level. Severe mental stress was observed in 3.42% of participants.

The most prevalent morbidity was chronic lumbar pain (33.14%), followed by hypertension (32%) and acid peptic disease (27.42%). Other issues included knee joint pain (12.75%), diabetes mellitus (4.98 %), neck pain (4.57%), shoulder pain (3.42%), and lipoma (2.8%).

Association between work experience and some risk Factors is shown in Tables no 4 -8

The table 4 shows that there is significant association between obesity (BMI ≥ 25) and hypertension. Among 100 bus drivers having BMI≥25, 34 (34%) had hypertension and 31(31%) had pre hypertension while among the 75 bus drivers having BMI<25, 12(16%) had hypertension and 22(29.33%) had prehypertension. The Odds of getting hypertension in study participant with BMI≥25 is 3.3 times more than those with BMI<25. (OR=3.319, 95% confidence interval 1.495 to 7.371).

As per table 5, there is highly significant association between year of service and hypertension. Hypertension increases with increase in working years. (p=0.004).

It shows that there is no significant association between low back pain and years of service. (p=0.07) as well as total working hours (p value = 0.5796)

It also shows that proportion of depression is significantly less in drivers working more than 20 years than those drivers working since less than 20 years. There is inverse relationship between depression and

work experience *(p = 0.02609).* No significant association was found between anxiety and working hours. *(p = 0.2115)*

The table 6 shows that there is no significant association between hypertension and mental stress in the present study (*p = 0.4606*). Statistically significant association was found between low back pain and depression (*p =0.01202.)*

Prolonged absences from home, poor working conditions, and limited access to homemade meals contributed to unhealthy dietary habits and associated morbidities. The prevalence of acid peptic disease is significantly higher among those drivers who used to eat outside i.e. hotels, restaurant etc than those who take meal from home. A statistically significant association was found between eating outside and acid peptic disease. (*p= 0.04661)*

Bus drivers reported poor rest room facilities, with no beds available, forcing them to sleep on the floor. Sanitation facilities were inadequate, and recreational facilities were absent. Poor bus maintenance, non-adjustable driver seats, and lack of proper cushioning contributed to physical discomfort.

Discussion

The present cross-sectional study aimed to investigate the morbidity patterns, with a specific emphasis on mental health, among bus drivers employed by a State Transport Corporation. The findings of this study are discussed below, with comparisons to similar research studies conducted in different contexts.

The age of bus drivers in the study ranged from 25 to 58 years, with the majority (20.57%) falling within the 50-55 age group. The mean age was 43.59 years. This is consistent with studies by Kartikeyan et al.[7] and Gadekar et al.[8], where drivers were mostly between 40 and 50 years old. These studies suggest that bus drivers tend to be middle-aged, possibly due to the nature of the profession and job requirements. Similar finding was reported by Aclen Ozder et al[9] in a study conducted in Turkey average age of bus drivers was 43.08 ± 5.41 years. Study by Kartikeyan et al[7] in Thane district of Maharashtra reported 31.34% study subject were above 41 yrs. A study by Arjun Lakshman et al[10] conducted in Kozhikode & by Gadekar et al[8] in Nanded Bus Depot, by H. Nasri et al[11] where study was at Kerman, Iran & in study conducted by Bawa and Shrivastav et al[12] in Mumbai. Results of these studies are comparable with the present study. The slight difference may be due to difference in age criteria by different employer.

In terms of literacy, all bus drivers in the study were literate, with the majority (61.69%) educated up to secondary school. This is similar to the findings of Issever et al[13], Arjun Lakshman et al [10], Gadekar et al [8], Bawa and Shrivastav[12], who reported high literacy rates among bus drivers, though there were variations in education levels. These differences may be due to regional or employer-specific educational standards.

The study found that most drivers (60%) worked up to 48 hours a week, with a small portion (17.71%) working over 60 hours. Similar trends were observed in studies by Bathija et al.[14] (in Hubali, Karnataka) and Bawa & Shrivastav[12] (in Mumbai), who also found that many drivers worked long hours. Such work schedules could contribute to physical and mental health challenges.

The frequency of night duties and time spent away from home were also analysed. A significant portion of drivers (30.86%) had no night duties, while some had night shifts up to six times a week. Regarding time spent away from home, 58.29% of drivers reported staying away for 11-15 days per month, aligning with findings from Sieber et al.[15]and Bathija et al.[14]. These irregular schedules might

negatively affect drivers' family life and overall well-being.

Obesity was prevalent among drivers, with 44% categorized as pre-obese. Studies by Hirata et al.[16] and Aclen Ozder et al.[9] similarly reported high obesity rates among transport drivers. This was linked to hypertension, with 32% of bus drivers being hypertensive, consistent with findings by Arjun Lakshman et al.[10] and Saberi et al.[17] Additionally, 33.14% of drivers reported low back pain, comparable to Deborah Alperovitch-Najenson et al.[18], who found 45.4% prevalence among urban bus drivers.

Mental health issues such as depression and anxiety were also examined. The study found 11.36% of bus drivers experienced mild depression, with 10.23% having mild anxiety. These rates were lower compared to studies by Issever et al.[13]and Ruiz Grosso P [19], who found higher prevalence rates of anxiety and depression in bus drivers. The study's lower depression rates may be due to differences in measurement scales. Work experience appeared to have an inverse relationship with depression, with more experienced drivers experiencing less depression, a finding consistent with Arjun Lakshman et al.[10].

Addiction to substances like tobacco and alcohol was notable, with 35.42% of drivers addicted to chewing tobacco. This aligns with findings from Kartikeyan et al.[7], Arjun Lakshman et al.[10] and Bathija et al.[14], who found varying rates of addiction among bus drivers. This suggests a need for interventions to address these habits.

The study explored various associations, including the link between work experience and hypertension, which was found to be significant. This echoes results from Arjun Lakshman et al.[10], where longer work experience was associated with higher hypertension rates. However, no significant association was found between hypertension and mental stress, similar to findings by Arjun Lakshman et al.[10] and some other studies[20,21,22]. Additionally, the study found no significant association between low back pain and work hours, a conclusion that contrasts with some previous research.

Overall, the study highlights that bus drivers face significant health challenges, including obesity, hypertension, low back pain, and mental health issues such as depression and anxiety. These results are comparable with existing literature, suggesting that bus drivers are at higher risk for various health problems due to their work schedules and lifestyle. More focused health interventions are needed to address these issues in this population.

Recommendations

Addressing the health and well-being of bus drivers requires a multipronged approach involving policy reforms, workplace interventions, and public health initiatives. Key recommendations include:

1. **Promoting Healthy Lifestyles**: Encouraging drivers to adopt healthier habits, such as balanced diets, regular exercise, and smoking cessation, is crucial. Employers can support these efforts by providing nutritious meals, fitness facilities, and educational programs.
2. **Improving Working Conditions**: Reducing traffic congestion and ensuring realistic schedules can help alleviate stress. Investing in ergonomic seating and vehicle designs can minimize musculoskeletal strain.
3. **Regular Health Check-Ups**: Routine medical examinations can aid in early detection and management of chronic conditions. Mobile health units and on-site clinics could be particularly beneficial for drivers with limited access to healthcare.

4. **Mental Health Support**: Providing mental health resources, such as counseling services and stress management programs, can help drivers cope with the psychological demands of their job.
5. **Comprehensive Research**: More studies are needed to understand the health risks faced by bus drivers, particularly in low- and middle-income countries. This research should inform targeted interventions and policy changes.
6. **Public Awareness Campaigns**: Raising awareness about the challenges faced by bus drivers and their impact on public safety can encourage stakeholders to prioritize occupational health in the transportation sector.

Conclusion

The state transport Bus drivers play an essential role in maintaining the functionality of urban and intercity transport systems. However, their health and well-being are often overlooked, resulting in significant personal and societal costs. Addressing the occupational health challenges faced by this group requires a concerted effort from policymakers, employers, and healthcare providers. By implementing targeted interventions and fostering a supportive work environment, we can improve the health outcomes of bus drivers, enhance public safety, and promote the overall sustainability of the transportation sector.

Limitations

The present study has following limitations. Firstly, the study design is cross-sectional nature and to confirm the results in-depth research with cohort study design is required with adequate follow up. It has been conducted in a single center and only in a state transport corporation workers, while the private companies catering public transport are also a major service providers with major chunk of workers. Hence secondly, the single city and only government sector subjects limit the generalizability of the findings.

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Legend Tables

Table 1: Distribution of Drivers as Per Working Conditions

Duty hours (Per Week)	Number of drivers	Percent
Up to 48	105	60%
48.1 – 60	39	22.28 %
60.1 -72	31	17.71 %
Night Duty(Per Week)	Number of drivers	Percent
0	54	30.86%
1	23	13.14%
2	36	20.57%
3	35	20.00%
4	14	8.00%
5	4	2.29%
6	9	5.14%
Days Stayed Away from Home In Previous Month	Number of drivers	Percent
0 -5	18	10.29%
6-10	5	2.86%
11- 15	102	58.29%
16- 20	26	14.86%
21-25	24	13.71%
Total	175	100.00%

Table 2: Distribution of Study Subjects as Per Comorbidities & Habbits

Classification	Number of drivers	Percent
Normal	76	43.43%
Prehypertension	53	30.29%
Stage 1 Hypertension	37	21.14%
Stage 2 Hypertension	9	5.14%
Obesity -Classification(Range)	Number of drivers	Percent
Underweight (<18.50)	6	3.43%
Normal (18.50-24.99)	69	39.43%
Pre obese (25.00-29.99)	77	44.00%
Obese >/= 30.00	23	13.14%
Habbits	Number of drivers	Percent

Only Chewing Tobacco	62	35.42%
Only Alcohol	9	5.14 %
Only Smoking Tobacco	1	0.57%
Misri	2	1.14%
Gutakha	2	1.14%
Chewing Tobacco + Alcohol	29	16.57%
Chewing Tobacco + Smoking +Alcohol	9	5.14%
Non Addicted	61	34.85%
Total	175	100%

Table 3: Proportion of Depression among Study Population Using Dass Scale

Depression Level	Range	Number of drivers	Percent
Normal	0-4	139	78.98%
Mild	5-6	20	11.36%
Moderate	7-10	13	7.39%
Severe	11-13	1	0.57%
Extremely Severe	14+	3	1.70%
Anxiety level	Range	Number of drivers	Percent
Normal	0-3	141	80.57%
Mild	4-5	18	10.28%
Moderate	6-7	11	6.28%
Severe	8-9	2	1.14%
Extremely severe	10+	4	1.71%
Mental Stress Level	Range	Number of drivers	Percent
Normal	0-7	102	58.28%
Mild	8-9	30	17.14%
Moderate	10-12	34	19.42%
Severe	13-16	6	3.42%
Extremely Severe	17+	3	1.71%
Total		175	100.00%

Table 4: Association Between Hypertension And Obesity

Obesity	Hypertension	Pre Hypertension	Normal	Total
BMI≥25	34 (34%)	31 (31%)	35 (35%)	100 (100%)

BMI<25	12 (16%)	22(29.33%)	41(54.66%)	75(100%)
Total	46(26.28%)	53 (30.28%)	76(43.42%)	175 (100%)
χ^2 = 8.50164 df = 2 p value = 0.00355				

Table 5: Association between Years of Service and Some Risk Factors

Years Of Service	Hypertension present	Hypertension absent	Total	P value
<10	4 (13.79%)	25 (86.20%)	29(100%)	χ^2 : 12.94
11-20	5 (9.09%)	50 (90.90%)	55(100%)	d.f : 3
20-30	23 (31.94%)	49 (68.05%)	72(100%)	p –value :
30 +	7(36.84%)	12 (63.15%)	19(100%)	0.004769
Total	39(22.28)	136 (77.71%)	175(100%)	
Years Of Service	Low back pain present	Low back pain absent	Total	
More than 10 years	45 (30.82%)	101 (69.17%)	146 (100%)	χ^2= 2.142
Less than 10 years	13 (44.82%)	16 (55.17%)	29 (100%)	d.f. = 1
Total	58 (33.14%)	117(66.85%)	175(100%)	P value = 0.07171
Years Of Service	Depression Yes	Depression No	Total	
Above 20 years	14(15.38%)	77(84.61%)	91(100%)	χ^2= 3.77
Below 20 years	23(27.38%)	61(72.61%)	84(100%)	d.f. =2
Total	37(21.14%)	138(78.85%)	175(100%)	p value = 0.02609
Working hours	Anxiety Present	Anxiety Absent	Total	
>48	11(16.41%)	56(83.58%)	67(100%)	χ^2 = 0.6419
Up to 48	24(22.22%)	84(77.77%)	108(100%)	d.f. = 1
Total	35(20%)	140(80%)	175(100%)	p value = 0.2115
Working hours	Low Back Pain Present	Low Back Pain Absent	Total	
60-72	11 (34.37%)	21(65.62%)	32(100%)	χ^2 = 1.091
48-60	14 (40%)	21(60%)	35(100%)	d.f. = 2
< 48	33 (30.55%)	75(69.44%)	108(100%)	p value = 0.5796
Total	58(33.14%)	117(66.85%)	175(100%)	

Table 6: Association between Hypertension and Mental Stress

Mental stress	Hypertension		Total
	Yes	No	
Yes	16 (21.91%)	57(78.08%)	73(100%)
No	23(22.54%)	79(77.45%)	102(100%)
Total	39(22.28%)	136(77.71%)	175(100%)
χ^2= 0.009788 d.f. = 1 p value = 0.4606			

Table 7: Association of Low Back Pain and Depression

Low back pain	Depression		Total
	present	absent	
Present	18(31.03%)	40(68.96%)	58(100%)
Absent	19(16.23%)	98(83.76%)	117(100%)
Total	37(21.14%)	138(78.85%)	175(100%)
χ^2: 5.091 d.f. =1 p value= 0.01202			

Table 8: Association between Eating Outside Food and Acid Peptic Disease

Eating Outside	Acid Peptic Disease Present	Acid Peptic Disease Absent	Total
Eating Outside >15 Days	23(35.38%)	42(64.61%)	65(100%)
Eating Outside <15 Days	20(22.98%)	67(77.01%)	87(100%)
Total	43(28.28%)	109(71.71%)	152(100%)
χ2: 2.818	d.f.= 1	P value: 0.04661	