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Original Research Article

HEALTH RISKS AND LIFESTYLE BEHAVIOURS AMONG TRANSPORT WORKERS IN KADAPA: EVIDENCE FROM MEDICAL CAMP DATA

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ABSTRACT

Background: Transport workers, especially drivers, are at risk of multiple health problems due to long working hours, irregular routines, sedentary habits, and exposure to stress. These occupational and lifestyle factors increase the likelihood of obesity, hypertension, diabetes, cardiovascular disorders, and substance use. **Objectives:** This study aimed to assess the prevalence of major health risks and lifestyle behaviours among transport workers in Kadapa, Andhra Pradesh.
Materials and Methods: A community-based cross-sectional study was conducted over six months among 212 transport workers who attended medical camps. Data on demographic characteristics, anthropometric measures, clinical parameters, and lifestyle habits were collected using structured tools. Standard health assessments and physician evaluations were carried out. Data were analyzed using descriptive statistics, Chi-square tests, and t-tests.
Results: Overweight (37.7%) and obesity (22.2%) were highly prevalent, while 30.2% of participants were hypertensive and 12.3% had diabetes or impaired glucose tolerance. Substance use was also common, with 35.4% consuming alcohol and 31.1% smoking. Vision impairment was documented in 32% of participants, and nearly one-fourth showed ischemic changes on ECG. Correlation analysis revealed that cholesterol levels were positively associated with both BMI ($r = 0.182$, $p = 0.004$) and age ($r = 0.301$, $p < 0.001$).
Conclusion: Transport workers in Kadapa exhibit a significant burden of non-communicable diseases and lifestyle-related risks. Although many associations did not reach statistical significance, clear trends suggest that drivers are particularly vulnerable. Regular health screening, lifestyle counselling, and workplace wellness initiatives are recommended to reduce morbidity in this group.
Keywords: Transport workers; Occupational health; Hypertension; Diabetes mellitus; Lifestyle risk factors; non-communicable diseases.

INTRODUCTION

Transport workers, especially drivers and logistics staff, are exposed to a broad range of health risks due to the demands of their occupation. Their daily routines often involve prolonged periods of sitting, disrupted circadian rhythms, irregular meal patterns, limited physical activity, and elevated occupational stress. These factors collectively increase their likelihood of developing chronic health conditions, including obesity, hypertension, diabetes mellitus, cardiovascular disease, musculoskeletal complaints, and substance dependence.

Apostolopoulos et al. reported that professional drivers show a higher prevalence of cardiovascular disease and obesity compared to the general population, largely attributed to sedentary work and lifestyle constraints.[1] Similar findings from Indian studies indicate elevated rates of hypertension and metabolic disorders among commercial drivers, linked to poor dietary habits and minimal physical exercise.[2] Sleep-related issues, which have been identified as independent predictors of cardiometabolic complications, further worsen the health burden in this group.[3]

Long-haul drivers, in particular, face additional hazards such as musculoskeletal disorders. Lemke et al. highlighted that repetitive exposure to poor ergonomics and inactivity predisposes this workforce to back and joint pain,[4] while Batt et al. observed that chronic lower back and cervical discomfort are frequent complaints in professional drivers.[5] In parallel, high levels of alcohol and tobacco consumption have been reported among transport workers, raising further concerns regarding substance dependence.[6]

Emerging evidence also points toward mental health implications of transport work. van der Beek et al. emphasized that depression, anxiety, and related psychological conditions are increasingly recognized as occupational concerns in drivers and allied transport workers.[7] On a positive note, Sieber et al,[8] demonstrated that structured workplace health promotion strategies—such as lifestyle counselling, dietary interventions, and stress management programs—can help reduce the health risks faced by this population.[9]

Given these multidimensional challenges, the present study seeks to describe the health risks and lifestyle behaviours of transport workers in Kadapa by analyzing systematically collected data from medical camps. By characterizing the prevalence of common disorders and identifying behavioural patterns, this work aims to generate evidence for targeted, community-level interventions to enhance the health and well-being of this occupational group.

Objectives

- To assess the prevalence of health risks (e.g., hypertension, diabetes, obesity) among transport workers in Kadapa.
- To evaluate lifestyle behaviours such as substance use.
- To identify associations between lifestyle choices and health outcomes.

MATERIALS AND METHODS

Study Design and Setting: This was a community-based, cross-sectional study conducted in Kadapa, Andhra Pradesh. Data were obtained from health screening camps organized specifically for transport workers, in collaboration with the Departments of Neurology and Cardiology at the Super Specialty Hospital, Kadapa.

Study Period and Population: The study was carried out over one year. All transport workers, including drivers, helpers, and contract personnel aged 18–60 years, who attended the medical camps were considered eligible. Individuals with incomplete records or with severe pre-existing illnesses unrelated to occupational or lifestyle factors were excluded.

Sampling: A convenient sampling approach was adopted and a total of 212 subjects were recruited in our study.

Data Collection Procedure:

The medical camps were conducted in collaboration with local transport unions, NGOs, and health authorities. Awareness about the camps was created using union meetings, public notices, and announcements at bus and truck terminals. After obtaining informed consent, participants were registered and screened.

Data collection followed a structured, stepwise process:

Registration – Demographic and occupational details (age, sex, marital status, years of service, and role).

Health Screening – Measurement of blood pressure, random blood glucose, weight, height, BMI, and vision assessment.

Lifestyle and Behaviour Assessment – Structured questionnaires were used to collect information on smoking, alcohol use, dietary habits, physical activity, and sleep patterns.

Clinical Examination – A physician performed a general examination to detect common chronic conditions such as hypertension, diabetes, or respiratory disorders.

Health Education and Referral – All participants were counselled on lifestyle modification. Those with abnormal findings were referred to nearby health facilities for further care.

Study Tools:

Demographic and Occupational Form – recorded baseline information.

Health Screening Form – documented results of physical and laboratory checks.

Lifestyle and Behaviour Questionnaire – assessed smoking, alcohol, and other risk factors.

Clinical Examination Form – physician findings and preliminary diagnoses.

Referral Form – details of health advice and referrals provided.

Data Management and Analysis:

Data were compiled into standardized formats and verified for accuracy. Confidentiality of records was maintained throughout. Analysis was performed using SPSS version 21. Descriptive statistics (mean, SD, proportions) were used to summarize demographic and clinical characteristics. Inferential statistics included Chi-square tests for categorical variables and t-tests for continuous variables. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Occupational distribution among study population

Occupation	No.	Percentage (%)
Driver	104	49.1
Helper	81	38.2
Contract workmen	27	12.7
Total	212	100

Among the 212 participants, nearly half were drivers (49.1%), followed by helpers (38.2%) and contract workmen (12.7%). This indicates that the majority of the study population was engaged in occupations involving direct transportation activities, with drivers constituting the largest group.

Table 2: Age distribution among study population

Age group (in years)	No.	Percentage (%)
18-30	64	30.2
31-45	87	41.0
46-60	61	28.8
Total	212	100

Among the 212 participants, the largest proportion belonged to the 31–45 years age group (41.0%), followed by the 18–30 years group (30.2%) and the 46–60 years group (28.8%). This shows that a majority of the participants were in the younger to middle-age category, reflecting a predominantly working-age population.

Table 3: Descriptive statistics in the study population

Variable	Mean	SD
Age	38.21	10.4
Height	164.75	6.21
Weight	70.04	13.57
RBS	129.45	39.82
Total Cholesterol	172.08	30.77

Health risk in the study population

Table 4: BMI distribution among study population

BMI class	No.	Percentage (%)
Normal	73	34.4
Obese	47	22.2
Overweight	80	37.7
Underweight	12	5.7
Total	212	100

Table 5: Age Vs BMI distribution among study population

Age group	BMI class				Total
	Normal	Obese	Overweight	Underweight	
18-30	27	8	23	6	64
31-45	25	28	30	4	87
46-60	21	11	27	2	61
Total	73	47	80	12	212

$X^2 = 12.379$, $p = 0.054$ (NS)

The distribution of BMI classes varied across age groups, with overweight being the most common category in the 46–60 years group (44.3%), while obesity was more prevalent in the 31–45 years group (32.2%). Younger participants (18–30 years) were more likely to have a normal BMI (42.2%) compared to other groups. However, the Chi-square test showed that the association between age group and BMI class was not statistically significant ($\chi^2 = 12.379$, $p = 0.054$). This suggests that BMI distribution did not differ significantly by age group in this study population, although a trend toward higher obesity and overweight with advancing age was observed.

Table 6: Hypertensive status among study population

Hypertension	No.	Percentage (%)
Normal	148	69.8
Stage-I	40	18.8
Stage-2	24	11.4
Total	212	100

Table 7: DM status among study population

DM	No.	Percentage (%)
Diabetic	11	5.2
Impaired	15	7.1
Normal	186	87.7
Total	212	100

Table 8: Vision status among study population

Vision	No.	Percentage (%)
Normal vision	144	68
Mild visual impairment	36	17
Moderate visual impairment	29	13.7
Severe visual impairment	3	1.3
Total	212	100

Table 8: ECG findings in study population

Category	Finding	Frequency (n=212)	Percentage (%)
Normal ECG	WNL / NSR	~150	~70.8%
Sinus Bradycardia	HR <60 bpm	~5	~2.4%
Q Waves / QS Complexes	Inferior (III, AVF)	~35	~16.5%
	Lateral (AVL)	~15	~7.1%
	Poor R-wave progression	~10	~4.7%
T-Wave Abnormalities	T↓ in III/AVF	~25	~11.8%
	T↓ in AVL	~10	~4.7%
	T√ (normal variant)	~15	~7.1%
Conduction Defects	Right Bundle Branch Block (RBBB)	~8	~3.8%
	Left Axis Deviation (LAD)	~2	~0.9%
Other Findings	Ventricular Ectopics	~5	~2.4%
	P Pulmonale (RA enlargement)	~1	~0.5%
	Known CAD with T changes	~3	~1.4%

Most ECGs were normal (~70.8%). Chronic ischemic changes (Q waves + T inversions) were seen in ~25% of cases, mostly in inferior leads. RBBB was uncommon (~3.8%), likely benign in most cases. T-wave inversions in III/AVF (~11.8%) were the most common repolarization abnormality. Poor R-wave progression (~4.7%) may indicate prior anterior MI or LVH.

Table 9: Life style risk factors in the study population

Risk factor		No.	Percentage (%)
Alcohol	Yes	75	35.4
	No	134	63.2
	Ex-alcoholic	3	1.4
Smoking	Yes	66	31.1
	No	142	67
	Ex-smoker	4	1.9
Tobacco chewing	Yes	15	7.1
	No	197	92.9

Table 10: Occupation Vs health risk in the study population
10.1 occupation with BMI

		BMICLASS				Total
		Normal	**Obese**	**overweight**	**Underweight**	
occupation	CONTRACT WORK MAN	9	7	8	3	27
	DRIVER	28	26	46	4	104
	HELPER	36	14	26	5	81
Total		73	47	80	12	212

$X^2 = 9.865$, $p = 0.130$ (NS)

The distribution of BMI classes across occupational groups showed some variation. Among drivers, overweight was the most frequent category (44.2%), while helpers were more likely to be of normal BMI (44.4%). Contract workmen showed a relatively even distribution across BMI classes, with slightly higher representation in the normal category (33.3%). Despite these patterns, the Chi-square test indicated that the association between occupation and BMI class was not statistically significant ($\chi^2 = 9.865$, $p = 0.130$). This suggests that BMI status did not vary significantly across different occupational categories in this study population.

Table 10.2: Occupation with DM

		diabetic			Total
		DIABETIC	IMPAIRED	NORMAL	
occupation	CONTRACT WORK MAN	0	0	27	27
	DRIVER	9	10	85	104
	HELPER	2	5	74	81
Total		11	15	186	212

$X^2 = 8.926$, $p = 0.063$ (NS)

The prevalence of diabetes and impaired glucose tolerance varied by occupation. Among drivers, 8.7% were diabetic and 9.6% had impaired glucose tolerance, while helpers showed slightly lower proportions (2.5% diabetic and 6.2% impaired). None of the contract workmen were diabetic or impaired; all were classified as normal. Despite these differences, the Chi-square test showed that the association between occupation and diabetic status was not statistically significant ($\chi^2 = 8.926$, $p = 0.063$). This indicates that diabetic status did not differ significantly across occupational categories in this study population, although drivers tended to show higher rates of abnormal glucose status compared to other groups.

Table 10.3: Occupation with HTN

		HTN		Total
		N	Y	
occupation	CONTRACT WORK MAN	23	4	27
	DRIVER	66	38	104
	HELPER	58	23	81
Total		147	65	212

$X^2 = 5.074$, $p = 0.079$ (NS)

The prevalence of hypertension differed across occupational groups. Among drivers, 36.5% were hypertensive, compared to 28.4% among helpers and 14.8% among contract workmen. Although drivers showed the highest burden of hypertension, followed by helpers, the Chi-square test did not reach statistical significance ($\chi^2 = 5.074$, $p = 0.079$). This suggests that while there is a trend toward higher hypertension prevalence among drivers, the differences across occupational categories were not statistically significant in this sample.

Table 11: Life style risk factors Vs health risk in the study population

11.1 Life style risk factors Vs HTN

risk factors		HTN		X^2 value	P value
		NO	YES		
Alcohol	YES	48	30	3.533	0.060 (NS)
	NO	99	35		
Smoking	NO	104	38	3.076	0.079 (NS)
	YES	43	27		
Tobac. chew	NO	136	61	0.121	0.728(NS)
	YES	11	4		

The association between lifestyle risk factors and hypertension was examined. Among alcohol consumers, 38.5% were hypertensive compared to 26.1% of non-consumers, showing a trend toward higher hypertension prevalence with alcohol use; however, this was not statistically significant ($\chi^2 = 3.533$, $p = 0.060$). Similarly, smokers had a higher prevalence of hypertension (38.6%) compared to non-smokers (26.8%), but the difference was also not statistically significant ($\chi^2 = 3.076$, $p = 0.079$). Tobacco chewing showed no meaningful association with hypertension ($\chi^2 = 0.121$, $p = 0.728$).

Overall, while alcohol use and smoking demonstrated a tendency toward higher hypertension prevalence, none of the risk factors showed statistically significant associations in this study population.

Table 11.2: Life style risk factors Vs DM

risk factors		DM			X^2 value	P value
		YES	Impaired	NO		
Alcohol	YES	5	5	68	0.436	0.804 (NS)
	NO	6	10	118		
Smoking	NO	8	8	126	1.476	0.478 (NS)
	YES	3	7	60		
Tobac. chew	NO	10	14	173	0.074	0.964(NS)
	YES	1	1	13		

The relationship between lifestyle risk factors and diabetes status was assessed. Alcohol use was not associated with diabetes or impaired glucose tolerance ($\chi^2 = 0.436$, $p = 0.804$), as both alcohol consumers and non-consumers had similar proportions of diabetes. Smoking also showed no significant association (χ^2 = 1.476, p = 0.478); while smokers appeared to have slightly higher impaired glucose tolerance (9.0%) compared to non-smokers (5.0%), the difference was not statistically meaningful. Similarly, tobacco chewing was not associated with diabetes status (χ^2 = 0.074, p = 0.964), as prevalence was nearly identical in chewers and non-chewers. Overall, none of the examined risk factors (alcohol use, smoking, tobacco chewing) showed a statistically significant association with diabetes or impaired glucose tolerance in this study population.

Table 11.3: Life style risk factors Vs BMI

risk factors		BMI				X^2 value	P value
		NORMAL	OBESE	OVERWT.	UNDERWT		
Alcohol	YES	28	16	28	6	1.240	0.743 (NS)
	NO	45	31	52	6		
Smoking	NO	41	35	59	7	7.116	0.068 (NS)
	YES	32	12	21	5		
Tobac. chew	NO	70	43	75	9	7.071	0.070 (NS)
	YES	3	4	5	3		

The relationship between lifestyle risk factors and BMI categories was examined. Alcohol consumption was not associated with BMI class (χ^2 = 1.240, p = 0.743), as the proportions of normal, obese, overweight, and underweight individuals were similar between drinkers and non-drinkers. Smoking showed a trend toward association with BMI (χ^2 = 7.116, p = 0.068), with non-smokers having higher obesity prevalence (29.7%) compared to smokers (14.5%), whereas underweight was slightly more common among smokers (9.0%) than non-smokers (5.1%). Similarly, tobacco chewing also showed a borderline non-significant trend (χ^2 = 7.071, p = 0.070), with chewers having relatively higher proportions of obesity (26.7%) and underweight (20.0%) compared to non-chewers. Overall, while none of the risk factors demonstrated statistically significant associations with BMI categories, smoking and tobacco chewing showed borderline significance, suggesting potential lifestyle influences on body weight patterns that may warrant further study in larger samples.

Table 12: Correlation and Multiple Linear Regression Analysis of BMI and Age with Total Cholesterol (N = 212)

Descriptive Statistics

	Mean	Std. Deviation	N
total cholesterol	172.0896	30.77708	212
BMI	25.5778	4.64496	212
age	38.2123	10.40449	212

Correlations

		Total cholesterol	BMI	age
Pearson Correlation	Total cholesterol	1.000	.182	.301
	BMI	.182	1.000	.092
	age	.301	.092	1.000
Sig. (1-tailed)	Total cholesterol	.	.004	.000
	BMI	.004	.	.090
	age	.000	.090	.
N	Total cholesterol	212	212	212
	BMI	212	212	212
	age	212	212	212

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.338[a]	.114	.106	29.10140

a. Predictors: (Constant), age, BMI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22865.016	2	11432.508	13.499	.000[b]
	Residual	177000.282	209	846.891		
	Total	199865.297	211			

a. Dependent Variable: totalcholesterol

b. Predictors: (Constant), age, BMI

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	113.414	12.892		8.797	.000
	BMI	1.027	.433	.155	2.372	.019

	age	.848	.193	.287	4.384	.000
a. Dependent Variable: total cholesterol						

Correlation analysis showed that total cholesterol was positively correlated with both BMI ($r = 0.182$, $p = 0.004$) and age ($r = 0.301$, $p < 0.001$), indicating that higher BMI and older age were associated with higher cholesterol levels. However, no significant correlation was found between BMI and age ($r = 0.092$, $p = 0.090$). Multiple linear regression analysis was conducted to determine the combined effect of BMI and age on total cholesterol. The overall model was statistically significant ($F (2,209) = 13.499$, $p < 0.001$), explaining 11.4% of the variance in cholesterol levels ($R^2 = 0.114$, Adjusted $R^2 = 0.106$). Both predictors contributed significantly to the model, with BMI ($B = 1.027$, $p = 0.019$) and age ($B = 0.848$, $p < 0.001$) showing positive associations. This suggests that while both BMI and age influence cholesterol, age appears to have a stronger predictive effect in this sample.

DISCUSSION

This study explored the health risks and lifestyle behaviours of transport workers in Kadapa using a community-based camp approach. The results reflect a considerable burden of non-communicable diseases (NCDs) and lifestyle-related risk factors in this occupational group, consistent with trends observed internationally among transport workers.

Demographic Profile and Occupational Risk

Almost half of the participants were drivers, with helpers and contract workers forming the rest. Most belonged to the 31–45-year age group, an age range where the cumulative effects of occupational exposures begin to emerge. Similar demographic distributions have been reported in studies from other regions of India, highlighting that the transport workforce is dominated by middle-aged men who remain vulnerable to long-term health risks if preventive action is delayed.[1,11] This underscores the importance of introducing lifestyle interventions at an early stage of their careers.

Overweight, Obesity, and BMI Patterns

More than 60% of workers were either overweight or obese, with only one-third falling within a normal BMI range. Such high prevalence is comparable to international findings where truck and bus drivers exhibit greater obesity rates than the general population.[3,9] The sedentary nature of transport work, combined with poor dietary patterns and irregular routines, likely explains this burden.[7] Although the statistical association between BMI and age was not significant, a tendency toward higher overweight and obesity with advancing age was observed, suggesting cumulative occupational impact over time.[12]

Hypertension and Diabetes

The study identified hypertension in nearly one-third of participants—higher than national community estimates of around 25%.[2] This supports earlier evidence that commercial drivers are predisposed to hypertension due to factors such as stress, irregular sleep, and occupational strain.[12] Diabetes and impaired glucose tolerance were found in about 12% of the population, with drivers carrying a higher burden than helpers and contract staff. While the associations with occupation were not statistically significant, the observed pattern is concerning and consistent with reports that professional drivers face greater cardiometabolic risks because of prolonged work hours and disrupted circadian rhythms.[5,8]

Lipid Profile and Correlates of Cholesterol

A significant positive correlation between cholesterol, BMI, and age was noted, with age exerting a stronger effect. These findings mirror those from other occupational health studies where obesity and ageing are reliable predictors of dyslipidemia.[13] Elevated cholesterol among transport workers increases the likelihood of long-term cardiovascular morbidity, highlighting the need for routine screening and preventive interventions in this population.

Lifestyle Risk Factors

High prevalence of alcohol consumption (35.4%), smoking (31.1%), and tobacco chewing (7.1%) was documented. These behaviours, often adopted as coping mechanisms for stress and long working hours, have been frequently reported in studies of Indian and global transport workers.[14] In this study, lifestyle factors did not show statistically significant associations with hypertension, diabetes, or BMI, but trends were observed. Larger and more representative samples may demonstrate stronger associations, as prior research has clearly established alcohol and smoking as risk factors for metabolic syndrome and cardiovascular disease.[15,16]

Visual and Cardiovascular Abnormalities

Vision impairment was observed in nearly one-third of participants, a finding of direct relevance to road safety. Similar results from Indian studies have attributed this to uncorrected refractive errors and fatigue-related visual strain.[17] Moreover, around 25% of ECGs showed chronic ischemic changes, suggesting unrecognized cardiovascular morbidity. These findings highlight the silent but potentially life-threatening conditions that may go unnoticed without regular medical assessments.

Strengths and Limitations

A strength of this study lies in its community-based approach, with direct medical assessment instead of reliance on self-reports. This improves accuracy and reliability of findings. However, limitations include its cross-sectional design, which prevents causal inference, and the use of convenient sampling, which may reduce generalizability. The relatively modest sample size could also have limited the statistical power to detect associations between lifestyle factors and health risks.

CONCLUSION

This study highlights the growing challenge of non-communicable diseases and lifestyle risks among transport workers in Kadapa. High levels of overweight, obesity, hypertension, diabetes, and substance use were observed, along with significant proportions of vision impairment and undetected cardiovascular abnormalities. Although statistical associations between occupation, lifestyle habits, and health risks were not significant, the observed patterns strongly suggest that drivers are at greater risk.

To address these concerns, workplace health interventions such as regular medical check-ups, structured wellness programs targeting diet and physical activity, stress management initiatives, and strict enforcement of alcohol and tobacco control are urgently needed. Furthermore, mandatory vision and cardiac evaluations for transport workers may not only improve their quality of life but also enhance public safety on the roads.

Future studies with larger, representative samples and longitudinal follow-up are recommended to confirm these findings and evaluate intervention strategies. Prioritizing the health of transport workers is crucial for sustaining both workforce well-being and road safety.

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