

Original Research Article

Exploring non-communicable disease prevalence and risk factors among construction workers in urban Mysuru

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ABSTRACT

Background: Non-communicable diseases (NCDs), including hypertension, diabetes, which constitutes major contribution to global morbidity and mortality. While lifestyle factors are well-documented contributors, the occupational exposures also play a crucial role. Construction workers, particularly in India's unorganized sector, face multiple risk factors such as physically demanding labour, hazardous work environments, and limited healthcare access. This study aimed to assess the prevalence and risk factors of NCDs among construction workers in urban Mysuru.

Methods: A cross-sectional study was conducted among 125 male construction workers aged 18 years and above over two months (October-November 2024). Data were collected using a semi-structured questionnaire, and health assessments included body mass index (BMI), waist-hip ratio (WHR), blood pressure (BP), and random blood sugar (RBS). Statistical analysis was performed using SPSS version 30, with logistic regression to determine associations between socio-demographic variables and NCD risk factors.

Results: Hypertension prevalence was 32.8%, significantly associated with age ($p<0.001$) and tobacco use ($p=0.026$). Diabetes prevalence was 13.7%, also significantly associated with age ($p<0.001$) and tobacco use ($p=0.001$). Unexpectedly, non-smokers had significantly higher odds of diabetes (AOR: 13.146, $p=0.012$). The most commonly reported health complaints were myalgia (32.8%), general weakness (18.4%), and skin infections (11.2%).

Conclusions: Construction workers in Mysuru exhibit a substantial burden of NCDs, with age and tobacco use as significant risk factors. Targeted interventions, including workplace health programs and preventive screenings, are essential to mitigate these risks and improve worker well-being.

Keywords: Construction workers, High risk behavior, Non-communicable disease, Occupational health

INTRODUCTION

Non-communicable diseases (NCDs), in itself contributes to approximately 74% of all deaths globally.¹ While NCDs are often linked to lifestyle factors, occupational exposures significantly influence their development and progression like the combined effects of rapid urbanization and work-related stressors further heighten the risk of NCDs. The construction industry, one of the largest global employment sectors, engages over 273 million workers worldwide.² In India, this sector remains

largely unorganized, employing around 57 million workers- approximately 7.5% of the country's total workforce.³ Lifestyle-related behaviours of construction workers, such as poor dietary habits, low levels of physical activity outside of work, tobacco and alcohol, and limited awareness of preventive healthcare measures, further contribute to their vulnerability to NCDs.⁴

In rapidly developing urban centres like Mysuru, India, the expansion of construction activities has increased the workforce engaged in this sector due to limited research

there no evidence to search for NCD prevalence among them. Studies indicate that nearly 16.4% of construction workers in India suffer from occupational injuries, while musculoskeletal disorders affect up to 57.3% of workers.^{5,6} Additionally, respiratory illnesses, dermatological conditions, and gastrointestinal diseases are frequently reported among this population.⁷

This study aimed to explore the prevalence of NCDs and their associated risk factors among construction-site workers in urban Mysuru, to assess the relationship between socio-demographic factors and risk factors to determine the overall burden of health problems in this workforce.

METHODS

A cross-sectional study was conducted over a period of two months (October and November 2024) to assess the health status and risk profile for non-communicable diseases (NCDs) among construction site workers in an urban area of Mysuru. The study population comprised adult construction workers aged 18 years and above, who had been employed for at least three months and provided informed consent. A total of 125 participants were selected using a convenient sampling technique.

Data collection was carried out using a semi-structured questionnaire, which included information on socio-demographic characteristics, behavioural history, and health parameters. The health assessment involved measuring body mass index (BMI), waist-hip ratio (WHR), blood pressure (BP), and random blood sugar

(RBS) to evaluate NCD risk factors. Measurements were taken using OMRON BP apparatus and Accu-Chek blood glucose meter. Institutional Ethical Committee clearance (JSSMC/IEC/23122024/03 NCT/2024-25) was obtained prior to the initiation of the study. The purpose of the study was explained to the study participants and informed consent was obtained from all participants in the local language before data collection.

The collected data were entered into Microsoft Excel and analysed using SPSS version 30 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including mean, standard deviation, frequencies, and percentages, were used to summarize quantitative and categorical variables. Inferential statistical tests, such as the chi-square test and logistic regression tests, were applied to assess associations between socio-demographic factors and NCD risk factors. Data distribution was presented using appropriate tables and figures. A p value of less than 0.05 was considered statistically significant.

RESULTS

Out of 125 construction site workers, 68 (51.9%) were in the 18-30 years followed by 37 (28.2%) in 30-45 group and 20 (15.3%) in 45-60 years. All were males and majority 52.7% had no formal education, while 36.6% had basic formal education with 6.1% of them educated till diploma and above. Nearly 56.5% used tobacco and 67.9% consumed alcohol. 41 out of 125 (32.8%) had hypertension and 17 (13.7%) were detected to be pre-diabetic. 15 out of 125 (12%) had both high BP (>120/80 mmHg) and high RBS (>140).

Table 1: Determine association between demographic details and risky behaviour with hypertension.

Factors	Categories	No hypertension N (%)	Hypertension N (%)	Total N (%)	Chi-square (χ^2)	P value
Age (in years)	18-30	53 (77.9)	15 (22.1)	68 (47.6)	29.490	0.000
	30-45	28 (75.7)	9 (24.3)	37 (25.9)		
	45-60	3 (15)	17 (85)	20 (14)		
Education	No formal education	43 (62.3)	26 (37.7)	69 (48.3)	4.703	0.095
	Basic formal education	33 (68.8)	15 (31.2)	48 (33.6)		
	Diploma and above	8 (100)	0 (0)	8 (5.6)		
Smoking/ chewing tobacco	Yes	44 (59.5)	30 (40.5)	74 (51.7)	4.930	0.026
	No	40 (78.4)	11 (21.6)	51 (35.7)		
Alcohol	Yes	57 (64.1)	32 (35.9)	89 (62.2)	1.396	0.237
	No	27 (75)	9 (25)	36 (25.2)		
BMI	Underweight	17 (65.4)	9 (34.6)	26 (18.2)	8.832	0.065
	Normal BMI	51 (66.2)	26 (33.8)	77 (53.8)		
	Pre-obese	11 (100)	0 (0)	11 (7.7)		
	Obesity class 1	5 (50)	5 (50)	10 (7)		
	Obesity class 2	0 (0)	1 (100)	1 (0.7)		

Hypertension prevalence in the study population was 46 (32.2%), with a significant association observed between age and hypertension ($\chi^2=29.490$, $p<0.001$). Prevalence

was highest in the 45-60 age group at 17 (85%), compared to 9 (24.3%) in the 30-45 group and 15 (22%) in the 18-30 group. Education level showed no significant

association ($\chi^2=4.703$, $p=0.095$). Tobacco use was significantly linked to hypertension ($\chi^2=4.930$, $p=0.026$), with higher prevalence among users, 30 (40.5%), than non-users, 11 (21.6%). Alcohol consumption and BMI

were not significantly associated with hypertension, though prevalence was highest in obesity class 1, affecting 5 (50%), and in the single individual in obesity class 2 (Table 1).

Table 2: Determine association between demographic details and risky behaviour with diabetes mellitus.

Factor	Categories	No diabetes N (%)	Diabetes N (%)	Total N (%)	Chi-square (χ^2)	P value
Age (in years)	18-30	64 (94.1)	4 (5.9)	68 (47.6)	31.936	0.000
	30-45	34 (91.9)	3 (8.1)	37 (25.9)		
	45-60	10 (50)	10 (50)	20 (14)		
Education	No formal education	59 (85.6)	10 (14.4)	69 (48.3)	1.480	0.477
	Basic formal education	41 (85.4)	7 (14.6)	48 (33.6)		
	Diploma and above	8 (100)	0 (0)	8 (5.6)		
Smoking/chewing tobacco	Yes	58 (78.4)	16 (21.6)	74 (51.7)	10.814	0.001
	No	50 (98)	1 (2%)	51 (35.7)		
Alcohol	Yes	75 (84.3)	14 (15.7)	89 (62.2)	0.444	0.505
	No	33 (91.6)	3 (8.4)	36 (25.2)		
BMI	Underweight	23 (88.5)	3 (11.5)	26 (18.2)	6.374	0.173
	Normal BMI	67 (87)	10 (13)	77 (53.8)		
	Pre-obese	9 (81.8)	2 (18.2)	11 (7.7)		
	Obesity class 1	9 (90)	1 (10)	10 (7)		
	Obesity class 2	0 (0)	1 (100)	1 (0.7)		

Table 3: Logistic Regression Analysis of predicting Diabetes among Construction site workers

Variables	Category	Univariate analysis		Multi variate analysis		P value
		OR	95% CI	AOR	95% CI	
Age (in years)	18-30	Reference				0.00
	30-45	19.5	5.1-74.7	18.16	4.2-77.8	
	45-60	13.8	3.1-60.4	17.06	3.4-83.5	
Smoking status	Yes	Reference				0.013
	No	0.067	0.09-0.52	0.065	0.07-0.567	

Table 4: Logistic regression analysis of predicting hypertension among construction site workers.

Variables	Category	Univariate analysis		Multi variate analysis		P value
		OR	95% CI	AOR	95% CI	
Age (in years)	18-30	Reference				0.00
	30-45	0.50	0.013-0.194	0.56	0.01-0.21	
	45-60	0.57	0.013-0.239	0.56	0.013-0.239	
Smoking status	Yes	Reference				0.101
	No	2.479	1.1-5.589	2.16	0.860-5.459	

Diabetes mellitus prevalence was 17 (13.7%), with a significant association between age and diabetes ($\chi^2=31.936$, $p<0.001$), showing higher prevalence among older individuals. It affected 4 (5.9%) in the 18-30 age group, 3 (8.1%) in the 30-45 group, and 10 (50%) in the 45-60 group. Education level showed no significant association. Tobacco use was significantly linked to diabetes ($\chi^2=10.814$, $p=0.001$), with prevalence higher among users, 16 (21.6%), compared to non-users, 1 (2%). Alcohol consumption and BMI were not significantly associated with diabetes (Table 2).

Compared to the 18-30 age group, older individuals have significantly lower odds of diabetes. For those aged 30-45 years, the adjusted odds ratio (AOR) is 0.072 (95% CI: 0.02-0.29), while for the 45-60 age group, the AOR is 0.077 (95% CI: 0.02-0.36), indicating a lower risk of diabetes in older age groups. Interestingly, non-smokers have significantly higher odds of diabetes compared to smokers, with an AOR of 13.146 (95% CI: 1.54-112.2, $p=0.012$). This unexpected finding contrasts with the common understanding that smoking is a risk factor for diabetes (Table 3).

Logistic regression results showed that age was significantly associated with hypertension. Compared to the 18-30 years reference group, workers aged 30-45 years had an AOR of 0.56 (95% CI: 0.01-0.21, $p < 0.001$), while those aged 45-60 years had an AOR of 0.56 (95% CI: 0.013-0.239, $p < 0.001$), indicating a strong association. Smoking status was not statistically significant, though non-smokers were less likely to have hypertension than smokers (AOR: 2.16, 95% CI: 0.860-5.459, $p = 0.101$) (Table 4).

Among 125 construction workers, myalgia was the most common complaint (32.8%), followed by general weakness (18.4%) and skin infections (11.2%). Gastrointestinal (5.6%), ocular (3.2%), respiratory (1.6%), and appetite issues (0.8%) were less frequent. Notably, 26.4% reported no health complaints, suggesting a perception of good health despite the physically demanding nature of their work (Figure 1).

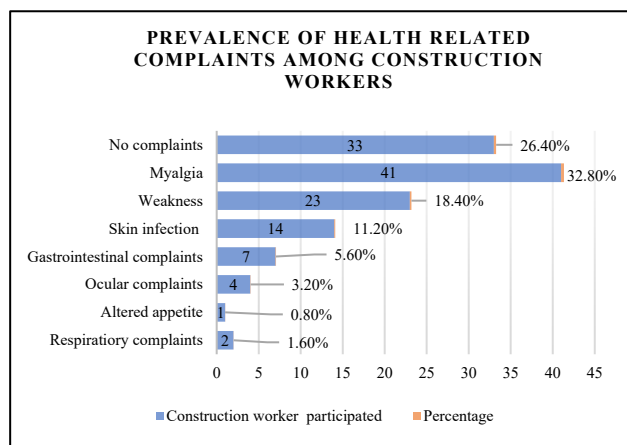


Figure 1: Prevalence of health complaints among construction workers.

DISCUSSION

This study highlights the prevalence of hypertension and diabetes mellitus among construction workers in urban Mysuru, emphasizing key demographic and behavioural risk factors. Hypertension was observed in 32.8% of participants, aligning with the findings of Subhashini et al, who reported a prevalence of 29% among construction workers in Chennai.⁸ The prevalence of diabetes in our study was 13.7%, significantly lower than the 28% reported in the above-mentioned study. These differences may be attributed to variations in study population, methodology, or regional factors.

Age was significantly associated with both hypertension and diabetes mellitus. Hypertension increased with age, with the highest prevalence (85%) in the 45-60 years age group. In contrast, diabetes mellitus was more prevalent among younger workers (94.1% in the 18-30 age group). This finding contrasts with other studies where the prevalence of both hypertension and diabetes typically increases with age.⁹ Tobacco use was significantly

associated with hypertension (40.5%) and diabetes (21.6%) among construction workers. This aligns with existing literature identifying tobacco as a major modifiable risk factor for NCDs. The high prevalence of tobacco use (56.5%) and alcohol consumption (67.9%) in our study is comparable to Patel et al findings, where tobacco use was reported in 48.38% of construction workers.¹¹ These high-risk behaviours emphasize the need for targeted interventions focusing on smoking cessation and lifestyle modifications to reduce NCD risk.

Interestingly, alcohol consumption and BMI were not significantly associated with hypertension, although trends were observed. Hypertension prevalence was higher among individuals with obesity class I (50%), while diabetes was more common among pre-obese individuals (81.8%). The lack of statistical significance in these associations may be due to sample size limitations or potential underreporting of alcohol intake and obesity-related factors. However, previous studies confirm the role of obesity as a risk factor for NCDs.¹⁰

Construction workers face multiple occupational hazards, including physical exertion, exposure to dust and chemicals, and high levels of stress, all of which contribute to the development of NCDs. The study found that 73.6% of workers reported at least one health-related problem, similar to Mohankumar et al study in Tamil Nadu, where 80% of construction workers had at least one health complaint.¹² The most common issues in our study were myalgia (32.8%), general weakness (18.4%), and skin infections (11.2%), reflecting findings in physically demanding occupations.¹³ Pratik et al reported that minor injuries (34%), skin issues (25.64%), and musculoskeletal disorders (19.55%) were the most prevalent conditions among construction workers.¹⁴

Limitations of this study include its cross-sectional design, which prevents causal inferences, the use of convenience sampling affecting generalizability, and potential recall and social desirability biases in self-reported lifestyle behaviors. Nevertheless, the findings underscore the critical need for targeted public health strategies to address NCDs among construction workers.

CONCLUSION

Despite these health risks, 26.4% of participants reported no health complaints, suggesting a lack of awareness about NCD risk factors and the importance of preventive healthcare. This highlights the urgent need for health education, routine screenings, and workplace interventions to improve health outcomes in this vulnerable occupational group.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee (JSSMC/IEC/23122024/03 NCT/2024-25)

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