

Original Research Article

Assessment of lifestyle among e-rickshaw drivers in Delhi using the simple lifestyle indicator questionnaire: a community-based cross-sectional study

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ABSTRACT

Background: E-rickshaw drivers are an important component of the urban informal workforce and are exposed to several occupational and lifestyle-related risk factors. This study was conducted to assess the lifestyle of e-rickshaw drivers in Delhi and its association with selected socio-demographic characteristics.

Methods: A community-based cross-sectional study was conducted among 254 e-rickshaw drivers operating in selected municipal zones of Delhi. Lifestyle was assessed using the simple lifestyle indicator questionnaire (SLIQ). Data were analysed using descriptive statistics, and associations between lifestyle and selected socio-demographic characteristics were assessed using the Chi-square test and Fisher's exact test, with statistical significance set at $p < 0.05$.

Results: Overall, 50.8% of the participants had an unhealthy lifestyle, while 49.2% had a healthy lifestyle according to the simple lifestyle indicator questionnaire (SLIQ). Good/poor lifestyle was significantly associated with (younger/advanced) age ($p = 0.001$), (higher/lower) educational status ($p = 0.010$), and number of family members (how many) ($p = 0.011$), whereas no statistically significant association was observed with socioeconomic status ($p = 0.271$).

Conclusions: The findings highlight the pressing need for targeted public health interventions aimed at promoting healthier lifestyles among e-rickshaw drivers (by doing what?). Future longitudinal studies are warranted to better understand causal relationships and to better inform evidence-based public health strategies.

Keywords: Cross-sectional study, E-rickshaw drivers, Health behavior, Lifestyle, Occupational health, Socio-demographic factors

INTRODUCTION

In the busy city of Delhi, where the streets are vibrant and (with) numerous transportation options abound, e-rickshaw drivers play a crucial role in facilitating the daily journeys of thousands. These dedicated drivers navigate through the city's hectic streets while providing an affordable and environment-friendly mode of transport, particularly for first- and last-mile connectivity. Being an e-rickshaw driver in Delhi encompasses dealing with multiple facets, including the job's requirements and the prevailing working conditions. This occupation

requires individuals to navigate through diverse challenges associated with both the nature of the work and the environment in which it takes place. According to records, more than one million e-rickshaws have been registered in Delhi for improving first- and last-mile connectivity, reflecting their increasing contribution to urban transportation and livelihood generation.¹

E-rickshaw driving is undeniably challenging, involving long working hours, physically demanding labour, and exposure to the hazards of navigating busy city roads. This occupation not only dictates the daily routines and

incomes of these drivers but also significantly influences their lifestyle. Lifestyle comprises behaviours and habits such as diet, physical activity, smoking, alcohol consumption, and stress, which are important determinants of health. Poor dietary habits, physical inactivity, tobacco use, and harmful alcohol consumption are important modifiable risk factors for non-communicable diseases, whereas healthy lifestyle practices contribute to better health.^{2,3}

Drivers, by the nature of their occupation, spend long hours in a seated position with limited opportunities for exercise. In urban occupational settings, e-rickshaw drivers often depend on inexpensive roadside food because of affordability and convenience. Drivers frequently experience high levels of stress owing to financial insecurity, traffic congestion, long working hours, and exposure to environmental pollutants. These occupational factors may promote unhealthy lifestyle behaviours, making e-rickshaw drivers a vulnerable occupational group requiring greater public health attention.⁴⁻¹⁴

No prior study was available that reported the prevalence of a non-healthy lifestyle specifically among e-rickshaw drivers. In view of this, the present study was undertaken to study the proportion of non-healthy lifestyle among e-rickshaw drivers in Delhi and to study the association, if any, between lifestyle and various socio-demographic characteristics of the e-rickshaw drivers.

METHODS

Study design, duration, setting and participants

The present study was a community-based cross-sectional study conducted from April 2024 to October 2025. The study was carried out in colonies across Delhi, focusing on locations where e-rickshaw drivers commonly congregated. The study population comprised e-rickshaw drivers working in Delhi. E-rickshaw drivers who had been plying in Delhi for at least 6 months were included in the study. E-rickshaw drivers who had been absent from Delhi for more than 6 months in the past year, individuals with a language barrier or those unable to comprehend the questionnaire, and individuals aged less than 18 years were excluded from the study.

Sample size

No prior study was available that reported the prevalence of a non-healthy lifestyle specifically among e-rickshaw drivers. However, a study by Godwin et al among the general adult population reported a prevalence of 64.2% for a non-healthy lifestyle using the same tool. Taking this as the expected prevalence (64.2%), with a 95% confidence interval and an absolute precision of 6%, the minimum required sample size was calculated to be 245 using the Epi Info 7 software. Accordingly, a minimum of

245 e-rickshaw drivers were recruited for the study. A total of 254 participants were included in the study.¹⁵

Sampling technique

Delhi has been divided into 12 zones. A list of residential colonies in Delhi was obtained from the official site of the Municipal Corporation of Delhi (MCD), which covers the majority of the city. Three zones out of these twelve were randomly selected. Within each selected zone, residential colonies were chosen randomly using a table of random numbers. Each selected colony was visited to identify public spaces where groups of e-rickshaw drivers assembled. From these identified sites, drivers were randomly approached and recruited, with no more than 15 drivers taken from any single site. Eligible drivers were approached individually, informed about the purpose of the study, and recruited after obtaining written informed consent.

The MCD zones selected were Shahdara North, Civil Lines and Shahdara South. The representation of participants from each zone was nearly uniform, with Shahdara North contributing the highest proportion (87; 34.3%), followed by Civil Lines (84; 33.1%) and Shahdara South (83; 32.7%).

Study tool and study variables

A pre-tested, interviewer-administered questionnaire was used to collect information on the socio-demographic characteristics of the e-rickshaw drivers. The tool was designed after an extensive review of the literature to ensure that it comprehensively covered relevant domains. The questionnaire included both closed-ended and open-ended questions to capture quantitative as well as qualitative details.

Lifestyle was assessed using the simple lifestyle indicator questionnaire (SLIQ). This questionnaire consisted of nine items and evaluated lifestyle habits over the preceding twelve months, thereby minimizing the influence of seasonal variations and short-term fluctuations on the results. The independent variables for lifestyle assessment included the overall SLIQ score, categorical scores, and dimensional scores measuring diet, exercise, alcohol consumption, smoking status, and stress. With the exception of alcohol consumption, higher raw scores in each dimension indicated healthier behaviour. These raw scores were subsequently converted into category scores ranging from zero to two, where zero denoted a poor score, one represented an intermediate score, and two denoted a healthy score. The category scores were then combined to derive an overall score ranging from zero to ten, which was used to classify lifestyle into three categories: unhealthy (score 0-4), intermediate (score 5-7), and healthy (score 8-10). For the purpose of this study and subsequent statistical analysis, the intermediate (5-7) and healthy (8-10) categories were combined into a single group, termed as “healthy

lifestyle”, while the 0-4 category was retained as “unhealthy lifestyle”. This categorization allowed for a more robust comparison and simplified dichotomous analysis of lifestyle patterns among the study participants.¹⁵

Data collection procedure

Eligible participants were approached individually and informed about the aims, objectives, and purpose of the study. Written informed consent was obtained from all participants before conducting the interviews. Data were collected using a pre-tested interviewer-administered questionnaire. Confidentiality of the information provided by the participants was strictly maintained throughout the study.

Statistical analysis

The data obtained during the survey were coded and entered into Microsoft Excel, and statistical analysis was carried out using SPSS (Statistical Package for the Social Sciences) software version 20.0. Descriptive statistics, including frequency, mean, standard deviation, and median with interquartile range, were used to summarize the results of the study. Continuous variables were presented as means with standard deviations or medians with interquartile ranges, while categorical variables were expressed as proportions and percentages. Where appropriate, categories with small cell frequencies were combined before applying statistical tests to satisfy the assumptions of the tests. Appropriate statistical tests of significance, such as the Chi-square test and Fisher’s exact test (where applicable), were applied to assess the association between lifestyle and socio-demographic characteristics of the study participants. Statistical significance was considered at a *p* value of less than 0.05.

Ethical considerations

Clearance was obtained from the institutional ethics committee- human research, University College of Medical Sciences (UCMS) prior to the commencement of the study. Informed written consent was obtained from all participants before conducting the interviews, after explaining the aims, objectives, and purpose of the study. Confidentiality of participants was strictly maintained throughout the study. Permission for the use of the Hindi and English versions of the simple lifestyle indicator questionnaire (SLIQ) had been obtained from the respective authors.

RESULTS

A total of 254 e-rickshaw drivers were included in the study. The socio-demographic characteristics, lifestyle profile, and association between lifestyle and selected socio-demographic characteristics are presented below.

Table 1: Socio-demographic characteristics of the study participants (n=254).

Characteristics	N (%)
Age group (years)	
18-19	1 (0.4)
20-29	55 (21.7)
30-39	86 (33.9)
40-49	103 (40.6)
≥50	9 (3.5)
Educational status	
Illiterate	58 (22.8)
Primary	81 (31.9)
Middle	87 (34.3)
Secondary	22 (8.7)
Senior Secondary	6 (2.4)
Family type	
Nuclear	189 (74.4)
Joint	65 (25.6)
Number of family members	
1-2	8 (3.2)
3	35 (13.8)
4	102 (40.2)
5	70 (27.6)
6-7	39 (15.4)
Monthly family income (₹)	
₹10,001-15,000	34 (13.4)
₹15,001-20,000	129 (50.8)
₹20,001-25,000	90 (35.4)
>₹25,000	1 (0.4)
Socioeconomic status (Modified BG Prasad)	
Class I	3 (1.2)
Class II	102 (40.2)
Class III	143 (56.3)
Class IV	6 (2.4)

Table 1 presents the socio-demographic characteristics of the study participants. The majority of participants belonged to the 40-49 years age group (103; 40.6%). Middle-level education was the most common educational status (87; 34.3%). Most participants belonged to nuclear families (189; 74.4%) and had four family members (102; 40.2%). More than half of the participants reported a monthly family income of ₹15,001–20,000 (129; 50.8%), while the majority belonged to Class III (Middle) of the modified BG Prasad socioeconomic classification (143; 56.3%).

Table 2 presents the lifestyle profile of the study participants. Poor dietary practices were observed in 207 (81.5%) participants, while all participants had poor exercise scores. Poor alcohol consumption and smoking scores were observed in 143 (56.3%) and 181 (71.3%) participants, respectively. Nearly half of the participants reported no perceived stress (123; 48.4%). Overall, 129 (50.8%) participants had an unhealthy lifestyle, whereas 125 (49.2%) had a healthy lifestyle.

Table 2: Lifestyle profile of the study participants (n=254).

Characteristic	N (%)
Diet score	
Poor	207 (81.5)
Intermediate	47 (18.5)
Healthy	0 (0.0)
Exercise score	
Poor	254 (100.0)
Intermediate	0 (0.0)
Healthy	0 (0.0)
Alcohol score	
Poor	143 (56.3)
Intermediate	56 (22.0)
Healthy	55 (21.7)
Smoking score	
Poor	181 (71.3)
Intermediate	0 (0.0)
Healthy	73 (28.7)
Stress score	
Severe stress	11 (4.3)
Mild stress	120 (47.2)
No perceived stress	123 (48.4)
Overall lifestyle (SLIQ)	
Unhealthy (Score 0-4)	129 (50.8)
Healthy* (Score 5-10)	125 (49.2)

*Healthy lifestyle includes participants with intermediate (SLIQ score 5-7) and healthy (SLIQ score 8-10) lifestyle categories.

Table 3 shows the association between selected socio-demographic characteristics and lifestyle status among the study participants. Lifestyle status was significantly associated with age group ($p=0.001$), educational status ($p=0.010$), and number of family members ($p=0.020$). No statistically significant association was observed between lifestyle status and socioeconomic status according to the Modified BG Prasad classification ($p=0.142$).

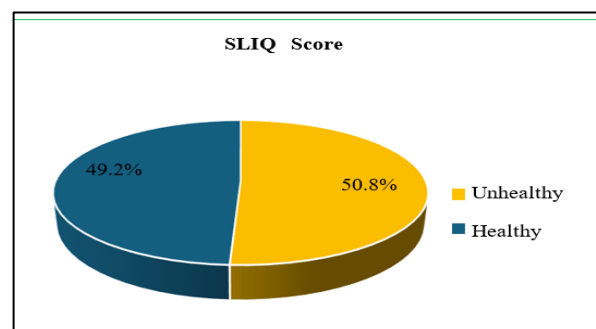
**Figure 1: Distribution of lifestyle status among the study participants according to the simple lifestyle indicator questionnaire (SLIQ).**

Figure 1 illustrates the overall distribution of lifestyle status among the study participants. Of the 254 e-rickshaw drivers, 129 (50.8%) were classified as having an unhealthy lifestyle, whereas 125 (49.2%) were classified as having a healthy lifestyle according to the simple lifestyle indicator questionnaire (SLIQ).

Table 3: Association between selected socio-demographic characteristics and lifestyle status among the study participants (n=254).

Characteristics	Unhealthy lifestyle (%)	Healthy lifestyle (%)*	χ^2	P value
Age group (years)			18.471	0.001
18-29	38 (67.9)	18 (32.1)		
30-39	48 (55.8)	38 (44.2)		
40-49	41 (39.8)	62 (60.2)		
≥ 50	2 (22.2)	7 (77.8)		
Educational status			13.344	0.010
Illiterate	37 (63.8)	21 (36.2)		
Primary	42 (51.9)	39 (48.1)		
Middle	46 (52.9)	41 (47.1)		
Secondary/Senior Secondary †	4 (14.3)	24 (85.7)		
Number of family members			9.805	0.020
1-2	7 (87.5)	1 (12.5)		
3	18 (51.4)	17 (48.6)		
4	46 (45.1)	56 (54.9)		
5	36 (51.4)	34 (48.6)		
6-7	22 (56.4)	17 (43.6)		
Socioeconomic status (Modified BG Prasad)			3.911	0.142
Class I-II‡	57 (54.3)	48 (45.7)		
Class III-IV‡	72 (48.3)	77 (51.7)		

P values were obtained using the Chi-square test or Fisher's exact test, as appropriate. *Healthy lifestyle includes participants with intermediate (SLIQ score 5-7) and healthy (SLIQ score 8-10) lifestyle categories. † Secondary and senior secondary categories were combined for statistical analysis because of small cell frequencies. ‡ Socioeconomic status categories were combined (class I-II and class III-IV) to satisfy the assumptions of the Chi-square test.

DISCUSSION

The present study demonstrated that nearly half of the e-rickshaw drivers had an unhealthy lifestyle based on the simple lifestyle indicator questionnaire (SLIQ). Lifestyle was significantly associated with age, educational status, and the number of family members, whereas no statistically significant association was observed with socioeconomic status.

Nearly one-half (50.8%) of the study participants had an unhealthy lifestyle based on the SLIQ. This finding indicates a considerable burden of unhealthy lifestyle behaviours among e-rickshaw drivers and underscores the importance of lifestyle assessment in this occupational group.¹⁵

Age-wise, the predominance of participants in the working-age group reflects a population in its most economically productive phase. This age group is typically exposed to occupational stress, sedentary routines, and lifestyle-related health risks, including obesity and cardiovascular conditions. The limited representation of younger and older age groups may restrict the generalizability of the findings across the full lifespan, but it also highlights the vulnerability of working-age adults to chronic health burdens.¹⁶

Educational attainment among participants was largely limited to primary and middle levels, with 22.8% being illiterate. Lower education is strongly associated with reduced health literacy, limited access to healthcare, and poorer health outcomes. Education influences not only knowledge of health practices but also the ability to navigate healthcare systems and make informed decisions. Moreover, studies have shown that lower educational attainment correlates with higher rates of chronic illness and lower self-rated health, especially in urban informal sectors.¹⁷⁻²⁰

Family structure also emerged as an important determinant. Most participants lived in households with 3-5 members, suggesting a predominance of nuclear or moderately extended families.²¹⁻²³

Socioeconomic status (SES), as classified by the Modified BG Prasad scale, showed that most participants belonged to the middle and upper-middle socioeconomic classes. In the present study, no statistically significant association was observed between lifestyle and socioeconomic status.²⁴⁻²⁶

The present study adopted a comprehensive approach by assessing socio-demographic characteristics and lifestyle behaviours using the simple lifestyle indicator questionnaire (SLIQ), a standardized and validated instrument. The application of appropriate statistical methods provided valuable insights into the interrelationships among lifestyle factors and socio-demographic characteristics. However, the cross-sectional

design limits the ability to infer causality, and reliance on self-reported information introduces the possibility of recall and social desirability bias. The study was conducted exclusively among passenger e-rickshaw drivers in Delhi; therefore, the findings may not be generalizable to other categories of e-rickshaw drivers or to semi-urban and rural settings.¹⁵

The findings of the present study highlight the need for targeted public health interventions to promote healthier lifestyles among e-rickshaw drivers. Health promotion programmes focusing on healthy dietary practices, increased physical activity, and reduction of tobacco and alcohol use should be strengthened. Future longitudinal studies are needed to explore causal relationships between lifestyle and health outcomes and to support the development of evidence-based public health strategies.²⁷⁻²⁹

CONCLUSION

In conclusion, this study offers important insights into the lifestyle of e-rickshaw drivers in Delhi, shedding light on the unique challenges they face in their occupational and personal lives. The socio-demographic data revealed that a large proportion of participants were within the economically productive age group of 31-50 years, with many experiencing significant financial insecurity, highlighted by low earnings and increasing competition in the e-rickshaw market. The study also identified substantial behavioural risks, including poor dietary habits, physical inactivity, high rates of smoking and alcohol consumption, and varying levels of stress. Lifestyle was significantly associated with age, educational status, and the number of family members. However, the study's cross-sectional design restricts the ability to draw causal inferences, and while it provides a snapshot of the drivers' lifestyle, it cannot capture the long-term effects of their occupational conditions and lifestyle choices. The findings highlight the pressing need for targeted public health interventions aimed at promoting healthier lifestyles among e-rickshaw drivers. Given the limitations of this study, future research should adopt a longitudinal design to track changes over time and explore causal relationships, as well as expand the scope to include diverse geographic settings to better inform public health strategies.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee Human Research (IECHR), University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi (Approval No. IECHR-2024-64-67; dated 25 March 2024)

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