

Respiratory symptoms among auto rickshaw drivers of Mangaluru

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ABSTRACT

Background: Auto rickshaw drivers spend their maximum time in polluted, dangerous, and very noisy environment. They are exposed to harmful pollutant gas such as carbon monoxide and sulfur dioxide which can contribute to the development of chronic obstructive pulmonary disease, asthma, breathlessness, and chest pain. **Objectives:** The present study was aimed to estimate respiratory symptoms and peak expiratory flow rate (PEFR) among auto rickshaw drivers. **Materials and Methods:** Cross-sectional descriptive study was conducted among auto rickshaw drivers working in Mangaluru. Information regarding sociodemographic profile, dietary habits, addictions, and working hours were collected, and respiratory examination along with PEFR estimation was done. **Results:** The maximum study participants were in the age group of 41–50 years, and 56.4% participants were working for >10 h per day. The main respiratory symptoms were breathlessness (28.7%) followed by cough (19.7%). Among 188 study participants, 61 (32.4%) had low PEFR. **Conclusion:** The respiratory symptoms are quite high among auto rickshaw drivers, and there is a need to increase awareness among them for the prevention of occupational disease.

KEY WORDS: Auto Rickshaw Drivers; Breathlessness; Peak Expiratory Flow Rate; Respiratory Symptoms


INTRODUCTION

Health has been closely linked to the occupation, and it is stated that occupational disease is the disease that contracted primarily as a result of exposure to risk factors arising from work or occupation.^[1] Among 11 million cases of occupational diseases globally, 1.9 million cases (17%) are contributed by India and out of 0.7 million deaths in the world 0.12 is contributed by India.^[2] It is also estimated that 15% cases of chronic obstructive pulmonary disease (COPD) are due to occupation or work-related.^[3] Among all occupation, health is a major concern in driving occupation.^[4] Auto rickshaws are one of the most common, cheaper and easily available form of public transport in most of the cities of India.^[5] The

environment in which auto rickshaw drivers spend their maximum time is polluted, dangerous and very noisy.^[6] They are exposed to harmful pollutant gas such as carbon monoxide, sulfur dioxide, and nitric oxide which irritates the respiratory tract leading to the development of restrictive and obstructive lung disease.^[7] Long-term exposure to traffic-related air pollution contributes to the development of COPD and respiratory problems such as cough, cold, breathlessness, and chest pain.^[8,9] Even auto rickshaw drivers are at higher risk of developing cardiovascular disease, musculoskeletal, and hearing problems. Many studies have been done on cardiovascular risk factors and musculoskeletal problems among auto rickshaw drivers.^[10,11] Therefore, this study was conducted to estimate the respiratory symptoms and PEFR among auto rickshaw drivers working in Mangaluru city.

MATERIALS AND METHODS

A cross-sectional study was done among auto rickshaw drivers working in Mangaluru. After obtaining ethical clearance from Institution Ethic Committee, the study

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was conducted for a period of 2 months from July 2017 to August 2017. Full-time auto rickshaw drivers, who were working for at least 6 months were included in this study. The convenience sampling method was used to collect data. The information regarding sociodemographic profile, dietary habits, addictions, and physical activity was collected in the pretested semi-structured questionnaire by interview method after taking informed written consent from all study participants. The respiratory examination was done, and lung function was assessed by the peak flow meter to measure peak expiratory flow rate (PEFR).^[12] The procedure for estimating the PEFR was demonstrated to all study participants. They were asked to take a maximal deep breath, then place the peak flow meter in their mouth and expire out through the mouth as hard and as fast as possible into the apparatus in the standing position.^[12] The procedure was done thrice, and best of three reading was taken as the final peak expiratory flow value. The readings were compared with the reference PEFR values for the Indian men corresponding to their age.^[13] The collected data were compiled, entered using excel sheet, and analyzed using statistical software. Chi-square test was used to test the association between the attributes and significance level was fixed at $P < 0.05$.

RESULTS

A total of 188 auto rickshaw drivers were included in this study, and all were male. The mean age was 34.11±9.63 years, and maximum participants (36.2%) were in the age group of 41–50 years. Among all participants, 182 (96.8%) were married, and the majority of participants were educated till middle school (56.4%) followed by high school (26.1%) and primary school (10.1%). Majority of participants belonged to Class IV (51.1%) followed by Class III (34.0%) according to modified B. G. Prasad classification of socioeconomic status. Among 188 participants, almost half of the participants (48.9%) had 6–10 years of service followed by 26.6% of >10 years of service. Maximum of participants (56.4%) were working for >10 h per day [Table 1].

The most common sign and symptoms among participants were breathlessness (28.7%), cough (19.7%), and rhinorrhea (12.2%) [Table 2].

Out of 188 participants (32.4%) drivers had PEFR < 80% [Figure 1]. Tobacco consumption was associated with low PEFR. Participants who were working for >10 years had higher chance of low PEFR (80%), which was significant [Table 3].

DISCUSSION

The present study showed that respiratory symptoms are the most common problems among auto rickshaw drivers. The maximum participants were in the age group of 41–50 years, and majority of them were working for >10 h per day. The

Table 1: Sociodemographic characteristics of study participants ($n=188$)

Sociodemographic characteristics	Frequency (%)
Age (in years)	
<20	4 (2.1)
21–30	43 (22.9)
31–40	54 (28.7)
41–50	68 (36.2)
>50	19 (10.1)
Marital status	
Unmarried	4 (2.1)
Married	182 (96.8)
Separated/Divorced	2 (1.1)
Religion	
Hindu	52 (27.6)
Muslim	118 (62.8)
Christian	18 (9.6)
Education	
Illiterate	7 (3.7)
Primary	19 (10.1)
Middle	106 (56.4)
High school	49 (26.1)
PUC and above	7 (3.7)
SES (Modified BG Prasad classification 2017) ^[12]	
Class 2	13 (6.9)
Class 3	64 (34.0)
Class 4	96 (51.1)
Class 5	15 (8.0)
Years of service (in years)	
<5	46 (24.5)
6–10	92 (48.9)
>10	50 (26.6)
Duration of working hour/day	
<10	82 (43.6)
>10	106 (56.4)

Table 2: Prevalence of respiratory symptoms and signs among study participants

Type of respiratory morbidity	Frequency (%)
Symptoms	
Cough	37 (19.7)
Cough >2weeks	4 (2.1)
Breathlessness	54 (28.7)
Rhinorrhea	23 (12.2)
Chest pain	11 (5.8)
Sign	
Wheeze	9 (4.8)
Hemoptysis	2 (1.1)

prevalence of smoking among participants was 42.0%. The main respiratory complaints of participants were

Table 3: Factors associated with low PEFR among the study population (n=188)

Parameters	PEFR		Total	Chi-square value	P-value
	< 80%	> 80%			
Age (in years)					
<40	39 (38.6)	62 (61.4)	101	3.787	0.051
>40	22 (25.3)	65 (74.7)	87		
Years of service (in years)					
<10	21 (15.2)	117 (84.8)	138	70.273	0.000
>10	40 (80.0)	10 (20.0)	50		
Duration of driving per day (in hour)					
<10	29 (35.4)	53 (64.6)	82	0.565	0.452
>10	32 (30.2)	74 (69.8)	106		
Smoking					
Yes	42 (53.2)	37 (46.8)	79	26.682	0.000
No	19 (17.4)	90 (82.6)	109		

PEFR: Peak expiratory flow rate

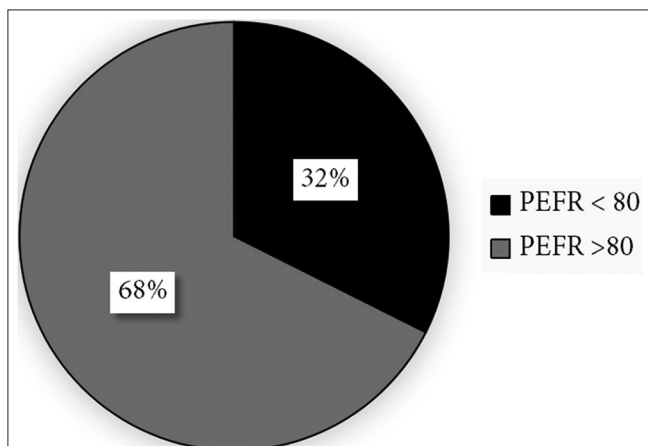


Figure 1: Distribution of peak expiratory flow rate among the study participants (n = 188).

breathlessness (28.7%) followed by cough (19.7%). In this study, 32.1% of participants had low PEFR (<80%). Those participants who were working for >10 years, the prevalence of low PEFR was 80%, and it was highly significant. Among smokers, 53.2% of participants had low PEFR, which was statistically significant.

The prevalence of smoking in this study was quite high compared to global adult tobacco survey data, which showed the prevalence of smoking as 24% in the general population.^[14] Even, Stephen *et al.* also showed the high prevalence of smoking (64%) among auto rickshaw drivers of Puducherry.^[9] Singh *et al.* reported the prevalence of breathlessness and cough as 13.18% and 7.73%, respectively, among auto rickshaw drivers of Agra, which was similar to our study findings.^[15] In this study, maximum had complaints of breathlessness and cough that may be due to smoking habit and harmful environment. The prevalence of low PEFR in this study was similar to the finding of Stephen *et al.* who showed 28% of auto rickshaw driver had abnormal PEFR (<80%).^[9]

Even Ajay *et al.* study also showed that auto rickshaw had lower PEFR compared to residents of Davangere.^[16] The participants who had service period of >10 years had high chance of low PEFR and the reason may be high exposure to environmental pollutants for longer duration. Similar findings were observed and comparable by Ajay *et al.*^[16] In a Binawara *et al.* study, 50% of drivers were smoker among those, who developed restrictive lung disease, which was comparable to our study findings.^[17]

As it was a cross-sectional study, but still the study showed the significant association of PEFR with duration of service and smoking habit, which are considered as the strength of this study. The limitation of this study was insufficient sample size for stratified analysis, and the findings of this study cannot be applicable to the general population.

CONCLUSION

The respiratory symptoms such as breathlessness and cough are quite high among auto rickshaw drivers. Smoking, years of service and duration of work per day were important risk factors for developing respiratory symptoms as well as reduced PEFR. Hence, there is a need to increase awareness among them for the prevention of occupational disease and regular application of personal protective measures.

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