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An exploratory study to assess respiratory status among auto rickshaw drivers in selected areas of Pune city

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Abstract
Air pollution has been aggravated by developments that typically occur as countries become industrialized: growing cities, increasing traffic, rapid economic development and industrialization, and higher levels of energy consumption. The high influx of population to urban areas, increase in unplanned urban and industrial development have led to the problem of air pollution.[1]
In this study a large group of the sample (33%) belong to age group of 51-60 years. Age and Chronic exposure to pollutants shows a negative effects on respiratory status. It was observed that 19% of sample had blood pressure in the range120\80- 139\89 and 25% of the sample had PFT falling in the range of severe.
Maximum participants were in the range of normal and mild respiration rate which was calculated in 1 minute. 39% of the sample had normal saturation and 54%of the sample had mild changes in their saturation.

Keywords: respiratory status, pollution, auto rickshaw drivers

Introduction
Currently, in India, air pollution is widespread in urban areas where vehicles are the major contributors and in a few other areas with a high concentration of industries and thermal power plants. Vehicular emissions are of particular concern since these are ground level sources and thus have the maximum impact on the general population. Also, vehicles contribute significantly to the total air pollution load in many urban areas [1]. Experimental studies indicate that due to airborne contaminants of diesel fumes, changes in PFTs are seen due to injury to airways and parenchyma in subjects who are exposed to it, because lungs are the major site of contact between the body and the environment [3].
Studies have also shown that three wheeler drivers are most affected by the air pollutants like NO2, PM, SO2. As these are the major pollutants of pollution caused by vehicle and these drivers are the one who spend most of their time in traffic [4].
The human lungs encounter approximately 7 litres of air per minute. Thus it is evident that lungs are a target for adverse effects of noxious gases due to air pollution. The airborne contaminants include: Nitric oxide (NO2), Carbon mono oxide (CO), Carbon dioxide (CO2), Ozone (O3) Sulphur dioxide (SO2), Hydrocarbons and Suspended particulate matters (SPM). They are responsible for injury to airways and lung parenchyma and lead to bronco-constriction, increased mucous secretion and increased alveolar swelling. Nitrous fumes may results acute pulmonary oedema [2].

Objectives
1. To assess respiratory status of auto rickshaw drivers in Pune city.
2. To associate the findings of respiratory status of auto rickshaw drivers with selected demographic variables.

Materials and Methods
In order to achieve the desired objectives of the present study Quantitative research approach with Non-experimental research design. The validity was done by the experts from nursing field, Reliability was done by test-retest method (r=1), which suggest tool was reliable. Pilot study was done by 10 samples. The study was conducted in selected areas of Pune. The study consists of 100 samples which were selected by non-probability convenient sampling method. Data collection was accomplished by using observational checklist. The data was analyzed by using descriptive and inferential statistics.

Results
Data was analysed as per the objectives.

Table 1: Demographical data of auto rickshaw drivers

Age in years	Frequency	Percentage
21-30	22	22%
31-40	22	22%
41-50	23	23%
51-60	33	33%
Working Hours		
4hrs- 6hrs	2	2%
7hrs-9hrs	37	37%
10hrs-12hrs	51	51%
13hrs-15hrs	10	10%
Qualification		
Primary	26	26%
Secondary	47	47%
Higher secondary	22	22%
Graduation	05	05%
Driving scince (years)		
1-10	60	60%
21-20	23	23%
21-30	12	12%
31-40	05	05%

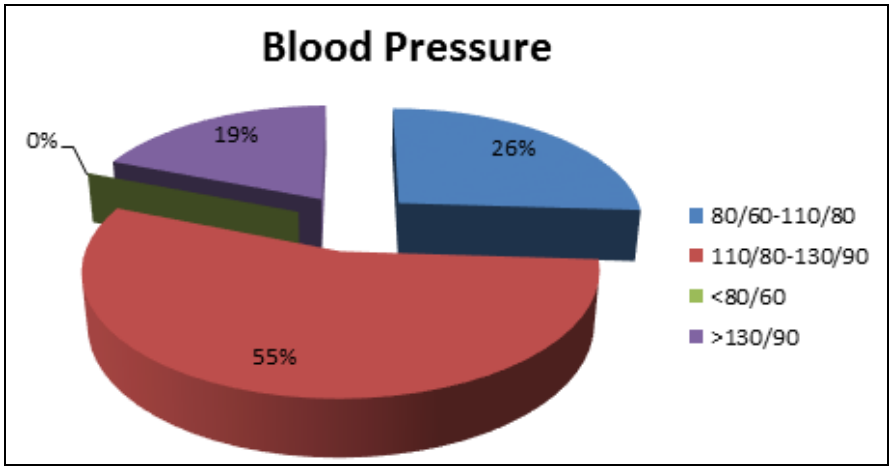

Fig 1: Blood pressure of auto rickshaw drivers

Above figure shows that 55% of the sample have blood pressure in moderate range.

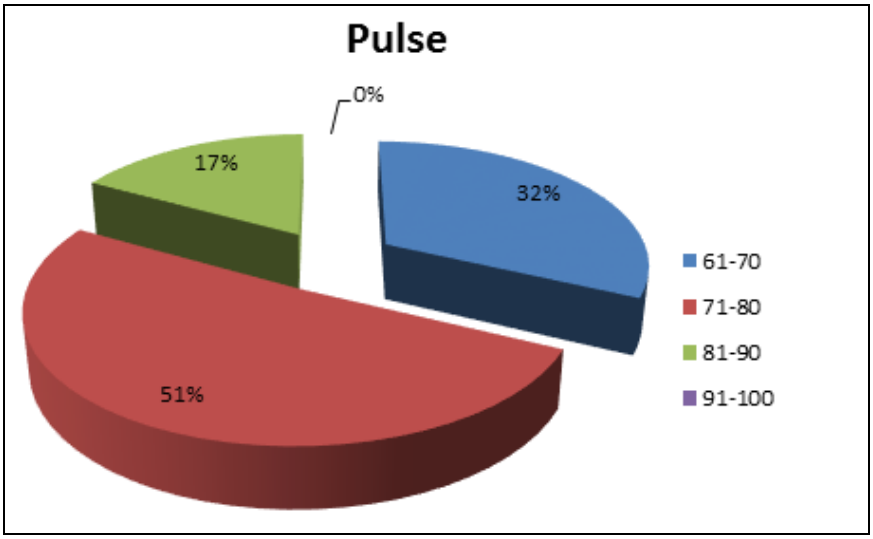

Fig 2: Pulse rate of auto rickshaw drivers measured in one minute

Above figure shows that Maximum participant were in normal range. i.e 51%.

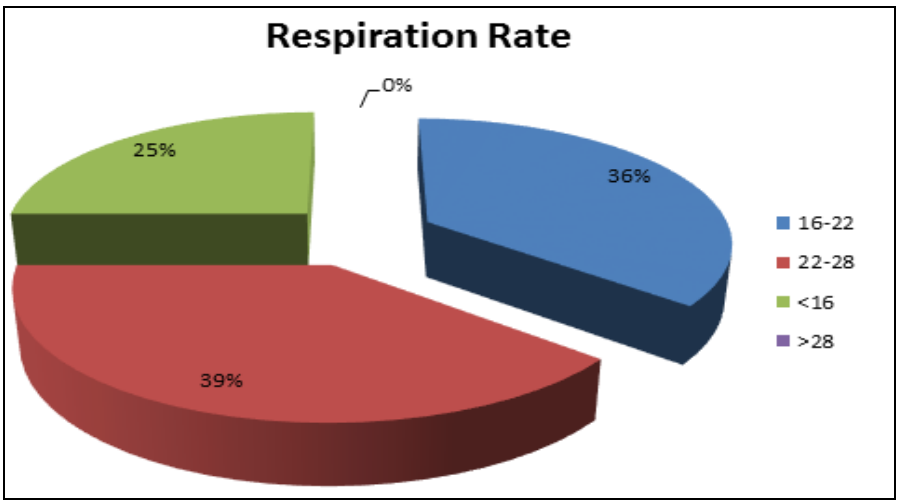

Fig 3: Respiration rate of auto rickshaw drivers measured in one minute

Above figure shows that maximum participant were in the range of normal n mild respiration rate which we calculated in 1 minute.

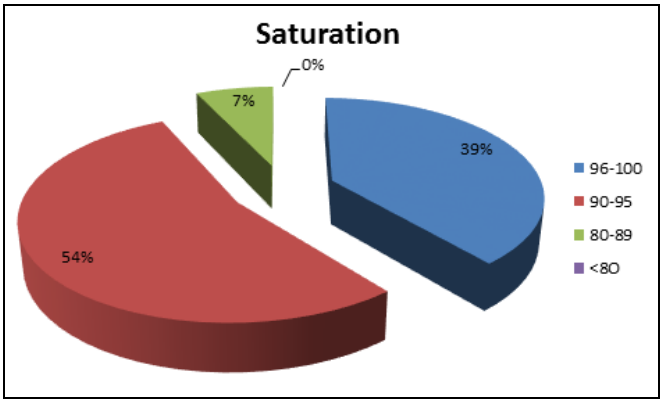

Fig 4: Saturation level of auto rickshaw drivers

From the above figure we found that maximum number of samples were having saturation level in mild range. And 39% were in normal range

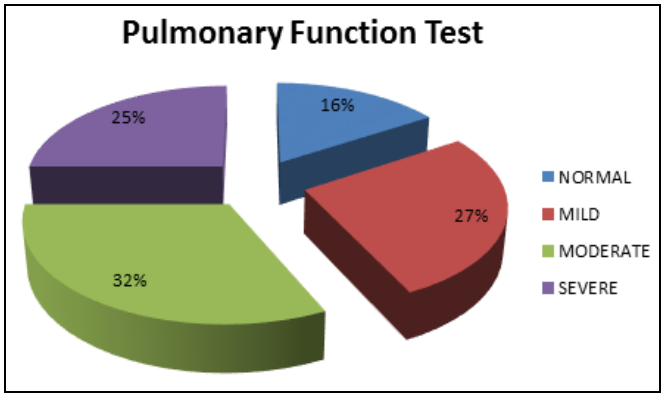

Fig 5: Impression of pulmonary function test of auto rickshaw drivers

From the above figure we found that maximum number of samples were having PFT level below normal parameters. i.e 84%.

Table 2: Association of demographic variables with respiratory status n=100

S. No	Demographic Variables	Chi Square (x^2)	P-Value	Table value	Significance
1	Age	31.966	0.000	12.59	Significant
2	Working hours	6.355	0.385	9.49	Not significant

The data in the table no 2 shows that there is association between age with the respiratory status as x^2 value is greater than table value and working hours shows that x^2 value is smaller than Table value (p-value) so there is no association with respiratory status.

Conclusion

The study concludes that 70.2% of sample had some adverse changes in respiratory status. It is recommended that regular health checkup, precautionary measures to be taken up to prevent the adverse effect of air pollution.

And as the person was younger better the respiratory status was and as age was increasing respiratory was getting poor.

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