

Original Research Article

Spirometric evaluation of traffic police constables in Vijayawada – exposed to automobile pollution

Dr. B. Phani Kumar¹, Dr. K. Ramesh Kumar², Dr. Yugandhar³, Dr. Bhanurekha⁴¹Assistant professor, dept of Pulmonary Medicine, Osmania Medical College, Hyderabad²Associate Professor of Pulmonary medicine, Osmania Medical College, Hyderabad^{3,4}Professor of pulmonary medicine, Dr. PSIMS & RF, chinnoutpalli

*Corresponding author

Dr. B. Phanikumar

Email: bathi70@gmail.com

Abstract: 100 police constables working in four busy traffic junctions in Vijayawada for not less than five years have been subjected for Spirometry and found out those exacerbations of asthma and COPD were associated with high concentration of SO₂ in the air and high concentration of CO increased the chance of heart disease. 55% of the traffic constables are having one or other complaints regarding their health. Respiratory symptoms like cough, shortness of breath, nasal allergies and chest tightness. Forced Vital Capacity (FVC) less than 70% predicted was seen in 26% of subjects. Mild defect in 19%, moderate in 6% and severe defect in 1% of subjects. FEV₁ less than 70% predicted was seen in 18% of subjects Mild in 15%, moderate in 2%, and Severe defect in 1% of subjects.

Keywords: COPD Forced Vital Capacity (FVC).

INTRODUCTION:

Air pollution is growing menace throughout the world. It is Nitrogen, suspended particulate matter [SPM] lead to increased morbidity in the respiratory tract. An estimated 1.4 billion urban residents worldwide are exposed to annual average for Suspended Particulate Matter (SPM) or Sulphur dioxide (SO₂), which are higher than the minimum standards recommended by the WHO [1] (UNEP & WHO, 1988). The data from the third world countries suggest that the trend of SO₂ concentrations is increasing (UNEP [2], 1991 Air pollution is not a special problem of developed countries, but with rapid urbanization and increased vehicular traffic, developing countries like India is experiencing more and more of air pollution in many of its cities. Inspired by the studies from India, through very few like Kamath *et al.*; [3] from Bombay Mohanrao *et al.*; [4] from Ahmedabad ST ingle, B G pachpande *et al.*; [5], sharat gupta *et al.*; [6], this project was under taken to screen the sample population i.e. Traffic Police Constables of vijayawada who are maximally exposed than other citizens by virtue of their duties, to look for ill effects of automobile pollution over the respiratory system.

National Environmental Engineering Research Institute (NEERI) has set up laboratories in nine major

cities of India i.e., Bombay, Delhi, Calcutta, Madras, Hyderabad, Kanpur, Jaipur, Ahmedabad and Nagpur in order to monitor various parameters of outdoor air pollution like sulphur dioxide, oxides of nitrogen, and suspended particulate matters. Frequent cold was attributed to the oxides of nitrogen, intermittent cough to suspend particulate matter and oxides of nitrogen, chronic cough and shortness of breath to all the pollutants i.e., suspended particulate matter and oxides of nitrogen. Exacerbations of asthma and COPD were associated with high concentrations of SO₂ in the air.CO increases the chance of heart diseases.

OBJECTIVE:

The main objective is Spirometric evaluation of traffic police constables working in four different places in Vijayawada exposed to automobile pollution.

MATERIALS AND METHODS:

100 traffic police constables working at different traffic junctions of Vijayawada all are male subjects with age ranging between 21 and 58 years. Persons working in traffic police station offices and traffic control room with no field exposure are excluded from the study.

RESULTS:

55% of the traffic constables are having one or other complaints regarding their health. Respiratory symptoms like cough, shortness of breath, nasal allergies and chest tightness Forced Vital Capacity (FVC) less than 70% predicted was seen in 26% of subjects. Mild defect in 19%, moderate in 6% and severe defect in 1% of subjects. FEV₁ less than 70% predicted was seen in 18% of subjects Mild in 15%, moderate in 2%, and Severe defect in 1% of subjects .

CONCLUSIONS:

55% of the traffic constables are having one or other complaints regarding their health

- Respiratory symptoms like cough, shortness of breath, nasal allergies and chest tightness are seen in 31% of subjects.
- Cough and tightness of chest are more frequent in persons with experience less than 5 years.
- Upper zone infiltrates on chest X-ray were noticed in 1 case which was proved to be tuberculosis.
- Forced Vital Capacity (FVC) less than 70% predicted was seen in 26% of subjects. Mild defect in 19%, moderate in 6% and severe defect in 1% of subjects. FVC defect (i.e. less than 70% predicted) was more prevalent among elder age group individuals implicating more experience – more exposure and thus more defect
- FEV₁ less than 70% predicted was seen in 18% of subjects Mild in 15%, moderate in 2%, and Severe defect in 1% of subjects.
- Defect in FEV₁ is more frequent in persons working one town and Autonagar areas where air pollutant levels are also high. Though statistically insignificant trend shows negative relationship between the air pollutants and ventilator functions.
- Defect in FEV₁ was also compared with smoking pattern. Two non-smokers with experience more 20 years had FEV₁ less than 50% predicted.
- 8% of subjects had FEF_{25-75%} level less than 65% predicted. The defect increased with increase in pack years of smoking in the study group.

REFERENCES

1. UNEP and WHO. Assessment of Urban Air Quality, Global Environment Monitoring Service, United Nations Environment Programmes and World Health Organisation, 1988.
2. UNEP Environmental Data Report, 1991-92.
3. Kamat SR, Godkhindi KD, Shah VN, Bhiwankar NT, Patade VD, Tyagi NK, Rashid SA. Prospective 3 Year Study of Health

- Morbidity In Relation To Air Pollution in Bombay, India Methodology & Early Results Upto 2 Years. Lung India. 1984 Feb 1; 2(1):1.
4. Rao NM, Patel TS, Raiyani CV, Aggarwal AL, Kulkarni PK, Chatterjee SK, Kashyap SK. Pulmonary function status of shopkeepers of Ahmedabad exposed to auto exhaust pollutants. Indian journal of physiology and pharmacology. 1992 Jan 1; 36:60-.
 5. Ingle ST, Pachpande BG, Wagh ND, Patel VS, Attarde SB. Exposure to vehicular pollution and respiratory impairment of traffic policemen in Jalgaon City, India. Industrial Health. 2005; 43(4):656-62.
 6. Gupta S, Mittal S, Kumar A, Singh KD. Respiratory effects of air pollutants among nonsmoking traffic policemen of Patiala, India. Lung India. 2011 Oct 1; 28(4):253.