



**ORIGINAL RESEARCH PAPER**

**Physiology**

**PULMONARY FUNCTION TEST IN PETROL PUMP WORKERS OF DIBRUGARH CITY**

**KEY WORDS:**

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**ABSTRACT**

**Background:-** Petrol pump workers are continuously at the risk of ill effects of petrol/diesel fumes due to their occupation. So this study was conducted to see the extent of the occupational hazard. **Materials And Method:-** This is a cross-sectional study design in which 240 participants (120 petrol pump workers and 120 normal individuals) in different areas of Dibrugarh city were recruited. Pulmonary function tests were assessed by measurement of FVC, FEV1, and FEV1/FVC.

**INTRODUCTION:-**

Rapid urbanization, trends have resulted in a tremendous rise in the number of transportation vehicles, thereby resulting in the increased need of petrol and diesel. Both petrol and diesel undergo combustion in automobile engines and give rise to combustion-derived nanoparticles (CDNPs). These particles are highly respirable and have a large surface area where organic materials can be adsorbed easily. In India, the percentage of benzene in automobile engines is about 3%. Petrol-pump workers who are exposed to the petrol fumes exhibit a number of clinical signs and symptoms which may be due to benzene toxicity. So this study was carried out to see the deleterious effect of petrol and diesel on the lung functions of petrol pump workers.

**MATERIALS AND METHODS:-**

The study was conducted at the various petrol pumps of Dibrugarh city, Assam in 240 participants.

Participant recruitment procedure: Every consecutive male individual working at petrol pump with minimum exposure of 3 years in different areas of Dibrugarh city was recruited as exposed group, whereas in the control group, the normal male healthy individuals were recruited who were not regularly exposed to petrol pump.

The ethical committee clearance and an informed consent of the subjects were taken. Subjects with clinical abnormalities of the vertebral column and the thorax, diabetes mellitus, pulmonary tuberculosis, bronchial asthma, chronic bronchitis, bronchiectasis, emphysema and malignancy and those who were drug addicts, cigarette smokers, tobacco chewers and those who had undergone abdominal or chest surgery were excluded from the study.

The pulmonary function tests were performed at their workplace by using a Med-spiror (Recorders and Medicare System, Chandigarh). It is a computerized spirometer which is designed to be used with electromechanical pneumotach. The testing procedures are quite simple and non-invasive and are harmless to the patients.

The FVC, FEV1 and FEV1/FVC values were calculated. All the gas volumes were corrected to B.T.P.S (Body temperature, ambient pressure and saturated with water vapour) automatically by the instrument. The data was analyzed by using the computer software, Microsoft Excel Statistical Package of Social Sciences (SPSS version 10.0). The mean and standard deviation (SD) were calculated and reported for the quantitative variables

**RESULT AND OBSERVATION:-**

The spirometric data among the study population and control is shown in table 1. The data shows that there is a decrease in the values of FVC and FEV1 in the petrol pump workers as compared to aged matched controls, but the values of FEV1/FVC% shows an increase.

**Table 1. Spirometric Data Among The Study Population**

parameters	Petrol pump works (mean±SD)	controls (mean±SD)	p-value	significance
FVC (LITRES)	3.47±0.51	4.07±0.41	<0.001	Highly significant
FEV1 (LITRES)	3.27±0.41	3.71±0.39	<0.001	Highly significant
FEV1/FVC %	94.60±3.65	91.05±3.27	<0.001	Highly significant

**DISCUSSION:-**

In this study there was a significant decrease in FVC value in petrol pump workers as compared to control, this is consistent with the findings of Chawla A, 2 and Singhal M, 3. The study also showed a decline in FEV1 in petrol pump workers as compared to control, this is similar to the findings of Uzma N 4 and Zuskin E, 5. The increase in FEV1/FVC% indicated a restrictive pattern of airway disease same as finding of Jigar N Mehta et al 6.

**CONCLUSION:-**

The occupational hazards faced by the petrol pump workers taking a toll on their lung. Use of protective mask will be beneficial in decreasing the progression of restrictive lung disease. Since most individuals are likely to remain asymptomatic till significant pulmonary damage results, a regular monitoring of the lung function is desirable.

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