

A STUDY OF PEFR AND FEV1/FVC RATIO IN SAWMILL WORKERS AT JAMNAGAR CITY

Kirit Sakariya**, Bharat Chavda*, Ashvin Sorani*,

*Assistant Professor, ** Associate Professor Department of Physiology PDU Medical College, Rajkot 360007

Background: The occupation-related lung diseases are an important aspect of clinical medicine. Spirometry plays a significant role in the diagnosis and prognosis of these diseases and describes the effects of restriction or obstruction on lung function. **Aim:** Based on this background we have conducted this study to examine the effects of wood dust on PEFR and FEV1/FVC in sawmill male workers and compare their lung functions with their predicted values during PFT. **Method:** The present study was carried out in department of physiology Shree M P Shah medical college Jamnagar. 25 saw mill worker had been examined. **Result:** Among them PEFR actual value (4.57 ± 0.34) and predicted value (8.68 ± 0.14) are highly significant ($P < 0.0001$). FEV1/FVC ratio actual (57.74 ± 1.9) and predicted value (88.03 ± 2.4) are also significant ($P < 0.001$). **Conclusion:** Prolonged exposure to wood dust in saw mill workers causes declining respiratory functions.

Key Words: pulmonary function test, sawmill workers, PEFR and FEV1/FVC ratio

Author for correspondence: Dr. Bharat Chavda, Department of, Physiology PDU Medical College, Rajkot 360007 e- mail: kirit sakariya2002@gmail.com

Introduction:

With development of civilization, increased population and indiscriminate industrialization, the intensity of pollution are escalating day by day. All these factors have an effect on the respiratory health of population. The prevalence of occupational lung diseases varies from 15 to 30% in various parts of India.

The occupation-related lung diseases are an important aspect of clinical medicine. Spirometry plays a significant role in the diagnosis and prognosis of these diseases and describes the effects of restriction or obstruction on lung function.

The normal peak flow rate value for adult male is 450-550 L/min and for adult female is 350-450 L/min. Our study based on these fact workers who are working in saw mills or wood industries exposed to wood dust. They work in factories for minimum 8 to 12 hours which is also time for exposure of maximum wood dust.

In view of the fact that sawdust puts the workers in jeopardy, this study was designed to investigate the effects of saw-dust on the peak expiratory flow rate (PEFR) and FEV1/FVC further to reduce possible health risks in saw-mill workers by providing information on hazards of saw dust (wood dust).

Jamnagar city is sea coast area so humidity is somewhat more as compare to any non-sea coast area. Dust particles stay more in air due to this higher humidity. These particles damage more due

to lack of proper ventilation and lack of environmental factors.

Based on this background we have conducted this study to examine the effects of wood dust on PEFR and FEV1/FVC in sawmill male workers and compare their lung functions with their predicted values during PFT_(1,2,6).

Material and Methods:

The present study was carried out in department of physiology Shree M P Shah medical college Jamnagar. 25 saw mill worker had been examined. Their actual and predictable values have been taken and compared. Inclusion criteria had been age between 25-50yrs and minimum 1 year of working experience saw mill factory with exclusion of smoking, chronic disease and any muscular or spinal deformity. Instrument to examine these dynamic lung volumes was medspiror which is designed as simple, easily operable and giving highly accurate results with actual, predicted and percentage of predicted values. It measures dynamic lung volumes by a flowing sensing device such as pneumotechometer. Mainly we have taken PEFR AND FEV1/FVC RATIO to study in sawmill workers and control group. Comparison has been done by using paired t test in graph pad prism version 6 software and p value has been obtained. Institutional Review Board (IRB) was not existed at the time of data were collected.

Result: Table 1: shows anthropometric measurements which are comparable with our inclusion and exclusion criteria.

Table 2 shows mean \pm SD values of PEFR and FEV1/FVC in sawmill workers those values are highly significant when compared with predicted values ($p < 0.001$)

Table:1 Anthropometric measurement of sawmill workers

variables	Sawmill workers
Age	33.8
Height	165
Weight	58.43
Duration of work(years)	14.72
Working hours(hours/day)	8.32

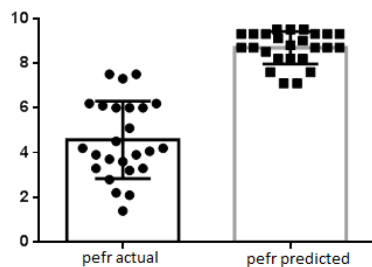
Table:2 Comparison of actual and predicted values of PEFR and FEV1/FVC ratio in sawmill workers

variables	Actual values	Predicted values	P values
PEFR	4.57 \pm 0.34	8.68 \pm 0.14	$P < 0.0001^*$
FEV1/FVC	57.74 \pm 1.9	88.03 \pm 2.4	$P < 0.001^*$

*Suggested highly significant values

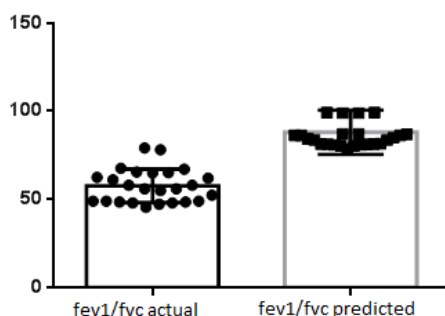
Graph- 1:

Frequency distribution of PEFR data in wood workers



Graph-2

Frequency distribution of FEV1/FVC ratio in wood workers



Discussion:

The present study has been carried out in 25 saw mill workers. We found that most of the saw mill workers are suffering from itching of eye, nasal blockage, runny nose and coughing.

Erdincosman et al also found same problem with their study on wood workers⁽²⁾. We found no more ventilation and protective measures at our study in Jamnagar city. We also have found the complaint of redness of eyes, rhinorrhoea and sore throat in workers working more than 10 years.

Milanowski et al found in their study in Poland that complaint of eye, nose and sore throat workers working in wood factories more than 10 years.^(5,4)

It was found in our study mean values for actual PEFR (4.57 \pm 0.34) is significantly less than predicted values for same sawmill workers (8.68 \pm 0.14). Kamat SR et al studied PEFR among ginning mill workers. Mean values of actual values of PEFR was significantly lower than its predicted values.⁽³⁾

Actual values of FEV1/FVC ratio in sawmill workers (57.74 \pm 1.9) are significantly lower than their PEFR predicted values. Milanowski J, Gora A et al studied FEV1/FVC ratio in furniture workers and mean values (60 \pm 2.1) quite similar to our study.⁽⁵⁾

Conclusion:

In present study overall assessment has been suggesting that working in saw mill factories or person exposed to wood dust shows greater risk of decreased lung functions. It causes preliminary restrictive lung disease in wood workers. Proper protection and ventilation should be advised to prevent declined lung functions.

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