A STUDY ON DYNAMIC LUNG VOLUMES OF SAWMILL WORKERS IN JAMNAGAR CITY

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Abstracts: **Introduction & objectives:** large no. of workers especially those employed in saw mill factories, fiber board and clip board factories and furniture factories are regularly exposed to wood dust. Our study based on these fact workers who are working in saw mills or wood industries exposed to wood dust. The aim of this study was to examine dynamic lung volumes in sawmill workers and to compare with healthy non workers. **Materials & Methods**: Study was carried out in 25 workers and 25 healthy non workers as control groups. Physical examination with exclusion and inclusion criteria has been done. Dynamic lung volumes examined with MEDSPIROR. **Results:** The mean values of FVC (2.4±0.55), FEV1 (2.29±0.47) are significantly low as compare to control group ($p<0.05$) and mean value of FEV1/FVC (87.97±18.3) are significantly higher in workers as compare to control group ($p<0.05$). **Conclusion:** As a result, in this study pointed out towards restrictive lung disease among the sawmill workers exposed to wood dust.

Key words: sawmill workers, wood dust, dynamic lung volumes

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Introduction:

Among the various types of organic dusts to which humans are exposed, wood dust is one of the world's most important, as it is harvested or processed in almost all countries for its traditional use for fuel and construction material. The elevated dust exposure observed in study can explained by combination of factors, including lack of awareness about hazards of wood dusts, inadequate and ineffective dust extraction system or lack of proper maintenance of ventilation at work places[8]

A large no. of workers especially those employed in saw mill factories, fibre board and clip board factories and furniture factories are regularly exposed to wood dust. 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.

Exposure to wood dust and substances connected to wood processing has been associated with variety of hazard both upper and lower respiratory tract disease particularly restrictive lung disease have been noticed and described.

Spirometry is commonly used in clinical medicine and research to evaluate effects of exposure on respiratory system. This research article addresses some common problems in using, evaluating and reporting spirometry results in companies or for research purposes.

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 dynamic lung volumes in sawmill male workers and compare their lung functions with apparently healthy non workers in Jamnagar city.

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 against 25 apparently healthy 25 male non workers. Control group was comparable with age, sex, height, weight to study group. Inclusion criteria had been age between 25-50yrs and minimum 1 year of working experience I 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 operatable and giving highly accurate results. It measures dynamic lung

volumes by a flowing sensing device such as pneumotechometer. Mainly we have taken FVC, FEV1 AND FEV1/FVC RATIO to study in sawmill workers and control group. Comparison has been done by using paired t test in MS Excel and p value has been obtained.

Institutional Review Board (IRB) was not existed at the time of data were collected.

Results:

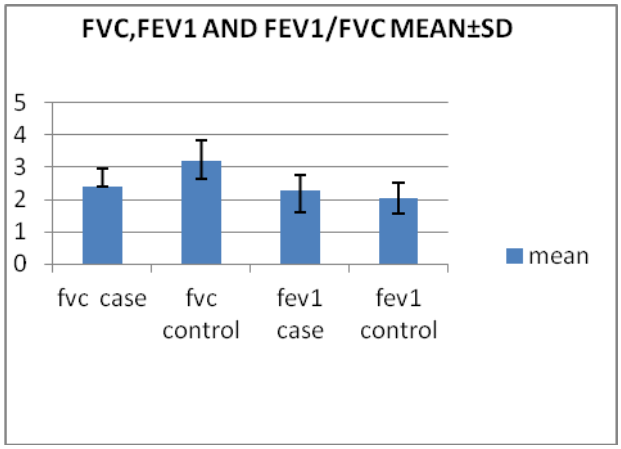
Table:1 Anthropometric measurement of workers and control

Variables	Case (saw mill workers)	Control (healthy non workers)
Age	33.8	36
Height	165.56	170
Weight	58.43	62
Duration of working in factories	14.72	
Working hours/day	8.32	

Table: 2 Comparison of dynamic lung volumes of sawmill workers and control group

Variables	Case (saw mill workers)	Control (healthy non workers)	P value
FVC(liter)	2.4±0.55	3.18±0.67	0.000205*
FEV1 (lit/sec)	2.29±0.47	2.05±0.46	0.064226
FEV1/FVC	87.97±18.30	75.85±22.18	0.012221*

(* suggest significant values (p<0.05)



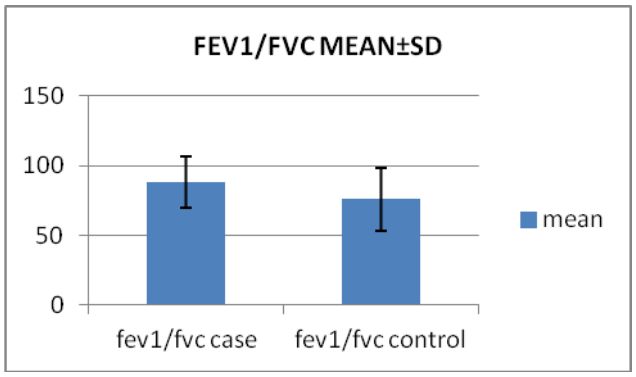


Table 1 shows anthropometric measurements which is comparable with control group. Table 2 shows mean values of FVC, FEV1 and FEV1/FVC in sawmill workers those values FVC (2.4±0.55) is highly significant (p<0.05) and for FEV1 (2.29±0.47) is comparatively not significant (p>0.05). FEV1/FVC in sawmill workers (75.85±22.18) is significant (p<0.05) as compare to control group of healthy non workers.

Discussion:

The present study has been carried out in 25 healthy non wood workers as control group and 25 saw mill workers .We found that most of the saw mill workers are suffering from itching of eye, nasal blockage ,runny nose , coughing . Erdinc osman et al also found same problem with their study on wood workers. 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[3,4,7].

It was found in our study that mean value for FVC in workers 2.4±o.55 is significantly less than the control group that is 3.18±0.67. It is also statistically significant ($p<0.05$). Abrak P,Belgin c et al studied FVC in workers those working in furniture decoration they got statistically significant value among the workers similar to our study. Melanowski et al have studied among furniture factory workers even they got significant lower mean FVC in workers. Kamat SR et al studied FVC in ginning factory worker they found significant lower FVC among workers [4,7] .

The mean values of FEV1 in workers is 2.29±0.47 which is marginally less than in control group that is 2.05±0.46 which is not statistically significant. Melanowski et al found significant lower in FEV1 values in worker as compare to control group.). Abrak P,Belgin c et al did not find any significant lower FEV1 values in their study[4,1].

The ratio of FEV1/FVC important in diagnosis of restrictive and obstructive lung disease (Fishman). The mean values of FEV1/FVC in workers is 87.97±22.18 which is significantly higher as compare to control group 75.85±22.18. High values indicating towards the restrictive lung disease among the workers. Milanowsky et al found significant higher FEV1/FVC in their study in workers which is similar to our study[4].

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

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