CHAPTER 5

Summary and Conclusion
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There are many kinds of respirable particles in the environment. Some are essentially peculiar to the occupational environment while others commonly occur in the environment. Even in very low levels of pollution in the workplace may result in significant changes in the lung function. The repeated and prolonged inhalation of the same substance in the workplace may result in subtle changes in the ventilatory capacity which eventually lead to irreversible loss of lung function.

The study was undertaken to evaluate the lung functions of working population of Kerala. A trial number of 678 subjects including 163 control subjects, belonging to seven different occupations, viz. wood, workers, bakery workers, cotton mill workers, Insulinoid plant workers, printing press workers, sedentary workers and laborers, of either sex were investigated. Pulmonary function tests were carried out with portable PC-based spirometer. About twenty-two lung function parameters were studied. The subjects were classified according to age as well as exposure duration and were compared with controls.

The lung volume and flow rates were found to be significantly lower than controls in both male and female occupational groups. The lung functions of exposed wood workers were uniquely lower than the controls. The lung volumes of wood workers were affected by the duration of employment while flow rates were not. Negative correlation was observed in lung volumes with duration of exposure. In bakery workers, lung volumes and flow rates were observed to be significantly lower than controls. Exposure duration also affected the lung volumes and flow rates. Negative correlation of lung function parameters with increased years of exposure was also noticed.
In cotton mill workers too, lung volumes and flow rates were found to be significantly lower than controls. Exposure duration was also related to lung volumes and flow rates. Negative but significant correlation was observed with increase in years of exposure. In workers of insecticide plant, only a few of the lung volumes and flow rates were lower than controls. Exposure had no effect on the lung volumes and flow rates.

In workers of printing press, lung volumes and flow rates were found to be significantly lower than controls in both male and female. Exposure also had affected lung volumes and flow rates in males whereas exposure duration had little effect on the lung functions of females. Negative correlation with years of exposure and lung functions was observed in male and female press workers.

In male and female sedentary workers, lung functions were lower than controls. The pulmonary function of male and female subjects varied with duration of exposure. Lung volumes and flow rates showed significant negative correlation with increase in years of employment. In female tailors too, lung volumes and flow rates were found to be significantly lower than controls.

The degree of change in lung functions varied with the occupational groups. It is due to the difference in the nature of job, the substance to which they are exposed, individual susceptibility and the physical activity involved in the occupation. The respiratory system respond to the pollutants. The intensity of response varies with the type and dose of pollution and the duration of inhalation. There is marked difference in the response by the two sexes.

Duration of employment also have altered lung volumes and flow rates in male and female groups except in workers of insecticide manufacturing plant. Lung functions were found to be significantly related to the duration of employment. In this case also, the two sexes differ in their response. The
The present study also revealed that lung functions are negatively correlated with years of employment.

On comparison among different occupational groups of males, significant differences were observed in lung functions of G1, G2, and G3 groups and lower lung function values were observed in sedentary workers while higher values were observed in bakery workers. Duration of exposure had greater effect on the lung functions of workers of printing press and bakery workers. In females, lower lung function values were observed in tailors.

Suggestions

1. Stringent efforts may be made to bring under control at workplace all chemical, physical, mechanical, biological and physiological agents that are known to be or suspected to be hazardous. Workers may be made aware of the health hazards of their occupation and should be encouraged to use the safety measures that will help reduce the risks.

2. It is the responsibility of the management to replace harmful substances by harmless or less harmful substances and to provide safe working environment and safety equipments.

3. Strict monitoring by government agencies may be conducted to ensure that pollution control equipments/devices are installed and that the pollution is within the permissible limits.

4. Use of equipments such as respirators, gloves, masks etc. may be encouraged.

5. Seminars, conferences, workshops etc. may be arranged to educate the workforce on the occupational health hazards and the importance of using safety devices.

6. As far as possible shifts may be arranged so that the level of exposure is not always the maximum to a particular worker.

7. The adverse effects of occupation generally increase with age. Therefore workers who are relatively older may be given jobs where the pollution is lesser such as office, packing area, security room, etc.