PREVALENCE OF LUNG DISEASE IN THE WORKERS OF SCISSORS MANUFACTURING INDUSTRIES IN MEERUT CITY – A SURVEY

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ABSTRACT

The aim of the present study was carried to study the prevalence of lung disease among the workers of small scale scissors manufacturing industries in Meerut City. The data were collected after conducting the survey during the period Jan 2005 to Jan 2009 in different divisions (Heat treatment, Processing, Polishing, Plating, Edging, Buffing, and Packing) of the scissors industries in different areas of Meerut city. The data were revealed that 50% - 100% workers were suffering from the lung disease.

Keywords: lung disease, scissors industry, workers.

1. INTRODUCTION

The total economy of Meerut, scissors and sports industries holds the valuable status. Among the various small scale industries of Meerut city, scissors manufacturing industries provide employment to at least 3% population of the city. Heavy metals are chemical elements that have a specific gravity at least five times that of water. The heavy metals most often implicated in human poisoning are lead, mercury, arsenic, cadmium, corroded iron particles. Some heavy metals such as zinc, copper, chromium, iron and manganese are required by the body in small amount, but these same elements can toxic in larger quantities.

Heavy metals may enter the body in food, water or air by absorption through skin and by respiration. Once in the body, they complete with and displace essential minerals and interfere with organ system functions. People may come in contact with metals in industrial works. Scissors manufacturing industries are one of them. So, the present study was carried to find out the prevalence of lung disease among the workers, working in the different divisions (Heat treatment, Processing, Polishing, Plating, Edging, Buffing, Packing) of industries.

METHOD OF STUDY

The survey was conducted during the period, Jan’ 2005 to Jan’ 2009 in different areas of Meerut, to find out the prevalence of lung diseases percentage. A small questionnaire was prepared and the workers working in the different divisions of the scissors industries were interviewed to collect the data. The geographical area of the city was divided in to five zones (East, West,
North, South and Central) and it was found that 78% of the small scale scissors industries were located in the central zone and 22% in the south zone, however, east, west and north zone are the posh area of the city.

Total 1000 workers (male : female = 900:100) were interviewed and the information related to their working hour, age group, weight, education, income, and religion was collected.

The data collected from the different divisions of the industry were analyzed to access the lung diseases percentage (Table: 1).

**INTERPRETATION OF DATA**

The data revealed that in the Polishing, Edging and Buffing divisions of the industry almost 100% of the workers of age group 20-48 were suffering from lung diseases. The average weight, working hour, income and education of these workers were (51-57 kg, 14-16 hours, Rs.3700 - 4000, second - fourth standard) respectively (Figure: 1).

In the Plating and Processing section 75-85% workers of 25-58 years of age were suffering from lung diseases however, their average monthly income, working hour, weight, and education was between 2400-3500, 12-15, 51-58 kg and second standard. The minimum case (50%) of lung diseases were examined in those workers who work in the Heat treatment and Packing division of the industry with minimum working hour (10-11 hour).

**Table: 1 Lung Disease among the workers of Scissors Manufacturing Industries**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Divisions</th>
<th>Gender</th>
<th>Weight (Kg)</th>
<th>Education</th>
<th>Age</th>
<th>24 Work Hour</th>
<th>No. of Workers</th>
<th>Monthly Income</th>
<th>Lung Disease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heat Treatment</td>
<td>M</td>
<td>50</td>
<td>3rd</td>
<td>25-45</td>
<td>11</td>
<td>20</td>
<td>4000.</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Processing</td>
<td>M</td>
<td>58</td>
<td>2nd</td>
<td>35-58</td>
<td>12</td>
<td>125</td>
<td>3500.</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>Polishing</td>
<td>M</td>
<td>55</td>
<td>4th</td>
<td>20-48</td>
<td>14</td>
<td>226</td>
<td>3700.</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Plating</td>
<td>M</td>
<td>51</td>
<td>2nd</td>
<td>15-35</td>
<td>15</td>
<td>100</td>
<td>2400.</td>
<td>85</td>
</tr>
<tr>
<td>5</td>
<td>Edging</td>
<td>M</td>
<td>57</td>
<td>2nd</td>
<td>20-45</td>
<td>15</td>
<td>127</td>
<td>4200.</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>Buffing</td>
<td>M</td>
<td>54</td>
<td>3rd</td>
<td>20-45</td>
<td>16</td>
<td>147</td>
<td>4000.</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>Packing</td>
<td>Both</td>
<td>45</td>
<td>Primary</td>
<td>10-30</td>
<td>10</td>
<td>175</td>
<td>1000.</td>
<td>50</td>
</tr>
</tbody>
</table>
Discussion
The working hour, weight and education played a determining key role in the study. On an average, the workers in each division of the industry works for about 10-16 hours. The average weight of the worker did not reached above 58 kg & their education was not more than primary standard. The female were found to work only in the Packing division of the industry.

In Polishing, Edging & Buffing division 100% of the workers were suffering from lung diseases, 75-85% of the workers were found in Processing and Plating division and minimum 50% were in Heat treatment and Packing facing lung problems. It may be due to the reason that the workers working in the scissors industry come in direct contact with the iron sparkles, suspended particles of metal (Si, Fe, Cr, Ni and Brass etc.), iron and cotton dust, and fumes of acids, kerosene oil, Mobil oil [Stacy et.al., 1959; Veblen, Wylie, 1993; Lehnert, 1993; Hochella, 1993; Guthrie, 1997; Forbes & Gros, 2003; Mateos et.al, 2006].

More over it was also found that most of the workers, about 85%, were smokers or alcoholics. The women were found only in the packing division of the industry while only 30% of them suffer from lung diseases.

References
6) John R. Forbes and Philippe Gros (2003), Fe, Mn & Co transport by NRAMPI (S1c11a1) and NRAMP2 (SIC lla2) expressed at the plasma membrane. American society of Hematology, p 1-28.

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