

# BYSSINOSIS PROBLEM IN TEXTILE WORKERS

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**ABSTRACT**

Byssinosis, a respiratory disease, is a great health hazard in textile mill workers caused by prolonged exposure to high atmospheric concentrations of cotton dust. **Objectives:** The present study is aimed to determine the prevalence and gravity of Byssinosis problem in exposed textile workers. **Setting:** The Crescent Textile Mills Faisalabad. **Materials & Methods:** A total of 101 mill workers were examined for byssinosis. The workers were categorized into Byssinotic and healthy groups through recording their respiratory complaints in a questionnaire. **Results:** The results revealed that of 101 workers, 16 (15.8%) were found to be suffering from Byssinosis with different respiratory complaints. Based on PEER values of affected mill workers, it was observed that 23.7% (n=24) of the cases were below the normal value. The results also exhibited that most (95.83% n=23) of Byssinotic patients had their duties in greater dusting segments of the mill like carding, blowing, dabbling and waste storage sections. **Conclusion:** Byssinosis is a serious respiratory problem of textile mill workers engaged in cotton processing units of the mill. The problem further aggravates in workers who persistently remain in the atmosphere of cotton dust.

**Key words:** Byssinosis, PEER value, Cotton processing hazards, Pulmonary disease, Occupational diseases

**INTRODUCTION**

Byssinosis is an occupational respiratory (lung) disease, which may occur in individuals after prolonged exposure to high atmospheric concentrations of cotton dust. The hazard is greater in workers involved in handling of raw cotton upto the carding stage, but it has been shown that disease can also occur in workers whose only contact with cotton has been in winding of yarn by high speed machinery. Since, waste cotton workers are not immune to the dusty atmosphere they may get more severe attack of the disease.

Byssinosis was firstly recognized as a respiratory disease in 1831 by an English physician, J P Kay. He saw the disease in English cotton workers who had a long exposure to cotton dust while at work. He called the disease as cotton spinners phthisis<sup>12</sup>. Whereas, an other physician Werner, in 1955, reported that in early stages the disease was characterized by tightness of chest. The

other presentation of Byssinosis is asthma for which the disease is also known as stripper's asthma, grinder's asthma or cotton card-rom asthma.

Byssinosis has now been found to be a worldwide disabling disease suggesting that the cotton dust alone is responsible for it. Since, dust control has been effective in reducing the prevalence of Byssinosis, but simple reduction in dust levels does not always assure its prevention. Also, bacteria and fungi present in cotton do not in themselves cause Byssinosis, but the endotoxins heat stable lipopolysaccharide protein complexes contained in the cell wall of Gram negative bacteria are responsible for the development of this respiratory disease<sup>3</sup>. However, the gradual change over from usage of natural fiber to synthetic is expected to reduce the risk of this occupational respiratory disease, since synthetic fibers do not give rise to Byssinosis. Nevertheless, in developing countries for which Pakistan is no exception, the risk of Byssinosis is likely to increase because of

building of new textile factories to process cotton, which the country grows in abundance to strengthen its economic position.

The present study was, therefore, planned to determine prevalence and gravity of Byssinosis problem in cotton handlers of a textile mill, so that some remedial measures against the problem could be suggested and implemented.

### SUBJECTS & METHODS

A total of 101 workers from different departments of the Crescent Textile Mills, Faisalabad were examined for the evaluation of Byssinosis in them. A questionnaire for the purpose was developed to interview the workers upon various complaints and sufferings with regard to various respiratory symptoms, e.g. cough, phlegm, tightness of the chest, breathlessness, wheezing, nasal catarrh, chest illness etc. Besides, the questionnaire also included queries upon the effect of season and tobacco smoking on the physical state of the workers.

The subjects of study were therefore, categorized into 2 groups, the subjects with consistent cough and phlegm and the subjects clinically found healthy with no cough and phlegm (Table I).

### METHODS

The peak expiratory flow rate (PEER) was measured in each case using Wright's Peak Flow Meter. The samples of air were taken with the help of Cassela Personal Air Sampling Pumps. The pumps were attached with the open face filter holders loaded with the pre-weighed filtration discs, and the whole assembly was attached to the individual.

The static sampling was carried out at the height of 5 feet 4 inches using static pumps loaded with 60 mm pre-weighed filtration discs. The PEER was measured and calculated as percentage of the predictive value as under;-

$$\frac{PEER_{Observed}}{PEER_{Predictive}} \times 100$$

### RESULTS

Of 101 textile mill workers aged 16-60 years, only 16 (15.8%) were found in morbid state with persistent cough and phlegm, besides other complaints as chronic bronchitis, asthma with chronic bronchitis and pulmonary tuberculosis. Nevertheless, a good percentage (84.2%, n=5) of workers found clinically healthy having no cough and phlegm or other complaints. The results also revealed that greater percentage of ailing workers was found suffering from respiratory problem towards escalated age groups. It is worth while to mention that 50% of un-healthy cases belonged to age groups 36-45 (25%, n=4) and 46-55 (25%, n=4) years Table-I.

The results as obtained on PEER values of the mill workers revealed that of total 101 cases, 24 (23.76%) were found to be below the normal range. It was also observed that out of these 24, 23 (95.83%) were working either in carding, blowing, dabbling or waste storage sections of the mill. This much higher percentage of affected workers very well exhibit the gravity of the problem in different sections of the mill.

### DISCUSSION

Byssinosis occurs principally in those individuals who clean and prepare fibers. Mill workers who handle or operate carding machine is exposed to highest concentration of dust, hence nearer the workers to carding engine, higher is the gravity of disease. Similarly, develop Byssinosis and thus, contribute towards prevalence of disease.

The results of study under report revealed that most (84.2%) of the mill workers did not show signs of Byssinosis and were clinically found healthy. Nevertheless, a certain percentage (15.8%) of them was suffering from Byssinosis with different pulmonary complaints. Better working conditions, conducive atmosphere around the mechanical areas of the mills and adoption of prophylactic measures before handling of machines are attributable to the greater percentage of healthy workers. Another reason for greater proportion of healthy workers might be the timely removal of unhealthy

workers from much Byssinosis causing sections to no Byssinosis sections of the mill. Hence, preventing the workers from further aggravation of their disease. On the other hand, the mill workers who were found to have fallen victim of Byssinosis exposure to cotton dust during work. This is why gravity and prevalence of disease was higher in older than younger workers. Further, below the normal range of PEER values in unhealthy workers also confirmed Byssinosis in them, the majority of whom were working in excessive dusting atmosphere of carding, debaling or waste storage sections. Results of this study may be related to some similar study conducted in USA which reported incidence of Byssinosis to be 15-50% in mill workers exposed to cotton dust. Besides, prevalence of Byssinosis in cotton processing workers was reported to be 22.5%, 19.0% and 14.2% by some National, Swedish and Turkish studies, respectively<sup>1,4,5</sup>. Coincidence of the results of present study with those of other national and foreign studies reveals that prevalence of Byssinosis appears to be almost same in the local as well as in the reported foreign countries. This also concludes that Byssinosis still continues to be a problem in the foreign as well, despite having better management facilities.

There are observations that Byssinosis is much prevalent in mill workers engaged in cotton and fiber processing units. The other factors that further contribute towards increased prevalence of Byssinosis include heavy smoking and prolonged service of workers in dusty work sites of textile mill<sup>6</sup>. The reason being that smoking potentiates the effect of cotton dust exposure on respiratory symptoms, thus, influencing Byssinosis additively<sup>7</sup>. Hence, the following necessary measures are required to be taken to prevent the workers from the disease and also to reduce its prevalence in the textile mill. Firstly, the worker should be motivated for dust control, periodical medical examination, personal protection and adoption of anti-smoking habit<sup>7</sup>. Also, workers should be watched for earlier characteristic symptoms, as tightness of chest and marked fall in ventilator/ capacity during working shift. Thus, measurement of FEV1 or airway resistance at the beginning and end of the work shift on Mondays/Saturdays may help not only to confirm the

diagnosis but to identify workers who are susceptible to the dust but without symptoms. Secondly, if a worker with clinical features of Byssinosis has any demonstrable functional abnormality at the beginning of the week, he must be removed from the sections of the work with high dust concentration to better assign work in other dust free sections. In developed cases of Byssinosis the same treatment as for chronic bronchitis with asthmatic features is advisable. Further, avoidance of dusty and smoky atmosphere, use of appropriate antibiotics for concurrent infections and symptomatic measures like cough suppressants bronchodilators etc and breathing exercises will also help manage the disease effectively. Besides, bactericidal treatment may be given to raw cotton rays may also be efficient, but it does not appear realistic in cotton growing areas of developing countries at the present time<sup>3</sup>.

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