

ASSESSMENT OF THE EFFECT OF COTTON DUST EXPOSURE ON PULMONARY FUNCTION AMONG WORKERS AT SHIVA SPINNING MILL TAPA, PUNJAB

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ABSTRACT

Occupation health is related to human work, human place and work environment. Occupation health is entirely preventive medicine. The main objective of occupational health is the safety of workers in all occupations from injuries and disease and to improve their health status. It includes research approach and designs setting of the study, variable, population sample, sample size and sampling technique, development of the tool, pretesting of the tool reliability of the tool, development of the tool content validation of tool. Pilot study data collection process and plan for data analysis are discussed. In this study Quantitative, explorative study was used to assess the effect of cotton dust exposure on pulmonary function among workers of cotton industry at selected industries. The investigator obtained a written permission from the concerned authority of the Shiva spinning industries Tapa, Punjab. The baseline information was obtained by distribution of tool and baseline pulmonary function was obtained by spirometer. The spirometry findings, the predicted mean and SD of FVC (L) was 3.72 ± 1.22 and observed was 4.12 ± 1.98 , the predicted mean and SD of FEV1 was 3.34 ± 1.51 and observed was 4.15 ± 1.27 and the predicted mean and SD of PEFR was 12.35 ± 1.34 and the observed mean and SD of PEFR was 10.61 ± 1.91 .

Key words: Workers, cotton, industries, respiratory problems and symptoms.

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INTRODUCTION

The health of the industrial workers, in a large measures, will also be influenced by conditions prevailing in their working place one of the declared aims of occupational health is to provide a safe 'Occupational environment", in order to safeguard the health of workers.

According to WHO, healthy workers are productive and raise healthy families and healthy workers are a key strategy for overcoming poverty. Occupation health is related to human work, human place and work environment. Occupation health is entirely preventive medicine. The main objective of occupational health is the safety of workers in all occupations from injuries and disease and to improve their health status.

MATERIALS AND METHODS

Research methodology refers to the systematic way of solving a research problem. It includes research approach and designs setting of the study, variable, population sample, sample size and sampling technique, development of the tool, pretesting of the tool reliability of the tool, development of the tool content validation of tool. Pilot study data collection process and plan for data analysis are discussed.

Research approach

In this study Quantitative, explorative study was used to assess the effect of cotton dust exposure on pulmonary function among workers of cotton industry at selected industries.

Research Design

Research design is a structured framework for study implementation selection of design, data collection methods sampling frame all data analysis plan. A cross sectional observational study was adopted for the study.

Research Setting

The setting is where the population or the portion of that is being studied is located and where study is carried out.

The pilot study was conducted in Geeta Threads Its Barnala.

The main study was conducted in Shiva Spinning mill Tapa, Punjab.

Variable

Variable is defined as an attribute of person or objects that takes on different values. A variable is any phenomenon or characteristic or attribute that changes. Variables are measurable characteristics of a concept and consist of logical group of attributes.

Population

The term population refers to the aggregate or totality of all the objects subjects or members that confirm to a set of specification.

In the present study the population comprised workers at cotton mill.

Sample

Sample refers to the subset of population selected to participate in a research study.

In the present study the samples were workers at Shiva spinning mill, Tapa, Punjab.

Sampling technique

Non-probability convenient sampling technique was used for this study. The samples were selected format Shiva spinning mill, Tapa, Punjab.

Sampling size

In this study the sample size were 300 workers.

Sample size was calculable exploitation Kish formula.

Sample size determination is the act of choosing the number of observations or replicates to include in a statistical sample. The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample

- The sample selected: Workers in the cotton industries.
- The total no of workers in selected Shiva spinning mill was 2500.
- Based on the Kish formula, the sample size is determined.
- The sample size of the present study is approximately calculated as 300.

Approximately 300 samples were selected.

Inclusion standards

1. All of the cotton industry workers who're inclined to participate in the study.
2. Workers age between 20-58 years.

Exclusion standards

1. The study excludes the cotton enterprise workers who're unwilling to take part inside the research.
2. People who are on depart and absent.
3. Folks who are recognized cases of chronic illnesses or respiratory troubles.

Research Tool:

Research tools are the instruments used by the investigator and observer or measure the key variables in the research problem a scale is an ordered system of numbering or indexing that is used as a reference standard in measurement in which each number corresponds to some quantity. Tools were obtained by the investigator after the review of literature on relevant topics discussion with experts and guides.

Content Validity of the research tool:

Validity is the most critical criteria and includes the degree to which an instrument measures, what it is supposed to measure. To obtain content validity of the tool the prepared tool with objectives, operational definitions, hypothesis, and it submitted to 5 experts in the field. Experts were chosen on the basis of their clinical experience and teaching experience. Recommendations given included in the tool.

Pre testing and Reliability of the tool:

Pre testing is the trial administration of newly developed instruments to identify flaws or assess the requirements. The purpose is to reveal the problems relating to answering, completing and returning the instrument. Reliability is defined as the extent to which the instrument yields the same results on repeated measures. It is then concerned with consistency, accuracy, stability and homogeneity.

Pre testing and Reliability of the tool was carried out on 10% patients in after getting medical superintend permission. The tool was found to be reliable. Correlation was computed using Karl Pearson's Coefficient of correlation formula. The tool was found to be reliable($r=0.81$).

Data Collection Procedure:

The investigator obtained a written permission from the concerned authority of the Shiva spinning industries Tapa, Punjab. The baseline information was obtained by distribution of tool and baseline pulmonary function was obtained by spirometer.

Plan for data analysis:

Analysis is the systematic organization and synthesis of research data and the testing of research.

A master sheet was prepared by the investigator to organize and complete the data. The data obtained was analyzed by using both descriptive and inferential statistics on basis of objectives and hypothesis of the study.

Inferential statistics:

The chi square test was used to find the association between the pulmonary functions score, respiratory problems with selected demographic variables of workers.

ANALYSIS AND INTERPRETATION OF DATA

Analysis is the process of organizing and synthesizing data, so as to answer research questions and test the hypothesis. The purpose of analysis is to reduce the data in an intelligible and interpretable form, so that the relation of the research problem can be studied and tested. Interpretation is the process of making sense of the results and of examining these implications.

Table: 1 Description of spirometry findings of workers in cotton industries.

Sr. No	Parameters	Predicted	Observed
1	FVC (L)	3.72±1.22	4.12±1.98
2	FEV1	3.34±1.51	4.15±1.27
3	PEFR	12.35±1.34	10.61±1.91

The above table describes the spirometry findings, the predicted mean and SD of FVC (L) was 3.72± 1.22and observed was 4.12±1.98, the predicted mean and SD of FEV1 was 3.34±1.51and observed was 4.15±1.27 and the predicted mean and SD of PEFR was 12.35±1.34and the observed mean and SD of PEFR was 10.61±1.91.

CONCLUSION

The spirometry findings, the predicted mean and SD of FVC (L) was 3.72± 1.22and observed was 4.12±1.98, the predicted mean and SD of FEV1 was 3.34±1.51and observed was 4.15±1.27 and the predicted mean and SD of PEFR was 12.35±1.34and the observed mean and SD of PEFR was 10.61±1.91.

The findings of the study was found in similar study conducted by Mohammed KH et al in 2008 and found that there was reduction in FVC and FEV1 for the age specific demographic variables, there was significant reduction of FVC and in FVC, and FEV1 ($P<0.01$) from that of control workers. It was found that at age of 51-60 years the value of FEV1 was statistically lower in cotton textile workers as compared to controls, while no significant difference at all age groups in the levels of FEV1%, PEF, and FEF25-75% compared with controls.

In another study conducted by Pimpan S in 2015 among the garment workers regarding exposure of cotton dust and its effect on lung function. It was shown that the prevalence of respiratory disorders in this occupational group was 25%. Significant respiratory tract signs and symptoms were associated with lung function capacity OR = 52.15, 95%, CI = 6.49, 419.60. Long work hours and few preventive behaviors were significantly associated with respiratory disorders OR = 2.89 and OR = 10.183, respectively.

The study concludes that the people working in the cotton industries are at risk for developing the respiratory problems and there is decreased pulmonary function.

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