Original Research Paper

Nursing

AN EXPLORATORY STUDY TO ASSESS THE KNOWLEDGE OF RESPIRATORY PROBLEMS AMONG WORKERS IN SELECTED FACTORIES OF LUDHIANA, PUNJAB.

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ABSTRACT The present study was conducted to assess the knowledge of respiratory problems among workers in selected factories of Ludhiana, Punjab. The Aim of the study was to assess the knowledge of respiratory problems among workers with a view to provide Health education to enhance their knowledge based on the findings of the study. The Objectives of the study were to assess the knowledge of respiratory problems among workers, to find out the relationship of knowledge of respiratory problems among workers with selected variables and to identify the deficit areas and prepare and give health education on respiratory problems to enhance the knowledge regarding respiratory problems among workers. It was assumed that workers do have some knowledge regarding respiratory problems. The conceptual framework of the present study was based on Modified Fitts & Posner's Three Phase Theory of Task Performance (1967). Pilot study was conducted on 15 workers to check the reliability and feasibility of the tool. The area selected for the main study was factories of Ludhiana, Punjab i.e. Malwa Cotton Spinning Mills Ltd, and Nahar Spinning Mills Ltd. Quantitative approach and non experimental exploratory research design were used in the study. Independent variables were age, gender, qualification/Education, type of work, duration of employment, monthly income, working hours / day, residence, dietary habits, smoking habits. Dependent variable was knowledge of respiratory Problems. Sample size for the present study was 150. Sample was selected using purposive sampling technique. Structured interview schedule was used to assess the knowledge of respiratory Problems among workers. Analysis of the data was done in accordance with the objectives of the study by using descriptive and inferential statistics. From the findings it was revealed that majority of the workers (61.33%) had good knowledge regarding respiratory problems. The knowledge was maximum in the area of organ of respiration & functions and minimum in the area of Preventive measures & treatment. Gender, Education status, Monthly Income, Working hours and Smoking Habits had significant relationship with knowledge of workers. Health education was given to the workers to increase their knowledge.

KEYWORDS : Knowledge, Respiratory problems, Workers, Factory

INTRODUCTION

Health is the precious possession of all human beings. Healthy individual can carry out daily activities and life enriching goals. Health for all is the global goal to be achieved at the end of the 20th century **(BT Basavanthappa, 1998)** [1]. The World Health Organization (WHO) considers the workplace a priority setting for health promotion in the 21st century. Workplace can have a positive impact on the health and well-being of workers, their families, communities and society at large **(WHO, 2013)** [2].

Industrialization is necessary for prosperity and at times for the survival of a nation. The production is the real wealth of a Nation. Only industrialization is not enough, real benefit is brought by continuous top performance of the worker which is only possible by their good health. Industrial workers constitute only a segment of general population and the factors that influence the health of the population also apply equally to industrial workers, which are housing, water, sewage and waste disposal, nutrition and education. In addition to these factors, the health of the industrial workers will influenced by conditions prevailing in their work place. Occupational health is undoubtedly an issue that calls for more research by experts and activists **(Abdel A. Dakhakhny A, Newier E.L & Kamal N.A, 1975)** [3].

India is the 2nd leading cotton producing country in the world next to china. It is estimated that nearly 20 million people working in the cotton industry and representing a major occupational group, Workers are exposed to cotton dust particles which are in the sizes from 0.1 to 150 microns. They are released in to atmosphere during processing, picking, crushing, grinding, abrading and loading. The particles more than 10 microns settle down from the air rapidly while smaller particles remain suspended indefinitely. The particles smaller than 5 microns are directly inhaled in to lungs and are retained there **(Rao K. P, Rao S & Sumangali P, 2013)** [4].

Need of the study

The work is considered a basic part of our life. Most adults spend approximately one fourth to one third of their time at work and often perceive work as a part of their self identity. It is reported that every 5 seconds a worker is injured in the United States and every 1 second a worker is temporarily or permanently disabled **(Rogers B, 1994)** [5].

In 1996 Center for disease control and prevention, reported that each day an average of 137 persons die from work-related diseases and an additional 17 die from injuries on the job. Each year 74000 require treatment in hospital emergency departments for work-related injuries **(NIOSH, 1999)** [6]. Respiratory disease is one of the most prevalent health problems among industrial workers (as they are exposed to an ocean of pollutants such as Dust). There is a lack of knowledge and awareness among the workers related to cause, spread of respiratory disease and its control and prevention in the work environment and ignorance and hesitance to use safety measures during the work. We believe dust to be a potential harmful agent in the development of chronic lower respiratory disease. Also, there is an economic burden of having unhealthy workers and the lowering of quality of life, when having chronic lower respiratory diseases, which makes it extremely important to clarify the influence of modifiable agents that causes chronic lower respiratory diseases. These instances provoked the researcher to undertake this study and assess the knowledge of respiratory problems among workers in the factories and enhance the knowledge by the means of health education.

Objectives:

1. To assess the knowledge of respiratory problems among workers.
2. To find out the relationship of knowledge of respiratory problems among workers with selected variables such as age, gender, qualification/Education, type of work, duration of employment, monthly income, working hours / day, residence, dietary Habits, smoking habits.
3. To identify the deficit areas and prepare and give health education on respiratory problems to enhance the knowledge regarding respiratory problems among workers.

Delimitations:

The study will be limited to:-
• Workers who are working in the factories i.e. male and female.
• Workers who are willing to participate in the study.

MATERIAL AND METHODS

Exploratory research approach and non experimental research design were used to accomplish the stated objectives. The structured interview schedule was used to assess the knowledge of respiratory problems among workers. The content validity of the tool was confirmed by expert's opinion for the relevance of the items. Reliability of the data collection tool was determined by applying split half method and was calculated by Karl Pearson's co–efficient of correlation and then by applying Spearman's Brown prophecy formula. Pilot study was conducted in the second week of November 2013 to ensure reliability of the tool and feasibility of the study. Data

collection for the final study was carried out in the month of Dec.2013. Prior to data collection procedure a formal permission was obtained from Managing Directors of factories, & Head of the Department of Community Health Nursing Christian Medical College and Hospital, Ludhiana, Punjab. The data was collected from two factories i.e. Nahar Spinning Mills Ltd and Malwa Cotton Spinning Mills Ltd, Ludhiana, Punjab. This consists of 1500 and 400 workers respectively. The data collected was then arranged and compiled for analysis.

DESCRIPTION OF TOOL
The structured interview schedule was used to assess the knowledge of respiratory problems among workers in selected factories of Ludhiana, Punjab. Tool was devided into two parts i.e.
- Part I- Socio Demographic Variables. This part consist of 10 items for obtaining personal information of industrial workers i.e. age, Gender, qualification/Education, type of work, duration of employment, monthly income, working hours, residence, dietary habits, smoking habits.
- Part II – Structured interview schedule. This part consisted of 36 multiple choice questions regarding respiratory Problems. Each question had 4 options. Each correct answer carried 1 mark and wrong answer carried zero mark. The highest score of each question was (1) and the highest possible score of the whole interview schedule was 36. The lowest possible score will be (0).

MAJOR FINDINGS
Findings related to Socio-demographic characteristics of sample
Majority of the workers (50.67%) were in the age group of 18-28, 60% were male, 42% were qualified matric to 10+2, 39.33% were in weaving work, 45.33% of the samples were having duration of employment in between 0-5 years, 44.67% of the samples were having monthly income in between 3000 – 5000, 84.67% were doing 6-9 hours of duty /day, 74.67% of the samples were from rural background, 52.00% were vegetarian,. 72.67% were non- smoke

Findings related to knowledge of workers regarding respiratory problems
Majority of the respondents had good knowledge (61.33%) regarding respiratory problems whose score was >24.

Majority of the workers had maximum knowledge in the area of Organ of respiration & functions ranked 1 with mean percentage 65.50%, and minimum in the area of preventive measures and treatment ranked 5 with mean percentage of 48.84%.

Thus, findings concluded that majority of the workers had good knowledge regarding respiratory problems.

RESULTS
Findings related to the relationship of knowledge of respiratory problems among workers with selected variables
- Mean knowledge score was highest (20.70) among workers who were in the age group of 29-38, and least (18.43) in those workers who were >48 years of age. Age had no impact on knowledge regarding respiratory problems among workers.
- Mean knowledge score was higher 21.05 among female workers and lower 19.19 among male workers. Gender had significant impact on knowledge regarding respiratory problems among workers.
- Mean knowledge score was highest 22.40 in workers who were educated >10+2 and least knowledge mean score 15.80 in those who were illiterate. Education status had significant impact on the knowledge regarding respiratory problems among workers.
- Mean knowledge score was highest 20.58 in workers who were in packing section and least knowledge mean score 19.58 in spinning section. Type of work had no significant impact on knowledge regarding respiratory problems among workers.
- Mean knowledge score was highest 20.78 among workers who were having experience of 10-15 years and least knowledge mean score i.e. 19.38 in workers who were having 5-10 years of experience. Duration of employment had no significant impact on knowledge regarding respiratory problems among workers.
- Mean knowledge score was highest 22.81in workers with income of Rs 7001-9000 per month, and least 16.20 in those earning >9000 Rs per month. Monthly income had significant impact on knowledge of respiratory problems among workers.
- Mean knowledge score was highest 20.60 in workers who were doing 3-6 hours duty per day, and least 18.00 in those who were doing 9-12 hours per day. Working hours had significant impact on knowledge of respiratory problems among workers.

- Mean knowledge score was highest 21.05 in the workers who were from urban background and lowest 19.89 in the workers who were from rural background. Residence had no significant impact on knowledge of respiratory problems among workers
- Mean knowledge score was highest 20.33 in those respondents who were vegetarian and lowest 20.03 in those who were non-vegetarian. Dietary habits had no significant impact on knowledge of respiratory problems among workers.
- Mean knowledge score was highest 21.02 in those samples who were non-smokers and lowest 17.98 in those who were smokers. Smoking habits had significant impact on knowledge regarding respiratory problems among workers. Thus, knowledge level was high among non smokers.

Findings related to the deficits according to knowledge areas with a view to give Health Education.
Workers had deficits in certain items of the knowledge areas regarding respiratory problems. Maximum knowledge deficit was in item no. 32 about a regularly recurring cough & Blood in sputum needs immediate Medical care, and minimum knowledge deficit was in item no. 31 i.e. the person who is suffering from any respiratory problem should seek treatment. Hence, there was a need to give health education in order to improve the knowledge of workers regarding respiratory problems.

SOCIO DEMOGRAPHIC CHARECTERISTICS OF SAMPLE
TABLE 1 Percentage Distribution of Demographic Characteristics

Socio-Demographic characteristics		n	%
Age (in years)			
a)	18-28	76	50.67
b)	19-38	40	26.67
c)	39-48	27	18.00
d)	>48	07	04.67
Gender			
a)	Male	90	60.00
b)	Female	60	40.00
Qualification/Education			
a)	Illiterate	15	10.00
b)	Primary to Middle	47	31.33
c)	Matric to 10+2	63	42.00
d)	Graduate and above	25	16.67
Type of work			
a)	Spinning	33	22.00
b)	Weaving	59	39.33
c)	Cutting	34	22.67
d)	Packing	24	16.00
Duration of employment (in years)			
a)	<1-5	68	45.33
b)	6-10	58	38.67
c)	11-15	18	12.00
d)	>15	06	4.00
Monthly income (In Rupees)			
a)	3000 – 5000	67	44.67
b)	5001 – 7000	57	38.00
c)	7001 – 9000	21	14.00
d)	>9000	05	03.33
Socio-Demographic characteristics		n	%
Working hours / day:			
a)	4-6	05	3.33
b)	7-9	127	84.67
c)	10-12	18	12.00
Residence			
a)	Urban	38	25.33
b)	Rural	112	74.67
Dietary habits			
a)	Vegetarian	78	52.00
b)	Non-vegetarian	72	48.00
Smoking habits:			
a)	Yes	41	27.33
b)	No	109	72.67

Table 1 According to Age, Percentage distribution of workers according to their age in completed years shows that the highest percentage 50.67% of the respondents were in the age group of 18-28

years, 26.67% of respondents were in 29-38 years and 18.00% respondents were in the commencing group i.e. 39-48 years and least 4.67% were in the age group of >48 years. According to Gender, 60% of samples were males and 40% were females. Regarding Education, 42% were educated up to secondary class, followed by 31.33% of the samples were educated up to primary to middle and 16.67 % was found in those samples who were graduate or above and least 10.00% were found illiterate. Regarding Type of work, the majority of the samples 39.33% were in weaving work, 22.67% were in cutting, 22.00 % were in spinning work and 16.00% was found in packing work. As per Duration of employment (in years), 45.33% of the samples were having duration of employment in between 0-5 years, 38.67% of the samples were having 6-10 years, 12.00% were having work experience in between 11-15 years followed by 4.00% were having >15 years of experience. According to monthly income (Rs per month), the maximum respondents 44.67% were having monthly income in between 3000 – 5000, 38.00% of the samples were having income in between 5001-7000, 14.00% of the samples were having income in between7001-9000 and least 3.33% were having income of 9000. According to working hours / day, maximum numbers of workers 84.67% were doing 7-9 hours of duty / day, followed by 12.00% were doing 10-12 hours duty/day, 3.33% were doing 4-6 hours duty/ day. According to Residence, 74.67% of the samples were from rural background followed by 25.33% of the samples were from urban background. According to Dietary habits, the maximum respondents 52.00% were vegetarian and 48.00% were non-vegetarian and According to smoking habits, maximum numbers of workers i.e. 72.67% were non- smoker and 27.33% were smokers.

Hence, it was concluded that majority of workers were in the age group of 18-28years, maximum were males, majority were educated up to secondary class with work experience of 0-5 years, most of them were in the weaving work, getting monthly income of 3000-5000 Rs, with the working hours of 6-9 hours / day. Majority of the workers were from rural background, maximum were non- smoker and vegetarian.

Objective – 1: To assess the knowledge of respiratory problems among workers.
Table 2 Frequency and Percentage Distribution of workers knowledge regarding respiratory problems according to level of knowledge

N =150

Level of knowledge	Workers		
	Score	n	%
Good	>23	92	61.33
Average	17-23	57	38.00
Below average	≤16	1	0.67

Maximum Score = 36
Minimum Score = 0

Table 2 and Fig 3 depicts that highest number of the respondents (61.33%) had good knowledge and 38% of the samples had average knowledge, whereas 0.67% had below average knowledge regarding respiratory problems.

Therefore, it was concluded that majority of the workers had good knowledge regarding respiratory problems.

Table: 3 Mean, Mean Percentage and Rank order of workers Knowledge score regarding respiratory problems according to Areas

N=150

Areas of knowledge	Maximum score	Mean scores	Mean %	Rank order
Organ of Respiration & Functions	6	3.93	65.50	1
Predisposing factors	7	4.03	57.57	3
Clinical Manifestation	10	5.86	58.60	2
Assessment & diagnostic Findings	2	1.00	50.33	4
Preventive measures & treatment	11	5.37	48.84	5

Maximum score = 36
Minimum score = 0

Table 3 and Fig 4. depicts that Mean, Mean percentage that was maximum in the area of Organ of Respiration & Function ranked 1

with mean percentage 65.50%, followed by clinical manifestation ranked 2 with mean percentage 58.60, predisposing factors ranked 3 with mean percentage 57.57%, assessment and diagnostic findings ranked 4 with mean percentage 50.33% and minimum in the area of preventive measures and treatment ranked 5 with mean percentage of 48.84%.

Hence, it was concluded that majority of workers had maximum knowledge in the area of Organ of Respiration & Function and least knowledge in the area of preventive measures and treatment regarding respiratory problem.

DISCUSSION
Discussion deals with the results of the study. In the discussion, the investigator ties together all the loose ends of study. The results and the discussion of the study are the investigator's opportunity to examine the logic of the theoretical framework, the methods and the analysis **(Wood and Hener J, 1998)[7].**

The present study has been conducted to assess the knowledge of respiratory problems among workers in selected factories of Ludhiana, Punjab. A structured interview schedule was used to assess the knowledge of workers regarding respiratory Problems. The data was collected from 150 workers. Based upon the findings from analysis of the data and review of literature, discussion of the present study was done in accordance with the objectives of research problem and discussed with reference to results observed by other researcher.

Findings of the present study revealed that majority 92 (61.33%) of the workers had good knowledge, 38% had average knowledge and 0.67% had below average knowledge regarding respiratory problems. Findings supported **by Hashim DS, Kubaisy W. Al and Dulayme A. Al (2003)[8]** With respect to knowledge about TB using structured questionnaire interviews, the study showed 322 out of 500 patients (64.4%) scored 'good' on their overall level of knowledge about the disease and health care workers were also interviewed which reveals 95.5% had good knowledge about TB. Another study conducted **by Tam T.W.Y, Fung I.W.H (2008)[9]** reported that awareness and understanding of the health and safety hazards among workers is insufficient. Moreover, workers are not familiar with the risks of respirator fitting in the factories.

Findings of the present study depicts the area wise mean percentage that was maximum in the area of organs of respiration and function with mean percentage 65.50%, followed by clinical manifestation with mean percentage 58.60, predisposing factors with mean percentage 57.57%, assessment and diagnostic findings with mean percentage 50.33% and minimum in the area of preventive measures and treatment with mean percentage of 48.84%. These findings are supported by another study conducted by **Pillai Shailaja (2006)[10]** among steel industrial workers on prevention of Respiratory health problems reported that area wise mean percentage of the knowledge score was 39.54 with mean 13.84. Area - wise mean percentage of knowledge score was 62.5% in the area of "Anatomy and Physiology of Lung" with mean 2.5. In the area of "management and prevention of asthma" the mean percentage was 37.24 with mean 7.84. The least mean percentage (35.2%) was observed in the area of "causes, signs and symptoms of asthma" with mean 3.52.

Findings of the present study also revealed that there is significant relationship of knowledge of workers regarding respiratory problems with certain variables i.e. gender, Educational status, working hours, monthly income and smoking habits. These Findings were inconsistent with the findings reported by **Joseph. J (2012)[11]** who's study' result shows that there was no significant association between the pre-test knowledge score of patient's and age (x^2=0.24), gender (x^2= 0.109), education (x^2_0.030) and duration of illness(x^2=0.226).

Findings of the present study also revealed that there was no significant relationship of knowledge of workers regarding respiratory problems with certain variables such as Age, Type of Work, Duration of Employment, Residence, and Dietary Habits. These findings were supported by **Fergusson W, Vamos M & Garrett J (2000)[12]** conducted in New Zealand who stated that there is no association between knowledge score and socio- demographic variables (p< 0.05).

In the present study, the structured interview schedule was used to assess the knowledge of workers regarding respiratory problems. Another study conducted in Karachi who used structured

questionnaire among 257 textile workers to assess the knowledge regarding occupational health and safety **(Shah MZ, Shah KS & Ansari MA, 2006)[13].**

CONCLUSION

In the present study majority of the workers had good knowledge regarding respiratory Problems. In the areas of knowledge, workers had maximum knowledge in the area of Organ of Respiration & functions and least knowledge in the area of treatment and preventive measures. In Socio-demographic characteristics gender, educational status, monthly income, working hours and smoking habits were found to be significantly related to knowledge of workers and maximum knowledge deficit was found in item no 32.

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