

Effectiveness of Structured Teaching Programme on Knowledge Regarding Occupational Hazards and Health Problems among Spinning Spinnig Mill Workers

**Prof. Radha.R¹, Dr. Prof. P. Padmathvathi², Prof. Lavanya³,
P Ms. Emil Titus⁴**

¹M. Sc(N), Professor, Department of Community Health Nursing, Dhanvantri College of Nursing, Namakkal, Affiliated to the Tamilnadu. Dr. M.G.R. Medical University, Chennai.

²Ph.D (N), Principal, Department of Obstetric and gynaecological nursing Dhanvantri College of Nursing, Namakkal, Affiliated to the Tamil Nadu. Dr.M.G.R. Medical University, Chennai.

³M.Sc(N), Professor, Department of Child Health Nursing, Dhanvantri College of Nursing, Namakkal, Affiliated to the Tamil Nadu. Dr. M.G.R. Medical University, Chennai.

^{4TH} year BSc(N), student, Dhanvantri College of Nursing, Namakkal, Affiliated to the Tamil Nadu. Dr. M.G.R. Medical University, Chennai.

ABSTRACT

Occupational hazards remain a major global public health concern, with mill workers being particularly vulnerable to environmental and workplace exposures such as excessive heat, cold, dust inhalation, noise, and ergonomic stress. These hazards can adversely affect workers' health, productivity, and quality of life. This study aimed to assess the knowledge of spinning mill workers regarding occupational hazards and health problems and to evaluate the effectiveness of a structured teaching programme. A pre-experimental one-group pretest-posttest research design was adopted. The study was conducted at Vedhagiri Mill, Pallakkapalayam, Namakkal, among 20 spinning mill workers aged 21–50 years who met the inclusion criteria and were selected using a convenient sampling technique. A structured questionnaire was used to assess participants' knowledge before and after the intervention. The findings demonstrated that the structured teaching programme significantly improved the workers' knowledge regarding occupational hazards and related health problems. The paired *t*-test value was 6.97, which was statistically significant at $p < 0.05$. Knowledge scores increased from 40% in the pretest to 74.2% in the posttest. A significant association was also observed between posttest knowledge scores and selected demographic variables ($\chi^2 = 38.14$, $p < 0.05$). The study concluded that the structured teaching programme was highly effective in enhancing the knowledge of spinning mill workers regarding occupational hazards and health problems.

Keywords: Structured Teaching Programme, Occupational Hazards, Occupational Health problems, Mill workers.

INTRODUCTION

Occupational health is concerned with the promotion and protection of workers' health, the prevention and control of occupational diseases through early diagnosis and prompt treatment, and the rehabilitation of disabled workers. It encompasses primary, secondary, and tertiary preventive measures to ensure workers' safety and well-being. The primary aim of occupational health is to promote and maintain the highest possible level of physical, mental, and social well-being among workers in all occupations. It also seeks to prevent health problems caused by workplace hazards by providing a safe and healthy work environment and ensuring that workers are placed in jobs suited to their physiological and psychological capacities. Ultimately, occupational health focuses on adapting work to the worker and the worker to the job, thereby improving health, safety, and productivity. **(Saneesh VM 2022)**

An occupational health hazard is any workplace condition or agent that has the potential to cause harm to a worker's health. It may result in short-term or long-term health problems. Bernardino Ramazzini (1633–1714), known as the "Father of Occupational Medicine," laid the foundation for understanding occupational health hazards. According to the Health and Safety Executive (HSE), a hazard is "anything that may cause harm," while the National Examination Board in Occupational Safety and Health defines a hazard as "something with the potential to cause harm." **(NEBOSH, 2020)**

Factory workers in India showed a significant improvement in knowledge of occupational health hazards following a structured teaching programme (STP), reflecting low baseline awareness and substantial post-intervention gains. Evidence suggests that STPs are effective in enhancing workers' knowledge, safety practices, and awareness of occupational hazards across various industrial settings. Although further research is needed to establish their long-term impact on health outcomes, STPs remain an effective educational strategy for promoting occupational health and preventing workplace-related health problems. **(Vasc Endovasc Rev. 2025.)**

STATEMENT OF THE PROBLEM

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING OCCUPATIONAL HAZARDS AND HEALTH PROBLEMS AMONG SPINNING MILL WORKERS IN A SELECTED AREA, NAMAKKAL DISTRICT.

OBJECTIVES

1. To assess the level of knowledge regarding occupational hazards and health problems among spinning mill workers.
2. To determine the effectiveness of structured assisted teaching program on knowledge regarding occupational hazards and health problems among spinning mill workers.
3. To find out the association between pre-test score level of knowledge regarding occupational hazards and health problems with their selected demographic variables among spinning mill workers.

METHODOLOGY

In this study, pre-experimental one group pretest posttest design was adopted. The aim of the study was to assess the level of knowledge and effectiveness of structured teaching program on occupational hazards and health problems among mill workers. The study was conducted in selected Vedhagiri Spinning Mill workers, Pallakkapalayam, Namakkal District, Tamil Nadu. The setting of the was based on feasibility, availability of samples. The permission obtained from the concerned authorities, which is 1km distance from Dhanvantri College of nursing. The population for this present study was workers with age group

between 21–50 years, worker included, who were willing to participate and who gave informed consent, who can able to read and write Tamil. After obtaining informed consent, the samples were selected for this study. The total sample size was 20 spinning mill workers selected by a convenient sampling technique. The research design selected for the present study was experimental, with one group's pre- and posttest design used to assess the effectiveness of the structural teaching program (STP) on knowledge regarding the prevention of occupational hazards and health problems in Pallakkapalayam, Nammakkal District. Researchers excluded frequency and percentage distribution, mean, and paired t-tests and used them to estimate the association between the pre-test measure and their related demographic variables.

Development of the Tool

The data collection instrument was developed after extensive review of literature and expert guidance. The tool consisted of **two sections**.

Section A: Demographic Variables

It included Age in years, Gender, Monthly Income, Marital Status, Educational Status, Place of Residence, Type of Family, Length of Service of Workers, Work Section /Department in the Mill, Working Hours, Previous History of any Respiratory-Related Problem, when you start working in the mill did you get any illness related with Respiratory tract, Working Shift / Work Timing.

Section B: Structured Knowledge Questionnaire

A structured questionnaire was used to assess the level of knowledge regarding Occupational hazards and health problems.

Scoring Procedure

Based on the percentage distribution pre-test and post – test score regarding the level of knowledge.

Level of Knowledge	Actual Score	Percentage
Poor	0-5	0% - 33%
Average	6-10	34% - 66%
Good	11-15	67 % - 100%

Validity

The content validity of the tool such as demographic variable and assessment scale was validated by guides and experts in this field. The tool was modified according to the suggestions and recommendation of experts of Community Health Nursing and Statistics. Necessary modifications were made based on expert suggestions.

Reliability

Reliability of the demographic variables and assessment scale was tested.

Ethical Consideration

1. Written permission was obtained from the **Principal of Dhanvantri College of Nursing, Namakkal**.
2. Permission was obtained from the **Manager and Spinnig Mill Workers who have health problems in the Factory**.
3. Informed written consent was obtained from each participant prior to data collection.
4. Confidentiality and anonymity of the participants were maintained throughout the study

Data collection and procedure

Data collection is the gathering of information needed to address the research problems. The word data

means information that is systematically collected in the course of the study. Data collection is gathering information from the sampling unit. The research plans are the “**Structured Teaching Programme**” was selected to collect the required data for the present study. Following the pre-test, Structured knowledge interview was administered, to the experimental group through charts and pamphlets and interactive discussion sessions in Tamil. The sessions were conducted **one week for 30 minutes** over a period of **7 days**. Post-test was conducted on the **7th day after completion of intervention** for the same groups using the Structured Teaching Programme.

Period of Data Collection

The data collection period was from **01-07-2025 to 07-07-2025**.

Plan for data analysis

The data were analysed by using both descriptive and statistics measures in form of the objectives.

The planned data analysis was followed:

- The collected data was coded and transformed to master sheet for statistical analysis
- Demographic data analysis by using frequency and percentage distribution.
- Mean, mean percentage SD and paired test were used to find effectiveness of structured teaching programme
- Correlation and association of the posttest knowledge and practical score of respondents with selected demographic variables
- The data would be represented in the form of the form of table b and figured

DATA ANALYSIS AND INTERPRETATION

The data collected were tabulated and presented according to the objectives under the following sections as follows:

Section A: Description of sample according to their demographic variables.

Section B: Pre- test assessment of knowledge regarding occupational hazards among mill workers.

Section C: Post -test level of knowledge regarding occupational hazards among mill workers.

Section D: Association between pre- test score of knowledge selected demographic variables.

Table showing Frequency and percentage distribution of Spinnig Mill Workers according to their demographic variables. N=20

Sno	Demographic variables	Frequency	Percentage
1.	Age	19	95 %
	A. 20 years	1	5 %
	B. 40 years		
2.	Gender	14	75%
	A. Male	6	25%
	B. Female		
3.	Monthly income	6	25%
	a. 15000	14	75%
	b. 10000		

4.	Marital Status		
a.	Married	13	65%
b.	Unmarried	7	35%
5.	Education		
a.	Educated	16	80%
b.	Uneducated	4	20%
6.	Place		
a.	Rural	2	10%
b.	Urban	18	90%
7.	Family		
a.	Joint	2	90%
b.	Nuclear	18	10%
8.	Year of Experience		
a.	1 year experience	9	45%
b.	5 year experience	11	55%
9.	Position of work		
a.	Supervisor	3	15 %
b.	Co-worker	17	85%
10.	Time of work		
a.	6 hrs	9	45%
b.	8 hrs	11	55%
11.	Respiratory infection		
a.	Yes	12	60%
b.	No	8	40%
12.	Illness in Respiratory tract		
a.	Yes	10	50%
b.	No	10	50%
13.	Working Hours		
a.	2-9	19	95%
b.	2-7	1	5%

Section B: Pre- test assessment of knowledge regarding occupational hazards among mill workers.

Table showing the percentage distribution of pre-test and post – test score regarding level of knowledge.

Level of Knowledge	Pre-test Frequency	Pre-test Percentage	Post-test Frequency	Post-test Percentage
Excellent	0	0%	12	55%
Average	11	55%	5	30%

Poor	9	45%	3	15%
Total	20	100%	20	100%

Section C: Post -test level of knowledge regarding occupational hazards among mill workers.

Table showing the section wise percentage of post- test knowledge score on Occupational hazards and health problems.

Knowledge On	No. of Questions	Min- max Score	Mean	SD	% of Mean Score
Introduction	3	0-3	2.2	1.3	75%
Definition	4	0-4	2.9	5.2	72%
Types	1	0-1	0.7	1.8	70%
Causes	5	0-5	3.7	6.3	74%
Mode of transmission	1	0-1	0.7	0.4	75%
Symptoms	3	0-3	2.2	7.4	75%
treatment	3	0-3	2.2	2.2	73%
Total	20	0-20	14.6	24.6	51%

Section D: Association between pre- test score of knowledge selected demographic variables.

Table: The association between the pre- test knowledge with the selected Demographic variables

S. No	Demographic variables	df	X ²	Table Value
01	Age	6	7.66	12.59 Significant
02	Gender	2	3.28	5.99No Significant
03	Monthly Income	6	24.4	12.59Significant
04	Marital Status	2	1.8	5.99No Significant
05	Working Hours	2	0.2	5.99No Significant
06	Respiratory Infection	2	0.8	5.99No Significant

DISCUSSION:

The findings revealed that the majority of spinning mill workers were 20 years of age (95%), while the remaining 5% were 25 years old. Most participants were male (70%), with females accounting for 30%. In the pre-test, 55% of workers had average knowledge and 45% had poor knowledge regarding occupational hazards and health problems, while none demonstrated excellent knowledge. Following the Structured Teaching Programme (STP), post-test results showed marked improvement, with 55% achieving excellent knowledge, 30% demonstrating average knowledge, and only 15% remaining in the poor knowledge category. A significant association was found between pre-test knowledge and demographic variables such as age and monthly income ($\chi^2 = 12.59, p < 0.05$). No significant association was observed with gender, marital status, working hours, or history of respiratory infection ($\chi^2 = 5.99, p > 0.05$).

CONCLUSION

Workers are frequently exposed to occupational hazards, including biological agents, dust, and poor workplace conditions, which increase the risk of respiratory illnesses such as postnasal drip, byssinosis,

asthma, and chronic bronchitis. Evidence supports the need for regular training to improve awareness, promote the use of personal protective equipment (PPE), and strengthen first-aid preparedness. In addition, implementing comprehensive occupational health schemes that provide financial support for the diagnosis and treatment of work-related illnesses would enhance workers' health, improve access to healthcare, and reduce the burden of occupational diseases

REFERENCES:

1. Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.). Jabalpur: Banarsidas Bhanot.
2. Basavanthappa, B. T. (2019). Community Health Nursing (2nd ed.). New Delhi: Jaypee Brothers Medical Publishers.
3. Stanhope, M., & Lancaster, J. (2020). Public Health Nursing: Population-Centered Health Care in the Community (10th ed.).
4. World Health Organization (WHO). (2020). Occupational Health: Protecting Workers' Health. Geneva: WHO.
5. International Labour Organization (ILO). (2019). Safety and Health at the Workplace. Geneva: ILO.
6. National Institute for Occupational Safety and Health (NIOSH). (2018). Occupational Safety and Health Guidelines. Centers for Disease Control and Prevention.
7. Saha, A., & Nag, A. (2017). Occupational hazards and health problems among industrial workers. *Indian Journal of Occupational and Environmental Medicine*, 21(2), 65–70.
8. Reddy, S. R., & Reddy, R. (2018). Occupational health hazards among healthcare workers. *Journal of Community Health Nursing*, 35(4), 215–220.
9. Smith, J. A., & Lee, R. (2019). Occupational hazard and their impact on workers' health *Journal of Occupational Health*, 61(2), 120–128.
10. Patel, R., et al. (2021). Occupational hazards and preventive measures among factory workers. *Indian Journal of Occupational and Environmental Medicine*, 25(3), 150–156.
11. Goyal, R. C. (2016). Community Medicine. New Delhi: CBS Publishers.
12. Kumar, V., Abbas, A. K., & Aster, J. C. (2021). Robbins and Cotran Pathologic Basis of Disease (10th ed.). Kumar, V., Abbas, A. K., & Aster, J. C. (2021). Robbins and Cotran Pathologic Basis of Disease (10th ed.)
13. OSHA. (2020). Occupational Safety and Health Administration Guidelines'. Department of Labor.
14. Leigh, J. P. (2011). Economic burden of occupational injury and illness. *Journal of Occupational and Environmental Medicine*, 53(11), 1305–1313.
15. Rosenstock, L., Cullen, M., & Fingerhut, M. (2005). Occupational health. In *Disease Control Priorities in Developing Countries* (2nd ed.). Oxford University Press.