

**ASSESSING THE EFFECTIVENESS OF AN INFORMATION
BOOKLET ON OCCUPATIONAL HEALTH AND SAFETY: A
KNOWLEDGE-BASED STUDY AMONG INDUSTRIAL WORKERS IN
A SELECTED INDUSTRIAL AREA**

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Abstract

Introduction: Occupational health and safety (OHS) is an essential component of industrial work environments. Despite regulatory frameworks, workers often exhibit limited knowledge of safety protocols, resulting in preventable accidents and health risks.

Aim: This study aimed to assess the effectiveness of an information booklet on improving the knowledge of industrial workers regarding OHS in a selected industrial area.

Objectives:

1. To assess knowledge regarding occupational health and safety among industrial workers.
2. To evaluate the effectiveness of an information booklet on OHS among industrial workers.
3. To find out the association between knowledge levels and selected demographic variables.

Methods: A quasi-experimental one-group pre-test and post-test design was adopted. A sample of 100 industrial workers was selected using purposive sampling. Data were collected using a structured knowledge questionnaire before and after the intervention. The data were analyzed using descriptive statistics, paired t-tests, and fisher's exact test.

Results: The mean pre-test score was 12.06 ± 5.0 , while the post-test score increased significantly to 20.7 ± 5.0 ($p < 0.001$), indicating the effectiveness of the information booklet. A significant association was found between age, gender, education level, type of work and knowledge scores ($p < 0.05$), while no significant association was observed with monthly income.

Conclusion: The information booklet significantly improved workers' knowledge of occupational health and safety. Educational interventions like booklets are innovative, cost-effective tools to enhance workplace safety culture.

Keywords: Occupational health, industrial safety, information booklet, knowledge assessment, industrial workers.

Introduction

Industrial workers are continuously exposed to occupational hazards, including physical injuries, chemical exposures, and environmental risks. Globally, workplace-related injuries and diseases account for significant economic and social losses. In developing countries, the gap between policy and practice often results in limited safety awareness among workers.¹

India, as a growing economy and the world's largest democracy, is increasingly recognizing the importance of Occupational Safety and Health (OSH) as a key developmental and empowering tool. Globalization has exposed Indian industries to international OSH standards and practices. Many progressive companies now implement corporate Health, Safety, and Environment (HSE) policies and pursue relevant certifications. Despite this, most of India's workforce (over 90%) remains in the informal sector, where OSH awareness is low. Official statistics on workplace injuries are limited and likely underprepared. In 2009, only 5% of the workforce in registered factories reported 1,509 fatal and 33,093 non-fatal injuries. This highlights the gap in OSH implementation and reporting. The study aimed to assess workers' knowledge on occupational hazards and safety, evaluate the impact of an informational booklet, and examine associations between pretest knowledge and demographic variables. Improving OSH awareness is crucial for India's workforce well-being. It is vital to reach the informal sector with safety education and resources.²

The innovation of simple, structured educational interventions such as information booklets can empower workers to understand and implement safety measures. This study explores whether such a tool can effectively increase knowledge about OHS among workers in an industrial area.²

Background

The International Labour Organization (ILO) estimates that 340 million workers have non-fatal industrial injuries and illnesses each year, while 2.3 million workers lose their lives to occupational accidents and diseases (ILO, 2019). According to the National Safety Council, more than 1,000 people died at work in India in 2018 alone (NSC, 2019).³

Workers, just 15% of them had access to OHS information, and only 22% had undergone OHS training (Kumar et al., 2017). According to another study, employees who received OHS training exhibited noticeably greater attitudes and understanding about OHS than those who did not (Singh et al., 2019).⁴

Occupational Health and Safety (OHS) is a vital component of worker welfare, yet it remains neglected in many parts of India, particularly in the informal sector. The majority of Indian workers, including semi-skilled labourers, are exposed daily to occupational hazards without adequate knowledge or protection. According to the International Labour Organization (ILO), more than 2.78 million workers die each year globally due to work-related accidents or illnesses, and India contributes significantly to these figures due to poor OHS implementation (ILO, 2019). The situation is worsened by a lack of awareness, limited access to safety training, and weak enforcement of safety laws.^{5, 6}

Objectives of the Study

1. To assess knowledge regarding occupational health and safety among industrial workers in a selected industrial area.
2. To evaluate the effectiveness of an information booklet on occupational health and safety among industrial workers.

- To find out the association between knowledge levels and selected demographic variables.

Materials and Methods

Study Design and Setting

A quasi-experimental one-group pre-test and post-test design was used & study was conducted in a selected industrial area over a period of one month.

Population and Sampling

- Target Population:** Industrial workers
- Sample Size:** 100 workers
- Sampling Technique:** Purposive sampling based on availability and consent

Tool for Data Collection

A structured knowledge questionnaire was developed, validated by experts, and consisted of 25 multiple-choice questions covering:

- Hazard identification
- PPE usage
- Emergency procedures
- Legal regulations
- Workplace safety practices

Intervention

An informational booklet titled “Occupational Health and Safety: A Guide for Workers” was developed based on standard OHS guidelines. It was distributed and explained in small group sessions post pre-test. After 7 days, the post-test was conducted using the same questionnaire.

Ethical Considerations

Informed consent was obtained from all participants. Anonymity and confidentiality were maintained throughout the study.

Statistical Analysis

- Descriptive Statistics:** Frequencies, percentages, means, and standard deviations.
- Inferential Statistics:** Paired t-test for pre- and post-test comparison; Fisher’s exact test for association with demographic variables.
- Significance level was set at $p < 0.05$.

Results

Section I

Description of samples (industrial workers) based on their personal characteristics

N=100

Demographic variable	Freq	%
Age		
Upto 20 years	8	8%
21-30 years	75	75%
31-40 years	10	10%
41-50 years	6	6%
Above 50 years	1	1%
Gender		
Male	56	56%

Female	44	44%
Marital status		
Single	58	58%
Married	42	42%
Educational qualification		
Primary	1	1%
Secondary	39	39%
Graduate	35	35%
Postgraduate	25	25%
Years of work experience		
Less than 1 year	49	49%
1-5 years	36	36%
6-10 years	12	12%
More than 10 years	3	3%
Role or designation		
Worker	76	76%
Supervisor	13	13%
Manager	6	6%
Helper	5	5%
Type of work		
Skilled	44	44%
Semi-skilled	54	54%
Unskilled	2	2%
Monthly income		
Less than ₹10,000	42	42%
₹10,000-20,000	45	45%
More than ₹20,000	13	13%

Table 1: Description of samples (industrial workers) based on their personal characteristics in terms of frequency and percentage

Section II

Analysis of data related to the knowledge regarding occupational health & safety among industrial workers in selected industrial area **N=100**

Knowledge	Pretest	
	Freq	%
Poor	19	19%
Average	61	61%
Good	20	20%

Table 2: Knowledge regarding occupational health & safety among industrial workers in selected industrial area

Table 2 shows that, 19% of the industrial workers had poor knowledge, 61% of them had average knowledge and 20% of them had good knowledge regarding occupational health & safety.

Section III

Analysis of data related to the effectiveness of information booklet on occupational health & safety among industrial workers in selected industrial areas **N=100**

Knowledge	Pretest		Posttest	
	Freq	%	Freq	%
Poor	19	19%	0	0%
Average	61	61%	9	9%
Good	20	20%	91	91%

Table 3: Effectiveness of information booklet on occupational health & safety among Industrial workers in selected industrial areas

Table 3 shows that, in pretest, 19% of the industrial workers had poor knowledge, 61% of them had average knowledge and 20% of them had good knowledge regarding occupational health & safety. In posttest, 9% of them had average knowledge and 91% of them had good knowledge regarding occupational health & safety. This indicates that the knowledge among industrial workers improved remarkably after information booklet on occupational health & safety.

Effectiveness of information booklet on occupational health & safety among industrial workers in selected industrial areas **N=100**

	Mean	SD	T	df	p-value
Pretest	12.6	5.0	11.0	99	0.000
Posttest	20.7	5.0			

Table 4: Paired t-test for the effectiveness of information booklet on occupational health & safety among industrial workers in selected industrial areas

Table 4 reveals that, paired t-test was used to assess the effectiveness of information booklet on occupational health & safety among industrial workers in selected industrial areas. Average knowledge score in pretest was 12.6 which increased to 20.7 in posttest. T-value for this test was 11 with 99 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. It is evident that the information booklet is significantly effective in improving the knowledge among industrial workers regarding occupational health & safety.

Section IV

Item Analysis **N=100**

Knowledge item	Pretest		Posttest	
	Freq	%	Freq	%
Primary purpose of occupational health and safety (OHS)	75	75%	88	88%
Personal protective equipment (PPE) is suitable for protecting your eyes in a hazardous environment	41	41%	79	79%
SDS stand for in occupational safety	56	56%	84	84%
Most effective way to eliminate a hazard in the workplace	45	45%	80	80%
Considered a physical hazard?	42	42%	71	71%
First step in responding to an injury at the workplace	57	57%	88	88%
Fire drills typically be conducted	60	60%	73	73%
Primary role of a safety officer in the workplace	60	60%	85	85%
First action if you detect a chemical spill in your workplace	62	62%	80	80%
Type of fire extinguisher is suitable for electrical fires	57	57%	78	78%

Ergonomics is concerned with:	55	55%	88	88%
Key sign of heat stress in workers	66	66%	93	93%
Purpose of lockout/tagout procedures	54	54%	81	81%
Hearing protection is recommended when noise levels exceed:	51	51%	97	97%
First step in performing a hazard analysis	40	40%	91	91%
Biological hazard	54	54%	97	97%
Notice unsafe behaviour in the workplace	47	47%	86	86%
PPE stand for in occupational health and safety	41	41%	84	84%
Primary goal of occupational health and safety programs	51	51%	78	78%
Common workplace hazard	37	37%	78	78%
Act governs occupational health and safety in most workplaces	35	35%	75	75%
As per the colour code a red colour indicates	39	39%	83	83%
In case of arc welding, one should protect his eyes using	35	35%	79	79%
Fire extinguisher is	48	48%	79	79%
Biological hazard	54	54%	74	74%

Table 5 presents the frequency and percentage of correct responses by industrial workers to each knowledge item in pretest and posttest. It indicates that there is remarkable improvement in the correct responses by industrial workers to each knowledge item regarding occupational health & safety.

Section V

Analysis of data related to association between knowledge score regarding occupational health & safety among industrial workers in selected industrial areas

N=100

Demographic Variables		Knowledge Scores			p-value
		Poor	Average	Good	
Age	Upto 20 years	1	4	3	0.046
	21-30 years	16	49	10	
	31-40 years	0	6	4	
	41-50 years	2	2	2	
	Above 50 years	0	0	1	
Gender	Male	5	42	9	0.003
	Female	14	19	11	
Marital status	Single	14	34	10	0.271
	Married	5	27	10	
Educational qualification	Primary	1	0	0	0.010
	Secondary	7	30	2	
	Graduate	8	17	10	
	Postgraduate	3	14	8	
Years of work experience	Less than 1 year	9	31	9	0.561
	1-5 years	8	22	6	
	6-10 years	1	6	5	

	More than 10 years	1	2	0	
Role or designation	Worker	15	48	13	0.304
	Supervisor	2	7	4	
	Manager	0	3	3	
	Helper	2	3	0	
Type of work	Skilled	7	22	15	0.006
	Semi-skilled	12	38	4	
	Unskilled	0	1	1	
Monthly income	Less than ₹10,000	10	26	6	0.202
	₹10,000-₹20,000	9	27	9	
	More than ₹20,000	0	8	5	

Table 6: Fisher's exact test for the association between knowledge regarding occupational health & safety among industrial workers in selected industrial areas

Table 6 shows that, p-values corresponding to age, gender, education and type of work were small (less than 0.05), the demographic variables age, gender, education and type of work were found to have significant association with the knowledge regarding occupational health & safety among industrial workers.

Discussion

The study demonstrated that the use of an information booklet significantly improved the knowledge levels of industrial workers regarding OHS. This aligns with similar studies indicating that print-based, culturally appropriate educational tools can influence awareness and behavior in workplace safety.

The booklet served as an innovative, low-cost educational strategy, especially beneficial in resource-limited settings where digital access is restricted.

Conclusion

The findings suggest that the information booklet was effective in enhancing knowledge on occupational health and safety among industrial workers. Such interventions are crucial in fostering a culture of safety in industrial environments.

Implications for Innovation and Practice

- **Innovation in Education:** Information booklets are scalable, low-cost, and effective educational tools.
- **Policy Recommendation:** Integration of such materials in routine safety training.
- **Industrial Application:** Customization of materials based on workplace-specific hazards can enhance impact.

Limitations

- No control group used for comparison
- Study limited to one industrial area
- Short follow-up period (7 days)

Recommendations for Future Research

- Conduct long-term follow-up to assess retention of knowledge
- Compare different modes of health education (booklet vs. audio-visual)
- Expand study across multiple industrial areas with control groups

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