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"The Knowledge On Occupational Health Hazards Among Soap Factory Workers"

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ABSTRACT

The material business in India is the principal business that has delivered enormous work especially for both disabled and unskilled workers. Soap business is one of the major earning for many home makers, even as a type of partial/side business. Soaps are used as cleansing and emulsifying agent, available in liquid and bar forms and comprise a wide variety of fragrances. The workers are in risk of several problems or diseases, as because of lack of adequate knowledge regarding hazards and preventive measures.

This study mainly aims to identify the knowledge of occupational health hazards and to evaluate the effectiveness of a self instructed educational module among workers of a selected Soap Factory, in Kanpur city, India. A sample of 70 women workers working in the Soap factory, were selected by random sampling technique. One group pre-test post-test design was used and the data was collected using self structured questionnaire. The pre test score shows majority of respondents had poor knowledge (52.85%) while only 7.14% demonstrated adequate knowledge. After administration of self instructed education module, the post-test shows that, 20% of participants demonstrated high knowledge, while low knowledge was reduced to 35.71%. The pre test mean knowledge score was 9.5 (SD 4.56) and the post test mean knowledge score was 12.84 (SD 5.65), with the t-value of 3.88. This indicates the effectiveness of the self education module.

Keywords:
Soap Factory, Worker, Occupational Health Hazards, Educational Module

INTRODUCTION

India, largest populated country in the world with more than 1.45 million populations, is having the high demand for daily personal care things like soap [1]. Soap is produced by a chemical process called saponification. This includes reaction of fats or oils with an alkali (eg: sodium hydroxide/ caustic soda) that produce soap molecules and glycerol [2]. Soap is not only higher in consuming rates, but also for production. As hygiene is utmost important for all, hand washing and daily bath is necessary, where soap is used more. Awareness of personal hygiene, urbanization, increased income and many more factors are contributing to expanded growth of soap making industry in India [3]. The soap market in India is valued around $3.7 billion - $4 billion in 2024, and according to various reports, growth will be approximately $6.8 billion - $7.3 billion by the year 2030 [4]. Consumers are widely depends on many likely factors, that helps to choose better products from the market. This includes trusted brands, demand for herbal product, price level, skin benefits, fragrance etc. Companies are also sensitive towards market demands or consumer preferences, so they adapt different strategies like promotion programs, advertisements, discounts, social media marketing, innovations, customer rating and many more [5].

Workplace hazards are significant in every industry. It mostly includes physical hazards (eg: slips, falls, shocks, vibrations etc), ergonomic risk (eg: poor body posture, poor lighting, excessive sound etc), chemical hazards (like toxic fumes, severe smell etc) technical/ machine injuries or accidents, and biological hazards (eg: infections) [6]. This leads to musculoskeletal disorders, skin problems, respiratory illnesses etc.

Workers vary by employment type:

- **Home-workers**: mainly women, they work from their homes or local areas usually with 'piece-rate systems'. Space related health risks are common due to overlapping of work and living areas [7].
- **Contract labourers:** they dominate the industry in India and many other developing countries, often works without legal protections [8].
- **Migrant workers:** due to need, they move across places and countries for low-wage jobs [9].

In India, Self-Employed Women's Association (SEWA), which includes more than 2 million of informal women workers, helps for improving wages and salary, social status and welfare, work conditions, and many more [10]. The Poor conditions of living, lack of nutritional diet, and poor access to health care increases the risks of occupational hazards [11]. Workers of any factory are prone to illness or accidents which may mechanical or non-mechanical. Illness includes respiratory disease, digestive problems, skin disease and many more; these leads to absenteeism and poor life quality [12]. A study on these sectors is very crucial to address the health status, safety standards, and rights of workers.

PROBLEM STATEMENT

"A Study to assess the knowledge on occupational health hazards and to evaluate the effectiveness of a self instructed education module among workers of a selected soap factory"

OBJECTIVES

- To assess the knowledge about occupational health hazards among workers of selected soap factory.
- To evaluate the effectiveness of the self instructed education module regarding occupational health hazards.
- To find the association between pre test knowledge regarding occupational health hazards among workers and its selected baseline variables.

HYPOTHESIS

- H1- there is significant difference between pre-test and post-test knowledge score regarding occupational health hazards among workers
- H2- there is significant association between knowledge regarding occupational health hazards among workers and its selected baseline variables

INCLUSION CRITERIA

- Adult women of any age
- Women working in RSPL soap factory, Kanpur
- Workers present at the time of data collection and willing to participate.

EXCLUSION CRITERIA

- Male adults
- Women working in other factories/industries
- Who are not willing to participate and not available at the time of data collection

RESEARCH METHODOLOGY

The present study used a Quasi-experimental design, with one group pre-test post-test design. It aimed to assess the knowledge levels regarding occupational health hazards among workers and also to evaluate the effectiveness of a self instructed education module regarding occupational health hazards in a selected soap factory in Kanpur city, Uttar Pradesh. Simple random sampling technique was used to select the sample of 70 adult women of any age, from the selected soap factory. Formal permission was taken from the authority as well as informed consent was taken from study samples before the study. A pilot study was conducted among 10% of the sample to analyse reliability and content validity was assessed by a panel of experts.

In this study, the baseline variables were age, education level, marital status, religion, previous information regarding occupational health hazards, duration of service & working hours. A self-structured knowledge questionnaire was used to collect the data regarding knowledge levels of occupational health hazards among workers, which consisted of 22 items. The knowledge level was categorised in to high (score ranges from 0-10), average (score ranges from 11-16) and low level (score ranges from 17-22). The pre-test was followed by self instructed education module, and post-test was done after 7 days to analyse the effectiveness of the module.

DATA ANALYSIS AND INTERPRETATION

The complete data was arranged in a master sheet and analysed by descriptive and inferential statistics.

1. Baseline characteristics of participants

Many of the participants (35.71%) were aged between 21–27 years, and had only primary education (35.71%). 52.86% were married, 50% were belongs to Hindu religion, and most of the participants (61.43%) had no previous information regarding occupational health hazards. Many of them (37.14%) working in the same field for 5-10 years and duration of working is 4-8 hours (50%).

Table 1: Frequency and percentage distribution of baseline variables

(N = 70)

Variable	Category	Frequency (f)	Percentage (%)
Age (in years)	< 21	15	21.43%
	21-27	25	35.71%
	28-35	20	28.57%
	Above 35	10	14.29%
Education level	Uneducated	20	28.58%
	Primary Education	25	35.71%
	Secondary Education	18	25.71%
	Above Graduation	07	10%
Marital status	Married	37	52.86%
	Unmarried	33	47.14%
Religion	Hindu	35	50%
	Muslim	15	21.43%
	Christian	09	12.86%
	Others	11	15.71%
Previous knowledge	Yes	27	38.57%
	No	43	61.43%
Duration of service	<5 Years	14	20%
	5-10 Years	26	37.14%
	11-15 Years	18	25.72%
	>15 Years	12	17.14%
Working hours	Up to 4 Hours	14	20%

	4 - 8 Hours	**35**	**50%**
	8 - 12 hours	**08**	**11.43%**
	>12 hours	**13**	**18.57%**

2. Pre-test knowledge level regarding occupational health hazards

In pre-test, only 7.14% had high knowledge about occupational health hazards, while 52.86% has shown low knowledge

Table 2: Distribution of participants based on pre-test knowledge score

(N = 70)

Knowledge Level	Frequency (f)	Percentage (%)
Low Knowledge	**37**	**52.86%**
Average Knowledge	**28**	**40%**
High Knowledge	**5**	**7.14%**

3. Post- test knowledge level regarding occupational health hazards

In post-test, 20% of participants demonstrated high knowledge, while low knowledge was reduced to 35.71%.

Table 3: Distribution of participants based on post-test knowledge score

(N = 70)

Knowledge Level	Frequency (f)	Percentage (%)
Low Knowledge	**25**	**35.71%**
Average Knowledge	**31**	**44.29%**
High Knowledge	**14**	**20%**

4. Comparison of pre-test and post-test knowledge score

The mean pre-test knowledge before administering educational module was 9.5 (SD 4.56) and the mean post-test knowledge was 12.84 (SD 5.65). Mean difference was 3.34 and t-value was 3.58. This shows the effectiveness of educational module.

Table 4: comparison of pre-test and post-test Knowledge Score

(N = 70)

Knowledge test	Mean	Standard deviation	Mean Difference	df	t-Value
Pre-Test	**9.5**	**4.56**	**3.34**	**69**	**3.85**
Post-Test	**12.84**	**5.65**			

5. Association between pre test knowledge score and baseline variables

Knowledge level was significantly associated with education level and not with age, marital status, religion, previous knowledge, duration of service and working hours (at 0.05 level).

Table 5: Association between pre-test knowledge score and baseline variables

(N = 70)

Demographic Variable	Chi-square Value (χ^2)	Degrees of Freedom (df)	P Value	Text of Significance
Age (in years)	**9.81**	**6**	**0.133**	**NS**
Education level	**22.63**	**6**	**0.001**	**S**
Marital status	**4.28**	**2**	**0.118**	**NS**
Religion	**9.93**	**6**	**0.127**	**NS**
Previous knowledge	**4.59**	**2**	**0.10**	**NS**
Duration of service	**6.84**	**6**	**0.336**	**NS**

Working hours	**3.67**	**6**	**0.72**	**NS**

(*S significant *__NS__ not significant**)**

DISCUSSION AND CONCLUSION

In this study, a total of 70 participants (women workers) were selected from a soap factory by Simple random sampling technique. The main objective was to assess the knowledge levels regarding occupational health hazards among workers and also to evaluate the effectiveness of the self instructed education module regarding occupational health hazards. Baseline proforma and self-structured knowledge questionnaire were used to collect data. The pre-test results revealed that only 7.14% had high knowledge about occupational health hazards, 52.86% shown low level of knowledge, and the rest of participants shown moderate level of knowledge. In post-test, knowledge level was: 20% of participant demonstrated high knowledge and low knowledge was reduced to 35.71%.

Regarding knowledge about occupational health hazards among workers

One of the objectives of this study was to find the knowledge about occupational health hazards among workers, in the selected factory. The study found that the knowledge about occupational health hazards among workers were mostly low. The pre-test reveals that, only 7.14% had high knowledge, while 40% shown moderate and 52.86% shown low level of knowledge. Atakora M. and Stenberg B. conducted a similar study in Ghana (2020), with the aim of assessing the knowledge and views of workers about the occupational health hazards and problems in gold mining area. 150 miners were selected by simple random sampling. They found that 63.3% of workers had low knowledge of occupational health hazards and safety. They also found that knowledge about safety regulations was associated with level of education (OR = 8.5; 95% CI: 7-10.5) [13].

The findings also supported by another descriptive cross-sectional study, conducted by Shrestha M. and Karki S. (2019), to assess the knowledge regarding occupational health hazards among nurses in a selected hospital, Nepal. Enumerative sampling method was used to select 61 samples. The study found that, 47.5% of nurses had low knowledge about occupational health hazards. Statistically significant association was found between in-service training and level of knowledge of participants regarding occupational health hazard (p-value= 0.024) [14].

Regarding effectiveness of self instructed education module

Another objective of this study was to find the effectiveness of self instructed education module. In this study, post-test knowledge level was: 20% of participant demonstrated high level of knowledge, 44.29% had moderate knowledge and low level knowledge was reduced to 35.71%; while comparing with 7.14% of high level knowledge, 40% of moderate and 52.86% of low level of knowledge in pre-test. The mean pre-test knowledge score was 9.5 (SD 4.56) and the mean post-test knowledge score was 12.84 (SD 5.65). Mean difference was 3.34 and t-value was 3.58. This clearly indicates the effectiveness of self instructed education module in improving the knowledge level of female workers regarding occupational health hazards.

This findings are supported by a quasi-experimental- one group pre-test post-test study conducted by Sonam Meshram & Sheikh Javed (2020) at Ujjain, M.P. The aim was to assess the effectiveness of structured teaching programme on knowledge of occupational health hazards among the factory workers. The pre-test was done to assess the knowledge and post-test conducted after 7 days, for a total of 50 workers. The Pre-test mean score was 6.58, Post-test mean score was 15.34, Mean difference was 8.76 and Paired t-test score was 32.58; this shows the effectiveness of teaching program. [15]

Regarding association between pre test knowledge score and its selected baseline variables

This study also tried to find the association between pre test knowledge level regarding occupational health hazards among workers and its selected baseline variables. Knowledge level was significantly associated with education level (chi-square value (χ^2) 22.63, p value 0.001) at 0.05 level and no significant association

was found with age, marital status, religion, previous knowledge, duration of service and working hours. This is supported by another study conducted by Maky M. in a sugar cane factory in Luxor Governorate (2020). It was a Cross sectional research study and a total of 541 workers were selected by simple random sampling technique. The mean age of workers was 45.74 ± 8.44, most of (62.1%) them had secondary education and majority (76.7%) of them had >10 years of working experience. 71.2% of workers had poor knowledge regarding occupational hazards. There is statistically significant relationship was found between knowledge level and education (P value 0.037). [16]

MAJOR FINDINGS OF STUDY:

The major findings of the study are as follows:

Baseline characters

Most of the participants were aged between 21–27 years (35.71%), had only primary education (35.71%), were married (52.86%), belongs to Hindu religion (50%), had no previous information regarding occupational health hazards (61.43%), working in the same field for 5-10 years (37.14%) and working duration is 4-8 hours (50%).

Pre-test and post-test knowledge level

In pre-test, 7.14% of participants had high knowledge, 40% shown moderate and 52.86% had low level of knowledge. In post-test, 20% of participant demonstrated high knowledge, 44.29% had moderate knowledge and low level knowledge was reduced to 35.71%. The mean pre-test knowledge was 9.5 (SD 4.56) and the mean post-test knowledge was 12.84 (SD 5.65). Mean difference was 3.34 and t-value was 3.58, thus proves the effectiveness of education module.

Association between pre-test knowledge with selected baseline variables

The study findings revealed that there is statistically significant association between education and knowledge level (chi-square value 22.63, p value 0.001) and no association found between knowledge level and age, marital status, religion, previous knowledge, duration of service and working hours.

IMPLICATION:

The utilization of research findings are important to update and upgrade the society, which ultimately fulfil the aim of each research. The findings of this research can be utilised by educators, practitioners, researchers and administrators, in order to update knowledge and practice.

Nursing Education:

- Nurse can use this information to educate nursing students as well as people working in different industry, regarding occupational health hazards.

Nursing Practice:

- Nurse can conduct different programs at community level, to counsel and educate people regarding occupational health hazards, its effective prevention and management.

Nursing Administration:

- The nurse administrator can organize teaching programme for health workers in order to enhance their knowledge on occupational health hazards.
- Administrators can formulate or modify policies which reduce occupational hazards.

Nursing Research:

- This research details enlightens the importance of boosting knowledge on occupational health hazards, and similar studies addressing more un-identified hazards.

LIMITATIONS

- This study was limited to women workers of selected soap factory.
- The sample size was small, and study period was limited.
- The data collection tools were prepared and used for the first time.

RECOMMENDATIONS

- Large-scale studies are needed to be conducted.
- Similar study can be conducted in various other factories and industries.
- Teaching or health education programs should be conducted at various levels for improving knowledge of occupational health hazards.
- Periodical health check for workers and regulation of standards by policy-makers are needed.

TAKE-HOME MESSAGE

Factories and companies are very common in every country, which aids in the financial development of nation. Workers in every industry experiences number of hazards which may be physical, mental, emotional, social or spiritual [17]. Adequate measures and policies are very crucial to be ensured in order to maintain high quality of life as well as work.

SUMMARY AND CONCLUSION:

People are concern about not only their health, but also hygiene and personal appearance. Soaps are available in different forms and fragrance, and for different uses like kitchen use, bathing, laundry use, medication etc [18]. Various health hazards like skin disease respiratory/ digestive problems, mental disturbances are common in soap industry [19]. Use of protective gear, adequate ventilation, restriction of children, proper storage and handling of chemicals are important measures that reduce risk of hazards [20]. This study mainly aimed to assess the knowledge of occupational health hazards and to evaluate the effectiveness of a self instructed education module among workers of a selected soap factory. The study found that knowledge levels are very low among workers, and the education module was successful in improving the knowledge of workers.

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DECLARATIONS

The author declares that there is no conflict of interest.

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