A Study to estimate the Prevalence of Health Problems and to Assess the Knowledge Regarding Prevention on Health Problems among Incense Stick Workers in Selected Industries at Bangalore

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Abstract

The health and efficiency of workers working in any organization get influenced in large measures by conditions prevailing in their work environment. The prevailing conditions are related to physical, biological, chemical and social agents. A worker is usually exposed to these agents for about six to eight hours daily. It is therefore, essential that this environment should be wholesome and free from any kind of harmful agents as far as possible.

The study was undertaken to estimate the prevalence and to assess the knowledge regarding prevention on health problems among incense stick workers in selected industries at, Bangalore.

Objectives of the Study

1. To estimate the prevalence of Health problems among incense stick workers.

2. To assess the level of knowledge regarding prevention on health problems among incense stick workers.

3. To find correlation between prevalence of health problems and knowledge regarding prevention of health problems among incense stick workers.

4. To find the association between the findings of the study and selected socio-demographic variables

Methods

A descriptive survey approach was used for the study. Non-probability Convenient sampling techniques was used to select 50 incense stick workers working at Sri Bhavani Perfumers, Bangalore. Data was collected using checklist to estimate the prevalence and structured questionnaire to assess knowledge.

Results and Discussion

The prevalence of the subjects shows that the highest mean observed was 3.68 for Back pain with mean percentage of 92 and standard deviation of 0.30, whereas the lowest mean observed was in the area of Abdomen pain was 1.68 with mean percentage of 42 and standard deviation of 1.50. The overall prevalence of mean was 13.12 with mean percentage of 65.6 and standard deviation of 4.99.

Analysis on level of knowledge of the subjects revealed that most of the worker had inadequate (98%) and only (2%) had moderately adequate knowledge. Highest mean observed was 1.62 for Skin problem as well as Urinary problem with Mean Percentage of 32.4 and Standard deviation of 0.93, where as the lowest mean observed was in the area of Abdominal pain and Respiratory problem which was 1.02 with mean percentage of 25.5 and standard deviation of 0.66. The overall knowledge mean was 6.72 with mean percentage of 44.6 and standard deviation of 3.78.

The inferential analysis using Karl Pearson's correlation coefficient showed moderately negative correlation exists between prevalence and knowledge of health problems among incense stick workers with the calculated 'r' value -0.09. Hence the null hypothesis (HO_1) stated that there is no relationship between prevalence and knowledge of health problems among incense stick workers was accepted.

The analysis of association of prevalence of the subjects, with selected socio demographic variables showed that calculated X^2 value is less than table value. Hence the null hypotheses (HO_2) stated as there is no significant association between the findings of the study and selected socio demographic variable was accepted.

The analysis of association was found to exists between prevalence of Back pain in regard to type of food, hours of exposure, since the calculated X^2 value is more than table value at $p<0.05$ level of significance, HO_2 stated as there is no significant association between the prevalence of health problems and selected socio demographic variable was rejected in this aspect.

The calculated X^2 values shows there is no association was found to between the level of knowledge with selected socio-demographic variables. Hence the Null Hypothesis (HO_2) stated that there was no significant association between the level of knowledge and selected socio demographic variables so null hypothesis is accepted.

Study concluded that the 98% of the incense stick workers had inadequate knowledge and only 2% had moderately adequate knowledge. Majority of subjects 92% had prevalence of Back pain and only 42% subjects had prevalence of abdominal pain. So adequate information will decrease the prevalence of health problems as well as increase their knowledge regarding prevention health problems.

Keywords: environment, prevalence, demographic, hypothesis.

Introduction

Occupational health as stated by World Health Organization is "The promotion and maintenance of the highest degree of physical, mental and social well

being of the workers in all occupation". Industrial workers may be exposed to (a) Physical (b) Chemical (c) Biological d) Mechanical (e) Psychosocial hazards on depending upon his occupation. Occupational diseases cover all pathological conditions induced by prolonged work or exposure to harmful factors inherent in materials, equipment or the working environment. Workers in every occupation can be faced with a multitude of hazards in the work place.[1]

In ancient times, people have used Dasangam, Dhoopam, Argajja, Sandal bile and paste to perform various religious ceremonies at homes, temples, religious places and for royal families. These were burnt while offering prayers. The incense stick or the 'Aggrbatti' as it is called in Hindi, was invented in Bangalore during the 1900's and at that time is was known as the Oodabathies.[2] The origin of aggarbatti making as a cottage industry can be traced to Thanjavur region of Tamil Nadu from where it spread to the neighboring state of Karnataka which is the largest producer in India, and to a lesser extent to Andhra Pradesh, Gujarat.[3]

Incense - a substance that produces a fragrant odor when burned. Incense is a preparation of aromatic plant matter, often with the addition of essential oils extracted from plant or animal sources, intended to release fragrant smoke for religious, therapeutic, or aesthetic purposes as it smolders. These incense sticks vary in fragrances like different flowers, sandalwood, and other pleasing fragrances that fill the air with a wonderful aroma, popularly known as ′aggarbatti ' or ' dhoop' in India, incense sticks have the ability to exude a heavenly bliss through its soothing fragrance and spiritual effect. From times unknown agarbattis, also called incense sticks / prayer sticks are known to elevate moods. These sticks are reputed to aid meditation. However agarbattis are mainly associated with providing peace tranquility and of course freshness as it imbibes the essence of many traditional ingredients known to provide a soul soothing effect.[4]

The major raw materials used in the aggarbatti industry are bamboo, wood charcoal and proposed perfumes. The preparation of aggarbatti requires the rolling of sticks, the paste which is made of jigat powder, charcoal powder, and various natural products, to provide the fragrance. The equipment used is a low wooden board of 3 sq.ft in size around which the workers sit on the floor in squat, rolling the sick on the board. During rolling, the legs are stretched under these low tables. The incense stick workers spend 8-10 hours per day for rolling the incense sticks.[5]

Due to prolonged sitting posture, the low back supports most of the body's weight, and as a result it is susceptible to pain caused by injury or other problems. Low back pain occurs in the lumbar, lumbosacral areas. It often

relates to degenerative process and musculo tendinous strain caused by stress from the human upright posture. In 2% of the population, backache is the presenting complaint in general practitioner's clinic.[6] Aggarbatti industry has gradually developed into a major industry. Of the total domestic sale of Rs 7.1 billion in 1990, South India accounted for 35%, West 30%, North 18% and East 17%. Almost two-thirds of consumption takes place in rural areas (61.23%).[7]

Customs in incense manufacture have changed little over the centuries except in the range of fragrances offered. In ancient times, only naturally fragrant resins or woods like sandalwood and patchouli were used for incense. Modern fragrance production allows virtually any scent to be duplicated, and fragrances are available now that couldn't be offered before. Examples include green tea, candy cane, blueberry, pumpkin pie, and gingerbread incense.[8] The Census of Handicrafts in 1996 reported that approximately 500,000 aggarbatti workers in the country of which 90 % are estimated to be women and about 80% to be home based family labour. Out Of these 250,000 workers are in Karnataka and 60,000 workers are in Gujarat, 50,000 in Kerala and Tamil Nadu and rest of them are distributed across the other states.[9]

There are about 10,000 agarbatti manufacturing units in the country including tiny, small and medium, besides another 200 well-established ones having over 50 branded aggarbattis. Nearly 12 lakh people are directly or indirectly employed by the industry.[10] World Health Organization (2002) reports that 217 million cases of occupational diseases 30-40 percent may lead to chronic diseases and 10 percent to permanent work disability and also 120 million cases of occupational accidents and injuries, 200,000 fatalities are expected yearly. Without preventive action, the burden of occupational diseases and injuries will escalate.[11]

A study conducted under the National Comprehensive Occupational Rehabilitation Program (2002) regarding "Work environment of the incense industries" stated that the most common screening symptoms reported by workers were pain in the arms, legs or joints (43 %), back pain (24 %), trouble sleeping (16 %), headache (11 %) and feeling tired or having low energy (10.9 %).[12] According to the ILO (2003), 2 million people die each year from work-related causes. 370,000 of these deaths are due to accidents. In addition, 270 million non-fatal work accidents and 160 million cases of occupational illness are registered each year.[13]

According to the United Nations Industrial Development Organization (2005), 200 million women are employed across all industry sectors, with half of this number in developing countries. Their work not only sustains their families, but also makes a major contribution to socio-economic progress. Most

women are employed in low-skilled, poorly paid positions, where they are often exposed to health hazards. Environmental issues play an important role for women in developing countries, since they arise both from poverty and from industrialization. Women in industry are usually concentrated in low-level positions, which tend to carry higher risks of exposure to serious health hazards or unclean working environments where there are jobs involving highly toxic materials like incense fragrance. UNIDO also addressing the issue of women, industry and environment in three ways: 1. Awareness creation and information. 2. Improving local environments 3. Cleaner production.[14]

Explorative study did by Jessamyn Embry (2008) on ''Dangerous Jobs Still Exist in India's Techno Hub'' In that study she states that one of the most common diseases resulting from working with incense is chronic obstructive pulmonary disease (COPD). Chronic bronchitis, occupational asthma, silicosis and emphysema are all connected with the incense trade. Work with incense also results in skin disease, the most common of which is primary irritant contact dermatitis. A direct result of handling incense powder and paste, dermatitis involves great discomfort as blisters itch and burn. If left untreated, the skin will begin to chap, crack, and ooze. With incense rollers who use their whole palm to make the sticks, the entire hand may puff and swell and the ability to perform household tasks, not to mention continuing to meet production quotas, becomes impossible.[15]

Materials and Methods

Objectives of the study

1. To estimate the prevalence of health problems among incense sticks workers.

2. To assess the level of knowledge regarding prevention on health problems among incense sticks workers.

3. To find correlation between prevalence of health problems and knowledge regarding prevention on health problems among incense sticks workers.

4. To find the association between the findings of the study and selected socio demographic variables

Hypotheses

Ho$_1$: There is no significant association between the prevalence of health problems and knowledge of incense sticks workers regarding prevention of health problems.

Ho$_2$: There is no significant association between the findings of the study and selected socio demographic variables.

Research Approach

In a view of the nature of the problem selected and objectives to be accomplished, descriptive survey approach was considered as an appropriate one.

Research Design

Based on the purpose of the study, research approach and variables to be studied, a non-experimental descriptive research design was selected for this study.

Variables

The variables for present study were:

❒ **Study Variable**- prevalence of health problem and level of knowledge regarding prevention of health problems among incense stick workers.

❒ **Attribute Variable**- Personal characteristics which include age, educational status, marital status, income, religion, and years of experience.

Setting of the Study

The setting selected for data collection was Sri Bhavani Perfume Industry, Chamarajpet, at Bangalore. An industry situated at 20 kilometer away form the institution. Natures of the workers are rolling, counting, packing. Total number of the workers working in Sri Bhavani Perfume Industry is 250.

The criteria for selecting this setting were geographical proximity, feasibility of conducting the study, availability of subjects and familiarity of the investigator with the setting.

Population

Population of the study was incense stick workers who are involved in rolling and packing at Sri Bhavani Perfume Industry, Chamarajpet, at Bangalore.

Sample and Sampling Technique

Using non-probability convenient sampling technique 60 female incense stick workers who fulfill the selection criteria were selected for the study.

Criteria for Selection of Sample

Inclusion Criteria: Incense sticks workers who are:

❏   available during the data collection period.

❏   able to speak Kannada.

Exclusion Criteria: Incense sticks workers who are:

❏   having underlying health problem.

❏   not having less than one year of experience.

❏   not willing to participate in the study.

Sample size

The sample size for the present study was 60 female incense stick workers who are involved in rolling and packing of Incense stick work at Sri Bhavani Perfume Industry, Chamarajpet, at Bangalore.

Development of Tool

After an extensive review of literature and discussion with the experts, structured check list for assessing prevalence and structured interview schedule for assessing knowledge.

Tool was further categorized as follows:

Part A-Socio demographic variables.

Part B-Check list to assess the prevalence of health problem which consisted of 20 items were developed and

Part C-Structured Interview Schedule to assess the knowledge which consisted of 23 items were developed.

Part B & C covers following areas as follows:

Section A: Back pain.

Section B: Abdomen Pain.

Section C: Respiratory problem.

Section D: Skin problem.

Section E: Urinary problem.

Scoring Key

Scoring key was prepared as follows:

Part I by coding the socio-demographic variables.

Part II one mark was awarded for each symptom present and zero for absence of symptom. Thus total of 20 marks were given for prevalence checklist.

Part III one mark was awarded for each correct response and zero for incorrect response. Thus total of 23 were given for knowledge assessment.

To interpret the level of knowledge, the scores were distributed as follows:

- ☐ Inadequate knowledge ≤ 50%.

- ☐ Moderately adequate knowledge 51-75%.

- ☐ Adequate knowledge > 75%.

Content Validity of the Tool

Seven experts including Five Nurse Educators and Two Doctors from Department of Community established content validity of the tool. According to the suggestions given by experts tool was modified for main study after discussing with the guide, the items in the Part B were changed from 23 prevalence items to 20 prevalence items.

Reliability

Reliability of tool was established by using Test-Retest method. The calculated 'r' value for Check list was 0.78 with r' 0.87 and calculated 'r' value for Structured Interview Schedule was 0.93 with r' 0.96

Procedure for Data Collection

Formal permission to conduct study was obtained from the concerned authorities. After introducing about self and purpose of the study, obtained assuring maximum anonymity and written consent from the Incense stick workers. Investigator administered the checklist for assessing prevalence of health problem and used structured interview schedule for assessing knowledge of Incense stick workers.

Plan for Data Analysis

The data analysis was planned to include:

- ☐ Descriptive Statistics.

    1. Frequency and percentage distribution were used to describe the socio demographic data, prevalence and knowledge of incense stick workers.

2. Mean, mean percentage and standard deviation were used to for prevalence and knowledge of the incense stick workers.

❐ Inferential Statistics.

1. Karl Pearson's Correlation co-efficient was used to assess the relationship between prevalence and knowledge of subjects.

2. "Chi-square" test was done to assess the association between prevalence and knowledge of incense stick workers with selected socio demographic variables.

Findings

The findings have been organized and presented under following headings.

Section A: Socio Demographic Variables Of Incense Stick Workers

Table 1: Frequency and percentage distribution of Socio Demographic Profile of the Incense Stick Workers:

n=60

Sl.No.	Socio Demographic variables	Frequency	Percentage (%)
1.	**Age in years**		
	a) 15-25	14	23
	b) 26-35	5	8
	c) 36-45	19	32
	d) 46 and above	22	44
2.	**Religion**		
	a) Hindu	45	75
	b) Christian	15	25
3.	**Marital status**		
	a) Single	11	18
	b) Married	49	82
	c) Separated / Divorced.	-	-
4.	**Educational status**		
	a) No formal Education	47	78
	b) Primary Education	13	22
	c) Secondary Education	-	-
	d) Higher Secondary Education	-	-

5.	**Years of experience**		
	a) 1-5	16	27
	b) 6-10	11	18
	c) > 10	33	55
6.	**Type of family**		
	a) Nuclear	35	58
	b) Joint	25	42
	c) Extended	-	
7.	**Monthly income**		
	a) < Rs. 1000	-	-
	b) Rs.1001-1500	12	20
	c) Rs.1501-2000	17	28
	d) > Rs. 2000	31	52
8.	**Nativity**		
	a) Karnataka	30	50
	b) Tamilnadu	30	50
9.	**Type of food**		
	a) Vegetarian	18	30
	b) Mixed	42	70
10.	**Hours of exposure**		
	a) < 5	3	5
	b) 6-10	45	75
	c) 11-15	12	20

Table-1 shows that maximum number of the subjects 22 (44%) belongs to the age group of above 46 years, and only 5 (8%) were in the age group of 26-35 years. Majority of the subjects 45 (75%) belongs to Hindu religion and only 15 (25%) of them were Christian. Majority of the subjects 39 (78%) were married and only 11 (22%) of them were Unmarried. On considering the Educational status, majority of the subjects 47 (78%) were in no formal education, only 13 (22%) of them had completed their primary education. Majority of the subjects 33 (55%) had more than 10 years of experience, and 16 (27%) had between 1-5 years and less than one year of experience respectively. With regard to Type of family majority of the subjects 35 (58%) were nuclear family, where as 25 (42%) were joint family. On considering the Monthly income, majority of the subjects 31 (52%) was earning more than ₹ 2,000, while only 12 (20%) of subjects income was between ₹ 1001-1500. Subjects 30(50%) were from Karnataka and 30 (50%) were from Tamilnadu. Majority Number of workers, 42 (70%) were mixed type of food and 18 (30%) from vegetarian. Majority of the subjects 45 (90%) were exposing between 6-10 hours and only 3 (5%) were, 5 Hours of Exposure.

Section B: Prevalence of Health Problems Among Incense Stick Workers

Table 2: Frequency and percentage distribution of prevalence of health problems among incense stick workers

n=60

Sl.No	Health Problems	Experienced		Not Experienced	
		F	%	F	%
1	Back pain	56	93	4	7
2	Abdominal pain	31	52	29	48
3.	Respiratory problem	48	80	12	20
4.	Skin Problem	37	62	23	38
5.	Urinary problem	45	75	15	25

Table 2 shows that maximum number of the subjects 93% had experienced towards Back pain and 7% of the subjects not experienced towards back pain. On considering the abdomen pain 52% of the subjects had experienced and 48% of the subjects not experienced towards abdomen pain. On considering the respiratory problem 80% of the subjects had experienced and 20% of the subjects not experienced towards respiratory problem. Majority of the subjects 62% was experienced towards skin problem and 38% of the subjects not experienced towards skin problem. Majority of the subjects 75% was experienced towards urinary problem and 25% of the subjects not experienced towards urinary problem.
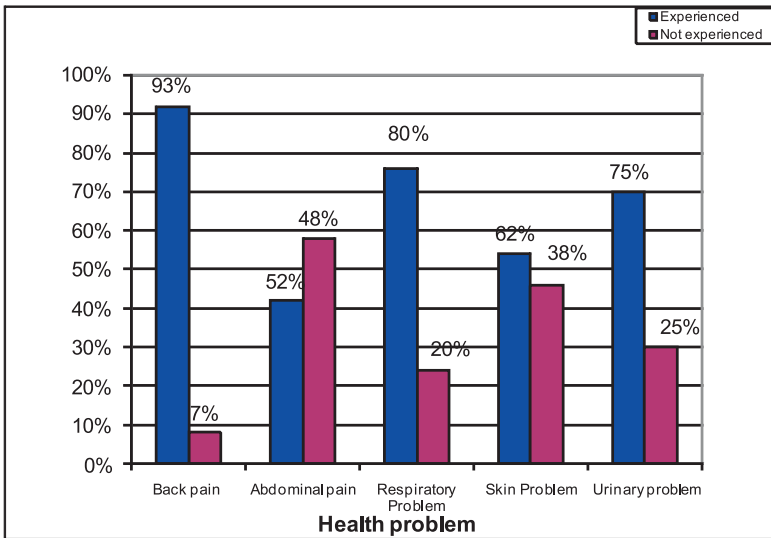

Fig. 1: Percentage distribution of prevalence of health problems among incense stick workers

Table 3: Mean, Mean percentage and Standard deviation of Prevalence of Health problems.

n= 60

Sl. No.	Health Problems	Mean	Mean Percentage	Standard Deviation
1	Back pain	3.68	92	0.30
2	Abdominal pain	1.68	42	1.50
3.	Respiratory problem	3.04	76	0.84
4.	Skin Problem	2.16	54	1.35
5.	Urinary problem	2.8	70	1.00
	Overall health problems	13.12	65.6	4.99

Table 3 shows that the highest mean observed was 3.68 for back pain with mean percentage of 92 and standard deviation of 0.30, whereas the lowest mean observed was in the area of Abdomen pain was 1.68 with mean percentage of 42 and standard deviation of 1.50.

The overall prevalence of mean was 13.12 with mean percentage of 65.6 and standard deviation of 4.99.
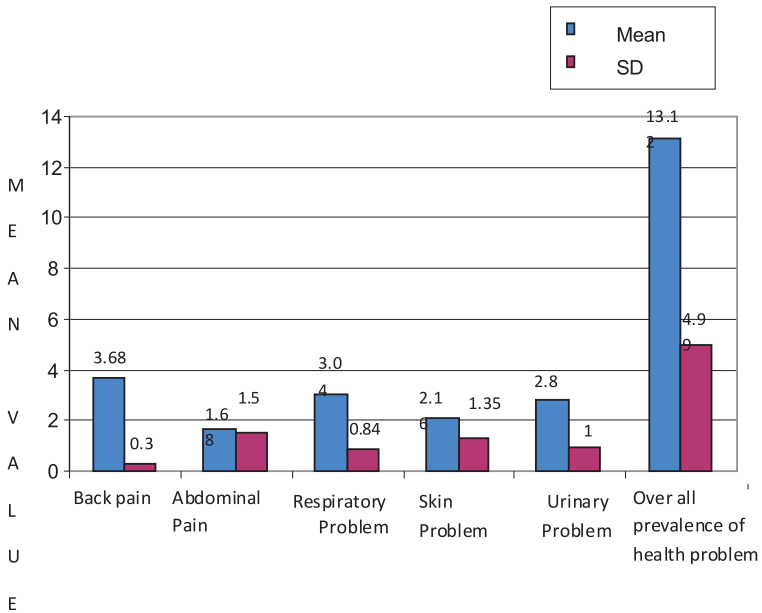

Fig. 2: Mean, Mean percentage and Standard deviation of prevalence of health problems.

Section C: Knowledge of Incence Stick Workers regarding Prevention of Health Problems

Table 4: Mean, Mean percentage and standard deviation of Knowledge variables

n=60

Sl. No	Variables	Mean	Mean Percentage	Standard Deviation
1	Back pain	1.44	28.8	0.86
2	Abdominal pain	1.02	25.5	0.60
3.	Respiratory problem	1.02	25.5	0.66
4.	Skin Problem	1.62	32.4	0.93
5.	Urinary problem	1.62	32.4	0.73
	Overall knowledge on prevention health problems	6.72	144.6	3.78

The above table shows that highest mean observed was 1.62 for skin problem as well as urinary problem with Mean Percentage of 32.4 and Standard deviation of 0.93, where as the lowest mean observed was in the area of abdominal pain and respiratory problem which was 1.02 with mean percentage of 25.5 and standard deviation of 0.66.

The overall knowledge mean was 6.72 with mean percentage of 44.6 and standard deviation of 3.78.
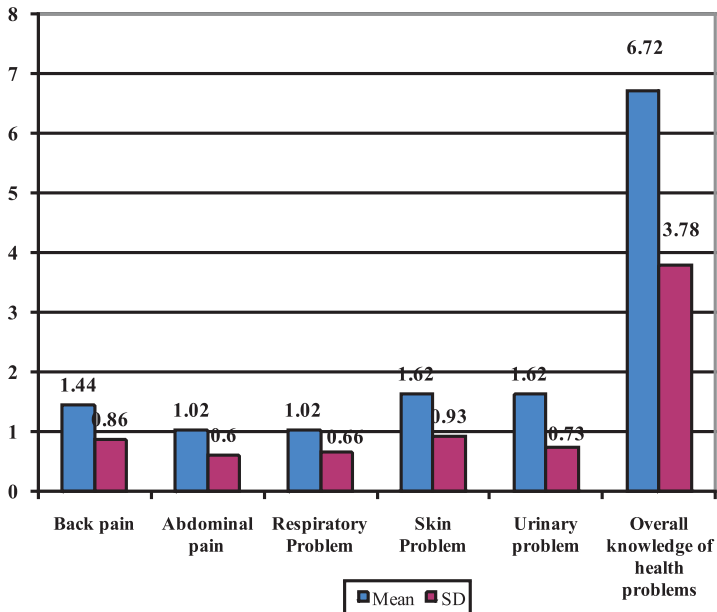

Fig. 3: Mean and Standard Deviation of knowledge variable

Table 5: Frequency and percentage distribution of level of knowledge of incense stick workers on prevention of health problems n=60

Sl. No.	Knowledge Variable	Inadequate Knowledge ≤ 50%		Moderately adequate Knowledge 51-75%		Adequate Knowledge > 75%	
		f	%	f	%	f	%
1.	Back pain	51	85	7	12	2	3
2.	Abdominal pain	58	97	2	3	-	-
3.	Respiratory Problem	58	97	2	3	-	-
4.	Skin Problem	52	86	4	7	4	7
5.	Urinary problem	53	88	6	10	1	2
Overall knowledge on health problems		52	86	4	7	-	-

Table 5 shows that regarding Back pain 51(85%) subjects had inadequate knowledge, 7(12%) subjects had moderately adequate knowledge, and only 2(3%) subjects had adequate knowledge. 58(97%) subjected exhibited in adequate knowledge regarding Abdominal pain and 2(3%) had moderately Adequate knowledge. In regards of Respiratory problem 58(97%) subjects had inadequate knowledge, and 2(3%) had moderately Adequate knowledge. Majority 52(86%) subjects had inadequate knowledge about skin problem and 4(7%) had moderately adequate knowledge as well as Adequate knowledge. In regard of Urinary problem 53(88%) subjects had inadequate knowledge and 1(2%) had moderately adequate knowledge. Overall result indicates that most of the worker had inadequate (86%) and only (7%) had moderately adequate knowledge.

Section D: Correlation Between Prevalence of Health Problems and Knowledge Variable

Table 6: Table of correlation between prevalence of health problems and knowledge of Incense stick workers.

n=60

Sl.No	Variable	Mean	SD	r	t
1.	Prevalence	9.08	65.6	-0.09	-0.62
2.	Knowledge	6.72	29.3		df=48 NS

NS: Not significant

Table 6 shows a very mild negative correlation exists between prevalence and knowledge of incense stick workers with the calculated 'r' value -0.09 and 't' value of -0.62. Since the calculated t value is less than table value, the null

hypotheses (Ho_1) stated that there is no relationship between prevalence and knowledge of incense stick workers was accepted.

Section E: Association of Prevalence of Health Problems and Knowledge of Prevention of Health Problems

The chi-square analysis showed, association was found to exists between prevalence of Back pain in regard to type of food, hours of exposure, since the calculated X^2 value is more than table value at $p<0.05$ level of significance, Ho_1 stated as there is no significant association between the prevalence of health problems and selected socio demographic variable was rejected in this aspect.

The analysis was done to find the association between level of knowledge and socio demographic variables to topic does not show any significant association. As computed chi-square value was lesser than the table value at $p < 0.05$, the null hypothesis Ho_2 stated that there is no significant association between the levels of knowledge with selected socio demographic variable was accepted.

Conclusion

Health is the precious possession of all human beings as it is an asset for an individual. Healthy individual can carry out daily living activities and life enriching goals. Health is the fundamental right of every individual and they are at full liberty to long for quality life. But contradicting it is found that man encounters number of diseases, some of which may be fatal.

Health is multifactor. The factors which influence health lie both within the individual and externally in the society in which he or she lives. It is truism to say that what man is and to what diseases he may fall victim depends and a combination of two sets of factors his genetic factors and the environmental factors to which he or she is exposed. These factors interact and these interactions may be health-promoting or deleterious.

Implication

Nursing Practice

1. Participate in health surveillance programme that include the assessment and recording of the health status of employees.

2. Participate in the environmental control programme that aims to identify, eliminate and control occupational health hazards.

3. Counseling and crisis intervention for those individuals experiencing work related problems and health promotion through specific health education and screening programmes.

4. Teaching programme can be conducted for groups, as it would allow both literate and illiterate workers to enhance their knowledge.

5. Health professionals need to involve themselves more in preparing such strategies.

Nursing Education

1. Nurse educator should emphasize more on preparing students to impart health information to the public specific to occupational health workers.

2. The Nursing students should be made aware of their role in occupational health nursing in health promotion and disease prevention in the present and future year.

3. The curriculum prepared should be able to prepare the students to educate the Incense stick workers regarding occupational health hazards and its prevention.

4. The nurse educator should periodically organize special training programme for the incense stick workers.

5. Students can be encouraged to take up projects and studies on Health problems among incense stick workers.

Nursing Administration

The Nurse as an administrator can organize and conduct teaching programme for community health nurse in order to enhance their knowledge and keep them aware of the health hazards which occurs in occupation and how to prevent them.

Nursing Research

Research provides nurses the credibility to influence decision making, policy and protocol formulation regarding prevention of occupational health hazards. Findings of the present study suggest that educators and administrators should encourage nurse to read, discuss and conduct research studies so as to enable the nurse to make data based decision rather than intuitive decisions.

Recommendations

1. The study can be replicated on larger samples in different occupational settings.

2. A longitudinal study can be conducted to see the effectiveness of teaching in bringing down the health hazards among incense stick workers.

3. A true experimental study can be could be undertaken with control group.

4. A similar study can be conducted to see the practice of safety measures among incense stick workers.

Limitation

Large number of samples could not be taken and interviewed because the management not issuing the permission to conduct study as well as the workers expressed difficult in spending time with the investigator because of their daily wages.

Interest of Conflict: None

Source of Funding: Funded by the primary researcher itself

Ethical Clearance: Obtained from the concerned institution.

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