EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE (SIM) ON THE KNOWLEDGE OF EARLY CANCER IDENTIFICATION FOR THE MALE WORKERS IN A SELECTED CHEMICAL INDUSTRY AT GWALIOR

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INTRODUCTION

Early detection and treatment for colorectal, prostate, skin and lung cancer have an immense potential for impact on the public health. Early detection and treatment only affect mortality and not the actual genesis of these cancers. The GLOBOCAN estimated that, lung cancer is the main cancer in the world today, whether considered in terms of number of cases (1.35 million) or deaths (1.8 millions) because of the high case fatality (ratio of mortality to incidence, 0.87). Prostate cancer is the fifth most common cancer in the world and the second most common in men (11.7% of new cases overall; 19% in

Developed countries and 5.3% in developing countries). Malignant melanoma of skin accounts for 160,000 new cases annually. According to world scenario nearly 70% of all the new cases of lung cancer in the world occur in the developed countries.

Need for the study

Most of the early cancers have no obvious symptoms, may not be found unless checked by medical professionals in specialist hospital.

Rapid industrialization, increasing amounts of chemical compounds in the environment, and discoveries of new occupational carcinogens such as asbestos and vinyl chloride indicate that occupational cancer is likely to become more frequent in the future.

1. OBJECTIVES

STATEMENT OF THE PROBLEM -

THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON THE KNOWLEDGE OF EARLY CANCER IDENTIFICATION FOR THE MALE WORKERS IN A SELECTED CHEMICAL INDUSTRY AT GWALIOR.

OBJECTIVES OF THE STUDY

1. To determine the level of knowledge of workers on early cancer identification using structured questionnaire.

2. To evaluate the effectiveness of SIM on early cancer identification in terms of gain in knowledge score.

3.   To find out the association between pretest knowledge scores and selected variables (age, income, years of experience and education).
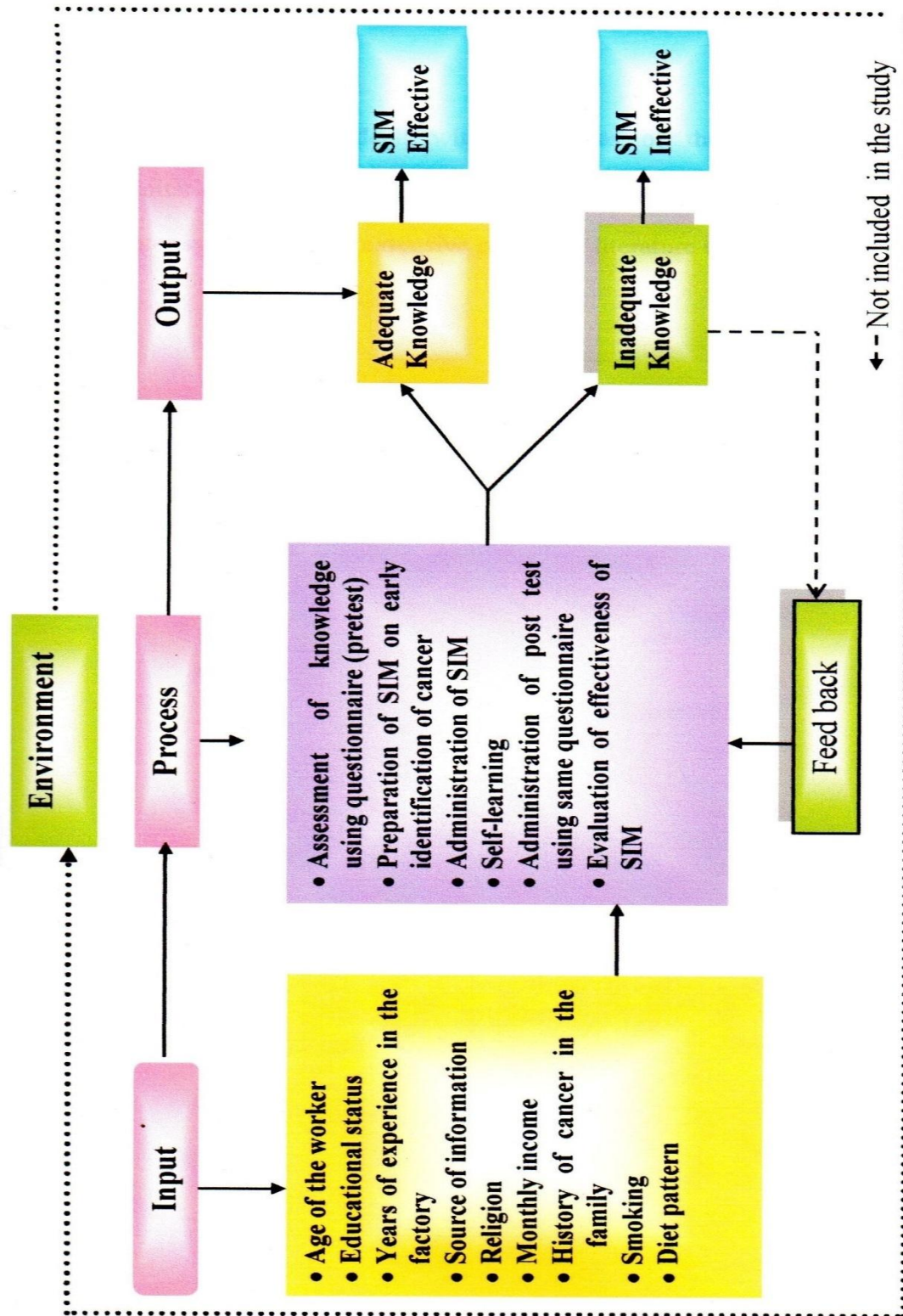

Fig 1: Conceptual Framework on effectiveness of Self instructional module (SIM) on knowledge of early identification of cancer based on System's Model by Ludwig Von Bertalanffy

3. REVIEW OF LITERATURE

"A lot of people have gone further than they thought they could, because someone else thought they could"

Review of literature is a systematic identification, location, scrutiny and summary of written materials that contain information on research problem.

Review of literature is an essential task in the research process. It brings clarity and focus to the research problem, improves the methodology, and broadens the knowledge base in the research area.

Literatures related knowledge of workers on early identification of cancer and effectiveness of self- instructional module.

The literature review has been organized and presented under the following headings.

1. Incidence of cancer and benign tumors among industrial workers

2. Knowledge on early identification of cancer.

3. Risk and screening for different cancers among industrial workers.

4. Effectiveness of SIM in nursing practice.

Knowledge on early identification of cancer

A study was conducted in India to ascertain the current level of understanding about prostate cancer (PCa) including treatment options and potential side effects of treatment, among older men. Convenience subjects of men aged 40-80 years (n=503) with or without prostate cancer presenting for routine consultations were given questionnaire. There were 80% of men who did not know the function of the prostate and 48% failed to identify, and 35% had no knowledge of the treatments for PCa and 53% had no knowledge of the side effects of treatments.

A descriptive survey is conducted in Turkey to examine the knowledge, attitudes, risk factors and early detection relevant to cancer of schoolteachers among 358 schoolteachers who are randomly selected from the eight school.

An exploratory study was conducted with 49 people to get an idea of what and how the general public thinks about genetic cancer. Group discussions revealed that people believed that the vulnerability for cancer was largely dependent on their lifestyle, and that they were at risk if cancer ran in their family. Participants found it difficult to distinguish cancer from genetic cancer since in both cases the cause was related to cell problems. People felt that they lacked adequate knowledge of genetic cancer, which was also confirmed by the misconceptions revealed during the discussions.

A study was conducted to examine the knowledge and practices regarding screening for colorectal cancer among 312 male and 332 female Chinese Americans in Chicago's Chinatown. A Chinese translation and cultural adaptation of the Cancer Control Supplement Questionnaire from the National Health Interview Survey was used to interview the respondents, who ranged in age from 40 to 69 years. Approximately 85% of the respondents had never been screened with the fecal occult blood test (FOBT), compared with 70% of the general population-far below the 50% target set by the Healthy People program.

A cross-sectional study was conducted in India to determine the proportion of people consuming tobacco in various forms, level of knowledge and practices regarding various harmful effects of tobacco and passive smoking. . About 157 people were interviewed regarding their tobacco consumption practices through a semi structured pre-tested questionnaire. The study subject was selected randomly among all the adult members of 18 years age and above present at the time of interview in the household by lottery method and the questionnaire was administered. The study showed that 110 (70%) people were tobacco consumers, 47% were knowledgeable about hazards of smoking, 22% were aware about passive smoking, and 90% started consuming tobacco below 20 years of age. Most of them were unaware about tobacco consumption hazards, and passive smoking.

Effectiveness of SIM in nursing practice

A study was conducted to evaluate the effectives of self-instructional module (SIM) for staff nurses on therapeutic nursing approaches for selected maladaptive behavior of psychiatric patients. Forty graduate nurses of one batch were selected by using convenience sampling technique

An evaluative study was done to find out the effectives of structured self-instructional module on selected drugs used in the critical care unit for staff nurses working in these units, in a selected hospital in Karnataka. The subjects comprised of 30 staff nurses. The study included two phases. The findings of the study revealed that SIM was found to be effective in increasing the • knowledge of the staff nurses.

Another evaluative study was done to find out the effectives of a SIM for staff nurses prepared on phototherapy for neonatal jaundice. The subjects consisted of 50 staff nurses from a selected hospital at Jaipur. One group pre-test post- test design was used. The findings of the study showed that the mean post- test knowledge score was found significantly higher than their mean pre- test knowledge score Ce (49) =35.35, p<0.01. Thus the study showed that SIM was effective in increasing the knowledge scores of staff nurses.

Summary

The review of the literature helped the investigator to find out the literature related to the existing problem and the knowledge of industrial workers on early identification of cancer and the different strategies adopted by researchers to improve the knowledge. Various studies have shown that people lack knowledge regarding early identification of cancer. Very few studies are adopted from India. This also gave a short foundation for the investigator to select suitable methodology, analysis and preparation of the self-instructional module.

4. RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically.

Research Approach

An evaluative approach was used for this study. Evaluative approach was used to test the effectiveness of self-instructional module prepared for workers. An evaluation research is an applied form of research an evaluative to find out how well a programme, practice, procedure or policy is working.

Research Design

A researcher's overall plan for obtaining answers to the research questions or for testing the research hypothesis is referred to as the research design. Quasi-experimental one group pre-test post- test design (01 X 02) was adopted for the study. The study design comprises of two phases as shown in the figure 2, the phase I deals with preparation, validation of tool and SIM. Phase II comprises of assessment of knowledge of workers on early identification of cancer by structured knowledge questionnaire (01), administration of SIM on same day (X), posttest on seventh day using the same questionnaire (02). Finally evaluation of effectiveness of SIM by descriptive and inferential statistics. The schematic representation of the study design is as follows.

Group	Phase I Presentation of knowledge Questionnaire and SIM	Phase II			Phase III
		Pre-test	Administration of SIM on same day	Post-test	Data Analysis
Industrial workers	• Reviewing the existing literature • Preparation of blue print • Preparation of knowledge questionnaire - content validity - pre-testing - reliability • Development of SIM - criteria checklist - content validity - pre-testing - pilot study	Administration of structured knowledge questionnaire on the first day (O_1).	Administration of prepared SIM on first day (X)	Administration of structured knowledge questionnaire on the seventh day (O_2).	Data will be analyzed for statistical significance in continuous numerical value by 't' test and chi-square test result will be expressed in frequency, percentage, mean standard and graphs. All hypotheses will be tested at 0.05 level

Fig 2: Schematic representation of the study design

Variables

Variable is an attribute of a person or object that varies, that is, takes on different values.

Independent variable: In this study the independent variable is the self-instructional module on early identification of cancer.

Dependent variable: In this study dependent variable is knowledge of workers on early identification of cancer.

Extraneous variable: An uncontrolled variable that greatly influences the result of the study is called as extraneous variable.

In this study the variables such as age, income, years of experience and education are treated as extraneous variables.

Setting of the Study

The study was conducted in the RairuDistulary Industries, Gwalior and Garg Chemical Company, Gwalior. In these factories there are around 370 workers working in different category.

Population

The target population is the total group of subjects about whom the investigator is interested and to whom the results could reasonably be generalized.

The population of the study consists of the industrial workers who are working in RairuDistulary Industries, Gwalior and Garg Chemical Company, Gwalior.

Subjects and Sampling Technique

Sampling is the process of selecting a subset of elements from a larger set (population) of elements.

The subjects for the study subjects comprised of 40 industrial workers. A simple random sampling technique was used to select 40 industrial workers.

Criteria for the Selection of the Subjects

Industrial workers who,

• Are willing to participate in the study.

• Are present at the time of data collection.

Data Collection Instruments.

A structured knowledge questionnaire was used for the data collection. A structured questionnaire is a method of gathering self-report information from respondents through self-administration of questionnaire in a paper and pencil format.

Development of the Tool

A structured knowledge questionnaire was thought to be appropriate for assessing the knowledge of industrial workers based on the assumption that they have some knowledge on early identification of cancer. The questionnaire on early identification of cancer was developed after review of literature on relevant topics and consultation with subject experts.

Preparation of Blue Print

It included three domains knowledge, comprehension, and application. It had 13 (43.33%) knowledge items, six (20%) comprehension items eleven (36.66%) application items.

Content validity

A measure is valid if it accurately measures what it is supposed to measure. Content validity is the intent to which a measuring instrument provides adequate coverage of the topic under the study

The blue print, tool, the criterion rating scale for validation of the tool and the answer key was submitted to one expert from the department of oncology and nine experts from the field of nursing who had specialized in medical and surgical nursing. The experts were requested to give their opinion regarding accuracy, relevancy and appropriateness of content against the criterion rating scale, which had column for `agree', 'disagree' and 'remarks/suggestions'.

There are 100% agreement by experts on 28 out of 30 items and 99% agreement on two items. The items were modified as the suggestions given by the experts seemed to be valuable.

Pre-testing of the tool

The tool was administered to five industrial workers. All the terms were clearly understood by the subjects. No modifications were made.

Reliability of the Tool

The internal consistency was computed using Spearman's Brown Prophecy formula with split half technique. Reliability co-efficient was found to be r=0.96. The tool was found to be reliable. No modifications were made.

Description of the Final Tool

The final structured knowledge questionnaire consisted of two parts. Part – 1 Baseline characteristics which contained items for obtaining baseline information about the industrial workers.

Part – 2 Structured questionnaire consisting of 30 knowledge items covering five aspects of content areas such as cancer in general, lung cancer, skin cancer, prostate cancer & colorectal cancer. The questions were multiple choice types with one correct answer. The maximum score was 30 and minimum score was zero.

Development of the Self-Instructional Module (SIM)

Criteria Checklist

Criteria checklist was prepared against which the SIM was to be evaluated.

Preparation of first draft of SIM

The first draft of SIM was prepared on the basis of criteria checklist developed for evaluating the SIM after review of literature on cancer in general, lung cancer, skin cancer, prostate cancer & colorectal cancer.

Content validity of the SIM

They included eight from the department of medical and surgical nursing specialty, one from the department of oncology. Suggestions for minor changes were duly made and the final draft was prepared.

Pre- testing of SIM

The SIM was given to five industrial workers and found that there was no difficulty in understanding the content of SIM.

Preparation of the final draft SIM

The SIM is titled "Early identification of cancer - How?" preface, a table of content, introduction, instructions for using the module, General objectives, content, exercises, answer key and references.

The content was organized in the following sequence.

Unit I: Cancer in General

Unit II: Lung Cancer

Unit III: Skin Cancer

Unit IV: Prostate Cancer

Unit V: Colorectal Cancer

Pilot Study

The pilot study was conducted in a chemical industry at Morena. The investigator obtained permission from the Manager of the industry prior to the study. The data was collected from five industrial workers. The purpose of the study was explained to them prior to the test to get their co-operation and prompt answers. The respondents were assured of the confidentiality of their identity and responses.

Pilot study was conducted in a similar way as the final data collection. On the first day the pre-test was conducted by a structured questionnaire after which the SIM was administered. The post test was conducted on the seventh day, on the same industrial workers using the same structured knowledge questionnaire. Each written test was completed within 30 minutes.

Method of Data Collection

The investigator obtained written permission from the Managers of Both RairuDistulary, Gwalior and Garg Chemical Company, Gwalior. The purpose of the study was explained to them and confidentiality was assured to all the respondents.

The pre-test was conducted on a total of 40 respondents following which a copy of the SIM was given to the respondents with the following instructions.

1.   Keep the SIM with them for seven days

2.   Read the SIM thoroughly

3.   Come for the post test on the seventh day to find out the effectiveness of SIM in increasing their knowledge.

Post test was conducted after few days. Respondents cooperated well with the investigator. Data collection process was terminated by thanking the respondents for their co-operation and patience.

Plan for Data Analysis

The data obtained in this study was planned to be analyzed by both descriptive and inferential statistics, on the basis of objectives and hypothesis of the study.

5. RESULTS

Collected data was analyzed based on the objectives of the study using descriptive and inferential statistics.

Objectives of the study

- To determine the level of knowledge of workers on early cancer Identification using structured questionnaire.
- To evaluate the effectiveness of SIM on early cancer Identification in terms of gain in knowledge score.
- To find out the association between pretest knowledge scores and Selected variables (age, income, years of experience and education).

Organization of findings

The data was analyzed and is presented under the following headings:

Section I: Subjects characteristics.

Section II: Effectiveness of SIM on early identification of cancer in terms of gain in knowledge score.

Section III: Area-wise Mean Percentage and Mean Gain of Pre-Test and Post-Test Knowledge Score.

Section IV: Significance of Difference between Pre-test and Post-Test Knowledge Score Regarding early identification of cancer.

Section V: Association between pre-test knowledge score and selected variables

Section VI: Agreement of items in the criteria checklist for evaluating the SIM.

Section VII: Acceptability of SIM by industrial workers in frequency and percentage.

Section I
Subjects characteristics

This section deals with the description of subjects characteristics and is explained in frequency and percentage, and is represented in figures.
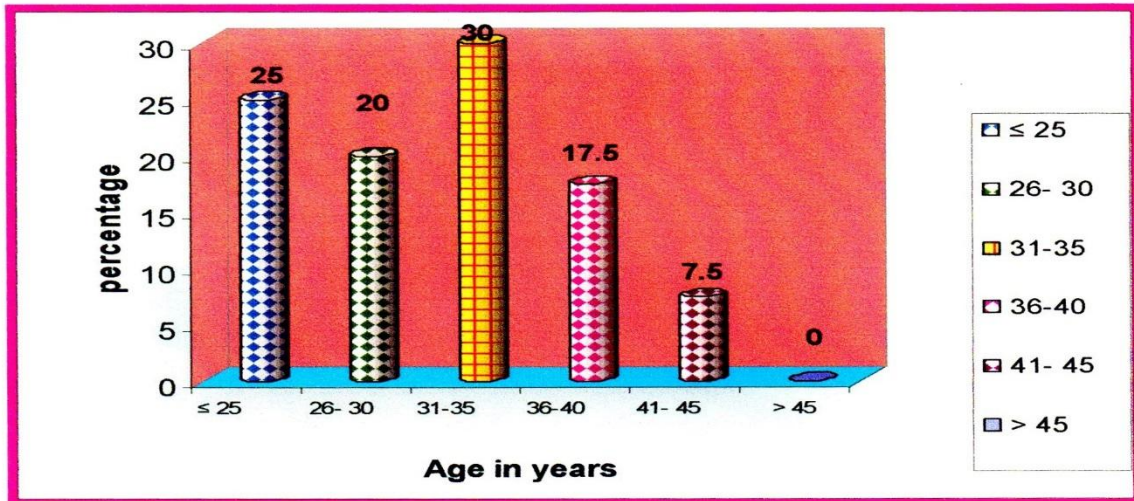
Figure 3: Cylinder Diagram Showing Percentage Distribution of Subjects According to Their Age.

Data presented in figure 3 shows that 25% were less than 25 years of age, 20% were 31-35 years of age, 30% were 36-40 years, 17.5% were 41-45 years of age, and 7.5% were more than 41 years of age.
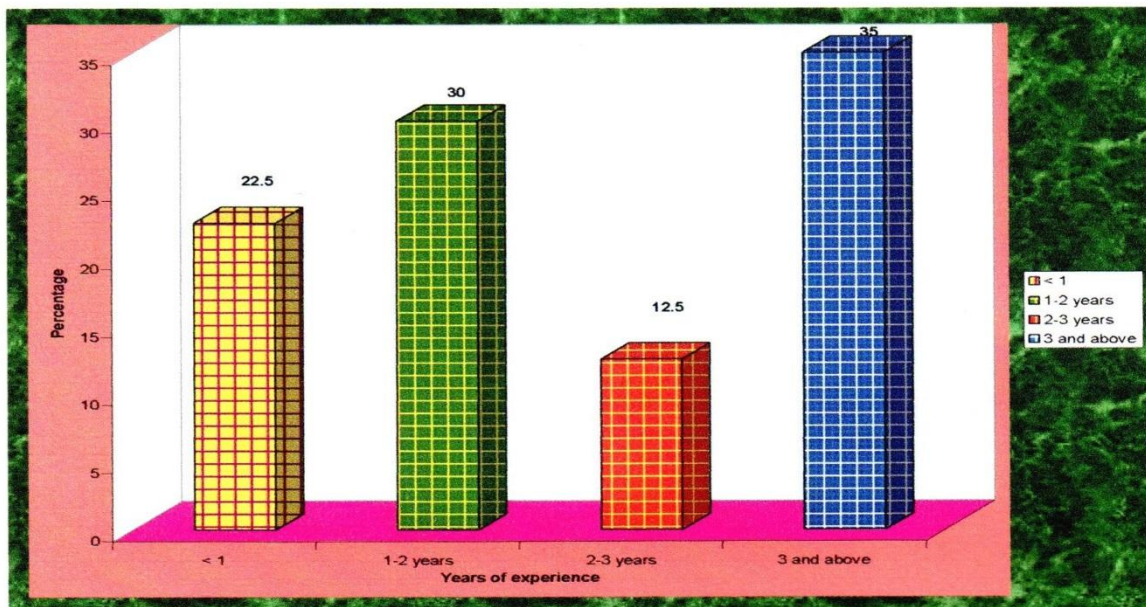

Figure 5: Cylinder Diagram Showing Percentage Distribution of Subjects According to Their Years of Experience in the Factory.

Data presented in figure 5 shows that 35.0% had total work experience of more than three years, 30% had 1-2 years, 22.5% had less than one year, and 12.5% had 2-3of experience in the factory.
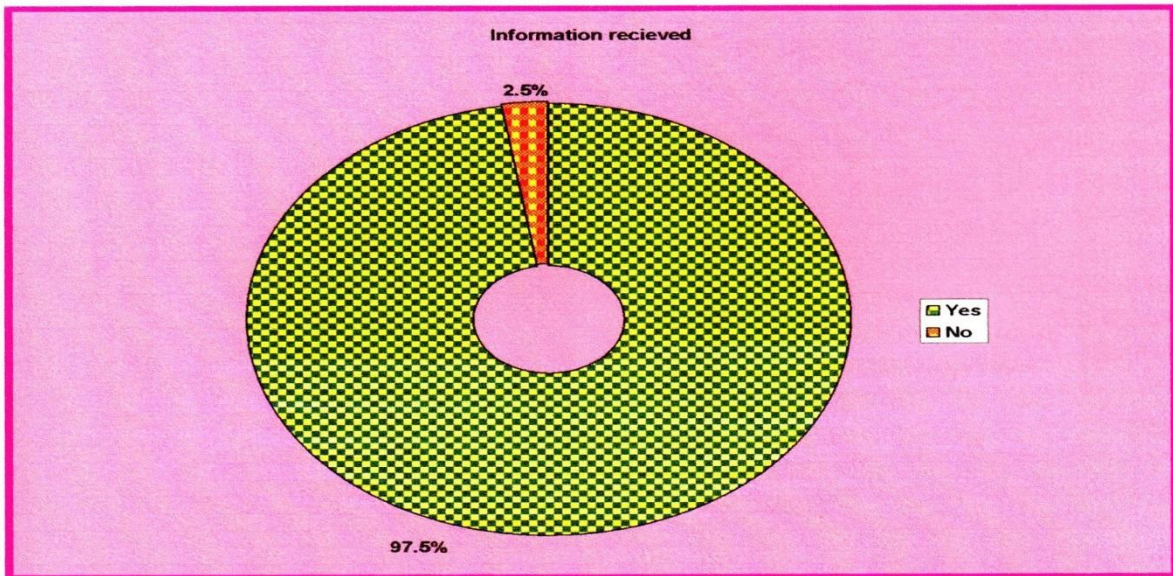
Figure 9: Doughnut Diagram Showing Percentage Distribution of Subjects According to information received on early detection of cancer.

Data presented in figure 9 shows that majority (97.5%) of the subjects had previous information and 2.5% had no previous information on early cancer identification.
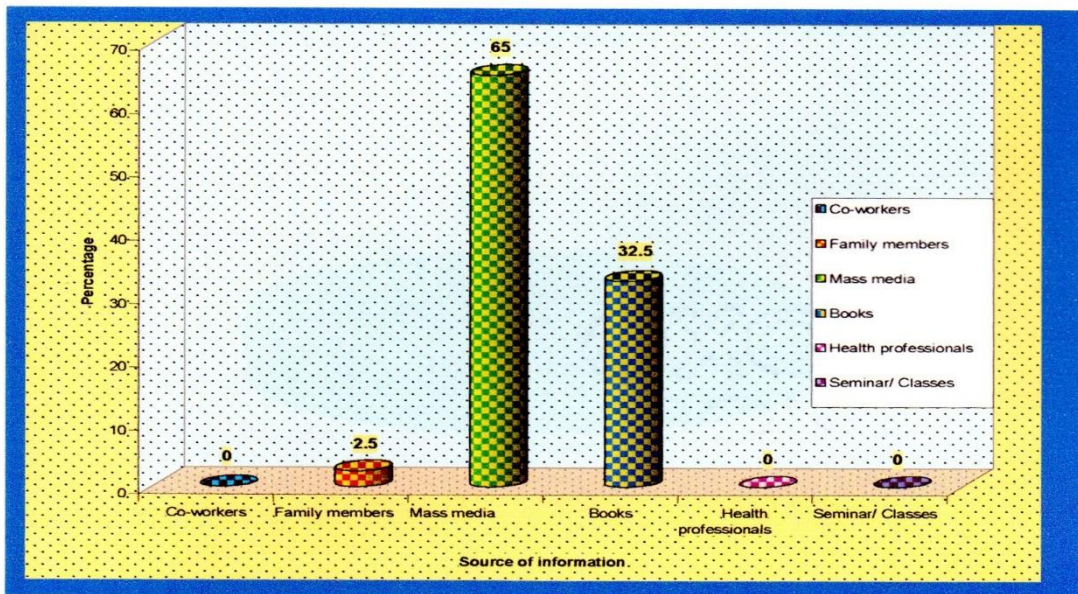

Figure 10: Cylinder Diagram Showing Percentage Distribution of Subjects According to the source of information.

Data presented in figure 10 shows that majority (65.0%) of the subjects had mass media as source of information and 32.5% had books and 2.5% had family members as source of information.

The date presented on the Table 7 describes that there is, 100% agreement for all items in the criteria checklist except two items having 90% of agreement. They are: simple to comprehend and content providing adequate information.

Section VII: Acceptability of SIM by industrial workers in frequency and percentage Acceptability of self-instructional module by industrial workers was established based on criteria checklist.

Summary

The result of data collected from 40 industrial workers on knowledge regarding early identification of cancer. Descriptive and inferential statistics were used for the analysis of the data based on the objectives and hypotheses. The mean post-test knowledge score (24.87) was higher than the mean pre-test knowledge score (12.75). The computed 't' value (t-24.751) showed a significant difference suggesting that the SIM was effective in increasing the knowledge of industrial workers on early identification of cancer. There was no significant association between pre-test knowledge score and selected demographic variables.

6. DISCUSSION

The aim of the study was to find out effectiveness of SIM in improving knowledge of industrial workers on early cancer identification.

The objectives of the study were:-

1. To assess the knowledge of workers on early cancer identification using structured questionnaire.

2. To evaluate the effectiveness of SIM on early cancer identification in terms of gain in knowledge score.

3. To find out the association between pretest knowledge scores and selected variables (age, income, years of experience and education).

Major findings of the study and Discussion

I. Characteristics of the respondents

About 30% of the respondents were 30- 35 years, 25% were < 25 years, 20% were 26-30 years 17.5% were 36- 40 years, and 7.5% were 41-45 years of age. All the respondents (100%) were males.

II. Knowledge of workers on early cancer identification

The difference between the mean post-test and the mean pre-test was found to be statistically significant ('V— 24.751) which shows that the SIM was effective in increasing the knowledge scores of industrial workers. Similar findings were also observed by other researchers.

III. Area wise mean actual gain in knowledge scores of workers on early cancer identification

The mean percentage knowledge score of post-test was maximum in the area of "cancer in general" (87.5%) and minimum in the area of 'skin cancer' (80.35 %). Mean difference between possible percentage gain and actual gain was calculated and found to be least (12.5%) in the area of 'Cancer in general'.

IV. Association between pre-test and post-test knowledge scores of workers and selected variables such as Age, Educational qualification, working experiences and income.

The findings of the study revealed that there is no significant association between pre-test and post-test knowledge scores and selected variables of the workers. Calculated x2 values (pre-test knowledge score and selected variables) is (age = 0.11, education r= 0.52, working experience = 0.60, income = 0.152) was not significant at 0.05 level. Calculated X2 values (post-test knowledge scores and selected variables) is (age = 3.465, Gender= 0.011, teaching experience = 1.097, educational qualification = 0.311, previous source of information — 1.6, marital status = 0.351) was not significant at 0.05 level.

Interpreted result shows that there is no significant association between pre-test, post-test knowledge and selected variables. Therefore the null hypothesis is accepted. The findings indicate that pre-test knowledge level of all samples was equal irrespective of their age, educational qualification, working experience. Thus the findings show that gain in knowledge score was due to self-instructional module.

The above mentioned studies and the findings of the present study clearly shows that the self-instructional module was effective in increasing the knowledge of workers and this will help them to identify the problems as early as possible.

7. CONCLUSION

Cancer is a disease that begins in the cell of the body. Many are affected by cancer in the world. The American cancer society estimated 1,437,180 new cancer cases and 565,650 deaths from cancer were projected to occur in the United States in 2008 the conclusion drawn wise:

1. Pre-test findings showed that deficient knowledge of workers on early cancer identification.

2. The Self Instructional Module in the study was found to be effective in increasing knowledge of workers.

3. SIM is an effective method for providing information. It was very much appreciated by the workers and they expressed their gratitude for providing information on the topic. Evaluation of SIM by worker's verbal response showed that it was very useful for the workers. They suggest that this type of information can be given frequently to upgrade their knowledge to identify cancer and to treat it at the early stage.

4. There was no significant association between variables and knowledge. So it is needed to educate all categories of industrial workers in the same setting.

Nursing research

Historically, industrial nursing has not documented sufficiently the health issues in industries, nor has it prioritized these issues for industrial nursing interventions or evaluated the effectiveness of nursing interventions. The emphasis on research and clinical studies is

needed to improve the quality of nursing. Nurses can do research in any areas of occupational health problem and can help in policy making.

Summary

This study has suggested that studies of this type should be an enduring procedure to make the industrial workers to be aware of cancer and its management. This awareness put off the progress of the disease and identifies the disease at the early stage.