

A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge Regarding Warning Signs of Cancer and Risk Factors of Lung Cancer among Adults in Selected Area of Aizawl

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Abstract: ***Background of the study:** Cancer encompasses a group of diseases marked by the uncontrolled growth and spread of abnormal cells. Lung cancer is the most prevalent and deadliest cancer worldwide, with its burden expected to rise alongside increasing tobacco use. This study assessed the effectiveness of a planned teaching programme on the warning signs of cancer and risk factors of lung cancer among adults in Maubawk, Aizawl, and examined associations with selected socio-demographic variables. **Methodology:** A quantitative study was conducted to assess the effectiveness of planned teaching programme on knowledge regarding warning signs of cancer and risk factors of lung cancer among adults in selected area of Aizawl, Mizoram. A pre-experimental one-group pre-test post-test design was adopted. Using non-probability purposive sampling, data were collected from 80 adults using a structured questionnaire. **Results:** The mean pre-test knowledge score was 12.65, which increased to 19.51 in the post-test following the intervention. The paired t-test value ($t_{99} = 27.19$) was statistically significant at the 0.05 level, confirming the effectiveness of the structured teaching programme. Pre-test results showed 50% of participants had good knowledge, 42% excellent, and 7.5% poor. Post-test scores indicated a significant improvement, with a mean difference of 6.86 ($t = 14.678$, $p = 0.0001$), confirming the effectiveness of the teaching intervention. Chi-square analysis revealed significant associations between pre-test knowledge and age ($\chi^2 = 13.654$, $p = 0.048$), education ($\chi^2 = 15.473$, $p = 0.031$), and occupation ($\chi^2 = 14.121$, $p = 0.0132$). No significant associations were found with gender, family history of cancer, or prior knowledge of lung cancer. **Conclusion:** The planned teaching programme effectively enhanced knowledge on warning signs of cancer and risk factors of lung cancer, highlighting the value of community-based education in raising awareness about cancer.*

Keywords: Warning signs, risk factor, lung cancer, assess, effectiveness, planned teaching programme, adults

1. Introduction

According to the American Cancer Society, "Cancer is a broad term for a group of diseases characterized by the uncontrolled growth and spread of abnormal cells." [1] It is a large group of diseases that can start in almost any organ or tissue of the body when abnormal cells grow uncontrollably, go beyond their usual boundaries to invade adjoining parts of the body and or spread to other organs [3]

Lung cancer is a type of cancer that forms in the tissues of the lungs, usually in the cells that line the air passage. Causes and Risk Factors of lung cancer includes; Smoking, **passive smoking**, radon gas, asbestos and other carcinogens, family history, previous lung disease, previous history of radiation therapy etc. Lung cancer can arise in any part of the lung, but 90%-95% are thought to arise from the epithelial cells, the cells lining the larger and smaller airways (bronchi and bronchioles). For this reason, lung cancers are sometimes called bronchogenic cancers or bronchogenic carcinomas [6]

According to the latest GLOBOCAN statistics 2022, lung cancer is the leading cause of cancer morbidity and mortality in 2022, responsible for close to one in eight (12.4%) cancers

diagnosed globally and one in five (18.7%) cancer deaths. With an estimated 1,369,000 cases, lung cancer is the most common cancer in men, after prostate cancer, and the second most common cancer in women, after breast cancer, with 725,000 cases [2]

It is well known that starting treatment early greatly increases the chances of surviving many types of cancer. Early detection depends on individuals knowing how to see the warning signals.

1.1 Statement of the Problem

"A study to assess the effectiveness of planned teaching programme on knowledge regarding warning signs of and risk factors of lung cancer among adults in selected area of Aizawl."

1.2. Objectives of the study

- 1) To assess the knowledge level regarding warning signs of cancer and risk factors of lung cancer among adults.

- 2) To analyse the effectiveness of planned teaching program regarding knowledge on warning signs of cancer and risk factors of lung cancer among adults.
- 3) To find out the association between knowledge score and selected demographic variables among adults.

2. Review of Literature

The review of literature is organized under the following headings:

Studies related to effectiveness of planned teaching programme

Irshad et al. (2023) conducted a quantitative research study to determine the effect of planned teaching program on knowledge of women of reproductive age group in selected rural community of Maharashtra state. The study comprised of 40 women of reproductive age group who fulfilled inclusive criteria drawn by purposive sampling method. The study revealed that the mean score among women was 12.9 during pre-test rose up to 18.9 in the post-test evaluation. Result interpreted that there was a significant increase in knowledge level of women after administration of the intervention. This indicates that planned teaching program was effective in improving the knowledge of the women of reproductive age group^[5]

Studies related to awareness on cancer

Yoko Yamagiwa et al. (2022) conducted a cross-sectional survey on awareness of cancer risk factors, information sources and health behaviors for cancer prevention in Japan. A nationwide representative sample aged 20 years or older (563 men and 653 women) responded to a questionnaire as part of a population-based survey in December 2018. Tobacco smoking (55.7%) and cancer-causing infection (52.0%) were regarded more highly than other lifestyle factors as causes of cancer (obesity [36.6%], physical inactivity [31.9%], unbalanced diet [30.9%], and alcohol consumption [26.2%]). The websites of public institutions, and health professionals were associated with a broad range of health behaviours including improving diet, exercise, cancer screening/health check-up, and abstinence from smoking/drinking. Among sources of print media, positive associations were observed between books and improving diet/exercise, brochures and cancer screening/health check-up, and advertisements and abstinence from smoking/drinking^[8]

Studies related to risk factors of lung cancer

Hana Qasim et al. (2024) performed a systematic review to highlight secondhand smoke as an etiology of lung cancer and insights for inclusion in cancer screening criteria. The researchers utilized the PubMed, Medline, Science Direct, and ClinicalTrials.gov databases to search for relevant literature using keywords ('low Dose CT,' 'second-hand smoke,' 'lung cancer'). The search strategy was designed to ensure a comprehensive retrieval of pertinent literature, minimizing the possibility of omitting articles due to insignificant spelling. In total, 239 relevant articles were retrieved from all databases, narrowing down to 14 articles after the initial screening and further reducing to 4 articles after the second round of screening. The results shows that three of the four articles included in the systemic review were

conducted in Asia. A study by He et al. showed a substantial increase in the relative risk of lung cancer among SHS with significant dose-response relationships between cumulative SHS exposure at home and work and the increased risk of cause-specific and total mortality. Another observational study on the use of LDCT in Japan has interestingly shown a shifting landscape of lung cancer demographics, with 49.6% of patients identified as never-smokers and 70.0% of the never smoker lung cancer patients having SHS exposure. Second-hand smoking has also been reported to increase the risk of pulmonary nodules and pulmonary emphysema in those with moderate-to-high SHS exposure, which was the population where lung cancer was more prevalent^[4]

3. Methodology

3.1 Research approach

This study aimed to assess the effectiveness of planned teaching programme on knowledge regarding warning signs of cancer and risk factors of lung cancer among adults. Quantitative research approach was adopted for the study.

3.2 Research design

In this study, pre-experimental one group pre-test post-test design was adopted in order to find out the effectiveness of planned teaching programme on knowledge regarding warning signs of cancer and risk factors of lung cancer among adults.

3.3 Setting of the study

The present study was carried out at Maubawk local council area of Aizawl, Mizoram.

3.4 Population

The study population included adult residing at Maubawk, Aizawl, Mizoram. This population was chosen to obtain relevant data for assessing the knowledge related to the research topic.

3.5 Sample

The sample for this study comprised adults who were 18 years of age and above who attended the Health Teaching Programme.

3.6 Sample size

The sample size for the present study consisted of 80 adults selected from Maubawk, Aizawl, Mizoram.

3.7 Sampling technique

Samples were selected using a non-probability purposive sampling technique.

3.8 Sampling criteria

The study included the following inclusion and exclusion criteria:

Inclusion criteria:

- Age group of 18 years and above.
- Residing at Maubawk, Aizawl.
- Who were available at the time of study.
- Who were able to read and write Mizo language

Exclusion criteria:

- Adults who were unable to respond the questionnaire.

3.9 Variables

- **Independent variable:** Planned teaching programme on warning signs of cancer and risk factors of lung cancer.
- **Dependent variable:** Knowledge regarding warning signs of cancer and risk factors of lung cancer.
- **Demographic variables:** In this study, demographic variables are Age, Gender, Educational status, Occupation, Family history of cancer, types of Cancer, Relationship, Previous Knowledge on Lung Cancer and source of knowledge.

3.10 Development of tool

For the purpose of data collection, a structured questionnaire was developed. The tool consisted of two parts: (i) a demographic proforma to collect personal data and (ii) a structured knowledge questionnaire on warning signs of cancer and risk factors of lung cancer.

3.11 Reliability of tool

The reliability of the structured knowledge questionnaire was assessed using Cronbach's alpha. The coefficient for the pre-test and post-test knowledge scores of adults regarding warning signs of cancer and risk factors of lung cancer was found to be 0.820, based on a sample of 30 participants, who were not included in the study. This indicates good internal consistency. Thus the tool was found to be reliable.

3.12 Ethical consideration

The following measures were taken for addressing ethical issues and establishment of ethical considerations:

- Ethical approval from Institutional Ethics Committee, Regional Institute of Paramedical and Nursing Sciences (RIPANS) on 25th February 2025.
- Administrative approval from the respective Senior Chief Medical Officer, Aizawl West, Mizoram on 28th August 2025 to conduct the study at Maubawk local council area of Aizawl, Mizoram.
- Written informed consent from each participants.
- Maintaining confidentiality of personal information and anonymity of the participants.

3.13 Data Collection Procedure

Ethical clearance was obtained from the Institutional Ethics Committee of RIPANS, and permission was granted by the Senior Chief Medical Officer, Aizawl West. Data was collected on the 4th of September 2025. Using non-probability purposive sampling, 80 adult participants were selected based on the set criteria. The researcher introduced herself, explained the purpose of the study, and obtained written

informed consent from each participant. A pre-test was then administered using a demographic proforma and a structured knowledge questionnaire. Planned teaching programme was delivered immediately after the pre-test was completed, followed by a post-test using the same tool to evaluate its effectiveness. The researcher wind up the session with a warm speech of gratitude to the participants.

3.14 Plan for data analysis

- The collected data will be analyzed according to the study objectives using both descriptive and inferential statistics. Descriptive statistics such as frequency, percentage, mean, median, and standard deviation will be used to summarize the demographic variables and assess participants' knowledge on warning signs of cancer and risk factors of lung cancer. Inferential statistics will include the paired t-test to determine the effectiveness of the structured teaching programme and the chi-square test to identify any association between knowledge scores and selected demographic variables.
- Frequency and percentage distribution were computed for describing the demographic variables and characteristics as shown in Table 4.1

4. Results

The collected data were tabulated, analyzed and interpreted by using descriptive and inferential statistics. The data are organized and presented under the following headings:

Section I: Description of frequency and percentage distribution of the demographic variables of adults.

- Section I: Description of the demographic variables of adults under the present study. The Demographic Variables are described in terms of Age in Year, Gender, Educational Status, Occupation, Family History of Cancer, if yes, specify types with relationship, previous knowledge of lung cancer and if yes, specify source of knowledge.
- Frequency and percentage distribution were computed for describing the demographic variables and characteristics as shown in Table 4.1

Table 1: Demographic characteristics of the study population, (n=80)

| Variables | Frequency (f) | Percentage (%) |
|-------------------------|---------------|----------------|
| Age | | |
| 18 – 28 | 13 | 16.3% |
| 29 – 39 | 15 | 18.8% |
| 40 – 50 | 13 | 16.3% |
| Above 50 | 39 | 48.6% |
| Gender | | |
| Male | 28 | 35% |
| Female | 52 | 65% |
| Education Status | | |
| Primary School | 23 | 28.8% |
| High School | 30 | 37.5% |
| Higher Secondary School | 19 | 23.7% |
| Graduate and Above | 8 | 10% |
| Occupation | | |
| Government Job | 11 | 13.8% |
| Private Job | 12 | 15% |

| | | |
|--|----|-------|
| Self-employed | 17 | 21.2% |
| Unemployed | 40 | 50% |
| Family History of Cancer | | |
| Yes | 36 | 45% |
| No | 44 | 55% |
| If Yes, specify the types of Cancer | | |
| Stomach | 7 | 19.4% |
| Lung | 8 | 22.2% |
| Pancreas | 1 | 2.8% |
| Cervix | 5 | 13.9% |
| Rectum | 2 | 5.6% |
| Liver | 2 | 5.6% |
| Breast | 1 | 2.8% |
| Leukemia | 2 | 5.6% |
| Colon | 2 | 5.6% |
| Bladder | 1 | 2.8% |
| Tonsil | 1 | 2.8% |
| Esophagus | 3 | 8.3% |
| Gall Bladder | 1 | 2.8% |
| Relationship | | |
| Brother | 2 | 5.6% |
| Father-in-law | 1 | 2.8% |
| Self | 4 | 11.1% |
| Father | 2 | 5.6% |
| Mother | 5 | 13.9% |
| Uncle | 3 | 8.3% |
| Sister | 3 | 8.3% |
| Aunt | 1 | 2.8% |
| Grandfather | 5 | 13.9% |
| Grandmother | 3 | 8.3% |
| Daughter | 1 | 2.8% |
| Husband | 3 | 8.3% |
| Wife | 3 | 8.3% |
| Previous Knowledge on Lung Cancer | | |
| Yes | 35 | 43.7% |
| No | 45 | 56.3% |
| If yes, specify the source of Knowledge | | |
| Relatives | 13 | 37.1% |
| Sub-centre | 2 | 5.7% |
| Patient with lung cancer | 5 | 14.3% |
| Social Media | 2 | 5.7% |
| Neighbour | 8 | 22.9% |
| Physician | 2 | 5.7% |
| Awareness | 3 | 8.6% |

Table 1 presents the demographic profile of the study participants (n = 80), providing both descriptive statistics and distribution across various categories relevant to the research objectives.

The age distribution shows that the majority of participants (48.6%) were aged above 50 years, followed by the 29–39 age group (18.8%), and both the 18–28 and 40–50 age groups (16.3% each). This age composition suggests that the sample primarily consisted of older adults. Regarding gender distribution, of the total sample, 65% were female and 35% were male, indicating a higher representation of women in the study. The majority had completed high school education (37.5%), followed by primary education (28.8%), higher secondary education (23.7%), and graduate or higher education (10%). The predominance of participants with lower educational levels may reflect barriers to accessing health information and services.

Occupational status revealed that unemployed participants comprise 50% of the sample. Self-employed individuals accounted for 21.2%, while private and government job holders represented 15% and 13.8%, respectively.

A family history of cancer was reported by 45% of participants. Among those with a family history, lung cancer (22.2%) and stomach cancer (19.4%) were the most frequently reported types, followed by cervix (13.9%), oesophagus (8.3%), and others including liver, breast, and tonsil cancers. These findings highlight the diversity of cancer experiences within families and underscore the potential influence of familial health history on awareness and concern regarding cancer risk.

The relationship with affected family members was assessed which shows close familial ties. Mothers and grandparents were the most frequently mentioned relations (13.9% each), followed by self, siblings, and spouses, indicating that cancer diagnosis impacts both immediate and extended family networks. Regarding previous knowledge of lung cancer, 43.7% of participants reported prior awareness. Among those who had such knowledge, relatives (37.1%) and neighbours (22.9%) were the primary sources of information, followed by patients with lung cancer (14.3%) and other sources such as physicians, sub-centres, and social media.

The demographic characteristics reflect an older, predominantly female sample with limited education and high unemployment, many of whom have family members affected by cancer. Informal sources of information remain critical in spreading awareness about lung cancer, emphasizing the need for targeted educational interventions through both formal and community-based channels.

Section II: Description of pre-test knowledge score of adults on knowledge regarding warning signs of cancer and risk factors of lung cancer

Table 2: Pre-test Knowledge Scores of Adults on Knowledge regarding Warning Signs of Cancer and Risk Factors of Lung Cancer (n=80) in the selected area of Aizawl, Mizoram, n=80

| Knowledge Score | Pre-test Score | | | | |
|-----------------------------|----------------|------|-------|--------|-------------------------|
| | Frequency (f) | % | Mean | Median | Standard Deviation (SD) |
| Poor Knowledge (0-6) | 6 | 7.5% | 12.65 | 13 | 3.75 |
| Good Knowledge (7-13) | 40 | 50% | | | |
| Excellent Knowledge (14-22) | 34 | 42% | | | |

Table 2 presents the pre-test knowledge scores of 80 adults regarding warning signs of cancer and risk factors of lung cancer in the selected area of Aizawl, Mizoram. The participants' knowledge was categorized into three levels: Poor, Good, and Excellent. Out of the total, 6 participants (7.5%) were found to have poor knowledge, scoring between 0 and 6. Half of the participants, 40 individuals (50%), had good knowledge with scores ranging from 7 to 13. Meanwhile, 34 participants (42%) had excellent knowledge, scoring between 14 and 22. The overall mean score of the

group was 12.65, while the median score was 13, showing that most participants had moderate to good knowledge. The standard deviation was 3.75, indicating some variation in scores among individuals. These results highlight that while many participants are aware of cancer warning signs and risk factors, a portion still needs better education and awareness.

So, Table 2 shows that before any awareness program, most adults had a moderate level of knowledge about cancer warning signs and lung cancer risk factors. While 50% had good knowledge and 42% had excellent knowledge, 7.5% had poor knowledge. The average score of 12.65 indicates that many participants were aware of some important information, but there is still a need for further education to improve understanding and awareness among the community.

Section III: Effectiveness of planned teaching programme on knowledge regarding warning signs of cancer and risk factors of lung cancer among adults.

Table 3: Comparison of Pre-test and Post-test Knowledge Scores of Adults Using Paired t-Test on Knowledge Regarding Warning Signs of Cancer and Risk Factors of Lung Cancer (n=80) in the selected area of Aizawl, Mizoram, n=80

| Knowledge | Score Range | Mean | Standard Deviation (S.D) | Mean Difference | t-value | d.f | p-value |
|-----------|-------------|-------|--------------------------|-----------------|---------|-----|---------|
| Pre-test | 5 - 21 | 12.65 | 3.75 | 6.86 | 14.678 | 79 | 0.0001 |
| Post-test | 16 - 22 | 19.51 | 1.59 | | | | |

Table 3 presents the comparison between pre-test and post-test knowledge scores of 80 adults regarding cancer warning signs and lung cancer risk factors in Aizawl, Mizoram. The

purpose of this analysis was to determine whether the educational program helped improve participants' knowledge.

To test this, the researchers set up a research hypothesis (H_1), which assumed that there would be a significant increase in knowledge after the program.

The pre-test scores ranged from 5 to 21, with an average (mean) score of 12.65 and a standard deviation of 3.75. This shows that before the program, participants had moderate knowledge. The post-test scores, after the teaching program, ranged from 16 to 22, with a mean score of 19.51 and a much smaller standard deviation of 1.59. This suggests that not only did knowledge improve, but participants' scores also became more consistent after the intervention.

The mean difference between pre-test and post-test scores was 6.86, meaning that on average, participants scored almost 7 points higher after the program. The t-value of 14.678 and degrees of freedom (d.f) equal to 79 were used to assess the significance of this difference. The p-value of 0.0001 shows that the results are statistically significant. So, the table clearly shows that the educational program had a positive impact on increasing the knowledge of adults regarding cancer warning signs and lung cancer risk factors. Therefore, we can conclude that the research hypothesis is accepted that there is significant increase in the knowledge level on knowledge regarding warning signs of cancer and risk factors of lung cancer among adults after the planned teaching programme.

Section IV: Association between pre-test knowledge with selected demographic variables

Table 4: Association between Pre-test knowledge with selected demographic variables, n = 80

| S.No | Demographic Variables | Knowledge Score | | | Chi-square | d.f | P- value |
|------|--------------------------|-----------------|-------------|---------------------|------------|-----|----------|
| | | Poor (0-6) | Good (7-13) | Excellent (14 - 22) | | | |
| 1. | Age (In Years) | | | | | | |
| | 18 - 28 | 0 | 4 | 9 | 13.654 | 6 | 0.048 |
| | 29 - 39 | 1 | 8 | 6 | | | |
| | 40 – 50 | 0 | 6 | 7 | | | |
| | Above 50 | 5 | 22 | 12 | | | |
| 2. | Gender | | | | | | |
| | Male | 2 | 16 | 10 | 0.914 | 2 | 0.633 |
| | Female | 4 | 24 | 24 | | | |
| | | | | | | | |
| 3. | Education Status | | | | | | |
| | Primary School | 5 | 12 | 6 | 15.473 | 6 | 0.031 |
| | Secondary School | 1 | 14 | 15 | | | |
| | Higher Secondary School | 0 | 10 | 9 | | | |
| | Graduate and above | 0 | 4 | 4 | | | |
| 4. | Occupation | | | | | | |
| | Government Job | 0 | 5 | 6 | 14.121 | 6 | 0.0132 |
| | Private Job | 0 | 5 | 7 | | | |
| | Self-Employed | 1 | 10 | 6 | | | |
| | Unemployed | 5 | 20 | 15 | | | |
| 5. | Family History of Cancer | | | | | | |
| | Yes | 1 | 18 | 17 | 2.290 | 2 | 0.318 |
| | No | 5 | 22 | 17 | | | |
| 6. | If yes, types of Cancer | | | | | | |
| | Stomach | 2 | 2 | 3 | 20.909 | 24 | 0.644 |
| | Lung | 0 | 4 | 4 | | | |
| | Pancrease | 0 | 0 | 1 | | | |
| | Cervix | 0 | 2 | 3 | | | |

| | | | | | | | |
|----|--|---|----|----|--------|----|-------|
| | Rectum | 0 | 1 | 1 | | | |
| | Liver | 0 | 1 | 1 | | | |
| | Breast | 0 | 1 | 0 | | | |
| | Leukemia | 0 | 0 | 2 | | | |
| | Colon | 0 | 1 | 1 | | | |
| | Bladder | 1 | 0 | 0 | | | |
| | Tonsil | 0 | 0 | 1 | | | |
| | Esophagus | 1 | 1 | 1 | | | |
| | Gall Bladder | 0 | 0 | 1 | | | |
| 7. | If yes, Relationship | | | | 30.013 | 24 | 0.184 |
| | Brother | 1 | 0 | 1 | | | |
| | Father-in-law | 0 | 1 | 0 | | | |
| | Self | 0 | 2 | 2 | | | |
| | Father | 0 | 2 | 0 | | | |
| | Mother | 1 | 2 | 2 | | | |
| | Uncle | 0 | 0 | 3 | | | |
| | Sister | 0 | 0 | 3 | | | |
| | Aunt | 0 | 0 | 1 | | | |
| | Grandfather | 0 | 3 | 2 | | | |
| | Grandmother | 0 | 1 | 2 | | | |
| | Daughter | 0 | 0 | 1 | | | |
| | Husband | 2 | 0 | 1 | | | |
| | Wife | 0 | 2 | 1 | | | |
| 8. | Previous knowledge of Lung cancer | | | | 3.184 | 2 | 0.204 |
| | Yes | 1 | 16 | 18 | | | |
| | No | 5 | 24 | 16 | | | |
| 9. | If yes, specify the source of knowledge | | | | 13.608 | 12 | 0.326 |
| | Relatives | 1 | 4 | 8 | | | |
| | Sub-Centre | 1 | 0 | 1 | | | |
| | Patients with Lung Cancer | 0 | 2 | 3 | | | |
| | Social Media | 0 | 1 | 1 | | | |
| | Neighbour | 2 | 2 | 4 | | | |
| | Physician | 0 | 0 | 2 | | | |
| | Awareness | 0 | 3 | 0 | | | |

Table 4 examines whether adults' pre-test knowledge regarding cancer warning signs and risk factors of lung cancer is related to their demographic characteristics. The goal was to see if factors such as age, gender, education, occupation, family history of cancer, or prior knowledge influence how much a person knows before an educational program. The research hypothesis (H_2) assumed that there is significant association between pre-test knowledge and these demographic variables.

In Age Distribution, the chi-square test showed a value of 13.654 with 6 degrees of freedom and a p-value of 0.048. Since the p-value is less than 0.05, this association is statistically significant. This indicates that knowledge levels vary across age groups. For example, participants above 50 had a higher number of "good" and "excellent" scores compared to younger groups, suggesting older adults may already have some awareness of cancer risk factors.

In Gender, the chi-square value was 0.914 with 2 d.f. and a p-value of 0.633. This is not significant, meaning there is no evidence that male and female participants differ in pre-test knowledge. Both genders had a mix of poor, good, and excellent scores, showing that knowledge was similar regardless of gender. In Education Status, the chi-square value was 15.473 with 6 d.f. and a p-value of 0.031, indicating a significant association. Participants with higher education generally scored better. For instance, graduates had more "excellent" scores compared to those with only primary education, which suggests that educational level influences

awareness of cancer warning signs and lung cancer risk factors.

For Occupation, the chi-square was 14.121 with 6 d.f. and a p-value of 0.0132, showing significance. Knowledge varied by occupation. Those unemployed or in government jobs had a mix of poor and good knowledge, while private job holders and self-employed participants had more "good" and "excellent" scores. This may reflect differences in access to health information in different occupational groups. In Family History of Cancer, the association was not significant (chi-square = 2.290, $p = 0.318$). Similarly, when considering types of cancer in the family (e.g., stomach, lung, cervix), the chi-square was 20.909 with 24 d.f., $p = 0.644$, which is also not significant. This indicates that having a family history of cancer does not necessarily influence pre-test knowledge. Likewise, the relationship of the family member with cancer was not significant (chi-square = 30.013, $p = 0.184$).

In the Previous Knowledge of Lung Cancer, the association was not significant (chi-square = 3.184, $p = 0.074$). Even specifying the source of knowledge (relatives, social media, physicians, awareness programs) did not show a significant effect (chi-square = 13.608, $p = 0.326$). This suggests that prior exposure to information about lung cancer did not necessarily translate into higher pre-test knowledge.

So, from the above, we can conclude that age, education, and occupation were the only factors significantly related to pre-test knowledge. Gender, family history of cancer, prior

knowledge, and sources of information did not show a meaningful impact. This means older participants, those with higher education, and certain occupational groups tended to have better baseline knowledge. Thus, the research hypothesis was accepted for age, education and occupation whereas it was rejected for other demographic variables such as gender, family history of cancer and previous knowledge of lung cancer.

5. Discussion

The present study revealed a significant statistical improvement in knowledge among participants (n=80) following an educational intervention. In the pre-test, In the pre-test, half of the participants, 40 individuals (50%), had good knowledge, 34 participants (42%) had excellent knowledge 6 participants (7.5%) were found to have poor knowledge regarding warning signs of cancer and risk factors of lung cancer. There was a marked improvement after the planned teaching programme with the mean difference between the pre-test and post-test knowledge score of 6.86 and the obtained 't' value (14.678, p=0.0001) was statistically significant at 0.05 level of significance, reflecting both improved and more consistent knowledge levels. These results confirm the effectiveness of the teaching programme in significantly enhancing participants' knowledge on warning signs of cancer and risk factors of lung cancer.

The results of this study are supported by the following research:

Irshad et al. (2023) conducted a quantitative research study to determine the effect of planned teaching program on knowledge of women of reproductive age group in selected rural community of Maharashtra state. The study comprised of 40 women of reproductive age group who fulfilled inclusive criteria drawn by purposive sampling method. The study revealed that the mean score among women was 12.9 during pre-test rose up to 18.9 in the post-test evaluation. Result interpreted that there was a significant increase in knowledge level of women after administration of the intervention. This indicates that planned teaching program was effective in improving the knowledge of the women of reproductive age group.^[4]

M. Yamunambigai et al. (2024) conducted a quantitative research study to assess the effectiveness of structured teaching program regarding warning signs of lung cancer among general public at Selected Community Area Puducherry. A pre-experimental one group pre-test and post-test research design was adopted using purposive sampling technique where 50 general public were selected for the study. The findings of mean (11.5) and standard deviation (2.45) proved the effectiveness of structured teaching program on warning signs of cancer among general public at selected community area. The study findings concluded that the Structured Teaching Program was effective on warning signs of lung cancer among general public at selected community area.^[7]

6. Conclusion

The study concluded that the planned teaching programme was highly effective in enhancing adults' knowledge

regarding warning signs of cancer and risk factors of lung cancer. While the socio-demographic variables such as age, education and occupation, and lifestyle habits showed significant association with baseline knowledge, family history of cancer, relationship, types of cancer, previous knowledge on lung cancer and source of knowledge does not significantly influenced participants' awareness. The marked improvement in post-test knowledge scores demonstrates that targeted health education interventions can effectively increase understanding and promote preventive practices. These findings emphasize the importance of implementing structured health education programmes in the community, to encourage proactive preventive behaviors.

7. Recommendations

On the basis of the findings, the following recommendations are suggested:

- The study can be replicated on a large sample, so that findings can be generalized to a larger population.
- A similar study can also be conducted using other teaching techniques like information booklet, pamphlets and power point presentation.
- A study can be conducted with true experimental research design with the control and experimental group.
- A similar study design can be adopted to assess the effectiveness of planned teaching programme regarding warning signs of cancer and risk factors of lung cancer among adults.

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