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# Effectiveness of an educational intervention in increasing knowledge regarding lung cancer among engineering students

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**Abstract**
**Introduction:** Lung cancer is a preventable and treatable disease yet its incidence and mortality are increasing every year due to lack of awareness and early detection.
**Objective:** The present study aimed at determining the effectiveness of an educational intervention i.e. video-assisted teaching on knowledge regarding Lung Cancer and its management among under-graduate engineering students.
**Methods:** The study utilized one group pretest-posttest quasi experimental research design to evaluate the effectiveness of a video-assisted teaching regarding lung cancer. A total of sixty selected engineering college students were selected for the study through a convenient sampling method. The data was collected by using structures self-reporting knowledge questionnaire regarding various aspects of lung cancer.
**Results**: The majority of the undergraduate engineering students (63.33%) had inadequate knowledge and the reaming (36.77%) had moderately adequate knowledge and none of them was found to be with adequate knowledge in the pretest. After the intervention, the results demonstrated a considerable improvement in the knowledge level and it was substantially significant according to the paired t-test value of t=27.008 at a 5% level ($p<0.05$).
**Conclusion:** Video-assisted teaching is an effective educational intervention increase the knowledge among students regarding various aspects of lung cancer.

**Keywords:** lung cancer, knowledge, awareness, educational intervention, health education, video assisted teaching, students

## Introduction

Lung cancer is a fatal disease liable for high cancer-related mortality worldwide. It is increasing in epidemic proportions and has become one of the leading reasons for death worldwide [1, 2]. Tobacco smoking nearly accounts about 90% of all lung cancer deaths worldwide and other major causes include tobacco smoke, radon, and occupational exposure to carcinogens [3, 4]. It is predicted that each year five million (one in ten adults) adults die owing to tobacco use [5, 6]. According to the World Bank report, every day 82,000-99,000 children and adolescents begin to smoke worldwide and half of them are expected to die untimely due to tobacco smoking-related diseases [7].

Lung cancer is essentially a preventable and treatable ailment however its incidence and mortality are increasing every year due to lack of awareness and early screening [4, 8, 9, 10, 11]. Researches existing on the level of knowledge regarding cancer among students accentuate the need for advanced educational interventions to increase the awareness about various aspects of cancer [8, 11, 12]. Early educational approaches in enhancing knowledge regarding cancer among college students have been proven beneficial [11, 12] yet their impact on promoting awareness regarding lung cancer sparsely documented in India.

## Objectives

1. To assess the existing knowledge level of undergraduate engineering students regarding lung cancer and its management before the intervention.
2. To ascertain the effectiveness of video- assisted teaching in increasing knowledge level by comparing pre-test and post-test mean scores of undergraduate engineering students regarding lung cancer and its management.
3. To establish the association between the pre-test knowledge score and selected demographic variable of undergraduate engineering students.

## Material and Methods

The study utilized one group pretest-posttest quasi experimental research design to assess the impact of a video-assisted teaching programme regarding lung cancer. A total of sixty selected engineering college students were selected for the study through a convenient sampling method. The data compilation was done by using a structures self-reporting knowledge questionnaire which consisted two parts. Part-A: consisted of 8 items that explore personal attributes of the respondents and Part-B: consisted of 30 items assess knowledge of respondents regarding

various aspects of lung cancer. The data compilation procedure involved pre-test (before the educational intervention) and a posttest (after the seven days of the educational intervention i.e. Video assisted teaching.

## Results

### A. Socio-demographic characteristics of study participant.

**Table 1:** Distribution of samples based on frequency and percentage of demographic characteristics

| Sl. No | Demographic Variable | Frequency (f) | Percentage (%) |
|---|---|---|---|
| 1. | Age in years | | |
| | 18-20 | 38 | 63.3 |
| | 21-23 | 21 | 35.0 |
| | 24-26 | 01 | 68.3 |
| 2. | Gender | | |
| | Male | 41 | 68.3 |
| | Female | 19 | 31.7 |
| 3. | Religion | | |
| | Hindu | 29 | 60 |
| | Christian | 20 | 36.7 |
| | Muslim | 11 | 3.3 |
| 4. | Family Expenditure | | |
| | ≤5000 | 36 | 23.3 |
| | 5001-10000 | 22 | 43.3 |
| | <10001 | 02 | 20.0 |
| 5. | Personal habits | | |
| | Smoking | 10 | 16.7 |
| | Drinking (alcohol) | 14 | 23.3 |
| | Chewing Tobacco | 07 | 11.7 |
| | None | 29 | 48.3 |
| 6. | Food pattern | | |
| | Vegetarian | 25 | 41.7 |
| | Non-Vegetarian | 35 | 58.3 |
| 7. | Source of Information | | |
| | Mass media | 27 | 45.0 |
| | Peer group | 14 | 23.3 |
| | Family members | 8 | 13.3 |
| | Health Personnel | 11 | 18.4 |

Table-1: Shows the demographic characteristics of the study participants. The sample consisted of 60 participants in that about 38(63.3%) of the participants were within the age group of 18-20 years, 41(68.3%) were males and the remaining 19(31.7%) were females. The majority of the participants 29(48.3%) were Hindus and 46(76.7%) belonged to nuclear family. Regarding personal habits, 10(16.7%) were smokers, 14(23.3%) were drinkers, 7(11.7%) were chewing tobacco and their major previous source of information about lung cancer, was mass media (45%).

### B. Distribution of participants according pre-test and post-test knowledge level.

Table-2: Displays distribution of participants according knowledge scores. In the pre-test a majority 38 (63.33%) had inadequate knowledge, the remaining 22 (36.77%) had moderately adequate knowledge and none of them was found to be with adequate knowledge. But, in the post-test, majority i.e. 40 (66.7%) had adequate knowledge and 20 (33.3%) of them were found to be with moderately adequate knowledge. It evidenced that there is an increase in the knowledge level.

### C. Aspect wise Knowledge score of the participants regarding Lung cancer

Table-3: Shows aspect wise pre-test and post-test knowledge score of participants: In the pretest, it is observed that the participants knowledge mean score percentage regarding different aspects of lung cancer were; Anatomy and Physiology of Lungs 39.60%, Definition of cancer 36.50%, Causes, Risk factors, Clinical manifestation & Complication 32.50%, and Management & Prevention 33.92%. In the post-test substantial enhancement in the knowledge level in all the aspects of lung cancer was observed; Anatomy and Physiology of Lungs 89.40%, Definition of cancer 80%, Causes, Risk factors, Clinical manifestation & Complication 72.90%, and Management & Prevention 72.75%. The overall pretest knowledge score for the maximum score of 30 the participants were ranging within 4-11, with a mean score of 10.35 and SD of 3.364. But it was found to be increased to the range of 15-28 with the mean of 22.73 and SD of 2.834 in the post-test.

### D. Effectiveness of educational intervention i.e. Video Assisted Teaching programme (VAT) by comparing pre-test and post- test mean scores of the participants.

Table-4: Depicts the outcome of paired 't' test analysis by comparing pre and post-test knowledge scores for its significance. The mean difference between the pre and post-test was observed to be 12.383 with SD of difference 0.458**.** The enhancement in the knowledge of the participants after the educational intervention was found to be 41.27% and it was significantly significant according to paired t-test value of t=27.008 at a 5% level ($p<0.05$).

**Table 2:** Distribution of participants according pre-test and post-test knowledge level.

| Sl. No. | Knowledge Level | Classification of the participants | | | |
|---|---|---|---|---|---|
| | | Pre-test | | Post-test | |
| | | Number | Percentage (%) | Number | Percentage (%) |
| 1 | Inadequate | 38 | 63.33 | 00 | |
| 2 | Moderate | 22 | 36.77 | 20 | 33.3 |
| 3 | Adequate | 00 | 00 | 40 | 66.7 |
| | Total | 60 | 100 | 60 | 100 |

### E. Association between levels of knowledge with their selected demographic variables.

The demographic variables of the participants; age in years, gender, religion, type of family, monthly expenditure, personal habits, food pattern and previous source of information were not statistically significant with their level of knowledge regarding lung cancer at a 5% level ($p>0.05$).

**Table 3:** Aspect wise Knowledge score of the participants regarding Lund cancer with, range, mean, mean percentage and standard deviation (SD)

| Sl. No | Aspects of Knowledge | Max. Score | Pre-Test | | | | Post-test | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Range | Mean | SD | Mean (%) | Range | Mean | SD | Mean (%) |
| 1 | Anatomy and Physiology of Lungs | 5 | 1-3 | 1.98 | 0.651 | 39.60 | 2-5 | 4.47 | 0.724 | 89.40 |
| 2 | Definition of cancer | 2 | 0-2 | 0.73 | 0.607 | 36.50 | 0-2 | 1.60 | 0.588 | 80.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | Causes, Risk factors, Clinical manifestation & Complication | 11 | 1-7 | 3.57 | 1.477 | 32.45 | 5-11 | 7.93 | 1.413 | 72.09 |
| 4 | Management & Prevention | 12 | 0-8 | 4.07 | 1.947 | 33.92 | 5-11 | 8.73 | 1.686 | 72.75 |
| Over all | | 30 | 4-11 | 10.35 | 3.364 | 34.50 | 15-28 | 22.73 | 2.834 | 75.77 |

**Table 4:** Outcome of paired t-test analysis on comparison of pre and post-test knowledge regarding lung cancer and its management.

| One Group | Max. Score | Participants Knowledge Score | | Mean difference | SE of Mean difference | Enhancement in the mean% | Paired t-Test | P value |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Mean (%) | | | | | |
| Pre-test | 30 | 22.73 | 77.7 | 12.383 | 0.458 | 41.27% | 27.008* | <0.05 |
| Post-test | 30 | 10.35 | 34.5 | | | | | |

## Discussion

It is evident from the study that participants had inadequate to a moderately adequate level of knowledge regarding various aspects of lung cancer before the educational intervention. This suggests an acute need to strengthen existing educational approaches to promote awareness regarding treatment and prevention of cancer among educated youth. The above findings of the study are akin to the findings of the studies conducted in India [11, 13, 14, 15]. The similar findings were observed in the study conducted by Meltem Kurtuncu *et al.* in which they found that students who don't study in health science campuses lack knowledge regarding cancer [8].

After the intervention, i.e. video-assisted teaching the significant enhancement in the knowledge regarding different aspects of lung cancer was observed the overall increase in the mean percentage of knowledge score was found to be 47.27 with 't' value 27.008 and it statistically significant at 0.05 level. The above findings are substantiated with various other studies used educational intervention as a tool to enhance knowledge regarding cancer among students [11, 12, 14, 16].

## Conclusion

Knowledge about various aspects of lung cancer is vital to ensure such behaviors that lead to the prevention and early detection of lung cancer. Video-assisted teaching as an educational intervention has a substantial effect on enhancing knowledge regarding various aspects of lung cancer.

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