



A Cross-Sectional Survey of Lung Cancer Prevention Awareness among Undergraduate Students

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Abstract.

Aim: This study was aimed to assess the perception of undergraduate students about lung cancer prevention.

Methodology: The study used a cross-sectional approach, the participants were students of Al-Muthanna University in AL-Samawa city. Starts on: Nov 25, 2024 Ends on: Apr 24, 2025 By Taking a random sample from the pool of students (n=100). Data was collected out of a tool that functions like questionnaires with some falsifiable and non-falsifiable statements. Eight specialists establish validity, which is then verified by a committee of professionals. Pilot research was done on 10% (n=10) of the students to analyze reliability of this questionnaire. **Results:** The students showed a good level of awareness about lung cancer, with no significant correlation between awareness and different characteristics (age, sex, residence, social class or economic conditions), however there was significant relationship found in all the related variables to college.

Conclusion: The researchers call for more research to be conducted into lung cancer, as a way of improving understanding and hearing from the general public. Develop student-centered education programs that focus on increasing awareness of lung cancer risk factors and prevention.

Recommendations: Introduction Cross-sectional studies on awareness and attitude among adults to prevent lung cancer.

Keywords: Prevention Lung Cancer, Health Awareness, Cross Sectional Research.

1. Introduction

NCDs, also known as chronic diseases are long duration or generally slow progression disease that usually results from a combination of genetic and physiological factors environmental and behavioral for example non communicable disease NCDs are grouped into four main types: cardiovascular diseases (for example, heart attacks and stroke; cancers; chronic respiratory illnesses such as Chronic obstructive pulmonary disease and asthma. So, bases on world health organization (World health organization, 2023).

Most of the previous definitions of cancer are around similar content as that in a recent National Cancer Institute definition 'Cancer is an uncontrolled growth and spread of abnormal cells where some normal control mechanisms cease to operate'. Exactly these definitions often shift the burden to cancer's clinical manifestations, or side effects — not what it is under its skin, through some sort of definition unburdened by ontology. Even though they reflect historical understandings, these do not take into account the more recent insight that cancer cells are transformed organisms under continuous evolution (Brown et al., 2023).

The cell cycle is a series of different events that happens in the life-span of a cell to duplicate and divide. There are two main phases in this time period, interphase and mitosis. Interphase represents the longest phase and is broken down into three sub-stages: G1, S, and G2. The G1 stage is where the cell grows and prepares for DNA replication. S Phase: DNA synthesis, genetic material duplication and long replication time. G2: the cell grows and approaches mitosis. Cytokinesis, also called the cytoplasmic division phase which is after mitosis and where

cell divides into two daughter cells. Then, the cycle moves on to interphase where it starts all over again. One of the main hallmark features that makes cancer malignant is disturbance in cell cycle which results into so many effects (Almalki, 2023).

The story of lung cancer (LC) epidemiology is intimately associated with the rise and birth of contemporary studies on chronic disease epidemiology. Although an elevated incidence of lung cancer was reported for miners and some other occupational groups in the nineteenth century, a large increase has been observed since the early twentieth century. Although lung cancer was the most commonly diagnosed, and frequently lethality caused by it in men at that time (Tao 2019).

Lung cancer is the second most frequently diagnosed cancer in the United States and leading cause of death from related to cancers. Although smoking is the leading risk factor—accounting for 80% to 90% of lung cancer cases—many other factors have also been identified as possible contributors in the development of this disease. But, few of the known risk factors for lung cancer are clearly causal in never-smokers (i.e., others than radon), which would be the world's 11th commonest cancer and 7th most important cause of a preventive death from all cancers. Despite the fact that lung cancer survival rates have only improved marginally in recent decades, early diagnoses via low-dose CT screening combined with new treatment options including targeted therapies and immunotherapy may decrease mortality and improve prognosis soon (Schabath & Cote, 2019).

On the other hand, there are risk factors which cannot be changed and those that can, non-modifiable: age, birth sex (male female) race or ethnic group; family history of coronary heart disease early death (1st-degree relative such as parents brother sister); hypertension. Age for lung cancer diagnosis (men and women): 70 years old in the US. Roughly 53% are found in people between the ages of 55 and 74, while a further third (37%) occur within even older individuals aged over the age of seventy-five. In the country, it is the number one killer on men above 40 and women over 59. In comparison with women, men are diagnosed and die of lung cancer globally more than twice as often. The main reason behind the existence of this sex gap is that men are more likely to smoke tobacco (Thandra et al., 2021).

Several registry-based studies have identified a positive family history of lung cancer as an important risk factor, suggesting higher familial predisposition to develop young-onset lung cancers. Higher relative risks were observed even when smoking behaviors adjusted for. Tobacco use, passive smoking, exposure to radon gas (in homes and business), air contamination from biomass fuel combustion or diesel exhausts also belong in this aggregate of alterable risk factors with chronic obstructive pulmonary illness susceptibility. The main risk factor for all major histological types of lung carcinoma is cigarette smoking (Malhotra et al., 2016).

Smoking is the major risk factor for all common histological types of lung carcinoma. Since the mid-1960s, epidemiological studies have confirmed that smoking has a harmful impact on lung carcinogenesis and this relationship is recognized by health and regulatory organizations (Huang et al., 2022).

The best and most effective way to reduce the risk of lung cancer is by preventing smoking initiation or supporting quitting. The USPSTF has issued recommendations on approaches to preventing tobacco use in children and adolescents as well as recommending pharmacotherapy and counseling for smoking cessation. Decisions regarding lung cancer screening are often made collaboratively between patients and healthcare providers. Screening benefits depend on risk, with those at higher risk most likely to benefit. However, screening does not prevent most deaths from lung cancer, making it essential to quit smoking. Lung cancer screening can also carry risks, such as false-positive results or incidental findings that could lead to unnecessary tests and procedures, as well the anxiety associated with having a suspicious lung lesion (potentially related malignancy) (Krist et al., 2021).

Aim of the Research:

- Assessing the awareness regarding preventive strategies related to pulmonary cancer among students
- Examine the relationship between awareness and demographic characteristics (age, sex, area of residence or social status).

Methodology:

Study Design

You are aimed your study objective out by using a quantitative descriptive design for cross sectional survey to determine the lung cancer prevention awareness among undergraduate students enrolled at Al-Muthanna University. The study occurred between 28 November 2025 and 19 April, with data collection occurring thereafter.

Organizational Provisions

Approval from Al-Muthanna University was obtained prior to data collection.

Moral Implications

This aspect of the research is important, because it meets ethical standards for scientific evaluation at this first step in sampling (described below):

A side note about confidentiality: the students are not identified.

Students are contacted on an individual basis as per the plan to provide details of the research and its objectives.

For the purpose of this research, all students will by definition have full information on their assignment.

All students are informed that the results of this questionnaire may only be used for educational purposes.

For all students, everyone is informed that any individual has the right to refuse participation in the study.

Context of the Research

This study carried out at (Al-Muthanna University / Al-Samawa City).

Study Sample

Sample Size used Raosoft calculator with data to ensure the final sample size of 105 person is adequate for research furthers, so valid and reliable results will be achieved.

Using a digital tool that helps to calculate the required minimum number of samples needed for validation (available here: <http://www.raosoft.com/samplesize.html>), the investigator used this link and found five participants refused to participate in study leaving 100 pupils.

Standards for Sample Selection

This study used the following inclusion criteria for selection of subjects:

The students who agreed to participate in the research, received formal consent after being informed of its purpose prior to data collection.

Al-Muthanna University students.

Stages of the Research

1. Development of the Instrument Framework:

The researchers designed a questionnaire supervised by the supervisor as part of achieving the aims of this study project on lung cancer prevention awareness at AL-Muthanna University.

2. Authenticity of the Instrument

A panel of fifteen specialists was shown the instrument to measure its authenticity. The specialists have an average of more than five years in their domain, with a mean tenure of 14.21 years out on the field. The specialists evaluated the survey, and some of the items were modified in this regard.

The Preliminary Investigation

In this preliminary research, however, a reduplication is completed to test reliability and length of time between researchers for specific costs & adverse occurrences then ultimately tweaks the design prior to entire study stages. Besides assessing the optimal response time, a pilot study (covering 10% of the sample comprising at least 10 students) was carried out to determine usability of instruments and understandability of constructed questionnaire.

Reliability of the Instrument

Reliability test was different for both parts of the questionnaire, and in order to know accuracy by major statistic parameter were calculated according Pearson's Correlation Coefficient reliability test indicated awareness. This is calculated without question that the questionnaire was successful and it result designed questionnaire to be reliable.

Data Gathering for Implementation

Data collection procedure Data were collected between March 4, and March 28, of the year 2025.

Techniques for Data Acquisition

The data were collected through a questionnaire on constructive awareness, which was filled with self-reported closed-ended structured questions. Score of (2) for the right response, score of (1) for wrong. The researcher set a threshold of (>0.74) for deficient awareness and (<0.75) proficient awareness determined from evidence-based practice regarding clinical skills in changing care with data collection up to October 2023.

Examination of Data

The analysis was performed using version 26 of the Statistical Package for the Social Sciences (SPSS).

1. Assessment of Normality: Kolmogorov-Smirnov Examination

The Kolmogorov-Smirnov (K-S) test was used to assess normal distribution.

Table (3-2) Testing of Hypothesis for Cognitive Sample:

2. Explanatory Statistical Averages

3. Deductive Examination

It is used to evaluate and quantify the reliability of estimates about a population from data drawn from that group. Constraints of the Research:

Some students were also uncooperative responding to the questionnaire leading a longer time.

The sample of the study could always be limited to an narrow cohort of university students from one specific, and not a reflection on other type or type characteristics/groups in terms toward greater representation among all within those groups/context).

The study may focus only on some aspects of lung cancer (for example, etiology and clinical signs or prevention) leaving aside others (e.g., management options or psychological problems), limiting the completeness of findings.

Outcomes of the Research:

Table (1): Socio-Demographic Characteristics Data

Socio-demographic characteristic		Frequency	Percentage %
Age	18-20	36	36
	21-23	41	41
	24-26	21	21
	27=>	2	2
	Mean =21.61 St. deviation = 2.269		
Sex	Male	53	53
	Female	47	47
Residence	City	68	68
	Rural	32	32
Social Status	Single	94	94
	Married	6	6
	Divorced	0	0
	Widower	0	0
Economic Status	Sufficient	74	74
	Somewhat Sufficient	22	22
	Not Sufficient	4	4

F: Frequency, %: Percentage, Mean: Arithmetic Mean, SD: Standard Deviation.

The table shows that the 21-23 year old range was the worst affected (41% of ages sample) As shown in Table 1, the majority of students (53%) were male and had experienced more impact than females (47%). Most students lived in the city (68%),

while others lived in rural locations (32%). Students were came from a lower social class (94% unmarried, 6% married). The main part of economic circumstance is to get debatable; country score higher than everything else at 74%.

Table 2: Distribution of Study Variables

Awareness on Lung Cancer prevention		No		Yes		Mean	St. deviation	Assessment
		F	%	F	%			
1	Preventive measures against smoking reduces the risk of getting a lung cancer.	7	7	93	93	1.93	0.526	Good
2	Another benefit of avoiding secondhand smoking is that it may also reduce your risk for lung cancer.	10	10	90	90	1.90	0.302	Good
3	Understanding family medical history and taking precautionary actions can reduce the chances of lung cancer.	25	25	75	75	1.75	0.435	Good
4	Avoiding alcohol consumption may reduce the risk of lung cancer.	13	13	87	87	1.87	0.338	Good
5	Minimize air pollution through contaminated, feeling low or have lung cancer prevented.	11	11	89	89	1.89	0.314	Good
6	Healthy food and regular exercise can reduce the risk of lung cancer.	11	11	89	89	1.89	0.314	Good
7	Adopting safety planning at your workplace may reduce the risk of lung cancer.	10	10	90	90	1.90	0.302	Good
8	Lung cancer management hinges upon screening and early detection.	11	11	89	89	1.89	0.314	Good
9	Hormonal homeostasis, particularly sex hormones, may reduce the incidence of lung cancer.	43	43	57	57	1.57	0.498	Good
10	Avoid exposure to chemicals and gases in workstations, laboratories or palaces of manufacturing	8	8	92	92	1.92	0.273	Good

F.=frequency, %=percentage, Assessment: Adequate <2, an adequate less than or equal 2.

The results presented in this table suggest that the majority of participants have appropriate awareness regarding lung cancer prevention.

Table (3): Recognition of the Research Sample

Variables	Classification	F	%
Preventive awareness of lung cancer among students of University	Good	95	95
	Poor	5	5
	Total	100	100

F.=frequency, %=percentage

The data presented in this table illustrates that the majority of participants are aware of lung cancer prevention.

Table (4): Correlation of Sample Socio-Demographic Attributes and Awareness:

Socio-Demographical Characteristics	Significance
Age	Chi-square=3.776 ^a df=3 P. value=0.287 Non-significant
Sex	Chi-square=1.540 ^a df=1 P. value=0.215 Non-significant
Residence	Chi-square=0.155 ^a df=1 P. value=0.694 Non-significant
Social status	Chi-square=0.336 ^a df=1 P. value=0.562 Non-significant
Economic status	Chi-square=1.849 ^a df=2 P. value=0.397 Non-significant

NS: Non-Significant at P>0.05, df: degree of freedom

Student awareness does not differ with age, sex or domicile social class nor economic factors. These variables all showed chi-square values above 0.05, the conventional level of statistical significance

Discussion

Analysis of Results Related To Demographic Characteristics

Student Age

The research showed that most participants were aged between 18 and 27 years, the largest segment of sample (41%) was in a age group ranging from 21 to 23 so considered as majority.

Consistent with the age results validated by (Bakry et al., 2021), that showed mean age of participants is (22.2 ± 1.33) years.

Now for part of the reason students are at a university age, so it's likely their ages reflect this time in life.

Sex

Results showed males (53%) had higher participation than females (47%).

In this survey study performed by Zafar (2022), over two-thirds of the participants were men, with 77.7% identified as male.

Slight majority of respondents were male probably as males prefer to do the completing this survey compared with females.

Societal Standing

The results showed that most Students were single (94%) and few of them had been married (6%).

Social standing manifested by Abo Al-Shiekh et al. (2021) reported that a majority of respondents are single.

Most of the participants were single, being it a developmental stage they had to prioritize their studies rather than matrimony.

Discussion Results on Student Awareness Findings

The study was descriptive in nature, consisting of 100 students from al-Muthanna University and the data showed a good level of awareness preventive. Awareness level peaks at 95%.

The results of research sponsored by (Qadhi, O. A., 2023) reported that pupils with good awareness accounted for (45.5%), moderate awareness was (24.3%) while low aware is the least which reached to be (26).

The results from this study contrast with those of Barros, A., et al. 2025) showed students have less awareness of lung cancer.

Luckman et al.'s source sentence the research conducted by Luckman et al. Most participants (62.6%) had acknowledgment to a strong awareness of the link between lifestyle factors and cancer per Lambert et al (2017)

Results of the study (Krukowska & Olejniczak, 2013) point to increased awareness on risk factors and lung cancer prevention among students.

The research outcomes vary from positive to negative awareness that many aspects can alter the awareness of students such as: demographic variables, area wise variations level (programme and educational material), personal attention during study period and variation in researcher methods for education.

Analyzing the Relationship of a Composite Measure of Awareness with Demographic Characteristics:

The study shows no significant relationship between students' awareness and the variables of age, sex, residence, social status and economical level. The chi-square statistics for these variables are greater than 0.05, the conventional criterion for significance testing.

Summary:

Summary Pertaining to Demographic Attributes

The majority of students ages (21-23 years old) made up 41% while male. The majority of the study participants belonged to college of science (24%), and most were single, 94%.

Summary Relevant to the Initial Objective:

The students' awareness of the risk factors and prevention of lung cancer

Summary Relevant to Objective

The sample of the study is not significantly correlated with age demographic variable, as evidenced by a p-value = 0.287 which exceeds 0.05. A comparison of the assessment for the study sample indicated no significant association with sex ($p = 0.215 > 0.05$).

Suggestions

The investigators recommended the following actions:

A similar study could be conducted on a larger population for greater generalizability.

Develop a well-structured questionnaire to cover various topics regarding the risk factors of lung cancer, preventive measures and awareness towards early detection.

Ask questions that address common misconceptions about lung cancer, such as the idea only smokers can get it.

Ask students about their awareness of lung cancer, as well as their smoking habits and views on health screening in addition to prevention measures.

Suggest incorporating the so-called engaging resources, workshops, seminars or online modules.

Start student-led movements or peer education where students educate their fellow peers on lung cancer.

Support smoking cessation programs and make tools readily available to students wishing to quit.

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