ORIGINAL RESEARCH

A Cross-Sectional Study on the Knowledge and Awareness of Lung Cancer and Screening in Jazan Region, Saudi Arabia

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Background: Lung cancer (LC) is the most common cause of cancer-related deaths worldwide. With lung cancer often diagnosed at advanced stages, understanding the local population's awareness levels is crucial for designing effective preventive strategies. By identifying gaps in knowledge, the research aims to inform targeted health education efforts, optimize resource allocation, influence policy development, and contribute to the limited body of research on lung cancer awareness in the region, ultimately fostering improved public health outcomes.

Methods: This was a cross-sectional observational study conducted in Jazan region, Saudi Arabia, from July 2022 to June 2023, 671 participants over 18 years old, encompassing both genders, were gsurveyed. Data was collected through a questionnaire covering sociodemographic characteristics and LC-related awareness. SPSS 23 was used for analysis. Factors associated with knowledge scores were explored using independent *t*-tests and ANOVA, with the Tukey post-hoc test identifying specific group differences.

Results: The study included 671 participants, most participants were between 18 and 35 years (73.5%), with 38.5% males and 61.5% females. Lung cancer (LC) awareness was high (95.1%), with 4.9% reporting a family history. Knowledge assessment revealed a mean score of 14.66, with 41.6% having low, 49.5% moderate, and 8.9% high knowledge levels. Correct responses were notable for recognizing LC as a common cancer, a leading cause of death, and associating smoking and shisha with risk. Symptoms were well identified. Screening awareness was at 63.5%, with 78.8% willing to undergo tests if at risk. Age, marital status, and occupation were associated with knowledge, while factors like gender, nationality, residency, education, income, and smoking status showed no significant associations.

Conclusion: The findings indicate that there are knowledge gaps related to LC and its screening in Jazan region in Saudi Arabia. Effective awareness programs targeting specific sociodemographic groups are needed to improve the early detection and outcomes.

Keywords: lung neoplasms, awareness, knowledge, smoking, health education, public health, risk factors, health literacy, preventive medicine, student health, shisha

Introduction

Lung cancer (LC), a significant global health concern, ranks among the most common malignancies worldwide.[1,2] In 2018, it accounted for over 1.7 million deaths, solidifying its position as the leading cause of cancer-related mortality.[2] Saudi Arabia is no exception, with LC ranking as the 5th most diagnosed cancer and the 3rd most common cause of cancer death.[3,4] The incidence of LC in Saudi Arabia has seen a significant rise, with cases increasing roughly 3.5 times from 350 to 1200 between 1990 and 2016.[3] Despite this increase, a systematic approach for LC prevention in the primary care setting is currently lacking. Consequently, LC diagnoses often occur in advanced stages.[4]

Globally, only 15% of LC cases are detected at an early stage; Saudi Arabia's statistics align with this trend, with just 14% of cases diagnosed early with localized tumors.[4] However, early detection via LC screening programs can reduce LC mortality by up to 20%.[5,6] Risk factors for LC are numerous and varied, with smoking topping the list. Other risk factors include secondhand smoke, exposure to radon, asbestos, arsenic, diesel exhaust, and certain forms of silica and chromium. Additionally, a personal or family history of lung cancer, radiation therapy to the chest, and dietary factors like beta-carotene supplements have been linked to an increased LC risk.[7,8]

Symptoms associated with LC include cough, dyspnea (shortness of breath), hemoptysis (coughing up blood), chest pain, and clubbing of the fingers.[9] Most LC cases, about 53%, occur in men and women between the ages of 55 and 74.[10] Despite increased survival rates for most malignancies, LC is often detected at an advanced stage, resulting in a five-year survival rate of only 5%.[1] This late presentation is partially attributed to poor awareness of LC symptoms.[11]

Improvement in LC outcomes may hinge upon enhancing LC awareness, symptom recognition, early diagnosis, and access to appropriate treatment.[12] A Malaysian study revealed that both smokers and non-smokers were willing to undergo LC screening once they were informed of their risk.[13] In contrast, 92.8% of USA veterans were willing to screen for LC regardless of their smoking habits.[14] Interestingly, most USA veterans in a smoking cessation study viewed LC screening as a stimulating and reflective exercise, despite some feeling anxious during the process.[15]

In Jazan region in the southwest of Saudi Arabia, there is a high prevalence of LC risk factors such as smoking, respiratory illnesses, and exposure to environmental toxins.[4,16] Despite LC is the 3rd leading cause of cancer-related death in Saudi Arabia, there is a lack of a systematic approach to LC prevention, resulting in late-stage diagnoses. The increasing incidence of LC, particularly in the Jazan Region, necessitates a comprehensive assessment of current knowledge, awareness, and screening utilization. With risk factors such as high rates of smoking and exposure to environmental toxins prevalent in the region, understanding the local context becomes crucial. This study aims to uncover specific deficiencies in awareness and screening practices, particularly among various demographic groups, to inform targeted interventions. By addressing these gaps, the research endeavors to contribute valuable insights for the development of effective public health strategies, ultimately enhancing LC awareness, early detection, and improving health outcomes in the Jazan Region.

Methods and Materials

Study Design, Setting and Participants

This was cross-sectional observational study conducted in Jazan region, Saudi Arabia, from July 2022 to June 2023. Jazan region is located in the southwest of Saudi Arabia, north of Yemen, and has a population of around 1.6 million people. The study population included all adults (male and female) over the age of 18 years. The exclusion criteria were being less than 18 years old, refusal to participate in the study, people from outside Jazan province.

Sample Size and Sampling Method

The sample size for this study was determined using the Raosoft sample size calculator and found that 385 participants are required to achieve a 95% confidence interval and a 5% margin of error. A simple random sampling technique used to select participants from the Jazan population.

Data Collection and Study Tool

The data were collected through a self-administered questionnaire, which was developed following a comprehensive review of related articles and consultation with an expert in the field. The questionnaire was crafted in the Arabic language and administered online, with the questionnaire link distributed to the targeted population. It is structured into three sections: the socio-demographic characteristics of participants, general questions regarding lung cancer knowledge and awareness, and inquiries about lung cancer screening procedures. Prior to the main study, a pilot study was conducted involving a group of 20 participants to test the data collection tool. The reliability of the questionnaire was assessed using Cronbach's alpha test (0.87). Subsequent to the pilot study, certain enhancements, and reorganization of

select questions were implemented, leading to necessary changes in the data collection instrument to improve its usability.

Statistical Analysis

Statistical analysis was conducted using the Statistical Package for the Social Sciences, SPSS v.23. Categorical variables were presented using frequencies and percentages, while numerical variables were described with minimum, maximum, mean, and standard deviation. The assessment of factors associated with knowledge scores utilized both independent *t*-tests and ANOVA tests. Following the ANOVA test, a Tukey post-hoc test was employed to identify specific group differences. The level of significance for all analyses was set at 0.05.

Ethical Consideration

Our study received approval from the Scientific Research Ethics Committee (REC) at Jazan University in Saudi Arabia (reference number: REC-44/02/317; date: September 26, 2022) in accordance with the 1964 Helsinki Declaration and its subsequent amendments. Informed consent was obtained from all participants, and their information is maintained confidentially, with the data solely utilized for scientific purposes.

Results

A total of 671 participants were included in the study, 493 (73.5%) participants fell within the 18–35 years category, 101 (15.1%) were aged 36–45 years, 66 (9.8%) were between 46 and 60 years, and 11 (1.6%) were 61 years and older. In terms of gender, 258 (38.5%) were males, while 413 (61.5%) were females. The majority of 427 (63.6%) were single, 229 (34.1%) married. Most of participants 393 (58.6%) lived in urban areas, while 278 (41.4%) resided in rural areas. Educational levels indicated that 206 (30.7%) were uneducated, 436 (65%) had high school education, a diploma, or less education, and 29 (4.3%) held a bachelor's degree. Monthly income distribution revealed that most participants earned less than 5000 SR, with 118 (17.6%) falling into the 5000–10,000 SR income bracket, 84 (12.5%) earning between 10,000 and 15,000 SR, and a minority having an income exceeding this range. Table 1

Table 1 Socio-Demographic Profile of the Participants (n = 671)

Variables	N	%
Age		
18–35 years	493	73.50
36–45 years	101	15.10
46–60 years	66	9.80
61 years and older	11	1.60
Gender		
Male	258	38.50
Female	413	61.50
Nationality		
Saudi	653	97.30
Non-Saudi	18	2.70
Marital Status		
Single	427	63.60
Married	229	34.10

(*Continued*)

Table 1 (Continued).

Variables	N	%
Divorced	12	1.80
Widowed	3	0.40
Place of residency		
City	393	58.60
Rural area	278	41.40
Educational level		
Uneducated	206	30.70
High school, diploma or lower	436	65.00
Bachelor's degree	29	4.30
Occupation		
Teacher	108	16.10
Employee in the health sector	28	4.20
Military	10	1.50
Civil employee	21	3.10
Student in health colleges	273	40.70
Student in a field other than health colleges	75	11.20
Retired from a job in the educational sector	23	3.40
Retired from a job other than health and education	14	2.10
Others	119	17.70
Monthly income		
Less than 5000 SR	375	55.90
From 5000–10,000 SR	118	17.60
From 10,000 to 15,000 SR	84	12.50
From 15,000 to 20,000 SR	58	8.60
From 20,000 to 30,000 SR	14	2.10
More than 30,000 SR	22	3.30

Table 2 provides the smoking profile of the participants. Out of the total, 66 (9.8%) were smokers, 582 (86.7%) reported that they were not, and 23 (3.4%) indicated they had previously been smokers. Among the current smokers, 44 (66.7%) expressed intentions to quit, 8 (12.1%) stated they were not planning to quit, and 14 (21.2%) were uncertain about their desire to quit. Regarding the presence of family members or friends who smoke, 473 (70.5%) confirmed having a family member or friend who smokes, 179 (26.7%) reported they did not, and 19 (2.8%) were unsure. Of the 473 participants with smoking family members or friends, 408 (86.3%) reported advising their family or friends to quit, while 65 (13.7%) disclosed that they did not provide such advice.

When asked if they had ever heard about lung cancer, 416 (95.1%) participants affirmed their prior knowledge, while 33 (4.9%) reported being unaware of lung cancer. When questioned about whether a member of their family had ever had

Table 2 Smoking Profile of Participants (n = 671)

Question	N	%
Are you a smoker?		
Yes	66	9.8
No	582	86.7
Previously	23	3.4
If you are a smoker, do you plan to quit? (n = 66)		
Yes	44	66.7
No	8	12.1
I do not know	14	21.2
Is any of your family members of friends a smoker?		
Yes	473	70.5
No	179	26.7
I do not know	19	2.8
If you have a family member or a friend who is a smoker, did you advise them to quit? (n = 473)		
Yes	408	86.30
No	65	13.70

lung cancer, among participants who were already familiar with lung cancer, 31 (4.9%) acknowledged having a family history of lung cancer, 576 (90.3%) denied such a family history, and 31 (4.9%) reported uncertainty about whether they had a family history of lung cancer.

Table 3 presents the participants' knowledge assessment of lung cancer, indicating a minimum knowledge score of 2, a maximum of 25, and a mean score of 14.66 ± 4.45. 66.6% of participants correctly recognized lung cancer as one of the most common cancers. Additionally, 74.9% of participants provided the accurate response that lung cancer is one of the leading causes of death. Regarding the awareness of risk factors for lung cancer, the majority of participants correctly

Table 3 Participants Knowledge Assessment Toward Lung Cancer (n = 638)

Question	N	%
Did you know that lung cancer is one of the most common cancers?		
No	113	17.7
Yes (correct answer)	425	66.6
I do not know	100	15.7
Did you know that lung cancer is one of the most common causes of death?		
No	87	13.6
Yes (correct answer)	478	74.9
I do not know	73	11.4

(*Continued*)

Table 3 (Continued).

Question	N	%
Do you think exercise reduces lung cancer?		
No (correct answer)	98	15.4
Yes	378	59.2
I do not know	162	25.4
Do you think lung cancer is a genetic disease?		
No	375	58.8
Yes (correct answer)	106	16.6
I do not know	157	24.6
Do you think that COPD is associated with lung cancer?		
No	133	20.8
Yes (correct answer)	263	41.2
I do not know	242	37.9
Is smoking a risk factor for lung cancer?		
No	3	0.5
Yes (correct answer)	623	97.6
I do not know	12	1.9
Is shisha a risk factor for lung cancer?		
No	8	1.3
Yes (correct answer)	597	93.6
I do not know	33	5.2
Do you think that smoking e-cigarette is a risk factor for lung cancer?		
No	15	2.4
Yes (correct answer)	550	86.2
I do not know	73	11.4
Do you think air pollution is a risk factor for lung cancer?		
No	62	9.7
Yes (correct answer)	464	72.7
I do not know	112	17.6
Do you think passive smoking (indirect) is a risk factor for lung cancer?		
No	52	8.2
Yes (correct answer)	471	73.8
I do not know	115	18

(*Continued*)

Table 3 (Continued).

Question	N	%
Do you think spicy food and fried food are associated with lung cancer?		
No (correct answer)	357	56
Yes	50	7.8
I do not know	231	36.2
Do you think alcohol consumption is a risk factor for lung cancer?		
No (correct answer)	107	15.9
Yes	335	52.5
I do not know	196	29.2
Do you think asbestos is a risk factor for lung cancer?		
No	32	5
Yes (correct answer)	249	39
I do not know	357	56
The following symptoms may or may not be considered a risk of lung cancer. To what extent do you agree that each of them can increase a person's chance of developing lung cancer? (more than one answer can be chosen) (all answers are correct)		
Shortness of breath	484	75.86
Cough with blood	481	75.39
Persistent chest pain	460	72.10
Cough does not go away	447	70.06
Pain when breathing	415	65.05
Painful cough	397	62.23
Persistent chest infection	373	58.46
High-pitched sound when breathing	316	49.53
Fatigue and constant tiredness	294	46.08
Changes in the characteristics of the previous cough	281	44.04
Unexplained weight loss	231	36.21
Loss of appetite	182	28.53
Changes in the shape of the finger (nail)	106	16.61
Persistent shoulder pain	99	15.52
Knowledge Score (lowest possible score = 0, highest possible score = 27)		
Minimum	2	
Maximum	25	
Mean	14.66	
Standard deviation	4.45	

identified smoking (97.6%) and shisha (93.6%) as risk factors for lung cancer. However, only 16.6% of participants accurately identified that lung cancer is a genetic disease. When questioned about symptoms associated with an increased likelihood of developing lung cancer, the majority of participants concurred that shortness of breath (75.86%), coughing with blood (75.39%), and persistent chest pain (72.10%) are indicative risk factors. The mean knowledge score for participants was 14.66 (SD = 4.45), ranging from a minimum score of 2 to a maximum of 25 out of a possible 27. This suggests an overall moderate level of knowledge among participants regarding lung cancer.

In Figure 1, the distribution of participants' knowledge levels toward lung cancer is depicted. Specifically, 279 (41.6%) participants demonstrated a low knowledge level (less than 50% of the total score, ie, a score of 13 or less), 332 (49.5%) exhibited a moderate knowledge level (between 50% and 75% of the total score, ie, a score between 14 and 20), and 60 (8.9%) displayed a high knowledge level (more than 75% of the total score, ie, a score of 21 and above).

Table 4 outlines the screening profile of the participants. A substantial majority, 612 (95.9%) participants, expressed the belief that early detection of lung cancer contributes to preventing death or advanced stages, while 11 (1.7%) reported not holding this belief, and 15 (2.4%) were uncertain. Among the participants, 405 (63.5%) reported awareness of the existence of screening for early detection of lung cancer, with 232 (36.4%) indicating a lack of knowledge about this screening. Among the subset of 405 participants familiar with the screening, 396 (97.8%) believed in the benefits of these tests, 4 (1%) believed there was no benefit, and 5 (1.2%) were uncertain about the benefits. Furthermore, 503 (78.8%) participants expressed willingness to undergo a screening test if they had a risk factor for lung cancer, while 72 (11.3%) reported being unwilling to undergo screening, and 63 (9.9%) were unsure about their willingness.

Table 5 presents the factors associated with knowledge of lung cancer. Age exhibited a significant association with knowledge of lung cancer ($p < 0.001$), indicating that older age groups had lower knowledge levels about lung cancer. The Tukey post-hoc test disclosed that participants aged 18–38 years old had significantly higher knowledge scores compared to every other age group, respectively ($p < 0.05$). Marital status also demonstrated a significant association with knowledge of lung cancer ($p < 0.001$), revealing that single participants had the highest knowledge mean score compared to other groups. The Tukey post-hoc test indicated that single participants had a significantly higher knowledge score compared to married participants ($p < 0.05$). Occupation showed a significant association with knowledge of lung cancer ($p < 0.001$), with students in health colleges exhibiting the highest knowledge mean score. The Tukey post-hoc test further revealed that students in health colleges had a significantly higher knowledge score ($p < 0.05$) compared to
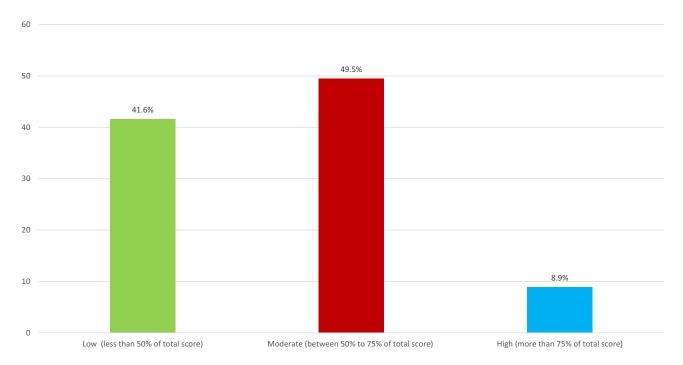

Figure 1 Participants Knowledge Levels Toward Lung Cancer.

Table 4 Lung Cancer Screening Profile (n = 638)

Question	N	%
Do you think that early detection of lung cancer will contribute to saving people from death or advanced lung cancer?		
Yes	612	95.9
No	11	1.7
I do not know	15	2.4
Did you know that there are screenings for early detection of lung cancer?		
Yes	405	63.5
No	121	19
I do not know	112	17.6
If your previous answer is "yes", Do you think there is a benefit from doing these tests?		
Yes	396	97.8
No	4	1
I do not know	5	1.2
If you have a risk factor for lung cancer, would you like to proceed to do the test, to ensure your safety from lung cancer?		
Yes	503	78.80
No	72	11.30
I do not know	63	9.9

Table 5 Factors Associated with Knowledge Toward Lung Cancer

Factor	Knowledge Score		P-value
	Mean	**Standard Deviation**	
Age			< 0.001*
18–35 years	15.3	4.31	
36–45 years	13.21	3.84	
46–60 years	12.81	4.93	
61 years and older	9.9	4.28	
Gender			0.631
Male	14.77	4.45	
Female	14.59	4.45	
Nationality			0.793
Saudi	14.65	4.43	
Non-Saudi	14.94	5.32	

(Continued)

Table 5 (Continued).

Factor	Knowledge Score		P-value
	Mean	**Standard Deviation**	
Marital Status			< 0.001*
Single	15.46	4.27	
Married	13.28	4.51	
Divorced	13.00	3.28	
Widowed	13.33	2.52	
Place of residency			0.091
City	14.41	4.50	
Rural area	15.02	4.37	
Educational level			0.170
Uneducated	15.12	4.31	
High school, diploma or lower	14.50	4.50	
Bachelor's degree	13.86	4.50	
Occupation			< 0.001*
Teacher	13.31	4.55	
Employee in the health sector	15.32	4.92	
Military	12.33	4.15	
Civil employee	13.21	4.06	
Student in health colleges	16.26	4.11	
Student in a field other than health colleges	14.01	4.47	
Retired from a job in the educational sector	12.39	4.50	
Retired from a job other than health and education	12.93	4.67	
Monthly income			0.140
Less than 5000 SR	15.02	4.21	
From 5000–10,000 SR	14.23	5.12	
From 10,000 to 15,000 SR	13.84	4.21	
From 15,000 to 20,000 SR	14.24	4.47	
From 20,000 to 30,000 SR	13.62	5.44	
More than 30,000 SR	15.60	4.63	
Are you a smoker?			0.578
Yes	14.88	4.70	
No	14.67	4.39	
Previously	13.71	5.45	

(*Continued*)

Table 5 (Continued).

Factor	Knowledge Score		P-value
	Mean	**Standard Deviation**	
If you are a smoker, do you plan to quit?			0.530
Yes	15.32	4.67	
No	15.00	4.97	
Previously	13.64	4.78	
Is any of your family members of friends a smoker?			0.227
Yes	14.79	4.43	
No	14.47	4.43	
Previously	12.86	5.14	
If you have a family member or a friend who is a smoker, did you advise them to quit?			0.804
Yes	14.77	4.44	
No	14.92	4.41	

Note: *Significant at level 0.05.

each of the following groups: teachers, students in fields other than health colleges, and participants retired from a job in the education sector. However, gender, nationality, place of residency, educational level, monthly income, smoking status, intention to quit smoking, having a family member or friend who smokes, and providing advice to family members or friends to quit smoking did not exhibit a significant association with the knowledge score toward lung cancer.

Discussion

This study offers valuable insights into the sociodemographic characteristics, smoking profile, knowledge, and screening behaviors related to lung cancer (LC) among residents of Jazan, Saudi Arabia. The demographic profile of the participants predominantly consisted of young, female, single individuals residing in cities, with a high school education or less. The majority were Saudi nationals, and the most common occupation was a student at a health college. The mean knowledge score for LC slightly exceeded the midpoint at 14.66 out of 25, but a considerable proportion of participants demonstrated low knowledge levels, with less than 10% classified as having high knowledge. This aligns with findings from other studies in Saudi Arabia and other countries that highlight suboptimal cancer awareness among the general population.[17,18] In the current study, most participants had heard of LC before, though a minority reported a family history of the disease, consistent with previous studies.[18] The incidence and mortality of LC have significantly increased among the Saudi population in recent decades.[4,8] Notably, LC is often diagnosed in the late stages due to few or no symptoms in the early stages.[19] Therefore, raising awareness about the risks and promoting early detection can significantly impact a person's outcome.

The findings reveal a significant association between age, marital status, and occupation with knowledge about lung cancer. Interestingly, no significant association was found between other sociodemographic factors, such as gender, nationality, place of residence, education level, and monthly income, with knowledge about lung cancer. These results are consistent with previous studies that have reported sociodemographic factors influencing health knowledge and behaviors.[20,21] The age group 18–35 years exhibited a higher level of knowledge about LC compared to older age groups, possibly due to greater exposure to health information through modern media platforms, which are more frequently used by younger generations.[22] Therefore, awareness campaigns should especially target older, married individuals without a healthcare background.

Marital status also exerted a significant impact on knowledge levels, with single individuals displaying higher knowledge scores compared to their married counterparts. This finding contrasts with some previous studies that suggest married individuals often have better health knowledge and behaviors due to the supportive role of spouses.[23] However, considering the young age of the majority of our participants, it could be that many of the single individuals are students currently exposed to health education, thereby increasing their knowledge levels. An Asian cohort study indicated that unmarried individuals had a higher risk of total mortality, including cancer.[24] Occupation emerged as another significant factor associated with knowledge of lung cancer. Health college students exhibited significantly higher knowledge scores compared to individuals in other occupations. This finding is anticipated due to the nature of their curriculum, which includes learning about diseases such as lung cancer. Our findings align with a study of students at a Malaysian tertiary institution that discovered more than half of those students were knowledgeable about.[25] This suggests that health education could be an effective strategy for improving knowledge about LC among the general population.[26]

In this study, 9.8% of the participants reported being current smokers, a prevalence lower than the global prevalence of tobacco smoking (20.2%).[27] This discrepancy may be attributed to the younger age demographic, cultural factors, or potential underreporting of smoking status. Moreover, it is concerning that over 70% of participants reported having family or friends who smoke, yet only 13.7% advised them to quit. Given that second-hand smoke exposure is a well-established risk factor for LC,[28] encouraging smoking cessation through public health strategies becomes crucial for mitigating the substantial burden of LC in Saudi Arabia.[29] A London study revealed that former (14.5%) and never smokers (13%) believed LC screening was pointless if a person was still smoking.[30]

Despite the high level of awareness about lung cancer, approximately 41.6% of the participants demonstrated a low level of knowledge about the disease. Similar knowledge gaps have been reported in previous studies from Saudi Arabia and other countries.[31–33] Furthermore, about 63.5% of the participants were aware of the existence of LC screening, and a significant majority (78.8%) expressed willingness to undergo screening if they had risk factors for lung cancer. This indicates a positive attitude towards prevention and early detection, suggesting that educational interventions promoting screening could be well received in this population. This finding aligns with previous research highlighting the critical role of early detection in reducing LC mortality.[5,6] The study findings underscore the need for comprehensive nationwide LC awareness programs focusing on at-risk groups. Communication campaigns through the media, schools, mosques, and healthcare facilities can help educate the public about LC risk factors, signs and symptoms, and the importance of early detection. Healthcare providers also need training to adhere to standard guidelines for screening high-risk patients, enabling early diagnosis and improved outcomes for lung cancer.

This study's limitations underscore the need for cautious interpretation of its findings. The cross-sectional design, while adept at capturing a momentary snapshot, precludes establishing causal relationships, limiting insights into the temporal dynamics of lung cancer knowledge and behaviors. The sample's regional specificity, drawn from Jazan, raises concerns about generalizability to the broader Saudi population, given potential cultural and socioeconomic variations. The skewed age distribution towards younger individuals may not fully represent the nuanced perspectives of older age groups, impacting the broader applicability of the study's outcomes. Furthermore, reliance on self-reported data introduces the risk of recall and social desirability biases, influencing the accuracy of participants' responses. While the study illuminates critical aspects of lung cancer awareness in Jazan, these limitations emphasize the importance of considering context and population characteristics when extrapolating the findings to inform broader public health strategies. Addressing these limitations in future research endeavors could refine our understanding of lung cancer awareness and screening practices in Saudi Arabia.

Conclusions

In this study, the findings indicate knowledge gaps related to LC and screening in Jazan region of Saudi Arabia. Effective awareness programs targeting specific sociodemographic groups are needed to improve the early detection and outcomes. Future research should employ a more diverse sample and consider longitudinal designs to enhance the study's external validity. Incorporating qualitative research methods could also help explore the underlying factors influencing LC knowledge and awareness in more depth. Health education campaigns should be tailored to target older, married individuals, particularly those not in the healthcare field. Greater efforts should be made to raise

awareness about the dangers of second-hand smoke and the importance of advising family and friends to quit smoking. Lastly, comprehensive nationwide LC awareness programs are needed, particularly focusing on high-risk groups.

Disclosure

The authors report no conflicts of interest in this work.

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