

DESIGN OF LUNG CANCER SPECIFIC QUESTIONNAIRES FOR THE SOUTH INDIAN POPULATION

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Abstract:

The lung is an essential organ for humans for respiration, which often gets affected by diseases. Lung diseases range from mild, like a cold, to life-threatening diseases, like asthma, tuberculosis, cancer, etc. It can be identified in patients by their symptom values through questionnaire. Among all the lung diseases, cancer is the most dangerous, and may be fatal. The survival rate of the patient with lung cancer depends on its early detection and proper treatment. The available questionnaires for screening tools, developed and validated for use in lung cancer detection studies, are reviewed in this paper. These studies show that the available questionnaires for lung cancer detection need modification to meet the needs of the people in the south Indian region. This work is aimed to design questionnaires for pre-diagnosis of lung cancer and its stage-wise detection, which may be useful in designing screening tools, which help the physician to diagnose the disease.

Keywords: *Asthma, TB, CAQ-L, CASQ-L, Lung Cancer, Lung diseases, Questionnaire.*

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1. Introduction

Lung cancer is the major cause of cancerous deaths in the United States and worldwide [1-3]. In India, about 51000 the lung cancer deaths were reported in 2012, which include 41,000 men and 10,000 women [4]. It is the leading cause of deaths in men; however, in women, it ranked ninth among all cancerous deaths [5]. Two main types of lung cancer are small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). About 15 out of 100 (15%) lung cancers are diagnosed with SCLC. It is aggressive, that is, it often grows rapidly and spreads to other regions, including lymph nodes, bone, brain, adrenal glands, and liver. The risk of developing SCLC is highly associated with cigarette smoking. Less than 5% of the patients diagnosed with the disease never smoked [6]. SCLC is so called, because when viewed through the microscope the cancer cells look small.

The more common form of lung cancer is the NSCLC, namely, squamous cell carcinoma (SCC), adenocarcinoma and large cell carcinoma (LCC) [7]. SCC develops in the central region of the lung and accounts for approximately 25-30% of all lung cancer cases. Adenocarcinoma accounts for approximately 40% of all lung cancer cases and develops in the outer region of the lung. LCC accounts for approximately 10-15% of all lung cancer cases, and is associated with rapid tumor growth and poor prognosis [8]. They are grouped together, because they behave in a similar way. It is not possible to work out, which type of NSCLC lung cancer patients have, because only a few cells are taken for the biopsy test. This does not make any difference in treatment; therefore, most NSCLC are treated in the same way [9]. In spite of decades of research on diagnosis and therapy, the survival of lung cancer patients remains poor, which is reported about 13-15% at five-year survival [10]. Symptoms of lung cancer includes cough/persistent cough, shortness of breath (dysphagia), loss of appetite (reduced food consumption level), weight loss, pain/persistent in the chest, cough up blood (hemoptysis)/blood in sputum, fatigue (tiredness)/persistent fatigue, pain in bone (back/hips)/shoulder/neck/arm etc. [11].

Patients with lung cancer will have a current or previous history of cigarette smoking [12, 13]. As a result, it would be better to target lifestyle changes and decreasing the incidence of smoking which may reduce the mortality from lung cancer. About 90,000 deaths are reported annually in the former, and non-smokers would not benefit from 'stop-smoking' strategies alone [14, 15].

The reason lung cancer is so frequently fatal in most of the patients, who are diagnosed in the later stages of the disease, when their malignancy is not curable. Only 15% of lung cancers are diagnosed in the early stages, which are more likely to be cured [16]. In contrast, to these outcomes are significantly better, when patients are diagnosed at earlier, respectable stages, with the 5 year survival rate for stage I disease approaching 70% [17-20]. Thus, if the lung cancer disease could be diagnosed at an early stage, the death rates from lung cancer would decrease.

Only limited screening tools are available, to diagnose lung cancer at an early stage from patients, by making use of questionnaires. The lung cancer screening tool developed by the American Lung Association makes use of the age, smoking history and number of packs smoked per year for predicting the lung cancer [21]. The lung cancer screening decision tool available at the Memorial Sloan Kettering Cancer Center helps the clinicians and patients to determine the chance that screening will be beneficial based on the patient's age, smoking history and environmental exposure [22]. The lung cancer risk profiler developed by Saint Peter's University hospital predicts the risk of cancer, based on the smoking history, other lung cancer risk factors such as diagnosed chronic obstructive pulmonary disease (COPD), diagnosed pulmonary fibrosis, exposure to asbestos, radon gas and dust, etc. [23]. David Cella developed subsets of questionnaires before making the final version of his functional assessment cancer therapy for lung (FACT-L). It consists of 36 questions grouped into physical well-being, social/family well-being, emotional well-being, and functional well-being and additional concerns for assessing the patients with lung cancer [24]. Apar Kishor Ganti and James L. Mulshine demonstrated that, the lung screening tools based on the computed tomographic (CT) scan images were significant for early lung cancer detection [25]. Members of the national lung screening trial team reported that the screening tool based on the low dose CT scan could reduce deaths among the lung cancer patients [26].

The limitations of the existing screening tools used in hospitals are that they were designed using only a few possible lung cancer related questions. To make the screening tool very effective, it is necessary to combine all possible lung cancer related questions along with their symptoms. The questionnaires reported in the literatures were developed by considering the living condition and life style of American and Spanish populations. No specific questionnaire is available for

detecting lung cancer and its stages from the south Indian population. Moreover, the available screening tools making use of CT scan images' are costly. Therefore, the present study is aimed to design questionnaires for lung cancer patients and their stage-wise detection, by modifying the existing one to meet the south Indian population.

2. Methods

2.1 Evolutional Committee

Questionnaires were prepared based on the pilot study which focuses on patient's symptoms who suffers with lung diseases. Based on lung diseases patient's inputs the questionnaires were reorganised to meet the objectives of the study. An evolutional committee (EC) has been formed to review the questionnaires. It consists of three oncologists, seven radiologists, three TB and chest physicians, two general practitioners, one cardiologist and statistical analyst. Three review meetings were held periodically, before the approval of the final questionnaires. The first review meeting was held in December 2013. The second and third meetings were conducted during the months of February 2014 and April 2014, respectively, to refine the questionnaires to meet the objectives of the study. After the approval by the EC, the questionnaires were approved by the institutional ethics committee of Bharat Education and Research Foundation (Academic wing of Bharat Scan), Royapettah, Chennai, affiliated to the Tamil Nadu Dr. M.G.R Medical University, Chennai, for Ph.D. and fellowship programmes in May 2014 (Ref:IEC-BERF/Approval Lr./Date: 4-6-2014).

2.2 Questionnaires

Two questionnaires designed, in which one is a cancer assessment questionnaire for lungs (CAQ-L), which may help to develop a screening tool to detect lung cancer from the lung disease patients, and the other is the cancer assessment stage-wise questionnaire for lungs (CASQ-L), which may help to develop a screening tool to predict its stages. The CAQ-L and CASQ-L are given in appendices I and II, respectively. The consent letter to be obtained from the patients during the data collection is given in appendix III.

Common symptoms for asthma are wheezing, shortness of breath and cough/persistent cough. Common symptoms of TB include loss of appetite, weight loss, fatigue (tiredness) /persistent

fatigue, cough up blood/blood in the sputum, cough/persistent cough and fever in the evenings. The common symptoms of lung cancer includes cough/persistent cough, shortness of breath, loss of appetite, weight loss, pain/persistent pain in the chest, cough up blood/blood in the sputum, fatigue/persistent fatigue and pain in the bone (back/hips)/shoulder/neck. Some symptoms are common for asthma, TB and lung cancer. However, some symptoms are unique for a particular disease. CAQ-L is designed to identify asthma, TB and cancer from lung diseases patients (based on the symptom values). It consists of three parts, namely, part 1, part 2 and part 3 respectively, which amounts to a total of 50 questions. Part 1 deals with the patient's demographic information, part 2 reveals the lung diseases questionnaire and part 3 describes the lung disease specific questionnaire. The patient's demographic information consists of 21 questions of fill in the blank, objective, and yes or no types. The lung diseases questionnaire consists of 11 questions of common symptoms for lung diseases, which are yes or no types. The lung disease specific questionnaire (cancer/Asthma/TB) deals with specific symptoms of asthma, TB and lung cancer, which accounts for 18 questions of objective types.

CASQ-L is designed to predict the stages of lung cancer patients. It consists of 46 questions which are also divided into three parts, namely, part 1, part 2 and part 3, respectively. Part 1 has the patient's demographic information, part 2 deals with the lung cancer questionnaire, and part 3 reveals the lung cancer specific (stage-wise) questionnaire. The patient's demographic information consists of 21 questions which are similar to that of CAQ-L. The lung cancer questionnaire has 11 questions which are slightly modified that of CAQ-L, consisting of lung cancer symptoms and are of yes or no types. Finally, the lung cancer specific (stage-wise) questionnaire has 14 questions which are also slightly modified that of CAQ-L, consisting of cancer stage-wise questions and are of objective types.

3. Discussion

The life style of the American and Spanish populations is different from that of the in south Indian population. Thus, the questions to be included in the questionnaire should directly relate to the study population, which may lead to minimal error for later diagnosis in the screening tools. We designed the CAQ-L and CASQ-L to detect lung cancer and the stages of lung cancer in patients, respectively.

The patient's demographic information in CAQ-L and CASQ-L consists of area (Urban/Suburban/Rural) of the patient, their income, educational level, food habit, nature of the work and occupational exposure, etc., to find their impact on the study population. The occupational exposure is further subdivided in to asbestos, arsenic/diesel exhaust, indoor smoke from household use of solid fuels and pollution (air, water). Recent research shows that as many as one-third of all cancerous deaths are linked to diet and physical activity [27]. Eating plenty of vegetables, fruit, and fish keep lungs healthy. Those who follow a diet are less likely to develop chronic lung disease. A good amount of fresh vegetable juices are a good way to start healing, along with adding a variety of spices such as garlic ginger and onions. The emphasis should be on eating as healthy diet as possible [28]. It means eating healthy food may reduce the chance of lung cancer. A study conducted by Villeneuve et. al evident that exposure to asbestos has contributed to an increased risk of lung cancer in Canadian workplaces, and nearly 3% of lung cancers among Canadian men are caused by occupational exposure to asbestos [29].

The international agency for research on cancer (IARC) is the part of world health organization (WHO) said that, the outdoor air pollution increases the chances of lung cancer. According to its report in 2010, 3.2 million deaths worldwide resulted from air pollution, including 223,000 from lung cancer [30]. Behera reported in his study that, the outdoor and indoor air pollution increases the risk of lung cancer [4]. Gupta et. al reported that, among risk factors of lung cancer in women, cumulative exposure of > 45 years to the indoor air pollution from the use of coal or wood for cooking increases [31]. A study conducted by Krewski et. al described that, the radon exposure in the drinking water can contribute to a small but significant in the risk of lung cancer [32]. A study conducted by Smith et. al concludes that, the long term exposure of arsenic in drinking water may increase the risk lung cancer [33]. Yi Sun et. al concluded in his study that, exposure to the diesel exhaust increases the risk of lung cancer [34]. There is a controversy between the history of cancer and lung cancer for long a time. The study conducted by Mayne et. al reported that, a family cancer history increases the risk of lung cancer [35].

There are controversies on the role of alcohol in lung cancer, but no studies have been made on the role of alcohol consumption patterns. Toriola et. al reported that, binge drinking of alcohol is not associated with an increased risk of lung cancer among non-smokers, but among smokers, it

is associated with an increased risk irrespective of the number of cigarettes smoked per day. According to their report, 65 cases of lung cancer (27 binge drinking smokers and 38 non-binge drinking smokers) during an average follow-up of 16.7 years, the relative risk (RR) were 2.70 (95% CI 1.61-4.53), 2.35 (95% CI 1.38-3.96) and 2.24 (95% CI 1.29-3.80) for those who smoked 1-19, 20-29 and ≥ 30 cigarettes per day, respectively. However, no increased risk was observed among non-smoking binge drinkers, RR 1.48 (95% CI 0.89–2.47). Even though the number of lung cancer cases among non-smokers was relatively small in their study, the fact that the increased risk was limited to only smokers [36]. It means binge drinking of alcohol among smokers may play a role in increasing the risk of lung cancer.

Burning mosquito coils is a common way to control mosquitoes effectively in homes and widely used in countries of Asia, South America and Africa. However, smoke emitted from these mosquito coils may contain pollutants that can be series health concern. Sandeep Salvi reported that, the smoke emitted from one mosquito repellent coil is equivalent to that of 100 cigarettes, thus causing harm to a large number of people [37]. Chen et.al concluded that, Taiwanese households frequently burn mosquito coils at home to repel mosquitoes [more than 3 times [days] per week], which accounts for 17.8% lung cancer deaths in Taiwan [38]. Interestingly, the EC added questions of those kinds in the patient's demographic information, to find out their impact on the lung cancer patients from the south Indian population. The lung disease specific questionnaire in CAQ-L consists of specific symptoms of cancer/asthma/TB, to find out what type of specific disease a patient may have. The scale is varied from low to very high to find the severity of the lung disease.

Cancer assessment stage-wise questionnaires for lungs are designed for only the lung cancer patients to predict their stages. The stage of lung cancer refers to the extent to which the cancer has spread in the body. It has four stages, namely, stage I, stage II, stage III and stage IV, respectively [39]. Stages I and II are called the early stages, and stages III and IV are called advanced stages. The scale is varied from low to very high to find the severity of spread of the cancer, thereby the stages of the cancer can be predicted. Lung cancer can be effectively treated if it is diagnosed in its early stages. Whenever possible, the patient with early stages of lung cancer (stages I and II) may be treated with surgical resection. Patients with whom resection is

not an option may benefit from radiation therapy [40]. It is very difficult to cure them in the advanced stages, because it might spread to other organs.

4. Conclusion

Lung cancer, as the most deadly cancer in the world, presents an enormous health care challenge. It is curable, if it is detected early. If undetected, it kills the healthy cells, thereby killing patients too. Hence it is necessary to detect it at an early stage to minimize the danger. The screening tools available, based on the CT scan images, are costly. On the other hand, the screening tools based on the questionnaires are cheap, but seek a modification to meet the south Indian population. Further, a specific questionnaire is needed to predict their stages. Thus, the proposed questionnaires CAQ-L and CASQ-L may be helpful for designing new screening tools, which may help the physician to detect the lung cancer and its stages. Applications of the proposed questionnaires remain to be studied. Since lung cancer is a special case of cancer, it would be interesting to see how proposed questionnaires can be extended to detect and find the stages of cancer. This is one of our future research directions.

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APPENDIX-I

CANCER ASSESSMENT QUESTIONNAIRE FOR LUNGS (CAQ-L)

PART: 1 PATIENT'S DEMOGRAPHIC INFORMATION

1. Name:
2. Age: _____ Years
3. Sex: M/F
4. Height: _____ cms
5. Weight: _____ Kgs
6. Patient ID:
7. Telephone No.:
8. Address:
9. Which area do you belong to?
 Urban Suburban Rural
10. Are you a non vegetarian?
 Yes No
 If yes, specify the frequency/month _____
11. What type of food do you prefer?
 Fast food (pizza, burger, chocolate pie, milk shakes, puffs, chat items and noodles)
 Semi-fried food (french fries, roasted potato, chicken nuggets and doughnuts)
 Oily food (fried rices, onion pakoda, fried mutton/chicken, gobimanchurian, chillie chicken and lolly pop)
 Diet food (fresh vegetables, fruits, greens and normal meals)
 Others specify _____
12. What type of drink do you prefer?
 Fresh drink (apple, orange, mozambi, pine apple, pomegranate, sapota, lemon, water melon)
 Bottled drink (pepsi, coke, sprite, fanta, maaza, thumbs up, seven up, miranda, slice, appy fizz)
 Packed drink (frooti, fruit nick, appy fizz, tropicana, rasna)
 Specify the drink intake in litres/Week _____
13. What is your income per month (In Indian Rupees)?
 <5000 5000-10000 10001-50000 >50000
14. What is your educational level?
 School level Graduation level Post-Graduation level
 (1-12 standard) (U.G Degree) (P.G Degree)
 Uneducated
 (Not entered even school)

15. What is your nature of work?

Industry (associated with Radon gas, Cement, Textile or Chemical)

Labour

Cook

Ship or Dockyard

Professional (BPO, Software, Doctor, Scientist, Engineer and Teacher/Lecturer)

Farmer

Others specify _____

16. What is your occupational exposure?

Asbestos

Arsenic/diesel exhaust

Indoor smoke from household use of solid fuels

Pollution (Air, Water)

Others specify _____

17. Are you currently a smoker/tobacco consumer?

a) Low

b) Medium

c) High

d) Very High

If you a smoker, specify the form of

Beedi

Cigarette

Chewing tobacco

Gutka

Duration of smoking/tobacco consuming _____

Number of beedi, cigarette, and tobacco packets per day _____

If no, you never had the habit of smoking/tobacco consuming? Yes No

18. Have you been exposed to an environment of tobacco (never smokers/ passive smokers especially spouses)? Yes No

19. Have you used mosquito coils frequently? Yes No

20. Do you take alcohol often? Yes No

21. Do any of your blood relations have lung cancer/cancer history? Yes No

PART: 2 LUNG DISEASES QUESTIONNAIRE

22. Do you have cough/persistent cough?

YES

NO

23. Do you have shortness of breath (dysphagia)/difficulty in breathing?

24. Do you have loss of appetite (reduced food consumption level)?

25. Do you have weight loss?

26. Do you have pain/persistent pain in the chest?

27. Do you have difficulty in swallowing?

28. Do you have cough up blood (hemoptysis) /blood in sputum?

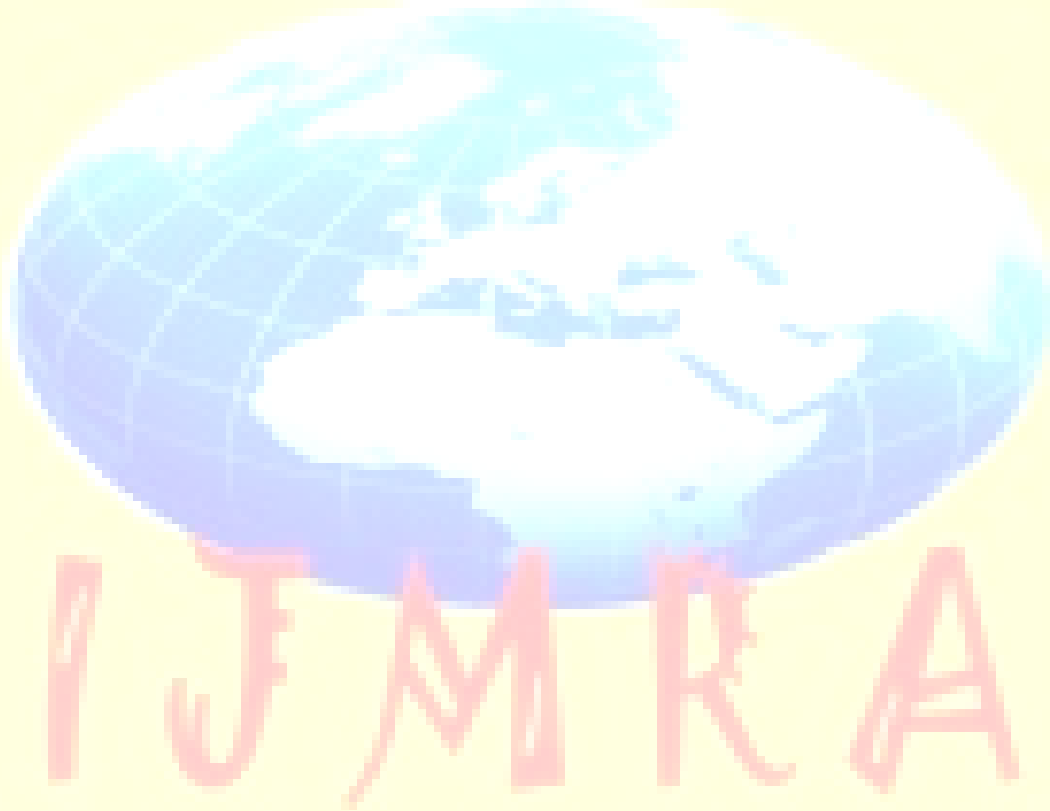
29. Do you have hoarseness of voice (voice sounds different from the usual)?

30. Do you have fatigue (tiredness)/persistent fatigue?
31. Do you have wheezing?
32. Do you have chest tightness/pressure?

PART: 3 LUNG DISEASES SPECIFIC (CANCER/ ASTHMA/TB) QUESTIONNAIRE

33. Do you have cough/persistent cough?
a) Low b) Medium c) High d) Very High
34. Do you have shortness of breath (dysphagia) /difficulty in breathing?
a) Low b) Medium c) High d) Very High
35. Do you have loss of appetite (reduced food consumption level)?
a) Low b) Medium c) High d) Very High
36. Do you have weight loss?
a) Low b) Medium c) High d) Very High
Low-Weight loss is $\leq 2\text{kg/month}$
Medium-Weight loss is between $>2\text{Kg/month} \ \& \ \leq 4\text{Kg/month}$
High- Weight loss is $>4\text{Kg/month} \ \& \ \leq 6\text{Kg/month}$
Very high- Weight loss is $>6\text{Kg/month}$
37. Do you have pain/persistent pain in the chest?
a) Low b) Medium c) High d) Very High
38. Do you have difficulty in swallowing?
a) Low b) Medium c) High d) Very High
39. Do you have cough up blood (hemoptysis)/blood in sputum?
a) Low b) Medium c) High d) Very High
40. Do you have hoarseness of voice (voice sounds different from the usual)?
a) Low b) Medium c) High d) Very High
41. Do you have fatigue (tiredness)/persistent fatigue?
a) Low b) Medium c) High d) Very High
42. Do you have wheezing?
a) Low b) Medium c) High d) Very High
43. Do you suffer from frequent/unexplained fever?
a) Low b) Medium c) High d) Very High
44. Do you have pain in bone (back/hips)/ shoulder/neck/arm?
a) Low b) Medium c) High d) Very High
45. Do you have swelling in the face/neck/feet?
a) Low b) Medium c) High d) Very High

46. Do you have frequent head ache/dizziness/seizures?
a) Low b) Medium c) High d) Very High
47. Do you have chest tightness/pressure?
a) Low b) Medium c) High d) Very High
48. Do you notice colour changes in the sputum (Greenish/Yellow)?
a) Low b) Medium c) High d) Very High
49. Do you have fever only in the evenings?
a) Low b) Medium c) High d) Very High
50. Do you experience sweating at nights/Rapid heartbeat?
a) Low b) Medium c) High d) Very High



APPENDIX-II

CANCER ASSESSMENT STAGE-WISE QUESTIONNAIRE FOR LUNGS (CASQ-L)

PART: 1 PATIENT'S DEMOGAPHIC INFORMATION

1. Name :
2. Age : _____ Years
3. Sex : M/F
4. Height : _____ cms
5. Weight : _____ Kgs
6. Patient ID :
7. Telephone No. :
8. Address :

9. Which area do you belong to?
Urban Suburban Rural
10. Are you a non vegetarian?
Yes No
If yes, specify the frequency/month _____
11. What type of food do you prefer?
Fast food (pizza, burger, chocolate pie, milk shakes, puffs, chat items, and noodles)
Semi-fried food (french fries, roasted potato, chicken nuggets and doughnuts)
Oily food (fried rices, onion pakoda, fried mutton/chicken, gobimanchurian, chilly chicken and lolly pop)
Diet food (fresh vegetables, fruits, greens and normal meals)
Others specify _____
12. What type of drink you prefer?
Fresh drink (apple, orange, mozambi, pine apple, pomegranate, sapota, lemon, water melon)
Bottled drink (pepsi, coke, sprite, fanta, maaza, thumbs up, seven up, miranda, slice, appy fizz)
Packed drink (frooti, fruit nick, appy fizz, tropicana, rasna)
Specify the drink intake in litres/Week _____
13. What is your income per month (In Indian Rupees)?
<5000 5000-10000 10001-50000 >50000
14. What is your educational level?
School level Graduation level Post-Graduation level
(1-12 standard) (U.G Degree) (P.G Degree)
Uneducated
(Not entered even school)

15. What is your nature of work?
- Industry (associated with Radon gas, Cement, Textile or Chemical)
- Labour
- Cook
- Ship or Dockyard
- Professional (BPO, Software, Doctor, Scientist, Engineer and Teacher/Lecturer)
- Farmer
- Others specify _____

16. What is your occupational exposure?
- Asbestos
- Arsenic/diesel exhaust
- Indoor smoke from household use of solid fuels
- Pollution (Air, Water)
- Others specify _____

17. Are you currently a smoker/tobacco consumer? Yes No
- If yes, specify in the form of
- Beedi Cigarette Chewing tobacco Gutka
- Duration of smoking/tobacco consumption _____
- Number of beedi, cigarette, and tobacco packets per day _____
- If no, you never had the habit of smoking/tobacco consumption? Yes No
18. Have you been exposed to an environment of tobacco (never smokers/ passive smokers especially spouses)? Yes No
19. Do you take alcohol often? Yes No
20. Have you used mosquito coils frequently? Yes No
21. Do any of your blood relations have lung cancer/cancer history? Yes No

PART: 2 LUNG CANCER QUESTIONNAIRE

- | | YES | NO |
|--|--------------------------|--------------------------|
| 22. Do you have cough/persistent cough? | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Do you have shortness of breath (dysphagia)/difficulty in breathing? | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. Do you have loss of appetite (reduced food consumption level)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. Do you have weight loss? | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. Do you have pain/persistent pain in the chest? | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. Do you have difficulty in swallowing? | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. Do you have cough up blood (hemoptysis) /blood in sputum? | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. Do you have hoarseness of voice (voice sounds different from the usual)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 30. Do you have fatigue (tiredness)/persistent fatigue? | <input type="checkbox"/> | <input type="checkbox"/> |

31. Do you have wheezing?
32. Do you have pain in bone (back/hips)/ shoulder/neck/arm?

PART: 3 LUNG CANCER SPECIFIC (STAGE-WISE) QUESTIONNAIRE

33. Do you have cough/persistent cough?
a) Low b) Medium c) High d) Very High
34. Do you have shortness of breath (dysphagia) /difficulty in breathing?
a) Low b) Medium c) High d) Very High
35. Do you have loss of appetite (reduced food consumption level)?
a) Low b) Medium c) High d) Very High
36. Do you have weight loss?
a) Low b) Medium c) High d) Very High
Low-Weight loss is $\leq 2\text{kg/month}$
Medium-Weight loss is between $>2\text{Kg/month} \ \& \ \leq 4\text{Kg/month}$
High-Weight loss is $>4\text{Kg/month} \ \& \ \leq 6\text{Kg/month}$
Very high-Weight loss is $>6\text{Kg/month}$
37. Do you have pain/persistent pain in the chest?
a) Low b) Medium c) High d) Very High
38. Do you have difficulty in swallowing?
a) Low b) Medium c) High d) Very High
39. Do you have cough up blood (hemoptysis)/blood in sputum?
a) Low b) Medium c) High d) Very High
40. Do you have hoarseness of voice (voice sounds different from the usual)?
a) Low b) Medium c) High d) Very High
41. Do you have fatigue (tiredness)/persistent fatigue?
a) Low b) Medium c) High d) Very High
42. Do you have wheezing?
a) Low b) Medium c) High d) Very High
43. Do you have pain in bone (back/hips)/ shoulder/ neck/arm?
a) Low b) Medium c) High d) Very High
44. Do you suffer from frequent/unexplained fever?
a) Low b) Medium c) High d) Very High
45. Do you have swelling in the face/neck/feet?
a) Low b) Medium c) High d) Very High
46. Do you have frequent head ache/dizziness/seizures?
a) Low b) Medium c) High d) Very High

APPENDIX-III
CONSENT LETTER

I am aware that this screening test is to predict whether I have any sign of lung disease (cancer/asthma/TB) and I do know that this result is not confirmatory and the screening personnel is no way responsible if I get contradictory result to this prediction in my further tests. I was not asked to undergo any invasive testing by the screening personnel. The details that I furnish (answers to the questionnaires) are true to the best of my knowledge.

Signature of the patient (with name)

Signature of the consultant (with name)

I J M R A