Establishing Community Awareness of Lung Cancer in Sampang District, Madura

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ABSTRACT Treatment for lung cancer remains challenging since most of the patients seek for medical advice at an advanced stage of disease. Sampang is one of the districts that refers many lung cancer patients in late stages to Dr. Soetomo Hospital, Surabaya. The objective of this study was to educate and promote the health cadres in Sampang regarding early detection of lung cancer as an attempt to bridge between the health workers and community, therefore the number of lung cancer early detection may be improved. The socialization was performed to the health cadres regarding early detection and screening of lung cancer, and guidance to fill the questionnaire and scoring of lung cancer risk factors. The participants' understanding was measured using a pretest-posttest design. The health cadres conducted early detection of lung cancer by distributing questionnaires of lung cancer risk factor scoring to the citizens using door to door methods. It has been established of 30 health cadres that well-understand regarding lung cancer as shown by the increase of post-test result compared to pre-test, and these health cadres have been capable to perform early detection of lung cancer in the community. The questionnaires' evaluation results showed that the group with high-risk factor was dominated by male, aged 45–65 years old, and active smokers. Furthermore, the health cadres were be able to detect that lifestyle and gender significantly contribute to increase the lung cancer risk factor in the community.

KEYWORDS Community service; Early detection; Health cadres; Lung cancer.

1. INTRODUCTION

Lung cancer encompasses all malignant diseases of the lungs originate from the lungs (primary). In clinical definition, primary lung cancer refers to malignant tumor originate from bronchus (bronchogenic carcinoma) (Menkes RI, 2023). According to epidemiological data obtained from Global Cancer Observatory (GLOBOCAN), the global incidence of lung cancer in 2020 amounted to

2,206,771 cases. This equates to 11.4% of all cancers worldwide in 2020 (Global Cancer Observatory, 2020b).

The World Health Organization (WHO) reported that lung cancer was the leading cause of cancer deaths in 2020, accounting for 1.80 million death cases. Cancer World Bank identifies lung cancer as the malignancy that causes the greatest number of mortalities worldwide (Goodarzi et al., 2019; Global Cancer Observatory, 2020b). Meanwhile, in Indonesia, the mortality rate of lung cancer in 2020 was 13.2% or 30,843 death cases reported according to GLOBOCAN. This data establishes lung cancer as the leading cause of cancer fatalities in Indonesia (Global Cancer Observatory, 2020a). The type of lung cancer and the complications that occur determine lung cancer mortality. Comorbidities, infectious conditions, as well as the stage and extent of cancer cell metastasis, contribute to increased morbidity and mortality (Sari et al., 2019).

In Indonesia, treatment for lung cancer remains challenging since most of the patients seek for medical advice at an advanced stage of disease. This is primarily due to fear and ignorance towards the disease. Patient's preference of using alternative methods along with the misconception about cancer will decrease life expectancy and quality of life while increasing mortality (Jayalie et al., 2016; Amin, 2017). The ignorance and the delay to pursue medical help, makes treatment unattainable for these patients. The mortality and morbidity remain high because most of the patients present with late-stage cancer (Widjaja et al., 2019).

Sampang is one of the districts that refers many lung cancer patients to Dr. Soetomo Hospital, Surabaya, and unfortunately, a majority of these patients are already in late stages of the disease. The risk factor of lung cancer in the society of Sampang District includes active and passive smoking activity, and indoor pollution. The lack of knowledge of the danger of smoking among Sampang District community contributes as one of risk factor for lung cancer. Therefore, it is necessary to educate and promote the health cadres in Sampang regarding lung cancer, including its symptoms, risk factors, and hazards. This activity employs a psychosocial approach that is intended to serve as an educational cadre for the community.

2. METHOD

This community service activity was carried out in Community Health Center of Camplong Sub-district in Sampang District, Madura.

The socialization of lung cancer awareness was conducted on 29 August 2023 in order to establish health cadres for early detection of lung cancer to the society in Sampang District. This community service was held by the Community Service team from Department of Pulmonology and Respiratory Medicine, Faculty of Medicine, Universitas Airlangga in collaboration with health workers from the Camplong Community Health Center. The targets of these activities are adult citizens in Camplong Sub-district, Sampang District, Madura, East Java. There are several steps in this community service including preparation, implementation, and evaluation.

Preparation

The preparatory activities were carried out by holding a series of meetings with the health workers of the Camplong Community Health Center, collaborating and providing guidance to the health cadres.

Implementation

Community counseling

Community counseling are carried out in 29 August 2023 which consisted of socialization of early detection and screening of lung cancer, and guidance to fill the questionnaire and scoring of lung cancer risk factors. The socialization was attended by community leaders, head of community health center, and 30 health cadres.

The participants' understanding was measured using a pretest-posttest design. The pretest was given before the socialization began, while the posttest was conducted after the socialization was given, and was given by paper questionnaire about lung cancer. Both used the same questions, which

were consisted of 10 multiple choice questions. The education given was mainly about the definition, risk factors, symptoms and dangers of lung cancer.

Post-community counseling

The health cadres conducted early detection of lung cancer by distributing questionnaires to the subjects using door to door methods. The questionnaires consisted of patients' identity and lung cancer risk factor scoring which categorized in 9 questions as below:

1. Gender: male (3); female (1)
2. Age: >65 years old (3); 45–65 years old (2); <45 years old (1)
3. Personal history of cancer: yes, >5 years ago (3); yes, <5 years ago (2); never (1)
4. Family history of cancer: lung cancer (4); other than lung cancer (2); none (1)
5. Smoking history: active smoker (4); past smoker (3); passive smoker (2); non-smoker (1)
6. Exposure to carcinogenic chemicals in occupational site for >5 years: yes (3); not sure (2); no (1)
7. Pollutant exposure in the residential area: yes (3); not sure (2); no (1)
8. Unhealthy house environment: yes (3); not sure (2); no (1)
9. Medical history of chronic lung disease: tuberculosis (3); other chronic lung disease (2); never (1)

The severity of risk factors:

a. Low: ≤11
b. Moderate: 12–16
c. High: 17–29

Evaluation

To evaluate the knowledge of extension health cadres after receiving counseling, the pretest and posttest being assessed by divided them into two categories, namely high with a value of more than

80 (>80) and low with a value of less than equal to 80 (≤80), then the results were compared to see the improvement of knowledge about lung cancer.

The questionnaires of lung cancer risk factor scoring that has been distributed to Sampang citizens by health cadres were being collected and sent to our team and the data were processed to find patients' characteristics according to the severity of risk factors. In the long term, this activity is expected to contribute to the prevention and early detection of malignant lung tumors and reduce morbidity and mortality due to delayed diagnosis of lung cancer.

3. RESULT AND DISCUSSION

The counseling was held on August 29, 2023 and was attended by head of local health service, head of community health center, and 30 health cadres as shown in Figure 1. The event was carried out well and smoothly thanks to the good cooperation between the Community Service Team and the Community Health Center Committee, as well as the enthusiasm of the cadres and health workers of the Community Health Center to listen and ask some questions. The counseling program started at 09.00 WIB, opened with remarks from the Head of Sampang District Health Service, the Head of the Camplong Community Health Center, video screening of an online remarks by the Dean of Medicine of Faculty of Universitas Airlangga, and remarks from the leader of our community service team. Then the event continued with socialization on Increasing Understanding of Lung Cancer Early Detection, question and answer session, and post-test. The results of the pre-test and post-test are shown in Table 1.

Table 1. Pre- and post-test questionnaire results.

Variable	Pre Test		Post Test	
	High Score	Low Score	High Score	Low Score
Knowledge about lung cancer and early detection screening	30% (9 people)	70% (21 people)	86.7% (26 people)	13.3% (4 people)

Based on the results of the pre-test and post-test comparison in table 1, the number of health cadres who understood lung cancer topic and its early detection after the socialization were increased.

Figure 1. Community counseling in Camplong Community Health Center

Following the community counseling, the early detection was performed by health cadres who have received socialization by distributing lung cancer risk factor scoring questionnaires to 577 subjects. The data from the questionnaire are shown in Table 2.

Among all subjects that being assessed, 50.9% (n= 294) were male and 49.1% (n= 283) were female. The data shows that most of the subjects had moderate-risk factor (n= 268) and 70.5% (n= 189) of them were male. Meanwhile, the female subjects were mostly had low-risk factor (n= 201).

Most of the subjects were under 45 years old (n= 306) which distributed equally into low- and moderate-risk factor (n= 139 in both group), and the remaining 28 had high-risk factor. The data also concluded that subjects both in age group of 45–65 years old and >65 years old were mostly had moderate-risk.

Maduranese were the most ethnicity which cover 98.4% (n= 568) of the subjects, while the 2.6% (n= 9) remaining were Javanese. The subjects mostly active smokers (n= 217) and 62.7% (n= 136) of them had moderate-risk factors. The non-smokers subjects followed in second place of smoking history category by 199 subjects, and 72.9% (n= 145) of them had low-risk factors. Moreover, 146

subjects were passive smoker which mostly (50%, n= 73) had moderate-risk factor. Meanwhile, 15 subjects were the past smokers, and 53.3% (n= 8) of them had high-risk factor.

The most respiratory symptoms complained by the subjects were shortness of breath and chest pain which experienced by 51 (8.8%) and 34 (5.9%) people, respectively. Shortness of breath was experienced by most (50.9%) subjects with moderate-risk factor (n= 26) and 37.3% (n= 19) of them had high-risk. Similarly, chest pain was mostly (47.1%) experienced by subjects with moderate-risk factor and 29.4% (n= 10) of them had high-risk factor. Meanwhile, chronic cough was experienced by 32 (5.5%) people which most of them (53.1%) had high-risk factor (n= 17) and 34.4% (n= 11) of them had moderate-risk factor. There were 2 (0.3%) people who had high-risk that experienced hemoptysis. Meanwhile, non-respiratory symptoms that mostly experienced by the subjects were headache by 101 people (17.5%). Most of them (49.5%) were included in moderate-risk factors (n= 50), and 29 (28.7%) of them were had low-risk, and the remaining 22 (21.8%) people had high-risk factor.

12 subjects were the former of tuberculosis patients, and 7 (58.3%) of them were included in high-risk factor. Similarly, 8 subjects are on treatment of tuberculosis, and 6 (75%) of them were included in high-risk factor.

Most of the subjects never had COVID (n= 556), however 21 people had COVID in 2021 and 12 of them had low-risk factor. Moreover, 21 subjects had diabetes mellitus and 9 of them (75%) had moderate-risk factor.

Table 2. Patients' characteristic according to questionnaires of scoring severity of risk factors.

No	Characteristics	Risk factors severity		
		Low (n= 216)	**Moderate (n= 268)**	**High (n= 93)**
1	Gender			
	Male	15	189	90
	Female	201	79	3
2	Age			
	<45 years	139	139	28
	45-65 years	63	108	55
	>65 year	14	21	10
3	Ethnicity			

	Maduranese	213	265	90
	Javanese	3	3	3
	Others	0	0	0
4	Smoking History			
	Active smoker	5	136	76
	Past smoker	0	7	8
	Passive smoker	66	73	7
	Non smoker	145	52	2
5	Respiratory Symptoms			
	Chronic cough	4	11	17
	Hemoptysis	0	0	2
	Shortness of breath	6	26	19
	Chest pain	8	16	10
	None	199	226	53
6	Non-respiratory Symptoms			
	Lump	0	3	6
	Body weight loss	3	16	14
	Weakness	6	28	16
	Headache	29	50	22
	Seizure	0	2	0
	Paralyzed/Limbs weakness	2	7	2
	Bone pain	13	27	13
	Stomach disorders	1	5	5
	Neck and arm swelling	0	0	1
	Others	2	17	7
	None	174	180	38
7	History of Tuberculosis Treatment			
	Former TB patients	0	5	7
	On treatment	0	2	6
	None	216	261	80
8	History of COVID			
	2020	0	0	0
	2021	12	8	1
	2022	0	0	0
	Never	204	260	92
9	History of Diabetes Mellitus			
	Yes	6	9	6
	No	210	259	87

Early detection involves two important components: screening and education to identify symptoms and encourage an early diagnosis. Early cancer detection focuses on recognizing symptomatic individuals as soon as possible so that in order to maximize their potential for successful treatment. Early identification of cancer may result in reduced morbidity and improved survival, and

in some cases, if detected early enough, therapy may involve only surgery (Schiffman et al., 2015; Dillner, 2019; World Health Organization, 2023). Common symptoms of lung cancer includes coughing, chest pain, shortness of breath, wheezing, hemoptysis, fatigue, weight loss (CDC, 2023b).

Risk factors for lung cancer are radiation exposure, occupational exposure to carcinogenic substances (according to the International Agency for Research on Cancer (IARC)), a family or personal history of cancer, and a prior diagnosis of lung disease including chronic obstructive pulmonary disease (COPD), tuberculosis, or idiopathic pulmonary fibrosis (Menkes RI, 2023).

The high-risk group is categorized into two subgroups: group A, which includes individuals aged >45 years old who have a documented history of active smoking with a partner, or who have ceased smoking for less than ten years, and have been exposed to carcinogens in the workplace or otherwise; and, group B which comprises individuals aged 40 years or older who have family history of lung cancer. In Indonesia, the average age for the onset of lung cancer is younger (average 58 years) compared to international data (average 65 years), as well as the age of first-time smokers; therefore, early detection and screening for lung cancer commences at a younger age (Menkes RI, 2023).

According to the findings of our investigations, the majority of subjects aged 45 and older appear to have moderate-risk factors. This is consistent with the 2018 guidebook from the Ministry of Health of the Republic of Indonesia on managing risk factors for lung cancer (Menkes RI, 2018), there has been a significant rise in the incidence of lung cancer among individuals aged 45–49. This is because this age group is more likely to be exposed to risk factors for longer periods of time and has a lower capacity for cell repair. Empirical data indicates that the prevalence of lung cancer is most pronounced among those who are 40 years of age or older. The ratio of incidence in men and women is 3:1 (Chaitanya et al., 2022). According to a study conducted at a cancer center hospital in Indonesia, the age group of 65 years old marked the highest prevalence of lung cancer among men, while the age group of 50 years old was the most affected among women. An upward trend in the incidence of lung cancer has been documented among individuals aged 45 and above in both men and women. At their initial visit, the majority of participants in this study (57.1%) were unaware of the precise stage of

their lung cancer, and up to 26.2% of participants arrived with stage 4 of lung cancer (Fariha et al., 2019; Sari et al., 2019).

According to our findings, the majority (70.5%) of subjects with moderate-risk factors were male, as were up to 96.7% of all subjects in the high group. This should be the focus of attention, because according to statistics from GLOBOCAN, which indicates that in 2020, Indonesia had 34,783 new cases of lung cancer, or 8.8% of total cancer cases, with men accounting for the majority of cases (Global Cancer Observatory, 2020a).

The result of our investigations showed that the moderate- and high-risk factors group were dominated by active smokers. Smoking cigarettes is the primary factor contributing to the development of lung cancer. Smoking increases about 20 times the risk of lung cancer development (Schabath & Cote, 2019). Lung cancer can also be induced through the use of alternative tobacco products (e.g., pipes or cigars), secondhand smoke inhalation, and occupational or domestic exposure to substances like radon or asbestos (CDC, 2023a). There are carcinogenic metabolites present in cigarette smoke that are predicted to have an adverse effect on body organs. It has been established that cigarettes contain carcinogenic (C), cocarcinogenic (CC), tumor promoter (TP), and mutagen (M) substances. Despite the fact that not all smokers will always acquire lung cancer, the World Health Organization asserts that tobacco is the most preventable cause of early death. Reducing tobacco consumption by half would sufficiently avert 20–30 million people from dying before 2025. This reduction in tobacco consumption by 2050 would prevent the deaths of 170–180 million individuals from all tobacco-related causes of death, including lung cancer (World Health Organization, 2005).

A compelling contention regarding the detrimental consequences of air pollution (regular exposure to diesel oil smoke and polycyclic hydrocarbons) is supported by the observation that the incidence of lung cancer was significantly higher in urban areas with higher percentage of deaths than in rural areas, despite the fact that rural residents exhibited higher prevalence of smoking habits (Rybojad et al., 2013; Gouvinhas et al., 2018). According to our observations, numerous Sampang

residents work and reside in high-pollutant environments, including carcinogenic chemicals exposed workplaces for >5 years (33.9%), high-pollutant living environments (27.2%), and unhealthy house environments (23.2%) (data not shown). In addition, the majority of male citizens lead an active smoking lifestyle. Therefore, early detection of lung cancer may respond to a social marketing intervention by increasing public awareness, promoting a healthier lifestyle, and encouraging early reporting of symptoms, which is crucial because if lung cancer is discovered at an earlier stage, when it is small and has not spread, it is more likely to be successfully treated.

4. CONCLUSION

The team has provided counseling sessions for 30 health cadres in collaboration with health workers at the Camplong Sub-district Community Health Center. The community service activity initiative aimed at early detection and screening of lung cancer was well received by both the village government and the community, which facilitated its successful execution. The post-test results showed that health cadres gained additional knowledge after counseling sessions regarding the danger of lung cancer and guidance for early detection based on the scoring of risk factors. Hopefully, in the future the established health cadres would be capable of performing early detection of lung cancer for the society of Sampang District, allowing this program to be implemented regularly every month to provide optimal intervention.

The results indicate that lifestyle and gender significantly contribute to increase the risk factor severity of lung cancer. The subjects who included in high-risk factors will be followed up for further examination at health facilities.

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CONFLICT OF INTERESTS

The author declares no conflicts of interest in this work.

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