



Profile of chronic obstructive pulmonary disease (COPD) patients in Oksibil Regional Public Hospital at 2020

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DOI : 10.36216/jpd.v6i1.179

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Received : 14 January 2022

Accepted : 25 April 2022

Published : 30 June 2022

Background: Chronic obstructive pulmonary disease (COPD) is a lung disease characterized by persistent respiratory symptoms and airflow limitation due to blocked airways and/or alveolar abnormalities caused by harmful particles or gases. COPD is the third leading cause of death in the world.

Objective: To determine the profile of COPD patients at Oksibil Regional Public Hospital.

Methods: This study implemented a descriptive study design. Sample acquisition was done with total sampling. All COPD patients from January until December 2020 were included in this study.

Result: This study obtained a total of 50 patients with COPD, with dominant of men aged > 60 years (36%) and worked as farmers (42%). Most of patients have history of smoking (64%), and those who use furnace or firewood (80%). Most of patients with COPD assessment test (CAT) score ≥ 10 (66%), with modified medical research council (mMRC) grades of 2-4 (66%). Based on the history of exacerbations, it was obtained that most with ≥ 2 times per year or minimum of one time with hospitalization. Based on the global initiative for chronic obstructive lung disease (GOLD) category, patients with the GOLD D category were the most numerous and the main symptom that made the patients come for treatment was shortness of breath.

Conclusion: Most COPD patients were more than 60 years old with smoking risk factors and GOLD D category.

Keywords: COPD, profile, risk factors, exacerbation, GOLD criteria.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a group of chronic lung diseases that persist for a long time and are accompanied by increased resistance to airflow.¹ Airflow characteristics of COPD is commonly caused by small airway obstruction (bronchiolitis) and parenchymal damage (emphysema) of each individual.² Airflow limitation related to abnormal lung inflammatory response to noxious substances or gases. The most common symptoms are shortness of breath, cough with or without sputum production. The risk factors for COPD are mainly cigarettes, environmental exposures such as biomass and air pollution.¹

COPD is the one of four main non-communicable diseases that cause 60% of deaths in Indonesia.^{3,4} Meanwhile, according to the results of basic health research (Riskesdas, 2018) from 35 provinces in Indonesia the highest prevalence is in Papua (7%), and the lowest in Bali (2.5%) and Central Java (3%).⁵ Numerous risk factors are strongly suspected to be the etiology of COPD. Another risk factor is genetic factors such as hereditary alpha 1 antitrypsin deficiency (AATD). These genes are involved in encoding matrix metalloproteinase 12 (MMP-12) and glutathione S transferase which are known to be associated with lung function or COPD risk.¹

Identifying and understanding the profile of COPD patients in one area are beneficial, in order to implement effective primary preventive strategy. Lack of descriptive profile data of one specific disease in one region may hinder the preventive approach to solved a health problem. This study was conducted to determine the profile of patients with COPD at Oksibil Regional Public Hospital, Gunung Bintang Regency, Papua.

MATERIAL AND METHODS

This study uses a descriptive model from COPD patients in Oksibil Hospital. This study conducted from January to December 2022. Total sampling was implemented in this study. The inclusion criteria were COPD patients at Oksibil Hospital, aged at least 18 years and willing to be respondents. Patients who did not meet the inclusion criteria were excluded. This study had been approved by Ethics Committee of Oksibil Regional Public Hospital, Papua, prior to the study being conducted.

Data acquisition obtained from primary data and secondary data. Primary data was obtained from direct interviews on participants with a questionnaire. The secondary data in this study were obtained through medical



record. The data obtained including gender, age of the patients, occupation, smoking status and use of firewood. Other data obtained related to the specific characteristic of COPD. These included the COPD assessment test (CAT), modified medical research council (mMRC), exacerbation rate in one year and main symptoms.

All data were analyzed descriptively. The age of the patients grouped into age category of 18-25 years, 26-40 years, 41-60 years and > 60 years. Smoking status divided into active and passive smoker. Data were presented in frequency and percentage, served in tables. All data were recorded and analyzed with Statistical Package for the Social Sciences (SPSS) version 21.

RESULTS

The results of this study showed that a total of 50 patients with COPD. Most of the patients were male (58%), while female was 42%. Most of patients were > 60 years old (36%), worked as farmers (42%). More than half of patients were active smoker (64%) and use firewood (80%) (Table 1).

Based on the CAT score, 66% of patients were with CAT score ≥ 10 and mMRC 2-4. As many as 82% of patients have ≥ 2 or ≥ 1 exacerbation in one year and requiring hospitalization. The main symptoms were shortness of breath (58%) and with GOLD D (60%) (Table 2).

DISCUSSION

The Global Burden of Disease Study reported a prevalence of 251 million cases of COPD globally in 2016. Globally, an estimated 3.17 million deaths were caused by this disease in 2015. More than 90% of COPD deaths occur in low and middle-income countries.³ The results of basic health research from 35 provinces in Indonesia showed the highest prevalence is in Papua Province (7%) and the lowest in Bali Province (2.5%) and Central Java Province (3%).⁵

This study showed that most of patients were male (58%). Based on the results of SUSENAS (National Socio-Economic Survey) in 2011 also showed that the prevalence of COPD dominantly was male (54%). This result is in line with research conducted by Firdausi and Nurul. They found that men suffer from COPD more and are 1.26 times more likely to suffer from COPD than women.⁶

Male tend to had COPD compared to female since more men smoke and are exposed to environmental exposures than women. This put them more prone to had COPD. This is in line with research conducted by Chapman et al, which found that 58% of COPD patients were men.⁷ The same study was also conducted by Zhong et al, which found that the incidence of COPD more commonly found in males (12.4%).⁸

This study obtained that most patients with COPD

were > 60 years old in age (36%). COPD often occurred in person > 40 years old of age. COPD commonly develop slowly and its symptoms becoming apparent after age of 40 or 50 years.⁹ This study also obtained that most of patients worked as farmers. Compared to other study, most of COPD patients worked as farmers, fisherman or laborer (4.7%).¹⁰ Other study also found that people lived in village have more tendency to have COPD. This finding associated with exposure related to agriculture.¹¹

Table 1. Demographic characteristics of COPD patients.

Characteristics	Value
Gender, n (%)	
Male	29 (58)
Female	21 (42)
Age, n (%)	
18-25 years	3 (6)
26-40 years	13 (26)
41-60 years	16 (32)
> 60 years	18 (36)
Occupation, n (%)	
Government employee	2 (4)
Private employee	9 (18)
Farmers	21 (42)
Housewives	14 (28)
Merchant	4 (8)
Smoking, n (%)	
Yes	32 (64)
No	18 (36)
Type of smoker, n (%)	
Active smoker	32 (64)
Passive smoker	18 (36)
Use of firewood, n (%)	
Yes	40 (80)
No	10 (20)

Table 2. COPD characteristics according to CAT, mMRC, exacerbation, main symptoms and GOLD criteria.

Characteristics	Value
CAT score, n (%)	
< 10	17 (34)
≥ 10	33 (66)
mMRC, n (%)	
0-1	17 (34)
2-4	33 (66)
Exacerbation in one year, n (%)	
0 or 1 time (not requiring hospitalization)	9 (18)
≥ 2 or ≥ 1 (requiring hospitalization)	41 (82)
Main symptoms, n (%)	
Shortness of breath	39 (58)
Cough	21 (42)
GOLD criteria, n (%)	
GOLD A	6 (12)
GOLD B	3 (6)
GOLD C	11 (22)
GOLD D	30 (60)

CAT, COPD assessment test; GOLD, global initiative for chronic obstructive lung disease; mMRC, modified medical research council

A study conducted by Zhong et al⁸ found that 60.4% of COPD patients have history of smikong, while other study by Goran et al¹² found that 51.6% of COPD patients have history of smoking. In line with this study, the result of this study found that 64% have history of smoking and were active smoker. The main risk factor of COPD is smoking. Research conducted by Landis in 2014 showed that active smoker in COPD patients was 28%, ex-smoker was 37% and none was 36%.¹³ Male had the highest prevalence of smoking. Smoking behavior in Indonesia in the population aged > 15 years tends to increase from 34.2% in 2007 to 36.3% in 2013. It was found in 2013 that active smokers were 64.9% in men and 2.1 % in women.¹⁰ With the increasing prevalence of smoking in developing countries and the elderly population in high-income countries, the prevalence of COPD is expected to increase over the next 40 years and by 2060 there may be more than 5.4 million deaths annually from COPD.^{14,15}

The characteristic obtained from this study showed

that 80% of COPD patients use firewood. Based on the survey results, it was found that the reason people use firewood is because of the cold environmental conditions. The average temperature in Oksibil ranges from 14.7°-26.8°. Ninety percent of the area is located in mountainous highlands with an altitude of 400 to 4000 meters.¹⁷ These environmental factor make people have to use firewood as warmer. Research conducted by Zhang et al found that 41.5% of COPD sufferers cooked using firewood and found that people who cooked with firewood had worse health.¹⁸

Environmental factors are known to play a role in the occurrence of COPD. These factors include indoor pollution such as cigarette smoke, stove smoke, firewood smoke and others. Indoor air pollution from burning biomass fuels and outdoor air pollution can interact additively with individual risk factors thereby increasing the incidence of COPD.¹⁹ Cooking with poor kitchen ventilation, e.g., exposure to wood fuel fumes and oil fuel fumes is estimated to contribute



up to 35%.²⁰

In this study, patients with CAT score < 10 was 17 patients (34%) and CAT score ≥ 10 was 33 patients (66%). The same results were also obtained in the study conducted by Manihuruk et al. who found that there were 60 people with COPD with a CAT value of 10 (60%) while a CAT value of < 10 was 40 people (40%).²¹ Research conducted by Huang et al found that patients with COPD with CAT score 10 and mMRC 2 were older and had more complaints of shortness of breath such as wheezing, more severe airway obstruction, less FEV1 and FVC, less airflow limitation.²²

In accordance to the exacerbation rate found in this study, other study also found similar result. A study conducted by Manihuruk et al found that 55 (55%) of COPD patients were hospitalized once or more.²¹ COPD exacerbations often lead to an increase in use of health resources.²³ For example, mild exacerbations can often be managed at home but may require increased use of reliever medications, such as inhaled bronchodilators, moderate exacerbations require antibiotics or corticosteroids, and severe exacerbations require hospitalization.²³

Research conducted by Manihuruk et al found that patients with the GOLD D category were more frequently found.²¹ Research conducted by Han et al found that there was a relationship between COPD symptoms and quality of life of patients based on examinations. CAT and the degree of shortness of breath mMRC to the degree of obstruction and risk of exacerbation.²⁴ While this study obtained that most main symptoms which make patients come was shortness of breath, other study also obtained similar results, in which 72.5% of main symptoms in COPD patients that make them seek medical treatment was shortness of breath.²⁵

This study also subjected to several limitations. This study identified demographic characteristics and severity characteristic with the use of exacerbation rate, CAT score and mMRC. However, characteristic of lung function in COPD patients were not studied. Limited resources in this setting hinder more robust exploration in this population. Furthermore, other comorbid could contribute to the occurrence of COPD. Further study may implement these issues to enhance the exploration of COPD profile in this region.

CONCLUSION

Most patients with PPOK in Oksibil was male, aged > 60 years old. Most of them worked as farmers and had history of smoking and use firewood. Most of them were with CAT score ≥10 and mmRC 2-4. Most of them were with GOLD D category.

CONFLICT OF INTEREST

The authors report no conflicts of interest regarding this study.

ETHICS CONSIDERATION

Ethics approval has been obtained from the Ethics Committee of Oksibil Regional Public Hospital, Papua, prior to the study being conducted.

FUNDING

None.

AUTHOR CONTRIBUTIONS

All authors equally contribute to the study from the conceptual framework, data acquisition, data analysis, and reporting the study results through publication.

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