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The Relationship Between Smoking Habits And The Incidence Of Chronic Obstructive Pulmonary Disease (COPD) In Adult Males In The Working Area Of Public Health Center X

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a chronic disease that is a public health problem with a continuously increasing prevalence. Smoking is a major risk factor for COPD, especially in adult men. This study aims to determine the relationship between smoking and COPD incidence in adult men in the working area of Community Health Center X.

This study used an analytical quantitative design with a cross-sectional approach. The study sample consisted of 60 adult male respondents, selected using a purposive sampling technique. Data were collected using a smoking habits questionnaire and COPD diagnosis data from medical records. Data analysis used the Chi- Square test.

The results showed a *p value = 0.001 (<0.05)* which means there is a significant relationship between smoking habits and the incidence of COPD.

The conclusion of this study is that smoking habits are closely related to the increasing incidence of COPD in adult men.

Keywords: Smoking, COPD, Adult Men

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1. Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a lung disease characterized by progressive, non-reversible airflow limitation. COPD is a leading cause of morbidity and mortality worldwide. World Health Organization the World Health Organization (WHO) stated that COPD is among the top three causes of global death.

The main risk factor for COPD is smoking. Continuous exposure to cigarette smoke can cause chronic inflammation of the airways and damage lung tissue. In Indonesia, the prevalence of smoking among adult males remains very high, thus increasing the risk of COPD.

The work area of Community Health Center X shows an increase in patient visits with complaints of chronic shortness of breath and phlegmy coughs, which suggest COPD. Therefore, research is needed to determine the relationship between smoking habits and the incidence of COPD in adult men.

2. Research Methods

a. Research Design

This study used a quantitative analytical design with a cross-sectional approach. This design was used to determine the relationship between smoking habits and COPD incidence in adult men at the same time.

b. Location and Time of Research

The study was conducted in the working area of Community Health Center X in May–June 2025. The location was selected based on the high prevalence of adult male smokers and the increasing cases of chronic respiratory disorders.

c. Population and Sample

The population in this study was all adult males who resided in the working area of Health Center X.

The sample size was 60 respondents, which was determined using purposive sampling technique.

Inclusion Criteria

- Men aged ≥30 years
- Have a history of smoking or not smoking
- Domiciled in the working area of Health Center X
- Willing to be a respondent by signing the informed consent consent

Exclusion Criteria

- Have a history of congenital lung disease
- Have a history of occupational exposure to hazardous chemicals or dust
- Experiencing acute respiratory tract infection during the study

d. Research Variables

- Independent variable: Smoking habits

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- Dependent variable: Incidence of Chronic Obstructive Pulmonary Disease (COPD)

e. Operational Definition of Variables

Variables	Operational Definition	Measuring instrument	Scale
Smoking habit	Respondents' smoking history and patterns	Questionnaire	Nominal
COPD	COPD diagnosis by medical personnel	Medical records	Nominal

f. Research Instruments

The research instruments used include:

- Smoking habits questionnaire, which includes:
  - Smoking status (smoker/non-smoker)
  - Duration of smoking (years)
  - Number of cigarettes per day
- Observation sheet/medical record to determine respondent's COPD status

g. Research Procedures

1) Processing research permits to relevant agencies
2) Explanation of research objectives and procedures to respondents
3) Informed filling consent
4) Data collection through interviews and questionnaires
5) Recording of COPD diagnosis data from community health center medical records

h. Data collection technique

- Primary data was obtained through questionnaires and direct interviews.
- Secondary data was obtained from medical records and health center reports.

i. Data Analysis Techniques

- Univariate analysis to determine the frequency distribution of respondent characteristics
- Bivariate analysis using the Chi- Square test to determine the relationship between smoking habits and the incidence of COPD.

The significance level used is $\alpha = 0.05$.

j. Research Ethics

This research was conducted in accordance with the ethical principles of health research, including:

- informed consent consent)
- Confidentiality of respondent identity and data
- Respondent's right to withdraw at any time

3. Research Results And Discussion

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a. Results

1) Respondent Characteristics

This study involved 60 adult male respondents.

Table 1. Respondent Characteristics

Characteristics	Category	f	%
Age	30–45 years	24	40.0
	>45 years	36	60.0
Smoking Status	Smoker	38	63.3
	Non-Smoker	22	36.7
COPD incidents	COPD	29	48.3
	No COPD	31	51.7

Interpretation:

Most respondents were aged >45 years and had a smoking habit. Nearly half of respondents were diagnosed with COPD.

2) Respondents' Smoking Habits

Table 2. Distribution of Smoking Habits

Smoking Habit	f	%
Light smoker	10	26.3
Moderate smoker	16	42.1
Heavy smoker	12	31.6
Total	**38**	**100**

Interpretation:

The majority of respondents fall into the moderate and heavy smoker category, indicating long-term exposure to cigarette smoke.

3) The Relationship Between Smoking Habits and the Incidence of COPD

Table 3.
Relationship between Smoking Habits and COPD Incidence

Smoking Habit	COPD	No COPD	Total	p- value
Smoker	25	13	38	
Non-smoker	4	18	22	
Total	**29**	**31**	**60**	**0.001**

Interpretation:

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The results of the Chi-Square test show a *p value = 0.001 (< 0.05)*, which means there is a significant relationship between smoking habits and the incidence of COPD.

4) Summary of Research Results

The results of the study showed that respondents with smoking habits had a higher risk of experiencing COPD compared to respondents who did not smoke.

b. Discussion

The results of this study indicate a significant relationship between smoking habits and the incidence of COPD in adult men in the working area of Health Center X. Respondents who have a smoking habit, especially moderate and heavy smokers, experience more COPD compared to respondents who do not smoke.

Smoking is a major risk factor for COPD due to the harmful substances contained in cigarettes, such as nicotine, tar, and carbon monoxide. Continuous exposure to these substances can cause chronic inflammation of the airways, damage to lung tissue, and progressive decline in lung function.

The results of this study align with the pathophysiological theory of COPD, which states that chronic irritation from cigarette smoke causes airway remodeling and alveolar damage. This condition results in permanent airflow obstruction.

The majority of respondents were over 45 years old, indicating that age plays a role in increasing the risk of COPD. The longer a person smokes, the greater the likelihood of lung damage.

The findings of this study also align with previous studies that suggest that active smokers have a higher risk of developing COPD than non-smokers. This strengthens the evidence that COPD prevention efforts should focus on controlling smoking habits.

However, a small proportion of non-smokers still have COPD. This is likely due to other factors such as exposure to secondhand smoke, air pollution, or a history of previous respiratory infections.

4. Conclusion And Suggestions

a. Conclusion

Based on the results of the research and discussions that have been carried out, the following conclusions can be drawn:

1) Most of the respondents in this study were adult males aged over 45 years and had a smoking habit.
2) Nearly half of respondents were diagnosed with Chronic Obstructive Pulmonary Disease (COPD).

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3) The results of the statistical analysis showed a *p value = 0.001 (< 0.05)*, which means there is a significant relationship between smoking habits and the incidence of COPD in adult men in the work area of Health Center X.
4) Adult men who have a smoking habit, especially moderate and heavy smokers, have a higher risk of developing COPD compared to non-smokers.

Thus, it can be concluded that smoking is the main risk factor for COPD in adult men.

b. Suggestion

Based on the research conclusions, the researcher provides several suggestions as follows:

1) For Community Health Centers
   - Increase smoking cessation education and counseling programs for the community, especially adult men.
   - Perform early screening for COPD in active smokers to prevent further complications.
2) For the Community
   - It is hoped that the public, especially adult men, can reduce and stop smoking habits to reduce the risk of COPD.
   - Avoid exposure to secondhand smoke and air pollution.
3) For Health Workers
   - Health workers are expected to be more active in providing health promotion related to the dangers of smoking and COPD prevention.
   - Increasing the role in early detection and education on COPD management.
4) For Further Researchers
   - Further research is recommended to use a cohort or longitudinal design to understand the causal relationship in more depth.
   - It is necessary to consider other variables such as duration of smoking, Brinkman index, exposure to secondhand smoke, and environmental factors.

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