

The correlation between compliance with medication using the mmas-8 method and the quality of life of chronic obstructive pulmonary disease (COPD) patients using the copd assessment test (cat) at Kolonel Abundjani General Hospital

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Abstract

Introduction: Chronic obstructive pulmonary disease (COPD) is a common respiratory condition that causes symptoms to get worse over time. Patient compliance with prescribed treatment is one of the factors considered to determine the success of symptom management which can improve quality of life.

Method: The design of this research is observational analytic with a cross-sectional approach. Research subjects were taken from patients who visited the outpatient clinic at the Kolonel Abundjani General Hospital in January - June 2023. The quality of life of COPD patients was assessed using the COPD Assessment Test (CAT) and medication adherence using the 8-item Morisky Medication Adherence Scale-8 (MMAS- 8).

Results: There were 149 subjects who met the inclusion and exclusion criteria. This number consists of 137 men, and 12 women. The largest age group was 56 – 65 years 73 people, and complaints were divided between coughing 88 people and shortness of breath 61 people. Group A had 15 people, group B had 44 people, and group E had 90 people. The results of CAT in COPD patients were 52 people with a score of < 10 and 97 people with a score of ≥ 10, while the results for MMAS-8 showed 64 people with a score of < 6 and 85 people with a score of ≥ 6. The Spearman test showed a significant correlation between CAT and MMAS-8 with a value of $p = 0.000$ ($p < 0.05$) and $r = 0.794$.

Conclusion: The research shows that there is a significant correlation between CAT and MMAS-8 in COPD patients at Kolonel Abundjani Hospital, with a value of $p = 0.000$ ($p < 0.05$) and $r = 0.794$ which indicates a strong positive correlation between non-compliance with drinking medication and decreased quality of life in COPD patients.

Keywords: Chronic Obstructive Pulmonary Disease, medication adherence, COPD Assessment Test, Morisky Medication Adherence Scale-8 (MMAS-8)

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common respiratory condition with increasing symptoms. Although this disease cannot be reversed, we may reduce the burden of illness and improve our quality of life by treating ourselves properly. (1) Chronic obstructive pulmonary disease affects about 384 million individuals globally, with more than half of COPD patients undiagnosed. (2) Chronic obstructive pulmonary disease is the third-highest cause of death globally, accounting for 3.23 million deaths in 2019, according to the World Health Organization (WHO). (3)

Chronic obstructive pulmonary disease is a systemic condition that is more frequent in those who have previously smoked. (4) Many disorders and risk factors have been linked to chronic obstructive pulmonary disease, including genetic factors, smoking, infections, malnutrition, age, certain occupational exposures, indoor and outdoor air pollution, asthma, and low socioeconomic status. (1) Spirometry, especially the FEV_1/FVC value of 0.7 post-bronchodilator, should be used to validate the diagnosis of COPD based on the GOLD ABE Assessment Tool. The FEV_1 result from spirometry will subsequently be used to classify air flow blockage into four levels:

GOLD 1, GOLD 2, GOLD 3, and GOLD 4. (5)

The COPD Assessment Test (CAT) questionnaire may be used to assess the health condition of COPD patients in a variety of ways. The lower the CAT score, the fewer the patient's symptoms. If the readings are low, the patient may require less therapy or the COPD disease may be adequately managed. The COPD is then divided into groups A, B, and E based on the CAT score and history of illness exacerbations, using the GOLD ABE Assessment Tool. (5)

As with other chronic illnesses, various aspects must be addressed when managing COPD symptoms, one of which is patient adherence to prescribed therapy. However, studies reveal that many people with chronic conditions do not take drugs as prescribed by their doctors. You may also use the Morisky Medicine Adherence Scale-8 (MMAS-8) questionnaire to examine compliance with the use of this medicine. (6)

Because there is little research on adherence to therapy for chronic diseases, particularly COPD, researchers are interested in collecting data on disease characteristics and medication adherence in patients with COPD at Kolonel Abundjani Bangko Hospital, one of the referral hospitals in Merangin Regency, Jambi Province.

METHOD

This study is an analytical observational study using a cross-sectional approach that was conducted on COPD patients at Kolonel Abundjani Bangko Hospital in Merangin Regency, Jambi Province, Indonesia. From January to June 2023, all COPD patients who visited the Kolonel Abundjani Bangko Hospital were included in the research. Chronic obstructive pulmonary disease individuals with other concomitant pulmonary illnesses were eliminated by the researchers. Characteristic data were acquired at the Kolonel Abundjani Bangko Regional Hospital utilizing medical record data. The patient was then diagnosed, and

the COPD Assessment Test (CAT) questionnaire as well as the Morisky Medication Adherence Scale-8 (MMAS-8) were administered. The findings of the CAT and MMAS-8 questionnaires, as well as the patient demographic data (age, gender, and major complaint), were recorded and gathered using the Microsoft Excel software, and were then analyzed using the Statistical Product and Science Service (SPSS) version 25 program.

Univariate analysis is used in data analysis and presentation to study the features of one variable using descriptive analysis. If the numerical data was normally and homogeneously distributed, bivariate analysis was conducted to assess whether there was a link between the CAT score and the MMAS-8 score using the Pearson Test. If the data is not normally and homogeneously distributed, an ordinal measurement scale can be used to perform the Spearman Test.

RESULTS

After screening samples based on inclusion and exclusion criteria, 149 patients were diagnosed and re-controlled at the Lung Polytechnic of Kolonel Abundjani Hospital from January to June 2023. Table 1 shows that 137 people (91.9%) were male, and 12 people (8.1%) were women. The age of the patients also varies quite widely, focusing on adults and the elderly: 5 people (3.5%) aged 36–45 years, 24 people (16.1%) aged 46–55 years, 73 people (48.9%) aged 56–65 years, and 47 people (31.5%) aged > 65 years. The Symptoms of patients who came included Chronic cough as many as 88 people (59.1%), and Dyspnea as many as 61 people (40.9%). COPD patients diagnosed and controls at the Pulmonary Clinic were grouped into A, B, and E according to the GOLD ABE Assessment Tool. Table 2 shows that 15 people (10.1%) were in group A, 44 people (29.5%) were in group B, and 90 people (60.4%) were in group E.

Table 1 Characteristics of COPD patients at the Kolonel Abundjani Hospital

Characteristics	N=149
Gender, n (%)	
- Men	137 (91.9)
- Women	12 (8.1)
Age, n (%)	
- ≤ 35 year	0 (0.0)
- 36-45 year	5 (3.5)
- 46-55 year	24 (16.1)
- 56-65 year	73 (48.9)
- > 65 year	47 (31.5)
Symptoms, n (%)	
- Dyspnea	88 (59.1)
- Chronic cough	61 (40.9)

Table 2 Distribution of COPD groups among COPD patients at Kolonel Abundjani Hospital

COPD Group	n	%
- A	15	10.1
- B	44	29.5
- E	90	60.4
- Total	149	100

The CAT questionnaire is used to differentiate the symptoms of COPD patients. A score < 10 indicates fewer clinical symptoms, while a score of more than ≥ 10 indicates clinical symptoms with more severe symptoms. Table 3 shows that there were 52 people (34.9%) with CAT results < 10, and 97 people (65.1%) with CAT results ≥ 10.

Table 3 Distribution of CAT results in COPD patients at Colonel Abundjani Hospital

CAT	n	%
- < 10	52	34.9
- ≥ 10	97	65.1
- Total	149	100

The MMAS-8 questionnaire to assess adherence to medication use is divided into adherent and non-adherent categories. Patients are considered compliant if the questionnaire result is < 6, while a result of ≥ 6 indicates a patient who is not compliant with taking medication. Table 4 shows that 64 people (43.0%) adhered to medication

use, and 85 people (57.0%) did not adhere to medication use.

Table 4 Distribution of MMAS-8 results in COPD patients at Colonel Abundjani Hospital

MMAS-8	n	%
- Adhered	64	43
- Did not adhere	85	57
- Total	149	100

Table 5 shows the correlation between CAT and MMAS-8 in COPD patients at Kolonel Abundjani Hospital. Based on the Spearman correlation test, the results showed that there was a significant correlation between CAT and MMAS-8, namely $p = 0.000$ ($p < 0.05$). The value of $r = 0.794$ shows a positive correlation, which means that non-compliance with taking medication will be followed by a decrease in the quality of life of COPD patients with a strong correlation strength.

Table 5 Correlation between CAT and MMAS – 8 COPD patients at Kolonel Abundjani Hospital

	MMAS-8
CAT	n = 149 p = 0.000 r = 0.794

Uji Korelasi *Spearman*, $p < 0,05$

DISCUSSION

Based on the results of this research, it was found that the number of male respondents was greater, namely 137 people (91.9%) men and 12 people (8.1%) women. This is in accordance with a study conducted by Dalimunthe RA and Arbaningsih SR in Medan, which showed that the prevalence of male COPD patients was 96.7% while that of females was only 3.3%. (7) Also, in accordance with research by Zhang H et al, the number of men with COPD is 64.2% and that of women is 35.8%. (8) However, COPD in adults in the United States, according to data from the Centers for Disease Control and Prevention (CDC) in 2020, shows that the prevalence

of women is greater than that of men from 2011 to 2020. (9)

According to the WHO, smoking accounts for more than 60–70% of COPD cases, while air pollution accounts for 30–40%. (5) Other risk factors vary, ranging from biomass exposure, workplace exposure, passive smoking, a history of asthma, tuberculosis, or respiratory tract infections in childhood. (10)

The largest age group was found in the 56–65 year group, namely (48.9%), followed by the age group > 65 years (31.5%), 46–55 years (16.1%), and 36–45 years (3.5%). Approximately 50% of patients experience COPD due to an accelerated decline in FEV₁ over time, while the other 50% experience COPD due to abnormal lung growth and development (with a decrease in normal lung function over time). (5)

Patients with COPD usually complain of shortness of breath, wheezing, chest tightness, fatigue, limited activity and/or coughing with or without phlegm production and may experience acute respiratory events characterized by worsening acute respiratory symptoms called exacerbations. 5 The results of this study found Patients came with the main complaints of coughing (59.1%), and shortness of breath (40.9%). To diagnose severity and provide appropriate treatment, a spirometry examination is needed. The incidence of misdiagnosis and drug administration is greatest in Africa and Southeast Asia due to the availability and inappropriate use of spirometry. (11)

Diagnosed patients will be grouped according to the GOLD ABE Assessment Tool. Based on the GOLD 2023 criteria groups A and B remain unchanged, while groups C and D are now combined into one group E. The largest number of respondents in this study was group E, namely 90 people (60.4%). In accordance with research by Yang T et al in 2022, which showed that the number of COPD patients in type B hospitals with groups C and D was 52.7%, while group B was 38.2% and group A was 9.1% using the 2017 GOLD classification.

Using the 2016 GOLD classification, it was found that groups C and D were 74.9%, group B 18.9%, and group A 6.2%. Indirectly, grouping using GOLD 2016, 2017, and 2023 does not have too much difference in results. (12)

CAT is used to differentiate the symptoms of COPD patients. There were more respondents with CAT results < 10, namely 52 people (34.9%), and 97 people (65.1%) with CAT results ≥ 10. This is in line with the average score of CAT in COPD patients, which was 14.6, which means ≥ 10.¹² The Morisky Medication Adherence Scale-8 (MMAS-8) is an empirically validated assessment tool for measuring non-adherence in various patient groups. A high level of compliance is given an MMAS-8 score of 8, moderate compliance is given a score between 6 and 8, and poor compliance is given a score of less than 6. Patients with a poor level of compliance are considered to not be taking medication as prescribed.¹³ Compliance with medication use in This study was measured by MMAS-8, where 43.0% of patients adhered to medication use and 57.0% did not comply. Several studies have examined adherence to treatment in COPD patients, with reports of medication adherence rates ranging from 22.3% to around 60%. (14)

The test using Pearson in Moradkhani B research in 2021 shows that the p-value of the relationship between MMAS-8 and CAT is < 0.001. 15 In accordance with the results of this study, there is a significant correlation between CAT and MMAS-8, namely $p = 0.000$ ($p < 0.05$). Understanding the factors associated with medication nonadherence can provide patients with options for appropriate treatment. These factors include socioeconomics, family support, unemployment, low income, low education, living alone, comorbidities, smoking status, and other factors. (16) In clinical practice, interventions that can be carried out to increase patient compliance include providing education about the disease suffered by patients, implementing motivational interventions for patients and

families who care for them, and suggesting a medication monitoring system. (14)

Our study is an observational cross-section that evaluates all factors that influence medication adherence. However, among the factors above, instructions on how to use the inhaler device are given every visit and continuously. The positive effect of continuous inhaler training on medication adherence has been demonstrated in several cohort studies involving COPD patients.(17,18) However, we were unable to evaluate this effect due to limitations related to our study design.

CONCLUSION

The results of the study showed that there was a significant correlation between CAT and MMAS-8 in COPD patients at Kolonel Abundjani Hospital, with a value of $p = 0.000$ ($p < 0.05$) and $r = 0.794$, which indicated a strong positive correlation between non-compliance with taking medication and decreased quality of life in COPD patients.

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