CHARACTERISTICS OF ACUTE ASTHMA PATIENTS BASED ON VISITS TO THE EMERGENCY UNIT AND TREATMENT COSTS IN JAKARTA ISLAMIC HOSPITAL PONDOK KOPI

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ABSTRACT

Proper handling of asthmatics can maintain the patient's quality of life. Visits of asthmatic patients to the Emergency Department (ER) indicate uncontrolled asthma and a marker of risk for future asthma exacerbations. Uncontrolled asthma can increase health costs, the risk of hospitalization, and can also cause death. This research at to determine the relationship of acute asthma patients who visit the emergency department with costs of treatment. Analytical descriptive research with cross-sectional study design. The population of this study was acute asthma sufferers who went to the emergency department of RSII Pondok Kopi in the period August 1, 2016 – August 1, 2017, and all of the population was used as a sample of 35 people. Data collection is done by studying the documentation of medical record data. The results showed 32.4% of respondents aged 41-49 years, 62.9% were female and had a high school education level (SMA), 40% of respondents were housewives (IRT), 65.7% had acute asthma. moderate, and the most precipitating factor is respiratory tract infection. Most visits to the ER were 30 patients (85.7%) with 1 visit and not accompanied by complications. The results of the highest treatment costs ranged from Rp. 300,000 – Rp. 400,000 as many as 22 patients (62.9%) with guaranteed treatment used were non-BPJS. The costs incurred by each acute asthma patient with 1 visit to the ER are lower than 2 times or more than 2 visits. It was also found that the number of acute asthma patients with complications was greater in costs than those without complications.

Keywords: *Acute Asthma, Emergency Department Visit, Costs of Treating Acute Asthma.*

INTRODUCTION

Asthma is a heterogeneous disease that is usually characterized by chronic inflammation of the airways and there is a history of respiratory symptoms such as wheezing, shortness of breath, chest tightness, and coughing that vary over a long period, along with airway narrowing. prevent triggering factors and proper management of asthma can be controlled so that the patient's quality of life can be maintained.

According to GINA 2017 data from various countries shows that the prevalence of asthma ranges from 1-18%¹. Based on the World Health Organization (WHO), Around 235 million people currently suffer from asthma, there were 383,000 deaths in 2015, most of the deaths related to asthma occurred in low-income and lower-middle-income countries.² According to Riskesdas in 2013, the prevalence of asthma in Indonesia obtained 4.5% of the entire population of Indonesia. If projected by the population of Indonesia in 2013 which amounted to more than 248 million people, then the number of asthma patients in Indonesia is more than 11 million people.³

The risk factors for asthma are host factors, environmental factors, and precipitating factors. Environmental factors are trigger factors for asthma in adults consisting of allergens, respiratory infections, occupational (work environment sensitization), smoking/smoking habits, gastroesophageal reflux, and air pollution.^{4,5} Precipitating factors can lead to asthma attacks. According to the Indonesian Lung Doctors Association (PDPI), asthma attacks are divided into 4 degrees, namely mild, moderate, severe, and life-threatening acute asthma.

Asthma-related hospitalizations and emergency department visits can indicate the presence of uncontrolled asthma and serve as a marker for an increased risk of asthma exacerbations in the future.⁶ Frequent and uncontrolled asthma can lead to a decrease in productivity and quality of life of the community, as well as an increase in the prevalence of asthma. health costs, the risk of hospitalization and can also cause death.⁷

METHODS

This study is a descriptive-analytic study with a cross-sectional study design to see the description of acute asthma patients and an analysis of the number of visits to the ER with the amount of treatment costs. This research was conducted at RSII Pondok Kopi in October–November 2017.

The population in this study were patients with acute asthma who went to the emergency department of RSIIJ Pondok Kopi in the period August 1, 2016 – August 1, 2017. In this study, 35 patients were obtained using the total sampling technique, meaning that all populations that fit the acceptance criteria (inclusion) were sampled. study. Data retrieval comes from the asthma register book and medical record data. Calculation analysis using SPSS 23.

RESULTS AND DISCUSSIONS

Table 1 shows the characteristics of acute asthmatic patients. In this study, there were more female patients with a total of 22 patients (62.9%) than patients of the male sex which had 13 patients (37.1%). For the age category, 41 – 49 years is the largest age group with 11 patients (31.4%), followed by the age group 50 – 58 years with 9 patients (25.7%), the age group 32 – 40 years with a total of 6 patients (17.1%), the age group 14-22 years with a total of 5 patients (14.3%), the age group 59-67 years with a total of 3 patients (8.6%), the age group 68-76 years with the number of 1 patient (2.9%), and not found in the age group 23-31 years.

Table 1. Characteristics of Acute Asthma Patients Treated at the Emergency Room of RSIIJ Pondok Kopi Period 1 August 2016 – 1 August 2017

Characteristics	N (35)	%
Gender		
Men	13	37.1
Women	22	62.9
Ages		
14-22	5	14.3
23-31	0	0
32-40	6	17.1
41-49	11	31.4
50-58	9	25.7
59-67	3	8.6
68-76	1	2.9
Educations		
Elementary School	2	5.7
Junior High School	5	14.3
Senior High School	22	62.9
Diploma-3	2	5.7
Bachelor of Degree	4	11.4
Profession		
Student	3	8.6
College Student	1	2.9
Housewife	14	40.0
Entrepreneur	4	11.4
Private Employees	10	28.6
Government Employees	1	2.9
Retired	2	5.7

Classification of Degrees of Acute Asthma		
Mild Acute Asthma	12	34.3
Moderate Acute Asthma	23	65.7
Severe Acute Asthma	0	0
Life-threatening Acute Asthma	0	0

For the education category, senior high school is the highest level of final education with 22 patients (62.9%), followed by junior high school with 5 patients (14.3%), undergraduate degree with 4 patients (11.4%), an elementary school with a total of 5 patients. 2 patients (5.7%) and D3 with a total of 2 patients (5.7%). For the occupational category, housewives were the most active with 14 patients (40.0%), followed by private employees with 10 patients (28.6%), entrepreneurs with 4 patients (11.4%), students with 3 patients (8.6%), retirees with 2 patients (5.7%), students with 1 patient (2.9%) and civil servants with 1 patient (2.9%). For the category of acute asthma degree classification, moderate acute asthma was the most acute asthma degree with 23 patients (65.7%), followed by mild acute asthma with 12 patients (34.3%) and no patient had asthma degree severe acute and life-threatening.

Based on Table 2. The trigger factors for acute asthma in the form of inhaled allergens were 1 patient (2.9%), pollutants and irritants were 8 patients (22.9%), respiratory tract infections were 12 patients (34.3%), cigarette smoke (active and passive) there were 2 patients (5.7%), physical activity was 3 patients (8.6%), weather changes were 7 patients (20.0%), and in the form of food, there were 2 patients (5.7%).

Table 2. Frequency Distribution of Asthma Trigger Factors in the Form of Inhaled Allergens, Pollutants & Irritants, Respiratory Tract Infections, Cigarette Smoke (Active and Passive), Physical Activity, Weather Changes, and Food

Asthma attack triggers	Number of Patients				Number
	yes (n)	(%)	no (n)	(%)	
Inhaled allergens	1	2.9	34	97.1	35
Pollutants and irritants	8	22.9	27	77.1	35
Respiratory tract infection	12	34.3	23	65.7	35
Cigarette smoke (active and passive)	2	5.7	33	94.3	35
Physical activity	3	8.6	32	91.4	35
Changes in the weather	7	20.0	28	80.0	35
Food	2	5.7	33	94.3	35

Based on Table 3. there were 30 patients (85.7%) with acute asthma who visited the ER RSII Pondok Kopi 1 time, then there were 4 patients (11.4%) with acute asthma who visited the ER of RSII Pondok Kopi 2 times and there was 1 patient (2.9%) with acute asthma who visited the emergency department of RSII Pondok Kopi more than 2 times.

Table 3. Frequency distribution of visits to acute asthma patients receiving treatment at the emergency department of RSIJ Pondok Kopi

The number of visits of acute asthma patients in the ED	Number of patients	
	(n)	(%)
1 time	30	85.7
2 times	4	11.4
More than 2 times	1	2.9
Jumlah	35	100.0

Based on table 4. there were 8 patients (22.9%) with acute asthma who went to the emergency department of RSIJ Pondok Kopi with complications, while there were 27 patients with acute asthma who went to the emergency department of RSIJ Pondok Kopi without complications (77.1%).

Table 4. Distribution of Complications Frequency in Acute Asthma Patients Treating the ER at RSIJ Pondok Kopi

Complications of acute asthma patients in the emergency department of RSIJ Pondok Kopi	Number of patients	
	(n)	(%)
With complication	8	22.9
Without complication	27	77,1
Amount	35	100.0

Based on table 5, there are 22 patients (62.9%) who are charged for acute asthma treatment in the ER RSIJ Pondok Kopi amounting to 300-400 thousand, followed by 7 patients (20.0%) who are charged for acute asthma treatment in the ER of Rp. 900 thousand-1 million, 3 patients (8.6%) were charged 100-200 thousand, 2 patients (5.7%) were charged 700-800 thousand and 1 patient (2.9%) was charged costs of 500-600 thousand.

Table 5. Frequency Distribution of Treatment Costs for Acute Asthma Patients who seek treatment at the ER at RSIJ Pondok Kopi

The cost of treating acute asthma patients in the ER RSIJ Pondok Kopi	Number of patients	
	(n)	(%)
100 - 200 thousand	3	8.6

300 - 400 thousand	22	62.9
500 - 600 thousand	1	2.9
700 - 800 thousand	2	5.7
900 thousand - 1 million	7	20.0
Amount	35	100.0

Based on table 6, there are 22 patients (62.9%) with acute asthma who seek treatment at the emergency department of RSIJ Pondok Kopi using Non-BPJS health insurance. While acute asthma patients who use BPJS health insurance are 13 patients (37.1%).

Table 6. Frequency Distribution of Health Insurance Used by Acute Asthma Patients in the ER at RSIJ Pondok Kopi

Health insurance used by acute asthma patients in the ER RSIJ Pondok Kopi	Number of patients	
	(n)	(%)
Non-BPJS	22	62.9
BPJS	13	37.1
Amount	35	100.0

Based on table 7, shows that the number of acute asthma patients who visited the ER for 1 visit was more than 2 visits or more than 2 visits and the highest cost charged to acute asthma patients for treatment was Rp. 300,000 – Rp. 400,000, -/person. In addition, a statistically significant relationship was found between the number of visits to the emergency room at RSIJ Pondok Kopi (P-value = 0.021) and the amount of treatment costs because the p-value is based on the results of calculations using the Chi-Square test was <0.05.

Table 7. Relationship between the number of visits and the amount of treatment costs in patients with acute asthma who seek treatment at the ER RSIJ Pondok Kopi

<i>Chi-Square Test</i>	Visit Rate			P
	1 time	2 times	> 2 times	
Treatment cost				
100 - 200 thousand	3	0	0	0,021
300 - 400 thousand	22	0	0	
500 - 600 thousand	1	0	0	
700 - 800 thousand	1	1	0	
900 thousand – 1 million	3	3	1	
Amount	30	4	1	

Based on table 8. shows that patients with acute asthma who visited the ER were more commonly found in patients without complications as many as 27 patients compared to patients with complications

as many as 8 patients. Meanwhile, in acute asthma patients with complications, the costs incurred are greater than those without complications. The data also shows a statistically significant relationship between the cost of treatment with acute asthma patients with complications and without complications (P-value = 0.000) in the ER RSIJ Pondok Kopi because of the p-value <0.05. The results of the Mann-Whitney test based on the table above also showed a statistically significant difference between the amount of treatment costs for acute asthma patients with complications and those without complications (p-value = 0.000) because the p-value showed < 0.05.

Table 8. Relationship and Comparison of the Cost of Treatment for Acute Asthma Patients with Complications and those without Complications in the ER at RSIJ Pondok Kopi

<i>Chi-Square & Mann-Whitney Test</i>	Visit Rate		P
	(+)	(-)	
Biaya Pengobatan			
100 - 200 thousand	0	3	0,000
300 - 400 thousand	0	22	
500 - 600 thousand	1	0	
700 - 800 thousand	1	1	
900 thousand – 1 million	6	1	
Amount	8	27	

The results of this study found that acute asthma was more common in female patients (62.9%) compared to male patients (37.1%) at RSIJ Pondok Kopi in the period 1 August 2016 – 1 August 2017. This study is in line with the research of Sari Rahmawati et al. Asthma is more common in women, amounting to 59 people (56.2%) than men, amounting to 46 people (43.8%).⁸ Based on Trawick's research, women suffer from asthma more often because it is strongly suspected by the influence of hormones, airway size, and other factors. socioeconomic. Women are treated more often than men because women are more often infected with viruses, nitrogen oxidants, household irritants, and aero-allergens.⁹

In this study, it was also found that cases of acute asthma were more common in the 41-49 year age group (31.4% of acute asthma cases in the study period). These results are by the research of Demas Nico et al. that the highest incidence of acute asthma attacks is in the age group 40-49 years (27.78%).¹⁰ This study tends to be by the research of Galih Lidya et al. The highest results were obtained in the age group of 30-39 years as many as 17 people (36.3%) and in the age group 40-49 years as many as 13 people (27.7%).¹¹

In addition to the age group, this study also found that cases of acute asthma were more common in patients with secondary/high school education as many as 22 people (62.9%). This study is by the research of Ni Wayan Candrawati et al. that final high school education is the highest education with a total of 20 people (51.3%).¹² This study also found more cases of acute asthma in housewives (IRT) as many as 14 people (40.0%). This study is by the research of Samsul Afandi et al. The type of work of asthma patients is mostly housewives, as many as 148 people (52.85%).¹³ But this is different with the research of Ni Wayan et al. the most occupations are civil servants as many as 13 people 33.3%.¹² This difference is probably caused by housewives being more often exposed to asthma trigger factors when doing daily activities. In this study, the most asthma attack degrees were moderate asthma attacks as many as 23 people (65.7%). This study is by the research of Demas Nico et al. The highest degree of an asthma attack was moderate asthma attack with a total of 16 people (88.88%).¹⁰

This study also examined the number of visits of acute asthma patients to the ER, 30 acute asthma patients visited the ER once. This study tends to be by the research of nguyen et al. There were 857 patients (26.7%) who visited the ER and most of them were uncontrolled asthma (42.9%).⁶ In this study, 27 patients went to the emergency department of RSII Pondok Kopi without any complications (77.1%). But this study is different from the research of Ni Wayan et al. in his study, the most common asthma was accompanied by comorbidities/complications totaling 26 people (66.7%), namely hypertension.¹² Differences in research results may be caused by differences in the number of samples, place, and lifestyle.

In addition, this study also examines the guarantee for the cost of treatment used, in this study, acute asthma patients who visited the ER used non-BPJS more than 22 people (62.9%), and also in this study, the highest number of medical expenses was approx. Rp. 300,000 – Rp. 400,000, - that is 22 people (62.9%). This study is by the research of Herry Priyanto et al. most of the patients used their expenses 51 people (50.0%) and the average cost of asthma treatment was Rp. 148.000, - with a range between Rp. 100,000 up to Rp. 500,000.¹⁴

Respiratory tract infection is the most common triggering factor for asthma attacks found at Pondok Kopi Islamic Hospital Jakarta. In this study, there were 12 people (34.3%). This study is by the research of samsul et al. Upper respiratory tract infections both caused by viruses and bacteria are one of the triggers of asthma that are often reported by patients, as evidenced in this study as many as 195 people (64.64%) claimed to have experienced an asthma attack that was triggered or preceded by a respiratory infection. above.¹³ This study is also by the research of Risa Maulida et al. There were more precipitating

factors in the form of respiratory tract infections, namely 24 people (51.06%) compared to other precipitating factors.¹⁵

In this study, it was found that there was a statistically significant relationship between the number of visits by acute asthma patients who went to the ER and the cost of treatment at RSIJ Pondok Kopi. Based on the research of Tiffany Wang et al. In America, an estimated 1.8 million visits to the ER each year. Tiffany Wang studied 2.9 million patients with ED-associated asthma in 2006-2008, finding the median cost of an ED visit to be \$1,502 (95% CI \$1,493-\$1,511). The cost of visiting acute asthma patients to the ER can be multiplicative because asthma is a chronic disease so that it can result in a significant increase in financial burden.¹⁶ In addition, according to Kaliner, when asthma is not controlled, sufferers visit the ER more often and are hospitalized and receive increased drug therapy to improve their asthma. back under control which causes more expensive maintenance costs.¹⁷

This study found a statistically significant relationship and comparison between the cost of treatment for acute asthma patients with complications and without complications (P-value = 0.000) in the emergency department of RSIJ Pondok Kopi. This study is by the research of Tsai CL et al. Older adults have higher mortality rates, have higher rates of near-fatal acute asthma events, have higher hospital costs, are more likely to be hospitalized, and have a longer hospital stay. After adjusting for comorbidities, older acute asthmatic patients had a 5-fold increased risk of overall death (OR, 5.2; 95% CI, 4.0–6.9). This study was also investigated by Tiffany Wang et al. The results show an increase in ED costs with increasing age. In addition, if there are age-related comorbidities such as chronic obstructive pulmonary disease which tend to complicate disease management and thus increase costs.^{16,18}

CONCLUSION AND SUGGESTIONS

The study was conducted on 35 patients. Adult acute asthma patients who seek treatment at the emergency department of RSIJ Pondok Kopi are mostly female and are 41-49 years old. The level of education in acute asthma patients at the Pondok Kopi Jakarta Islamic Hospital is high school (SMA) and a housewife by profession (IRT). The classification of the most acute asthma degrees is moderate acute asthma. The most precipitating factor that causes acute asthma at RSIJ Pondok Kopi is respiratory tract infection. There are more who are not accompanied by complications and use non-BPJS health insurance coverage.

The increasing number of ER visits for an acute asthma patient and an acute asthma patient accompanied by complications, the greater the cost of treating acute asthma in the ER at Pondok Kopi Islamic Hospital. This is statistically significant.

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