

## Characteristics of Asthma Patients Seeking Care at West Java's Top Referral Hospital, Indonesia

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### Abstract

**Background:** The increasing incidence of asthma in many countries in recent decades makes asthma a global health problem. The aim of the study was to determine the characteristics of asthma patients at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital as West Java's Top referral hospital.

**Methods:** The study used a cross-sectional design. The study population was the medical record data of asthma patients at the Respiriology Outpatient Clinic during June 2012–June 2013. There were 1,591 patient's medical records at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung in that period and 140 medical records were diagnosed with asthma. Seventy medical records were excluded because of inadequate data and 70 medical records were the sample of this study. The collected data were presented using percentage.

**Results:** Seventy percent of the cases were female. From these cases 34% of patients were aged 51–60 years. The partially controlled type was the most frequent type of asthma (62%). The most common sign and symptom was shortness of breath (86%). The most common drug used was Beta 2 agonist drugs (90%).

**Conclusions:** The characteristic of asthma is that the patients are mostly female. Mostly the patients were in the age range of 51–60 years. The partially controlled type is the most frequent type of asthma. Shortness of breath is the most common clinical manifestation in asthma. Beta 2 agonist is the most used drug for asthma. [AMJ.2017;4(1):78–82]

**Keywords:** Asthma, beta 2 agonist, shortness of breath

### Introduction

Asthma is a chronic disease that is influenced by many factors.<sup>1</sup> It is characterized by reversible airway obstruction, inflammation of the respiratory tract, and increased responsiveness of respiratory tract.<sup>2</sup> According to the Global Initiative for Asthma (GINA), asthma is a chronic inflammatory disease of the airway that includes the involvement of many cells and other cellular elements in it. The chronic inflammation causes recurrent episodes of wheezing, shortness of breath, chest tightness, and cough, especially at night and in the early morning. Asthma is associated with reversible airway obstruction which can occur spontaneously or with treatment.<sup>2-4</sup>

The increasing incidence of asthma in

many countries in recent decades, especially in developing countries, makes asthma as a global health problem.<sup>3,4</sup> The World Health Organization (WHO) estimates that about 235 million people worldwide suffer from asthma.<sup>5</sup> Over the last thirty years, the prevalence of asthma has been continually increasing.<sup>6</sup> According to calculation, the number of people in the world that suffer from asthma in 2025 is expected to increase to 100 million people.<sup>7</sup> In Indonesia, the prevalence of asthma ranged between 5 to 7% of the total population.<sup>1,3</sup>

Furthermore, factors that influence the prevalence of asthma are patient's age, gender, race, atopic status, heredity, and environmental factors. The ratio of prevalence between male and female during childhood is 1.5:1 and becomes equal during puberty.<sup>1</sup> In adulthood, the ratio is higher in female compared to

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male.<sup>8</sup> However, based on age, the prevalence of asthma in children is higher than in adult.<sup>1</sup>

The aim of this study was to determine the characteristics of asthma at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung as West Java's top referral hospital, in the period June 2012 to June 2013.

## Methods

This study was a descriptive observational study with a cross-sectional approach performed at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung. This study was conducted in October 2013. The sampling method used in this study was total sampling. The main source of the study population was the medical record data of asthma patients who sought treatment at the Respiriology Outpatient Clinic during June 2012–June 2013. This study has been approved by the ethical clearance committee of Dr. Hasan Sadikin General Hospital.

There were 1,591 patient's medical records at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung in that period. All patients' data with diagnosis of asthma on medical record at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung were collected. There were 140 medical records of patients who were diagnosed with asthma. The medical

records were excluded in this study if age, sex, asthma control type, sign and symptom, and medication data were not available. Seventy medical records were excluded because of inadequate data and the other 70 medical records were the sample of this study. The data were analyzed and calculated for the frequency of each variable by using computer.

## Results

One hundred and forty from 1,591 patients who sought treatment at the Respiriology Outpatient Clinic of Dr. Hasan Sadikin General Hospital Bandung in the period June 2012 until June 2013 suffered from asthma (9%).

The asthma patients were categorized according to sex, age on admission, age of first onset. This study revealed that 70% of the asthma cases were female. Thirty four percents of the cases were patients aged 51–60 years and 54% of the patients were more than 50 years old. Nine percent of the patients had the first onset of asthma at 18 years of age or older; however 88% of the data was missing because of inadequacy of the data.

Then, the result of this study was displayed according to the characteristics of the asthma. The results showed the partially controlled type was the most frequent type of asthma, represented by 62% of the total number. The most common clinical manifestation from

**Table 1 Characteristics of the Asthma Patients (n=70)**

Characteristics	n (%)
Sex	
Male	21 (30)
Female	49 (70)
Age on Admission (Years)	
<21	6 (9)
21–30	7 (10)
31–40	9 (13)
41–50	10 (14)
51–60	24 (34)
>60	14 (20)
Age of Onset (Years)	
<18	2 (3)
>18	6 (9)
Missing data	62 (88)

**Table 2 Clinical Manifestation and Treatment Management of Asthma Patients (n=70)**

Characteristics	n (%)
Asthma Control	
Controlled	12 (17)
Partially Controlled	43 (62)
Uncontrolled	15 (21)
Clinical Manifestation	
Shortness of Breath	58 (83)
Cough	31 (44)
Wheezing	22 (31)
Epigastric Pain	2 (3)
Cold	1 (1)
Fever	1 (1)
Palpitation	1 (1)
Throat itch	1 (1)
Anorexia	1 (1)
Medication	
Controller	
Glucocorticosteroid	39 (56)
Theophylline	7 (10)
Reliever	
Beta 2 Agonist	63 (90)
Anticholinergic	11 (16)
Others	
Mucolytic	41 (59)
Expectorant	18 (26)
Antibiotic	11 (16)
Antihistamine	6 (9)
Proton Pump Inhibitor	4 (6)

the asthma patients was shortness of breath with 83%, followed by cough with 44% and wheezing with 31%. According to the medication used in the management of the patients, this study revealed that the most common drug used in asthma patients was Beta 2 agonist drug with 90% of the cases, followed by mucolytic drugs with 59% of the cases.

## Discussion

There are many statistics about prevalence of asthma from around the world, but only a few

from Indonesia. This means that prevalence of asthma in Indonesia is varied. This could be due to the differences of the methods, ethnics, environmental factor, and social economic status of the patients.<sup>9</sup>

The distribution of asthma based on sex in this study was higher among females than among males with the rate of 70% and 30% respectively. This result is slightly higher than in a study conducted by Priyanto<sup>10</sup> that reported 66.7% of asthmatic patients in Persahabatan Hospital are female. Sex hormones also contribute to this phenomenon. Female sex hormones such as estrogen and

progesterone have a role in asthma. Tam et al.<sup>11</sup> showed that female hormones increase the airway inflammation when exposed to the allergen, and the severity also fluctuates over the course of menstrual cycles. Estradiol has an important role to up-regulate the pro-inflammatory cytokine and down-regulate the anti-inflammatory cytokine. The expression of Interleukin (IL) like IL-10, IL-1 $\beta$ , and Tumor Necrosis Factor (TNF)- $\alpha$  will increase by the effect of progesterone.<sup>12</sup> Female hormones also have an impact on T helper cell.<sup>11</sup> Females have a better humoral immunity than males, who demonstrate a better cellular immunity.<sup>13</sup> Those factors may contribute to the higher distribution of female admission to the Respiriology Outpatient Clinic.

The age of admission at the Respiriology Outpatient Clinic showed that most of the asthma patients aged 50 years or over (54%), specifically from patients in the age range 51–60 years (34%). Aging also have an important role because of the changes in anatomy and physiology of the respiratory system.<sup>14</sup> This may be associated with an increase of burden in morbidity and mortality due to the increasing age. In older patients, distinguishing between asthma and chronic obstructive pulmonary disease (COPD) is difficult and can be misrecognized.<sup>15</sup> Decline in lung function and incomplete lung growth in children make the overlapping of the syndrome in both disease.<sup>16</sup>

Many data from the age of onset was missing on the medical records (88%). Nine percent of the sample in this study had the first onset of asthma at the age of 18 years or older. However, this study did not explore the manifestation of other atopic disease so the onset could be younger than 18 years of age. Individual with child onset of asthma has an increased risk for irreversible obstructive lung disease later in life.<sup>17</sup> Antó et al.<sup>18</sup> showed that new onset of asthma in adult is related to two factors, host and environmental factors including female gender, lung function, bronchial hyperresponsiveness, atopy, nasal allergy, obesity, parental asthma, respiratory infections in early life and high risk occupations.

The majority of the patients at the Respiriology Outpatient Clinic had the partially controlled type of asthma control (62%). This result differs from the study conducted by Bachtiar<sup>19</sup> at Persahabatan Hospital. Bachtiar<sup>19</sup> showed that the most frequent type of asthma controlled type at the Persahabatan Hospital is the uncontrolled type with 67% of the cases. The difference in the result can be due to the different study design, sampling method and

the research material used in both studies. Many factors that contribute to the patients' behavior related to type of the asthma control. Priyanto<sup>10</sup> stated that the main reason of the irregularity of asthma patients' control is unmatched schedule between working hours and clinic hours.<sup>10</sup> The other results are the distance of the clinic from their home, the side effect of drugs, the expensive cost of drugs, and the behavior of health care providers towards them.

The most common clinical manifestation of the asthma patients at the Respiriology Outpatient Clinic was shortness of breath (83%), followed by cough (44%) and wheezing (31%). This is similar with three main characteristics of clinical manifestation in asthma which are wheezing, dyspnea, and coughing.<sup>6</sup>

Moreover, Beta 2 agonist is the most common drug used for the treatment of asthma with 90% used for relieving the shortness of breath. Rapid-acting inhaled beta agonist is a drug of choice for reducing the bronchoconstriction in adult and children.<sup>4</sup> A few example of beta 2 agonist like Albuterol and Formoterol have a similar safety level and have an effect to reduce asthma symptom.<sup>20</sup> This result is relevant with the most common manifestation in asthma that emerge in this study which is shortness of breath, yet this study did not provide the drugs combination.

This study is limited due to the use of secondary data, which were the medical record as the research material and the lack of information found in the medical record due to several missing characteristics data.

In conclusion, the characteristics of asthma patients in this study are mostly female. The patients' age is mostly in the range of 51–60 years. The partially controlled type is the most frequent type of asthma. Shortness of breath is the most common clinical manifestation in asthma and Beta 2 agonist is the most used drug for relieving the shortness of breath in asthma patients.

The completeness of the medical record is emphasized and a further study is needed to correct this limitation and broaden the scope of study to yield better comprehension for characteristics of asthma.

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