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## **VARIOUS DOMINANT FACTORS THAT INFLUENCE THE FREQUENCY OF BRONCHIAL ASTHMA RECURRENCES**

Fahrur Nur Rosyid\*

Faculty of Nursing, Muhammadiyah University of Surabaya

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### **Corresponden**

[fnr100@ums.ac.id](mailto:fnr100@ums.ac.id)

### **ABSTRACT**

#### **Introduction**

Bronchial asthma is a chronic disease, with many patients in the world. Bronchial asthma is a lung disease which is often met in the public. Growth of industry in Indonesia is more and more fast and extending will give negative impact in the form of air pollution. This air pollution is one of the factors in the incidence of relapse of bronchial asthma. This purpose of research is to know the dominance factors influencing the frequency of relapses of bronchial asthma, and the pattern of increasing frequency of relapses of bronchial asthma.

#### **Method**

The method applied in this research is analytical descriptive with cross sectional design. Population which checked are all patients whose bronchial asthma medicating in Polly Lung Disease RSU Dr. Soetomo Surabaya. Technique in sampling totally sample. The sample which was checked was bronchial asthma patient which of old age between 20-25 years was either woman or men. Technique of data collecting with structural questionnaire and observation method. Presentation of data by using tables of frequency distribution.

#### **Result**

Research results show must of frequent respondents of relapsing of bronchial asthma in the last years more than 5 times; reals, and some smalls less than 3 times; reals, factors influencing frequency of relapse of bronchial asthma are as follows: allergic to inhalants, bad air, inhalant irritants, heavy activity, reaction of drugs, infection (viral), emotional, heavy sport, household conflict, and allergic to food

#### **Conclusion**

This research conclusion depicts relapse in an factor and the last year influencing the frequency of relapse of bronchial asthma so that patients are more increasing information which got and planned in medication .

### **Introduction**

Bronchial asthma is a major problem, both in Indonesia and globally, because it is a chronic disease with the highest number of sufferers worldwide.

Asthma is a common lung disease. The rapid and widespread development of industry in Indonesia will have a negative impact in the form of air pollution, which is a factor in asthma relapses. For some sufferers, this disease causes many

problems related to relapses (Sundaru, 2002).

Currently, an estimated 500 million people worldwide suffer from asthma and there is a tendency for this to increase in the future. In Indonesia, an estimated 10% of our population suffers from asthma in various forms. The incidence in countries with advanced medical research is estimated at 5% to 20% of infants and children suffering from asthma, while the average number of asthma sufferers in adults and the elderly ranges from 2% to 10% (Sundaru, 2002). In the Pulmonary Disease Laboratory of the Faculty of Medicine, Airlangga University: UPF Pulmonary Dr. Soetomo Hospital, Surabaya, according to 2000 data, the number of outpatients and inpatients with asthma ranks second after pulmonary tuberculosis infection (Alsagaff, 2003). The results of observations at the Pulmonary Disease Polyclinic of Dr. Soetomo Hospital, Surabaya, in June 2005 showed that there were 10 people with bronchial asthma, all of whom often experienced relapses. Recurrence of bronchial asthma is often caused by poor socio-economic problems, hard work, lack of family attention, and environmental hygiene factors.

Asthma complaints, characterized by shortness of breath and *wheezing*, are well-known. Many asthma sufferers also use various medications on the market. However, there are many aspects the public needs to understand, including what asthma actually is, why it occurs, how to diagnose it, and how it should be managed. It's also important to recognize that, in addition to

causing health problems, bronchial asthma also has extensive socioeconomic impacts. High levels of absenteeism among asthma sufferers have been frequently cited in various literature. Children are forced to miss school due to asthma, or are unable to participate in sports events, among other things. It's also possible that employees' work productivity may be affected by asthma.

In fact, asthma is not a frightening disease. It can be controlled, relapses can be prevented, and it can be managed through proper management. Like other chronic diseases, asthma requires long-term management. Successful treatment is determined not only by anti-asthma medication, but also by adherence to medication and other factors related to preventing asthma attacks. To achieve these goals, knowledge about asthma is essential. One of the prerequisites for successful asthma treatment is good cooperation between the patient, their family, and their treating physician. In addition to cooperation between the patient, their family, and their physician, each party also needs to increase their knowledge of asthma to achieve treatment goals (Sundaru, 2002). Good asthma management not only impacts the patient's health but also the nation's productivity.

With the above background, it is necessary to conduct research on various dominant factors that influence the frequency of bronchial asthma recurrence in the Lung Disease Polyclinic of Dr. Soetomo Hospital, Surabaya.

### **Research Materials and Methods**

- 1) The method used in this study is descriptive analytical with a cross-sectional design.
- 2) The population to be studied is all bronchial asthma sufferers who are

- treated at the Lung Disease Polyclinic of Dr. Soetomo Hospital, Surabaya.
- 3) The sampling technique used was a total sample. The sample in this study were bronchial asthma sufferers aged between 20 and 55 years, both male and female.

- 4) Data collection was carried out by means of observation and visiting bronchial asthma sufferers who were receiving treatment through interviews.
- 5) Data collection techniques using observation methods and providing questions through structured questionnaires
- 6) The research was conducted at the Lung Disease Polyclinic of Dr. Soetomo Hospital, Surabaya from March to October 2007.
- 7) Data analysis

The data that has been collected is examined for completeness and then processed and presented in the form of a frequency distribution table.

- 8) How to interpret and draw conclusions from the results  
The data that has been formed into information will be used as a reference for analyzing research results based on the theories contained in the literature review.

## Result

### Overview of the Frequency of Bronchial Asthma Recurrences in the Last Year

Table 1. Overview of the Frequency of Bronchial Asthma Recurrence in the Pulmonary Polyclinic of Dr. Soetomo Hospital, Surabaya in 2007

No.	FREQUENCY	AMOUNT
1.	< 3 Times (1-2 Times)	18
2.	3 – 5 Times	23
3.	> 5 times	41
TOTAL		82

Source: Primary Data

From Table 1 it can be seen that most of the respondents who experienced a relapse of bronchial asthma in the last year were more than

5 times, which is 41 people, and a small portion, less than 3 times, which is 18 people.

### Overview of Trigger Factors for Bronchial Asthma Recurrence

A detailed description of the triggering factors for bronchial asthma recurrence can be explained below:

1. Infection Factors as Triggers for Bronchial Asthma Recurrence

Table 2 Frequency Distribution of Infection Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	INFECTION FACTORS	FREQUENCY	
		n	%
1.	Always	16	19.51
2.	Sometimes	28	34.15
3.	Never	38	46.34
TOTAL		82	100

Source: Primary Data

From Table 2, it can be seen that for the majority of respondents, infection factors were never a trigger for bronchial asthma relapses, namely 38 people (46.34%), and a small portion always were, namely 16 people (19.51%).

2. Inhalant Allergy Factors as Triggers of Bronchial Asthma Recurrence

Table 3 Frequency Distribution of Inhalant Allergy Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo

Hospital, Surabaya, in August – October 2007

No.	FOOD ALLERGY FACTORS	FREQUENCY	
		n	%
1.	Always	1	1.22
2.	Sometimes	19	23.17
3.	Never	62	75.61
TOTAL		82	100

No.	FACTOR INHALAN ALLERGY	FREQUENCY	
		n	%
1.	Always	45	54.88
2.	Sometimes	35	42.68
3.	Never	2	2.44
TOTAL		82	100

Source: Primary Data

From Table 3, it can be seen that for the majority of respondents, inhalant allergy factors were always the trigger for bronchial asthma relapses, namely 45 people (54.88%), and a small portion, namely 2 people (2.44%), never did.

3. Irritant Inhalant Factors as Triggers of Bronchial Asthma Recurrence

Table 4 Frequency Distribution of Inhalant Irritant Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	FACTOR Irritant Inhalants	FREQUENCY	
		n	%
1.	Always	41	50.00
2.	Sometimes	34	41.46
3.	Never	7	8.54
TOTAL		82	100

Source: Primary Data

From Table 4 it can be seen that most of the respondents were irritant inhalant factors.

always as a trigger for bronchial asthma relapse, namely 41 people (50.00%), and a small portion never, namely 7 people (8.54%).

4. Food Allergy Factors as Triggers for Bronchial Asthma Recurrence

Table 5 Frequency Distribution of Food Allergy Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

Source: Primary Data

From Table 5, it can be seen that for the majority of respondents, food allergy factors were never a trigger for bronchial asthma relapses, namely 62 people (75.61%), and a small portion always were, namely 1 person (1.22%).

5. Emotional Factors as Triggers for Bronchial Asthma Recurrence

Table 6 Frequency Distribution of Emotional Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	EMOTIONAL FACTORS	FREQUENCY	
		n	%
1.	Always	12	14.63
2.	Sometimes	22	26.83
3.	Never	48	58.54
TOTAL		82	100

Source: Primary Data

From Table 6, it can be seen that for the majority of respondents, emotional factors were never a trigger for bronchial asthma relapses, namely 48 people (58.54%), and a small portion always were, namely 12 people (14.63%).

6. Domestic Conflict Factors as Triggers for Bronchial Asthma Recurrence

Table 7 Frequency Distribution of Household Conflict Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	FACTORS HOUSEHOLD CONFLICT	OF FREQUENCY	
		n	%
1.	Always	8	9.76
2.	Sometimes	35	42.68
3.	Never	39	47.56
TOTAL		82	100

Source: Primary Data

From Table 7, it can be seen that for the majority of respondents, household conflict factors were never a trigger for bronchial asthma relapses, namely 39 people (47.56%), and a small portion always were, namely 8 people (9.76%).

7. Bad Air Factors as Triggers for Bronchial Asthma Recurrence

Table 8 Frequency Distribution of Bad Air Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

N o.	BAD AIR FACTORS	FREQUENCY	
		n	%
1.	Always	43	52.44

2.	Sometimes	31	37.80
3.	Never	8	9.76
TOTAL		82	100

Source: Primary Data

From Table 8, it can be seen that for the majority of respondents, bad air is always a trigger for bronchial asthma relapses, namely 43 people (52.44%), and a small portion, namely 8 people (9.76%), never does.

8. Exercise Factors as Triggers for Bronchial Asthma Recurrence

Table 9 Frequency Distribution of Sports Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	FACTOR SPORT	FREQUENCY	
		n	%
1.	Always	10	12.19
2.	Sometimes	45	54.88
3.	Never	27	32.93
TOTAL		82	100

Source: Primary Data

From Table 9, it can be seen that for the majority of respondents, exercise is sometimes a trigger for bronchial asthma relapses, namely 45 people (54.88%), and a small proportion always, namely 10 people (12.19%).

9. Activity Factors (Heavy Work) as Triggers for Bronchial Asthma Recurrence

Table 10 Frequency Distribution of Activity Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo

Hospital, Surabaya, in August – October 2007

Source: Primary Data

No.	FACTOR ACTIVITY	FREQUENCY	
		n	%
1.	Always	22	26.83
2.	Sometimes	56	68.29
3.	Never	4	4.88
TOTAL		82	100

From Table 10, it can be seen that the majority of respondents said that activity factors sometimes trigger relapses of bronchial asthma, namely 56 people (68.29%), and a small proportion never did, namely 4 people (4.88%).

#### 10. Drug Reaction Factors as Triggers for Bronchial Asthma Recurrence

## Discussion

### A. Frequency of Bronchial Asthma Recurrence in the Last Year

In general, it can be seen that the majority of respondents had a frequency of bronchial asthma recurrence in the last year of more than 5 times, namely 41 people, and a small portion had less than 3 times, namely 18 people.

According to Heru Sundaru (2002), a relapse is a repeated attack with the same symptoms as the initial one, which occurs in people with bronchial asthma. Heru Sundaru (2002) divides asthma patterns based on repeated attacks, namely:

#### 1) Intermittent Asthma

The most common form of asthma is infrequent and mild attacks. Attacks occur once or three times a year and are primarily caused by

Table 11 Frequency Distribution of Drug Reaction Factors as Triggers for Bronchial Asthma Recurrence in the Lung Polyclinic of Dr. Soetomo Hospital, Surabaya, in August – October 2007

No.	FACTOR DRUG REACTIONS	FREQUENCY	
		n	%
1.	Always	22	26.83
2.	Sometimes	56	68.29
3.	Never	4	4.88
TOTAL		82	100

Source: Primary Data

From Table 11, it can be seen that the majority of respondents said that drug reaction factors sometimes trigger relapses of bronchial asthma, namely 56 people (68.29%), and a small proportion never did, namely 4 people (4.88%).

viral respiratory infections. Outside of attacks, healthy individuals are just like normal individuals.

#### 2) Acute Asthma

Acute asthma is asthma that comes on suddenly and is very severe. The shortness of breath is so severe that the sufferer must immediately seek medical help. If the shortness of breath is not relieved by injection of anti-asthma medications, this asthma attack is called "status asthmaticus." The sufferer must be hospitalized immediately, as the situation is life-threatening.

#### 3) Chronic Asthma

People with chronic asthma often experience symptoms almost daily or weekly, such as coughing, shortness of

breath, waking up in the middle of the night, and other symptoms. These individuals require regular medical supervision.

According to Sundaru (2002), the airways of asthma sufferers have a unique characteristic: they are highly sensitive to various stimuli ( *bronchial hyperreactivity* ). These stimuli in asthma are more commonly known as trigger factors. According to Tambayong (2000), there are several factors that trigger asthma relapses, namely:

- a. Infections, for example: colds or other viral infections, sinusitis, bronchitis, bronchiolitis.
- b. Inhalant allergies, for example: pollen, insect dust, animal dander, animal dander, furniture dirt, mold spores.
- c. Irritant inhalants, for example: paint, gasoline, tobacco smoke, cold air, vehicle exhaust.
- d. Food allergies, for example: milk, eggs, nuts, chocolate, fish, shellfish, tomatoes, strawberries.
- e. Trigger mechanisms, for example: nasal polyps, excessive laughing, changes in environmental temperature, and physical activity.
- f. Psychological stress.
- g. Drug reactions, for example: vaccines, penicillin, aspiration, and anesthetic agents.

According to Tabrani Rab (1996), the factors that activate asthma are:

- 1) Respiratory tract infection
- 2) Allergens: Inhalation, digestion.
- 3) Sport
- 4) Bad air.
- 5) Emotional: offended, angry, scared, laughing, crying.
- 6) Domestic conflict.
- 7) The air changes from time to time.
- 8) Various drugs: aspirin, antibiotics.

Seeing the above phenomenon, it can be assumed that the more often a person is

exposed to triggering factors (respiratory tract infections, allergens, digestion, exercise, bad air, emotional, domestic conflicts, air that changes from time to time, various drugs) the frequency of relapses in bronchial asthma sufferers will be more frequent.

## B. Triggering Factors for Bronchial Asthma Recurrence

Based on the research results, it can be explained that the factors that influence the frequency of bronchial asthma recurrence are as follows:

- 1) Inhalant allergies (room dust, household furniture dirt)
- 2) Bad air (change in weather)
- 3) Irritant inhalants (tobacco smoke, paint, gasoline, cold air, vehicle exhaust)
- 4) Heavy (work) activity
- 5) Drug reactions (Antibiotics, Aspirin)
- 6) Infection (exposure to viruses)
- 7) Emotional (laughing, crying, scared)
- 8) Heavy exercise
- 9) Domestic conflict
- 10) Food allergies (eggs, fish, seafood, shellfish, and drinking milk)

Bronchial asthma is a reversible narrowing of the bronchi *caused* by hyperactive bronchi being contaminated with antigens. The airways of asthmatics are characterized by their hypersensitivity to various stimuli ( *bronchial hyperreactivity* ). This stimulus in asthma is more commonly known as a trigger factor. The reaction that occurs in allergic asthma is thought to occur as follows: an allergic person tends to produce abnormally large amounts of IgE antibodies, which cause an allergic reaction when they react with a specific antigen. In asthma, these antibodies primarily attach to mast cells in the pulmonary interstitium, which is closely associated with the bronchioles and small bronchi. When a person inhales an allergen, their IgE antibodies increase. The allergen reacts with the antibodies that have attached

to the mast cells, causing these cells to release various substances. These include histamine, slow-reacting anaphylaxis ( *leukotrient* ), eosinophil chemotactic factor, and bradykinin. The combined effect of all these factors will produce local edema in the walls of small bronchioles as well as thick mucus secretion in the bronchiole lumen and bronchiole smooth muscle spasm, thus causing increased airway resistance.

In asthma, the bronchioles are smaller in diameter during expiration than during inspiration because the increased pressure within the lungs during forced expiration compresses the outer layers of the bronchioles. Because the bronchioles are already partially obstructed, further

obstruction from external pressure causes severe obstruction, especially during expiration. People with asthma can usually inhale well and adequately, but occasionally have difficulty exhaling. This causes dyspnea. Functional residual capacity and residual lung volume are greatly increased during an asthma attack due to difficulty expelling expired air from the lungs. This can lead to *a barrel chest* .

This phenomenon can be assumed that inhalant allergies (room dust, household furniture dirt), bad air (changes in weather), irritant inhalants (tobacco smoke, paint, gasoline, cold air, vehicle exhaust) are the dominant triggering factors for the frequency of bronchial asthma relapses.

## Conclusion

Most of the respondents had a frequency of bronchial asthma recurrence in the last year of more than 5 times, and a small number had less than 3 times. Factors that influence the frequency of Bronchial Asthma relapses are as follows: Inhalant allergies (room dust, household furniture dirt) , Bad air

(changes in weather) ,Inhalant irritants (tobacco smoke, paint, gasoline, cold air, vehicle exhaust) , Heavy activity (work), Drug reactions (antibiotics, aspirin), Infection (exposure to viruses) , Emotional (laughing, crying, fear), Heavy exercise, Household conflicts, Food allergies (eggs, fish, seafood, shellfish, and drinking milk)

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