

## **The Effect of Chest Physiotherapy on Mucus Clearance in Patient with Asma at Tunjung Room of Praya Public Hospital**

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### **ABSTRACT**

#### **Introduction**

Asma is a chronic respiratory disease that seriously affects the world public health. Asma may be available at any age, some can be very severe and even to death. This is the attempts to free the airway caused by a buildup of sputum in Asmatic patients using chest physiotherapy.

#### **Method**

The study design of was a pre experimental study with one group of pre test-post test.

#### **Results**

The result showed the effect of chest physiotherapy against mucus clearance of sputum in patients with Asma in Tunjung Room Of Praya Public Hospital. The number of patients that can expectorate before chest physiotherapy only 0% of patients increase into 80% after chest physiotherapy. The research showed that Paired Sample T-test obtained the significance of (P) 0.000 where the P value is less than 0.05 ( $P < 0.05$ ), so it is inferred that there is affect of chest physiotherapy against mucus clearance in patients with Asma in Tunjung Room Of Praya Public Hospital.

#### **Conclusions**

The conclusion of this study in general was that there was an effect of chest physiotherapy on mucus clearance of sputum in Asma patients in the Tunjung Room of Praya Regional General Hospital.

#### **Keywords**

Chest physiotherapy; Mucus clearance; Asma

### **BACKGROUND**

The incidence of allergic diseases has recently increased in line with changes in the lifestyle of modern society, pollution both environmental pollution and substances in food. One of the most common allergic diseases in the community is Asma (1). This disease is a chronic respiratory tract disease that has a serious impact on the health of people throughout the world. Asma can be obtained at all ages, some can be very severe and even to death (2).

The number of death in patients with bronchial Asma basically occurred because of inadequate treatment which was caused by the delay of patients coming to the hospital, or their own clinical errors such as failure to recognize acute Asma attacks, especially those that make severe improper management programs, or treatment inadequate (3). Estimates currently there are 300 million people in the world with Asma (4), and Asma sufferers in the

United States range from 6 to 8 million (5). Whereas in Australia, Canada and Spain it was reported that visits of patients with acute bronchial Asma in the emergency care department ranged from 1-12% (6).

Based on the Household Health Survey (SKRT) in various provinces in Indonesia, Asma ranks 5th out of 10 causes of pain together with chronic bronchitis and emphysema. In 2010 Asma, emphysema and chronic bronchitis were the fifth cause of death or 5.2%. In 2011, the prevalence of Asma throughout Indonesia was 13/1000, compared to chronic bronchitis 10/1000 and pulmonary obstruction 2/1000 (2).

In Asma prevalence tends to increase along with increasing age. The prevalence of Asma is slightly higher than for women. The prevalence of Asma in NTB province is 5.3% (range: 1.8-7.2%), the highest in Central Lombok due to Asma found prevalence increases with age, high in groups that are not in school, women are more prevalent compared to men, lowest in Mataram City due to a clean environment, and high community knowledge about Asma. These conditions are high compared to the prevalence of national Asma by 3.5%. The disease prevalence obtained does not reflect the actual prevalence which may be higher due to the limitations of the questionnaire without any examination. Maybe respondents who have not been diagnosed by health workers also do not feel symptoms of the disease (7).

Based on preliminary studies conducted by prospective researchers on October 17, 2014 found the number of Asma patients treated at the visiting room of Praya Hospital from medical record data from June to August 2014 as many as 75 patients. From the observations also showed nurses in the visiting room lacking attention to independent nursing actions such as chest physiotherapy action on post-nebulizer Asma patients in the Tunjung Room of the Praya Regional General Hospital.

Something that can trigger an Asma attack varies greatly from one individual to another and from one time to another. Some things include allergens, air pollution, respiratory tract infections, fatigue, weather changes, food, drugs or excessive emotional expression. Poor air quality and changes in people's lifestyles are predicted to be the cause of the increase in Asma sufferers in Indonesia, which until now has not been resolved. The high mortality rate from Asma is caused by poor Asma control and the attitude of patients and doctors who often underestimate the severity. Though uncontrolled Asma can limit the quality of life drastically and the welfare of patients and their family members (6). To reduce complaints in Asma patients with phlegm accumulation, it is necessary to expel the sputum by doing vibrating clapping. Based on previous studies that vibrating.

Clapping is a pat done on the chest or back wall with a hand shaped like a bowl, by flexing the finger and placing the thumb in contact with the index finger, lightly clapped to the chest wall in rhythmic movements over the lung segment to be flowed. While Vibration is a technique of giving compression and manual vibration to the chest wall during the respiratory exhalation phase. Clapping, alternating with vibration, is carried out for 3 to 5 minutes for each position. The patient's position depends on the pulmonary segment being treated, the

patient uses diaphragmatic breathing during the procedure to improve relaxation. Do not clap the spinal area, the sternum or under the thoracic cavity, above the drainage tube of the chest, spine, kidney, spleen or breast (in women) is avoided, clapping is done carefully in the elderly because of an increased incidence of osteoporosis and risk of rib fracture (8).

## METHODS

The research design was a research plan which was structured in such a way that it could get the answers of the research. In a narrower sense the research design refers to the type or type of research chosen to achieve the research objectives (9).

The design of this study was a pre-experimental design "one group pre test - post test" that was by revealing a causal relationship without a comparison group conducted in a cross sectional manner (the dependent and independent variables were examined simultaneously) in each post nebulizer Asma patient that was successfully obtained in the room Tunjung Praya Regional General Hospital. Post-Nebulizer Asma sufferers are observed whether or not sputum is released before giving vibrating clapping action and then observing the phlegm again after being given vibrating clapping action.

This design form is as follows:

Treatment group	Pre test	Treatment	Post test
	01	X	02

Explanation :

01 = Pretest value (Phlegm/sputum that came out before being given a vibrating clapping action)

X = Experiment (Being given a vibrating clapping action)

02 = Posttest value (Sputum that came out after being given a vibrating clapping action)

## RESULTS

### 1. Sputum Spots Before Chest physiotherapy

Based on observations made on 25 respondents, mucus clearance of sputum before vibrating clapping can be seen in the table below.

Respondent Sputum Distribution Distribution Table Before Vibrating Clapping in Tunjung Room I and II Praya Regional General Hospital 2015

No	Mucus clearance	Frequency (persons)	Percentage (%)
1	Effective	0	0
2	Did not effective	25	100
Amount		25	100

Based on the table above, there was no effective sputum expenditure characteristic on respondents before chest physiotherapy and ineffective respondents as many as 25 people (100%).

The data on the research results obtained almost all ineffective airway cleanups with a total of 25 respondents (100%) while the effective ones did not exist.

## 2. Sputum Spots After Chest physiotherapy

Based on the results of observations conducted on 25 respondents, mucus clearance of sputum after vibrating clapping can be seen in the table below:

Respondent Sputum Spending Distribution Table After Vibrating Clapping in Tunjung Room I and II Praya Regional General Hospital 2015

No	Mucus clearance	Frequency (persons)	Percentage (%)
1	Effective	20	80
2	Did not effective	5	20
Amount		25	100

Based on the table above, obtained the characteristics of sputum expenditure on respondents after vibrating clapping that is an effective respondent of 20 people (80%) and ineffective respondents as many as 5 people (20%).

Of the 25 respondents who had been given vibrating clapping, effective sputum removal was 20 people (80%) and ineffective mucus clearance was 5 people (20%). This is in accordance with the opinion of Ranywaisya P, (2008) A thick secret that is difficult to cough may be released by chest physiotherapy chest. clapping and vibrating help release mucus that is attached to the bronchioles and bronchi. After the patient is given a clapping action vibrating the patient feels the breath feels better and the urge to release phlegm is stronger.

## 3. Effect of Chest physiotherapy on Sputum Spots in Asma Patients

Sputum discharge before and after vibrating clapping can be seen in the table below:

Respondent Sputum Spending Distribution Table After Vibrating Clapping in Tunjung Room I and II Praya Regional General Hospital 2015

Chest physiotherapy	Mucus clereance				Total
	Effective	%	Did not effective	%	
Before	0	0	25	100	25
After	20	80	5	20	25

Based on the table above, it could be seen that the observation of 25 respondents turned out to be an increase in the number of respondents who ejected phlegm effectively, from before there was no effective vibrating clapping to 20 respondents (80%) after vibrating clapping. On the other hand there was a decrease in the number of ineffective, where there were 25 respondents (100) who were not effective before chest physiotherapy and there were 5 respondents (20%) who were not effective after vibrating clapping.

**4. Statistical Test Effect of chest physiotherapy on Sputum Spots in Asma Patients**

Based on statistical tests the effect of chest physiotherapy on mucus clereance of sputum in Asma patients that have been done can be seen in the table below:

Table of Effect of Chest physiotherapy on Sputum Expenditures in Tunjung Room I and II Praya Regional General Hospital 2015

**Paired Samples Test**

T-Test	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Before Chest physiotherapy After Chest physiotherapy	-.80000	.40825	.08165	-.96852	-.63148	-9.798	24	.000

Based on the table above, it could be seen that the results of statistics using paired t-tests indicate that there is a significant influence between before and after vibrating clapping.

Based on the paired t-test statistical analysis (average difference test for the corresponding sample) the price of significance (P) 0,000 where the P value was less

than 0.05 ( $P < 0.05$ ) so  $H_0$  was rejected, meaning that there is a clapping effect on vibrating mucus clearance of sputum in Asma patients.

Based on the results of statistical tests used paired t-test showed an average difference between before and after given vibrating clapping action in Asma patients. The significance value is 0,000 ( $< 0.05$ ) so  $H_0$  is rejected or in other words there is an effect of chest physiotherapy on mucus clearance of sputum in Asma patients.

This was in accordance with the opinion According to Potter and Perry, (2006) vibrating clapping is one of the chest physiotherapy that is very useful for patients with respiratory diseases both acute and chronic. Clapping this vibrating although the way it looks is not special but this is very effective in the effort to remove secretions and improve ventilation in patients with impaired pulmonary function. So the goal of vibrating clapping in lung disease is to help release secretions attached to the bronchioles and bronchi, to prevent the buildup of secretions, improve the movement and flow of secretions, to help increase the velocity of air expressed from a small airway. This chest physiotherapy can be used for the treatment and prevention of chronic obstructive pulmonary disease, restrictive respiratory diseases including neuromuscular disorders and restrictive pulmonary disease due to pulmonary parenchymal abnormalities such as fibrosis and patients who receive mechanical ventilation. Chest physiotherapy in general can help dilute phlegm and dilate the respiratory tract.

## **DISCUSSION**

The female respondents who suffered Asma were 16 people (64%) while males were 9 people (36%). As revealed by Sudoyo, A. W, et al (2009) in the United States visits of Asma patients in female patients in the emergency department and finally require hospital treatment twice as much as men (6). In men the ability to control triggers from Asma is probably better than women, so women are more likely to experience Asma. It could be seen that the distribution based on age group turned out that Asma patients in the Tunjung Room of the Praya Regional General Hospital were mostly in the 46-55 year age group with 9 people (36%).

At the age of  $> 46$  years a person has entered the final adult development stage, where at this stage the type of stressor faced is an aging process and social status (10). Asma attacks will not occur without trigger factors, such as allergies, infections, irritants, excessive physical activity and psychological factors (stress).

From this study it could be seen that most Asma patients experience Asma 6-10 years with a total of 8 people (32%). This is in accordance with research conducted by Paru SMF dr. Sutomo Surabaya in 37 health centers in East Java with the number of respondents as many as 6662 respondents were found almost entirely experiencing recurrence (11). Most of the

respondents who experienced Asma in the Tunjung Room of the Praya Regional General Hospital were 6-10 years old, possibly due to the recurrence of Asma triggers.

In this study, it could also be seen that respondents with married marital status were 21 people (84%), and not married as many as 4 people (16%). This is consistent with the causes of stress according to Brech Grand divided into two, namely: Macro causes include death, divorce, retirement, mental injury, and bankruptcy, and micro-causes include household quarrels, workload, problems with what is eaten and so on (12). Basically, if it is associated with the many problems faced by married people, it is more complex than those who are not married, widowed / widower so that the level of stress in the family of married people tends to be higher.

The respondents who suffered Asma in the Tunjung Room of the Praya Regional General Hospital mostly did not work, due to the low socio-economic status so that they were unable to take preventive or treatment measures. The results of research conducted at the public hospital praya room show that the actions of chest physiotherapy performed well and in accordance with the prescribed procedure will affect the airway clearance in Asma patients. This is supported by the data obtained from the results of this study, out of 30 respondents who were given vibrating clapping action, resulting in airway clearance with an effective criteria of 22 people (73.3%), and ineffective category of 8 people (26.7%).

## **CONCLUSIONS**

The conclusion of this study in general was that there was an effect of chest physiotherapy on mucus clearance of sputum in Asma patients in the Tunjung Room of Praya Regional General Hospital.

Specifically it can be concluded as follows:

1. Sputum expulsion in post nebulizer Asma patients before vibrating clapping in the Tunjung Room of Praya Hospital. From the data on the results of the study, almost all of the ineffective airway cleaning was done with 25 respondents (100%) while the effective ones did not exist before being given vibrating clapping.
2. Sputum expulsion in Asma post nebulizer patients after vibrating clapping in the Tunjung Room of Praya Hospital. From the 25 respondents who had been given vibrating clapping, effective sputum removal was 20 people (80%) and ineffective mucus clearance was 5 people (20%).
3. The results of the paired t-test statistical analysis (average difference test for the corresponding sample) significance price (P) 0,000 where the P value was less than 0.05 ( $P < 0.05$ ) so  $H_0$  was rejected.

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