



## Implementation of Chest Physiotherapy and Effective Coughing on Respiratory Disorders In Patients With COVID-19: A Case Study

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### ABSTRACTS

*COVID-19 can cause symptoms of acute respiratory disorders such as fever above 38°C, cough, and shortness of breath for humans. One of the nursing interventions that can be applied to clear the sputum in the airway is chest physiotherapy and effective coughing. The research design used an evaluative design is a case study with data analysis using descriptive-analytic. The case study was carried out on adults, 57 years old with Covid-19. Chest physiotherapy and cough intervention were given for 7 days. the results obtained after this action that the client does not complain of shortness of breath again and coughs are not felt again. These nursing actions can be taken to reduce the symptoms of respiratory disorders felt in patients with Covid-19*

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### 1. INTRODUCTION

The death rate due to COVID-19 in Indonesia increases with increasing age, namely the population aged 45-54 years is 8%, 55-64 years 14%, and 65 years and over 22%. by a new type of coronavirus, namely Sars-CoV-2, which was first reported in Wuhan China on December 31, 2019. This COVID-19 can cause symptoms of acute respiratory disorders such as fever above 38°C, cough, and shortness of breath for humans. In addition, it can be accompanied by weakness, muscle

aches, and diarrhea. In patients with severe COVID-19, it can cause pneumonia, acute respiratory syndrome, kidney failure, and even death.

COVID-19 infection can cause mild, moderate or severe symptoms. The main clinical symptoms appear are fever (temperature  $> 38^{\circ}\text{C}$ ), cough and difficulty breathing. In addition, it can be accompanied by severe shortness of breath, fatigue, malgia, gastrointestinal symptoms such as diarrhea and other respiratory tract symptoms (PDPI, 2020). Covid-19 patients usually complain of cough accompanied by phlegm, shortness of breath and joint pain. Physical examination showed signs of increased respiratory rate, irregular breathing rhythm and ronchi. Referring to these manifestations, a common nursing problem in COVID-19 patients is the ineffectiveness of airway clearance.

One of the nursing interventions that can be applied to clear sputum in the airway is chest physiotherapy and effective coughing. Many studies have proven that chest and cough physiotherapy can effectively help patients expel sputum. The results of Tahir's research, 2019 showed that with effective cough therapy and effective chest physiotherapy to remove sputum in ineffective airway clearance, it was shown that the ability to expel patient's secretions was shown from the first day to the last day of giving chest physiotherapy and effective coughing, the results showed that the patient was able to secrete because it can cough effectively.

Effective coughing is a way to train patients who do not have the ability to cough actively with the aim of clearing the larynx, trachea, and bronchioles of secretions or foreign objects in the airway (Fatimah et al, 2019). Chest physiotherapy is one of physiotherapy that is very useful for people with respiratory diseases, both acute and chronic. Chest physiotherapy is one of the therapeutic nursing methods to open the airway and loosen phlegm by means of postural drainage and tapping in patients with impaired airway clearance (Herdman, 2018).

Research conducted by Tahir, et al (2019) found that with effective cough therapy and effective chest physiotherapy for removing sputum in ineffective airway clearance, the ability to expel patient secretions was shown from the first day to the last day of administering chest physiotherapy and coughing. Effectively, it was found that the patient was able to expel secretions because he could cough effectively.

Previous research conducted by Siti Fatimah, (2019) found that for 3 days the final evaluation from Mr. M and his family have been able to perform effective coughing techniques, effective coughing actions are carried out twice a day with the help of family or independently and auscultation results in the sound of crackles on the right side being inaudible, so it is proven that effective coughing actions carried out for 3 days can help remove secretions Mr. M. This case study was conducted to find out the application of effective cough therapy and chest physiotherapy in the elderly with respiratory disorders in COVID-19 patients.

## **2. METHODS**

### **Patient Information**

The client is a 57-year-old male. The client complained of fever for the past 3 days, shortness of breath, and coughing. The results of the PCR test were declared positive for COVID-19.

### **Clinical Findings**

During the assessment, it was found that TTV: Td: 130/90 S: 39°C RR: 27 x/minute Pulse: 98x/minute, and additional breath sounds (rhonchi) were heard. The client said he had no previous medical history and had no family history of illness. The client also said that when he was sick he had difficulty starting to sleep because of coughing and shortness of breath. The functional status assessment was assessed using the Kats index with the results of independent client examinations in daily activities such as eating, continental, moving to the restroom, dressing, and bathing independently. From the results of the assessment of cognitive and affective status using the Short Portable Mental Questionnaire (SPMSQ) format, the client has experienced good intellectual function. From the results of the cognitive function examination using the Mini mental-state examination (MMSE), 28 results were obtained, which means there is no cognitive function disorder.

Assessment of psychological and social conditions The client has a good emotional state such as not being easily offended or angry with others, has good family support because the client's family really cares about him, and has good relationships between families with other families visiting the client often or vice versa, and good relationships with other people is also good because the Client often talks with neighbors, both those who are the same age as him and those who are

younger than him. The results of the spiritual assessment found that the client was diligent in worship.

### **Diagnostic Assessment**

The nursing diagnosis for this client is ineffective airway clearance, with the nursing care plan carried out by airway management. The general goal after being given nursing intervention for 7 days is that the production of sputum or phlegm does not block the airway. The specific objectives include: effective coughing ability to increase (2 to 5), sputum production (2 to 5), frequency of breathing patterns (2 to 5)

### **Therapeutic Intervention**

The intervention was carried out to remove sputum or phlegm in COVID-19 patients by carrying out chest physiotherapy and effective coughing. The intervention started by positioning the semi-Fowler or Fowler and prone, then continued with chest physiotherapy and coughing effectively in the morning for 15 minutes for a period of 7 days.

### **Follow-up and Outcomes**

After the nursing intervention for chest physiotherapy and cough was effective for 7 days, the results showed that the client said he was able to cough effectively, and chest physiotherapy actions could also be carried out by one of his family members. The client said that during chest physiotherapy and effective coughing every day, it was carried out in the morning for 7 days, the coughing and shortness of breath were slowly not felt again, phlegm could be removed properly, thus making the client's breathing relieved.

## **3. RESULTS AND DISCUSSION**

Chest physiotherapy and coughing are effective in the morning for 7 days on clients to help remove phlegm or secretions from the airways of clients with Covid-19. The stages of implementing the activity begin by providing warm water tools, mats or bedding, tissue pillows and a place to expel phlegm, then adjust the client's position and then clapping the client's back, after that instruct the patient to stone effectively.



6. *Instruct the client to rest for a while and ask the client to finish the water*
7. *Return to a comfortable position*
8. *Evaluation: lung sounds (auscultated) and client comfort*
9. *Cleaning tools and washing hands*

According to Hidayat, (2018) the objectives of doing effective chest physiotherapy and coughing in patients with COVID-19 are as follows: To expel stored secretions, To restore, maintain and strengthen the function of respiratory muscles, To improve movement and flow of secretions, and to remove secretions from the respiratory tract

According to Hidayat, (2018) the indications for effective chest physiotherapy and coughing on clients with respiratory system disorders are as follows: Patients with airway disorders, Patients with general weakness and swallowing and coughing disorders, Patients with pneumonia, Patients with increased sputum production, Patients with lung abscess. All of these indications appear in patients who are experiencing Covid-19 with moderate symptoms. COVID-19 patients may present in two ways, namely, severe hypoxemia with normal lung compliance, where the cause of hypoxemia is impaired pulmonary blood flow.

In the first stage, a Prone lying position is recommended in hypoxemic COVID-19 patients. It improves oxygenation and ventilation.<sup>6,11</sup> If the patient is not ventilated, an active prone lying position can be given, or an assisted position can also be given. Commands can be provided with audio-visual aids and charts to help prevent contact with COVID-19 patients and decrease transmission risk. Next, a chest physiotherapist provides airway clearance techniques, optimal patient positioning, and inspiratory muscle training to these patients, which improves their ventilatory function. The final stage of sputum is expelled through coughing.

Based on the evaluation carried out for 7 days on the client, it can be concluded that the effectiveness of giving chest physiotherapy and coughing effectively can be done in the morning to help remove phlegm or secretions in the airway. Clearance of the airway can be achieved because these effective chest and cough physiotherapy measures can mobilize increased secretions in the respiratory tract (Laukhil, 2018). A patent airway is an outcome target or outcome criterion for the diagnosis of ineffective airway clearance (Herdman, 2018).

This is supported by previous research conducted by Siti Fatimah, (2019) the results

showed that for 3 days the final evaluation of the client and family were able to perform effective coughing techniques, and effective coughing actions were carried out twice a day with the help of family or independently and auscultation obtained sound results. The rhonchi on the right side were no longer audible, so it was proven that an effective coughing action for 3 days was able to help expel the client's secretions.

This is also in line with previous research conducted by Sitorus, et al (2018) which found that performing chest physiotherapy and coughing effectively could improve the general condition of the client. Evaluation of the successful application of chest physiotherapy and effective cough on both clients showed that they are both getting better quickly this is because they equally adhere to the chest physiotherapy program and effective coughing. Keluarga sebagai pusat pemberian asuhan keperawatan memegang peranan yang sangat penting dalam penatalaksanaan gangguan pernafasan pada pasien COVID-19. Penerapan protocol kesehatan menjadi kunci utama untuk melindungi diri dan keluarga dari penyebaran virus COVID-19 (Darmawati, 2016, 2021)

#### 4. CONCLUSION

Effective chest physiotherapy and coughing can be used as an intervention in nursing care for respiratory disorders in patients with covid 19. During the 7 interventions, coughing and shortness of breath were reduced, and phlegm could be expelled properly, thus relieving the client's breathing.

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