

Case Report Paper

Nursing Intervention in Handling Covid-19 Hypoxia Patients in the Isolation Room of Covid-19 Hospital Badaruddin Kasim Tanjung South Kalimantan

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Article History

Received:
28.01.2023

Revised:
15.02.2023

Accepted:
21.02.2023

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Abstract: Coronavirus 2019 (Covid-19) is an infectious disease caused by the acute respiratory syndrome of coronavirus 2 (Sars-CoV-2). Some complaints appear in patients who are confirmed to be covid-19, one of which is hypoxia, hypoxia is a condition of low levels of O₂ contained in cells / tissues to below the physiological level. Nursing intervention activities against clients with hypoxia that nurses must do is to adjust the position of the client's body to reduce lung workload, teach correct breathing techniques, and pay attention to the environment, collaboration on O₂ administration. The research aims to find out nursing interventions in handling Covid-19 hypoxia patients in the Covid-19 Isolation Room of H. Badaruddin Kasim Tanjung Hospital. This study used qualitative methods with interview techniques that explained the implementation of nursing interventions with hypoxia clients with COVID-19 in the Isolation Room of Badaruddin Kasim Tanjung Hospital. Sampling using purposive sampling techniques. Data is analyzed through the results of interview recordings in the form of verbatim transcripts or descriptions of recordings in the form of written descriptions or narrative texts. based on the results of the interview produced six sub themes, namely changing the position of semifowler patients in maximizing breathing, oxygen administration, monitor respiration status, observation of the respiratory department, monitor symptoms of hypoxia & happy hypoxia, and airway monitor.

Keywords: COVID-19, Hypoxia, Isolation Room.



1. Introduction

COVID-19 is an infectious disease caused by the new coronavirus, called '2019 novel coronavirus' or '2019-nCoV.' [1]. Coronavirus 2019 (Covid-19) is an infectious disease caused by the acute respiratory syndrome of coronavirus 2 (Sars-CoV-2). The disease was first discovered in December 2019 in Wuhan, and has since spread globally around the world, resulting in the 2019-2020 coronavirus pandemic. Various efforts to prevent the spread of the Covid-19 virus were also carried out by governments in countries around the world to break the chain of the spread of the Covid-19 virus [2]. Some complaints appear in patients who are confirmed to be covid-19, one of which is hypoxia, hypoxia is a condition of low levels of O₂ contained in cells / tissues to below physiological levels [3]. Oxygen levels in cells/tissues can be said to be hypoxia when the partial pressure of oxygen gas (Pgas) (PO₂) in the blood of the arteries < 100 mmHg because there is < 20% of O₂ gas in atmospheric air [4]. Cells that experience a lack of oxygen or blood supply will begin to swell and cell death occurs [5]; [6]. Nursing intervention is any action, based on clinical judgment and knowledge, which nurses take to improve outcomes in clients [7]. Nursing intervention activities for clients with hypoxia that nurses must do is to adjust the position of the client's body to reduce lung workload, teach the correct breathing technique, and pay attention to the environment, collaboration on O₂ administration. Based on this problem, researchers conducted a study with the title Nursing Intervention in handling Covid-19 Hypoxia Patients in the Isolation Room of Covid-19 Hospital H. Badaruddin Kasim Tanjung.

2. Literature Review

Corona Virus Disiase is a single positive, encapsulated and non-segmented RNA virus. Corona virus belongs to the order Nidovirales, family Corona viridae. Corona viridae are divided into two sub-families distinguished by serotypes and genomic characteristics. There are four genera namely alpha coronavirus, betacoronavirus, deltacoronavirus and gamma coronavirus [8]; [9]; [10]. Cyclic manifestations of COVID-19 are, noncomplicating, mild pneumonia, severe pneumonia, Acute Respiratory Distress Syndrome (ARDS, sepsis).

Management of COVID-19 patients, namely by early detection and sorting of patients related to COVID-19 infection must be done from the start of the patient coming to the hospital. Some efforts to prevent and control infections need to be applied principles, namely hand hygiene, the use of personal protective equipment to prevent direct contact with patients (blood, body fluids, secretions including respiratory secretions, and skin not intact), prevention of needle and sharp objects, management of medical waste, cleaning and disinfecting equipment in hospitals and cleaning the hospital environment. Cleaning and disinfecting based on coronavirus characteristics is sensitive to heat and can effectively be inactivated by disinfectants containing chlorine, lipid solvents with a temperature of 56 °C for 30 minutes, ether, alcohol, peroxoacetic acid and chloroform. Chloroform chlorhexidine is not effective in inactivating the virus. Based on the Decree of the Minister of Health number HK.01.07 /Menkes/413/2020 concerning COVID-19 guidelines and control, regarding COVID-19 guidelines and controls, the procedures for handling COVID-19 pasein are as follows:

- a) Covid-19 patients without symptoms. A common symptom is respiration rate between 12-20 x/min, oxygen saturation value $\geq 95\%$. The therapy provided is the provision of vitamin C and vitamin D and Zinc.
- b) Covid-19 patients with mild symptoms. Common symptoms are fever, cough, fatigue, anorexia, headache, anosmia, loss of taste buds, myalgia and bone pain, sore throat, flu, nausea, vomiting, abdominal area pain, diarrhea, inflammation of the conjunctiva, redness of the skin or discoloration of the toes, respiration rate of 12-20x / minute, oxygen saturation value $\geq 95\%$. The recommended treatment room is a government-facilitated isolation room or place, isolation at home independently for the qualified. Therapies that can be given such as the drugs Oseltamivir or Pavifiravir, Azitromizin, vitamins C and D and Zinc.
- c) Covid-19 patients with moderate symptoms. Symptoms are generally the same as those of covid-19 patients with mild symptoms. Differences in symptoms at respiration rate $> 30x$ / minute with oxygen saturation value $\leq 95\%$, there are complaints of dyspnea with respiratory distress. The place where the treatment is carried out is in a special hospital or that receives Covid-19 treatment. Therapy given such as the drugs Favipirafir, remdesivir, azitromicin, cotextosteroid, vitamins C and D, zinc, anticoagulants, LMWH / UFH based on the evaluation of the doctor in charge. Handling of patient treatment.

- d) Covid-19 with comorbidities. Oxygen therapy with high Flow Nasal Canule (HFNC). Covid-19 patients with severe or critical symptoms. Symptoms are generally the same as symptoms in covid-19 patients with moderate symptoms. Differences in symptoms usually contain a picture of the patient's condition leading to critical such as Acute Respiratory Distress Syndrome (ARDS) or respiratory failure, sepsis, sepsis shock and malfunction of some organs. The therapy provided is also the same as in covid-19 patients with moderate symptoms. Non-invasive oxygen administration using HFNC or invasive with the installation of ventilators and other additional therapies.

3. Methodology

This study used qualitative methods with in-depth interview techniques using android cellphone tools for video recordings of interviews, pen stationery and books, as well as interview guides explaining the implementation of nursing interventions with hypoxia clients with COVID 19 in the Isolation Room of Badaruddin Kasim Tanjung Hospital. The sample in the study was a nurse who provided nursing intervention to clients with COVID 19 in the Isolation Room of Badaruddin Kasim Tanjung Hospital as many as 3 respondents in accordance with the sample criteria and was considered sufficient to represent the research system in the form of a case study. Sampling with purposive sampling techniques.

4. Finding and Discussion

Based on the results of the researcher's analysis, there are several themes, namely:

1. Changing the position of semi-fowler patients in maximizing breathing
The results of findings and nursing interventions to maximize lung function in producing oxygen for the body can be done by providing a semi-fowler position and or pronation position. The semi-fowler position is able to maximize lung expansion and decrease the use of additional breathing aids, thus making oxygen in the lungs increase. In addition, damage to the alveolus membrane due to fluid deposits can be reduced due to the influence of gravitational force so that oxygen transport becomes optimal [11]. While the position of pronation will cause the back of the lungs to open and there is no compressed mediastinum or abdominal cavity which results in more airflow into the alveoli [12].
2. Oxygen administration
The results of this study showed that the majority of nurses provided interventions in the form of providing oxygen therapy to Covid-19 patients. In patients with Covid-19 who are hospitalized for respiratory problems due to hypoxemia and when patients begin to experience a decrease in oxygen saturation $<94\%$, oxygen administration is given to patients [13]. This is done to improve the condition of hypoxemia and hypoxia of the tissues by increasing the oxygen fraction (FiO_2) [14].
Monitor the status of respiration Covid-19 patients who receive treatment at the hospital are patients with moderate, severe to critical illness categories. Monitoring of Covid-19 signs and symptoms in each patient is carried out to determine the patient's condition including in moderate, severe or critical conditions. Monitoring the patient's condition for 24 hours is more done by nurses. According to the Ministry of Health of the Republic of Indonesia [15] in the pocketbook of the Covid-19 procedure protocol outlines the monitoring that needs to be done on Covid-19 patients with medium categories such as complete peripheral blood laboratory monitors. SpO_2 status check to find out the status of hypoxemia, under certain conditions blood gas analysis (AGD) examination can be done. In severe or critical category patients, peripheral blood laboratory examinations, thoracic photo examinations, monitor signs such as: tachypnea, breath frequency ≥ 30 x / minute, oxygen saturation with pulse oximetry $\leq 93\%$, $PaO_2 / FiO_2 \leq 300$ mmHg, lymphopenia, progressive, progressive CRP enhancement, progressive lactic acidosis, increased lung damage $>50\%$ on thoracic imaging within 24-48 hours. In critical condition monitors there is respiratory failure that requires mechanical ventilation, shock or multiorgan failure that requires ICU treatment [16].
3. Observation of the respiratory department
In patients exposed to Covid-19 have a variety of symptoms, one of which is respiratory distress. The clinical picture of the severity of respiratory disorders due to Covid-19 is acute respiratory failure associated with Acute Respiratory Distress Syndrome (ARDS). Airway disorders, pulmonary parenchyma, pulmonary blood vessels and respiratory neuromuscular

disorders occur in Covid-19 patients [17]. Respiratory disorders in Covid-19 patients with severe conditions require patients to receive intensive care. Most patients admitted to the ICU with severe conditions due to exposure to Covid-19 have Acute Respiratory Distress Syndrome (ARDS) and require mechanical ventilation installation measures. This occurs due to a dramatic decline of the respiratory system [18] [19]. Symptoms and signs of acute respiratory failure such as the presence of hypoxemia or hypercapnea or both are accompanied by symptoms of the disease, decreased consciousness, headaches [20] are based on the mechanic of breathing, namely Respiration Rate 25-35 x / min, Vital capacity 30-15 ml / kg, Inspiratory Force 50-25 cm H₂O. While respiratory failure Respiration Rate >35 x / min, Vital capacity <15 ml / kg and Inspiratory Force <25 cm H₂O. Meanwhile, according to Shapiro, the criteria for acute respiratory failure if the PaO₂ value <50 mmHg and the Pressure of PaCO₂ >50 mmHg. Outlined the criteria for diagnosing ARDS according to The Berlin Definition one of which is the results of thorac imaging that is not clear whether effusion, atelectasis or mass occurs. It is likely the source of pulmonary edema but not entirely related to excess fluid due to heart failure.

4. Monitor symptoms of hypoxia and happy hypoxia

Hypoxia is a condition of the body's cells lack of oxygen caused by lack of oxygen in the blood (hypoxemia). Hypoxia events generally occur in covid-19 patients. One way to prove it is to review complaints of shortness of breath, frequency of breath and depth of breath, measure oxygen saturation or see the results of Blood Gas Analysis (AGD). This condition needs to be monitored because it is related to the impact caused by hypoxia such as decreased consciousness and even organ failure. Some cases of Covid-19 are now also revealed to have hypoxic events but do not cause symptoms of respiratory disorders or often known as happy hypoxia. Whereas when the PaO₂ artery drops below 40mmHg, dyspnea should occur [17].

Happy Hypoxia is a condition in which there is severe arterial hypoxemia in patients but there are no complaints of shortness of breath or signs of proportional breathing disorders. This condition is what causes many health workers to conclude that the patient is fine or not in a critical condition. Acute respiratory distress syndrome (ARDS) occurs when fluid builds up in the tiny, elastic air sacs (alveoli) in your lungs. The fluid keeps your lungs from filling with enough air, which means less oxygen reaches your bloodstream. This deprives your organs of the oxygen they need to function. The impact is that the worsening of the condition towards acute respiratory distress syndrome (ARDS) quickly occurs, this is because of the undetectability of happy hypoxia. Therefore, the monitor of happy hypoxia symptoms is one of the nursing interventions that need to be done regularly [21]. Early detection of happy hypoxia is needed to prevent further lung damage, one of which is by using a pulse oximeter to measure oxygen absorption in the blood.

5. Airway monitor

In the case of Covid-19 categorized in pneumonia because it has symptoms such as fever, cough, shortness of breath, rapid breathing. Pneumonia is an inflammatory process in the lungs that there is conciliation caused by filling the exudate alveoli cavity and one of the nursing problems that arise is ineffective airway cleaning. Studying the problem of ineffective airway cleaning can help nurses to collaborate immediately in overcoming the problem. So that the patient's problem does not lead to a serious direction [19]. To perform continuous monitoring of COVID-19, wearable respiratory sensors need to demonstrate long-term stability under the erosion of sweat, body and ambient temperature fluctuations, mechanical deformations, and many other environmental impacts. Thus, precisely encapsulating respiratory sensors could be a critical research direction. Meanwhile, many respiratory sensors can respond to abundant biomechanical motions such as swallowing, speaking, heartbeat, and limb movements, which may mask respiratory information and introduce noise. Developing a differential respiratory monitoring system by deploying multiple sensing nodes in different locations of the human body is a possible solution to cancel artifacts. In addition, for biochemical sensing, developing nanomaterials with optimized selectivity on SARS-CoV-2-related proteins, for example, spikes, envelope, matrix, or nucleocapsid proteins, could allow for ultrasensitive and low-noise detection of biomarkers from exhaled breaths [20].

5. Conclusion

Research wants to know nursing interventions in handling Covid-19 hypoxia patients in the Covid-19 Isolation Room of H. Badaruddin Kasim Tanjung Hospital. The results of this study obtained nursing interventions are always given to covid-19 patients with hypoxia, namely changing the position of semifowler patients in maximizing breathing, oxygen administration, monitor respiration status, observation of the respiratory department, monitor symptoms of hypoxia & happy hypoxia, and airway monitor.

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