

Effects of Progressive Mobilization on Awareness Levels in Intensive Care Unit

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Abstract: Decreased awareness is one indicator of gravity and prognosis in critical patients. One of the therapies used in treating patients with the decreasing of consciousness is by the arrangement of position in the form of mobilization progressive. This study used pre Experiment with one group pre-post-test design. Sample were 20 patients selected by using purposive sampling technique. Data were collected through observation, measurement of awareness level with Glasgow Coma Scale (GCS) instrument before and after which was analysed by Paired T-Test. The results showed an increase in GCS value between before and after progressive mobilization treatment with $p=0.000$ which was smaller than $\alpha=0.05$. Progressive mobilization is able to serve as additional interventions that can be applied to improve patient awareness status and improve ventilation, circulation, and perfusion.

1 BACKGROUND

Disturbance of consciousness can occur in neurological disease and non-neurological conditions (Wuysang et al. 2015). The problem that often arises in critical patients treated in the intensive care unit (ICU) is the decrease of consciousness. The prevalence of delirious patients (delirium) reaches 80% (Bashar et al. 2017). The study found that critically ill patients were at high risk for delirium, with 50% of ICU patients and 80% of mechanical ventilation patients experiencing delirium. Patients with delirium have a higher risk of complications of nosocomial pneumonia, longer duration of mechanical ventilation, longer treatment period and a higher risk of death compared to patients without delirium (Munro et al. 2017). The indicator of gravity and prognosis in critical patients are the patient's awareness status. Prevention and management of decreased levels of patient awareness in intensive care is essential for identifying risk factors, evaluating the patient's environment, maintaining basic nursing care activities and being able to implement nonpharmacological interventions (Tel 2017). Nonpharmacological interventions that can be applied to critical patients are progressive mobilization therapy (Tel 2017).

Mobilization refers to adequate physical activity to obtain acute physiological effects that increase ventilation, peripheral and peripheral perfusion, circulation, muscle metabolism, and alertness and to prevent deep vein thrombosis. The benefit of progressive mobilization in critical patients is to improve physiological function and fulfill adequate oxygen demand (Roos 2015). Other studies have also found mobilization therapy to improve oxygenation in critical patients, preventing respiratory complications and delirium (Umei et al. 2016). Progressive mobilization can have a positive impact on the awareness of the patient with a ventilator in ICU. We tested this hypothesis in a fundamental study of the effects of progressive mobilization on awareness levels in patients with decreased awareness in ICU RSUD Prof. Dr. H. Aloei Saboe Gorontalo.

2 METHODS

2.1 Study Design, Population and Sampling

This study used pre experiment research type with one group pre-post-test design. Sample were 20 patients in Intensive Care Unit (ICU) who met

inclusion criteria: 1) GCS <11), 2) O₂ Saturation ≥ 90%, 3) Heart rate > 60 <120, 4) age 29-45 years old taken by purposive sampling. Measurement of awareness level with Glasgow Coma Scale (GCS) instrument (Institute of Neurological Sciences NHS Greater Glasgow and Clyde 2015). The Ethics Commission of the Faculty of Nursing Universitas Airlangga approved the study and all recruits provided voluntary written consent to participate after being fully informed about the procedure, risk, and protocol.

2.2 Procedure and Analysis

Progressive mobilization in this study was head of bed 30° with trunk position, a range of motion 2 times a day (morning and afternoon) and Continuum Lateral Rotation Therapy every 2 hours. Perform initial mobility screen 8 hours of ICU admission. Progressive mobilization is given for 5 days. The data were analysed by using Independent T-Test with significance level $\alpha=0.05$.

Table 1: Demographic characteristics and clinical data of the 20 patients.

Variable	Patients (n=20)
Age	29-45
Sex	
Male	12 (60%)
Female	8 (40%)
Diagnosis	
Stroke	7 (35%)
Respiratory Distress Syndrome	12 (60%)
Sepsis	1 (5%)

Table 2: The effect of progressive mobilization in ICU Patients.

Variable	Pre-test (mean (SD))	Post-test (mean (SD))	p
Awareness levels/ GCS	9.50 (0.889)	10.95 (0.826)	0.000

* GCS is only seen on the eye and motoric because the patient is on a ventilator

3 RESULTS

During the study from 5 January 2018 to 03 March, 2018 found 56 patients who installed ventilator. 20 (n=20) patients were respondents who met the criteria.

This study found that after 5 days of progressive mobilization in 20 respondents experienced a change

in awareness status characterized by an increase in GCS score. Paired T-Test test results found P-value = 0.000 <0.005 and the value of CI do not pass the number 0 then statistically there is the effect of progressive mobilization of the level of awareness of patients in ICU.

4 DISCUSSION

Head of bed or head elevation in head injury patients is expected so that venous drainage to the brain remains smooth. Head of bed can be done if there is no contraindication for the patient to do (Mahfoud et al. 2010). The position of the head of bed does not interfere with the perfusion of oxygen to the cerebral (Olviani, 2015).

Provision of a higher head position may provide good lung performance in the ventilation distribution process as well as perfusion will improve during mobilization. Blood circulation is also affected by body position and gravitational changes of the body. So that perfusion, diffusion, the distribution of blood and oxygen flow can flow throughout the body. Head of the bed has an effect on oxygen saturation. Head of bed position causes the body to perform various ways to adapt psychologically to maintain cardiovascular homeostasis. Critical patients usually have a weak pulse, unstable breathing or low cardiovascular reception so it is better to be given intervention rather than being left in a static position (Vollman 2010).

The Range of motion (ROM) is an exercise performed to maintain or improve the ability to move the joints normally and completely to increase muscle mass and muscle tone (Potter & Perry, 2010). ROM exercises determine the value of bone and muscle joint ability in performing a movement, improving muscle tone, improving muscle tolerance for exercise, preventing joint stiffness, and improving blood circulation (Beebe & Lang 2009)

ROM can affect the development of awareness in patients in the ICU room. Implementation of ROM in critical patients runs well and is digested by patients with mechanical ventilation. ROM may affect blood pressure, heart, respiratory rate, central venous pressure and oxygen saturation within the normal range (Younis & Sayed Ahmed 2015).

CLRT was found to reduce the incidence of ventilator-associated pneumonia in patients with mechanical ventilation (Bein et al. 2012). CLRT is continuously shown to reduce the risk of nosocomial pneumonia, pulmonary complications, reduce the number of days of ventilation, length of stay and reduce overall treatment costs (Swadener-Culpepper

et al. 2008). CLRT improves the drainage of secretion in the lungs, optimizes pulmonary expansion, reduces respiratory complications (VAP, atelectasis, ARDS) and reduces the associated risk of venous and PE thrombosis from immobilization (Kubo 2008). CLRT achieve best results when done at least 18 hours two times a day (Timmerman 2007).

The decrease in physical function that occurs in critical patients in ICU can be countered with physical therapy to increase muscle strength and to apoptosis (Suwardianto 2006).

Level of awareness each patient has with a variety of average clinical problems is influenced by the inadequate supply of oxygen to the brain tissue (hypoxia) so that the need for improved ventilation and circulation in the body. Progressive mobilization consisting of the head of bed 30° with trunk position, ROM, and CLRT.

Head of bed can reduce intracranial pressure, launching venous drainage to the brain and increasing oxygen saturation in the body. Passive ROM by nurses in addition to preventing complications due to immobilization, can also reduce the accumulation of sputum and increase the elasticity of blood vessel walls so that the circulation of virgin, oxygen, and nutrients smoothly. CLRT every 2 hours can maximize ventilation and prevent and treat respiratory complications. Hypoxia will be handled when oxygenation in the body is supported by good circulation and ventilation so perfusion to the brain can improve the patient's awareness status. Progressive mobilization may increase the transport of oxygen in the patient's body.

Mobilization of patients in ICU as early rehabilitation to maintain muscle strength and to prevent poor changes in cardiovascular response, in addition, mobilization is expected to shorten the length of care in ICU (Morris & Herridge 2007).

Progressive mobilization is a recommended intervention to improve the awareness status of patients with critical conditions, especially patients with hypoxia.

5 CONCLUSIONS

Progressive mobilization in ICU patients can support ventilation and circulation improvements to provide adequate perfusion effects to the brain tissue that can boost the patient's awareness status.

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