

CHAPTER I

INTRODUCTION

1.1 Background

A mechanical ventilation is a life-support device used to replace or support impaired respiratory function, enabling patients to breathe normally. It operates by delivering positive pressure to push air into the lungs, thereby reducing the workload of the respiratory muscles (Hassan et al., 2021). In principle, a mechanical ventilation or ventilator placement involves connecting the device to the patient via an endotracheal tube (ETT) inserted through the patient's mouth and down into the trachea. The process of inserting the ETT into the patient's trachea is called intubation (Suwardianto, 2020).

Ventilator placement, particularly via an endotracheal tube (ETT), can cause pain in patients. The insertion of a foreign object into the airway can lead to irritation, pressure, and tissue trauma, all of which trigger a pain response (Pangestika, 2020). Pain in ventilated patients becomes even more complex due to various underlying diseases and a decreased level of consciousness in most cases. This condition leads to limited body movement, making patients unable to verbally express the pain they're experiencing (Gelinas, 2016). Pain assessment must be conducted accurately to determine subsequent interventions, as it can significantly impact both the patient's physical and psychological condition (Georgiou et al., 2015).

According to World Health Organization (WHO) records from 2016, among 16 ICUs in Asian countries, including Indonesia, there were 1285 patients using mechanical ventilators. In a study conducted by Iwashita (2018), in Japan a study on ventilated patients found that 17,775 patients on ventilators were cared for in exclusive general care units, while another 20,516 ventilated patients were treated in ICU settings. In Indonesia, the number of critically ill patients using mechanical ventilators accounts for two-thirds of all patients admitted to Indonesian ICU (Bastian et al., 2016).

In a study conducted by (Lestari et al., 2024) in the ICU of Soedono Madiun Regional General Hospital on 30 patients with mechanical ventilators, using the Critical Care Pain Observation Tool (CPOT) for assessment, the results showed that 60% of respondents experienced mild pain with a pain score range of 1-2, 26.6% had moderate pain with a score range of 3-4, and the remaining 13.3% suffered from severe pain with a score of 5-6.

Pain is the most frequently experienced uncomfortable sensation for patients on ventilators. (Yamashita et al., 2017). Pain in ventilated patients can be exacerbated by several factors, including age, gender, disease stage and complications, and a history of post operative pain (Ayasrah, 2016). Pain is often suspected to be exacerbated by the duration of ETT use and the insertion technique. The longer an ETT is in place, the greater the risk of pain and complications like pressure injuries and upper respiratory tract infections. The inability to speak or communicate can also make patients feel more distressed, potentially increasing their perception of pain (Wayan et al., 2023). Patients

with a low level of consciousness are unable to verbally express pain, necessitating the prioritization of pain measurement that relies on behavioral indicators in patients experiencing communication difficulties (Gomarverdi et al., 2019).

Pain that intensifies and is not properly diagnosed will make it difficult to determine effective pain management (Gomarverdi et al., 2019). Several pain assessment tools used specifically for critically ill patients include *Behavioral Pain Scale* (BPS), *Critical Care Pain Observation Tool* (CPOT), *Non Verbal Pain Scale* (NVPS), *Comfort Scale* and *Pain Assessment and Intervertion Notation* (NVPS). *Critical Care Pain Observation Tool* (CPOT) it becomes the most sensitive pain assessment instrument compared to other tools (Wahyuningsih et al., 2017). *Critical Care Pain Observation Tool* (CPOT) It is a method designed to detect pain in patients, primarily those in critical care who experience difficulties communicating pain. CPOT functions by observing changes in patient behavior as a reaction to pain, hence it is known as a behavior-based pain assessment instrument. CPOT includes four behavioral domains facial expression, body movements, muscle tension, and compliance with the ventilator for intubated patients, along with vocalization for non-intubated patients. Each domain is scored between 0 and 2, making the total maximum score across all domains range from 0 to 8 (Rijkenberg & Voort, 2016).

From the phenomena described above, the researcher is interested in conducting a study on “Analysis of Factors Affecting Pain Based on the Critical

Care Pain Observation Tool in Patients on Mechanical Ventilation at Ngudi Waluyo Wlingi Regional General Hospital” to analyze the factors associated with pain in ventilated patients in the ICU of Ngudi Waluyo Wlingi Regional General Hospital.

1.2 Problem Formulation

Based on the provided background, the author formulates the research problem as follows: “What are the factors influencing pain in patients on mechanical ventilators in the ICU of Ngudi Waluyo Wlingi Regional General Hospital?”

1.3 Research Objectives

1.3.1 General Objectives

The general objective of this study is to broadly analyze the factors influencing pain in ventilated patients at Ngudi Waluyo Wlingi Regional General Hospital.

1.3.2 Specific Objectives

The objectives of this study are to:

1. To analyze the relationship between age and pain in ventilated patients
2. To analyze the relationship between gender and pain in ventilated patients
3. To analyze the relationship between disease and pain in ventilated patients
4. To analyze the relationship between post operative status and pain in ventilated patients

5. To analyze the relationship between level of consciousness and pain in ventilated patients
6. To analyze the relationship between the duration of endotracheal tube (ETT) use and pain in ventilated patients
7. To analyze the dominant factors causing pain in ventilated patients

1.4 Research Benefits

1.4.1 Theoretical Benefits

It's hoped that the findings of this study will provide additional knowledge, learning, and information regarding the factors influencing pain in ventilated patients at Ngudi Waluyo Wlingi Regional General Hospital for educational institutions, and can also serve as a reference for future research.

1.4.2 Practical Benefits

1. For Ngudi Waluyo Regional General Hospital Wlingi

This study can benefit the hospital by identifying factors influencing pain in ventilated patients. This information can serve as a guide for determining appropriate interventions, ultimately enhancing the quality of care for ventilated patients at Ngudi Waluyo Wlingi Regional General Hospital.

2. For Respondents

This research is expected to contribute to a more objective detection and measurement of pain, as well as an understanding of factors influencing

pain in ventilated patients. This will enable patients to receive more precise, prompt, and higher-quality interventions.

3. For Polytechnic of the Ministry of Health Malang Applied Bachelor of Nursing Program

This study is anticipated to serve as valuable learning material and input for students, particularly those in the Applied Bachelor of Nursing program in Malang, regarding the factors influencing pain in ventilated patients using the Critical Care Pain Observation Tool.

4. For Other Researchers

This research is expected to be an additional reference for future studies concerning factors influencing pain in ventilated patients using the Critical Care Pain Observation Tool.