



CHAPTER I

INTRODUCTION

Patients in critical care units usually exhibit problems related to the respiratory tract. For some patients, these respiratory problems represent the primary illnesses; in others, they are secondary to diseases of other organ systems (Kenner, Gazzetta and Dossey, 1985). It has been estimated that up to 20-100% of all patients admitted to the intensive care units of Maharaj Nakorn Chiang Mai Hospital suffered from respiratory tract problems and required mechanical ventilation (Summary of the daily records of the intensive care units, Maharaj Nakorn Chiang Mai Hospital, 1991). While mechanical ventilators can save lives, they cannot be used effectively unless the responsible personnel are sufficiently knowledgeable about their effects on pulmonary physiology as well as proficient of their mechanics.

The use of mechanical ventilators involves multiple related procedures in varying time frame. The complexity of these processes and the usual severity of patients who need them require that responsible nursing personnel are adequately skilled and attentive in the overall application. Nevertheless, there can be unavoidable complications from the process of ventilator care

itself and other complications due to inappropriate use of ventilator and its related procedures, starting from endotracheal intubation until extubation.

Endotracheal intubation is a time limited procedure to rescue a patient, especially when respiratory arrest is found. To prevent brain death, the nursing team has only 4-5 minutes to assess the patient's condition, prepare equipments, assist physician until the procedure is completed. After intubation, if the patient's conditions indicate ventilatory failure, mechanical ventilation will be needed. A mechanical ventilator has to be connected to an endotracheal tube or a tracheostomy tube. These tubes act as the foreign bodies and may induce increased secretion in the airway whereas the patient loses the effective cough reflex because of the retained tube. Accumulated secretions in the airway may cause obstruction (Nelson, 1958; Dugan and Samson, 1963), hypoventilation, carbon dioxide retention, anoxia and coma (Neufeld et al., 1968).

In order to clear the airway, tracheal suctioning is needed. This procedure must be properly carried out because it can easily introduce complications such as trauma to the airway mucosa (Jung and Gottliet, 1976; Plun and Dunning, 1956) and cardiac arrhythmia (Shin et al., 1969). Mucosal ulceration may occur with the passage of suction catheter alone and the severity of the ulceration varies directly with the increase in negative pressure employed (Thambiran and Ripley, 1966). Moreover, some results of improper technique, such as tracheal stenosis due to cuffed

endotracheal tube (Vathesatogkit et al., 1979) and respiratory tract infection, are often not immediately apparent.

In a review of nosocomial infection conducted by the infectious control committee of Maharaj Nakorn Chiang Mai Hospital, it is found that the incidence of respiratory tract infection is the second highest (Summary of the infectious rate record, Infectious Control Committee, Maharaj Nakorn Chiang Mai Hospital, 1991). Also, the study by Srisupan et al. (1988) revealed an overall infection rate of 9.3% among all inpatients and the common sites of infection are urinary tract, respiratory tract, blood, surgical wounds and gastrointestinal tract, respectively. It will be interesting to assess how much of the respiratory tract infection is due to improper care provided for patients with mechanical ventilation and how much of this infection can be prevented.

Maharaj Nakorn Chiang Mai Hospital has provided her service for people in the northern part of Thailand for more than 30 years. While other hospitals may have large enough resources to set up a Department of Respiratorytherapy specifically to provide respiratory care services including mechanical ventilator care, such services are lacking in Maharaj Nakorn Chiang Mai Hospital. Here, this type of care is the responsibility of nursing personnel. In certain circumstances, nurses even have to set up and adjust ventilators by themselves. With this background, it is surprising that a study assessing the quality of mechanical ventilator care provided by nursing personnel has never been done in this hospital. Currently, there is insufficient evidence based on sound scientific

study and carefully controlled observations about the quality of nursing care provided to patients with mechanical ventilator among nurses.

Although the principles of mechanical ventilator care are usually taught in all basic nursing program, this care is, however, performed with considerable variations and frequently with questionable regards for sterile technique and proper management of the equipments. Because knowledge and sophisticated technology as well as the complications of which the mechanically ventilated patients encountered are rapidly increasing, so we attempt to take a more comprehensive look at the quality of patient care provided for the patients who require mechanical ventilator in a hospital setting and interrelated variables within it. In our effort to identify the problem area(s) in the caring of patients with mechanical ventilator in the intensive care units at Maharaj Nakorn Chiang Mai Hospital and to develop more appropriate and rational guidelines for the care of this device, the following research questions are addressed:

The primary research question: in intensive care unit, Maharaj Nakorn Chiang Mai Hospital, what is the percentage of acceptable ventilator care (assessed by the criterion standard) provided by nursing personnel?

The secondary research question: what are the factors affecting the quality of mechanical ventilator care?

The main objectives of the study are: 1) to determine the quality of mechanical ventilator care among nursing personnel in

the intensive care units at Maharaj Nakorn Chiang Mai Hospital, 2) to determine the factor(s) affecting the quality of mechanical ventilator care, and 3) to give appropriate recommendation(s) regarding mechanical ventilator care, based on sound research results, in order to improve the quality of care.