Nurses' Performance during Weaning from Mechanical Ventilator for Patients with Chronic Obstructive Pulmonary Disease

Thesis

Submitted for Partial Fulfillment of the Master Degree in Nursing Science Critical Care Nursing

By

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Dedication

الي ملهمتي

كنتم لي دوما مصدر الهام ودعم

كنتم نعم العلم والخلق والتواضع

وستظلون دوما تاج علي راسي

وستظلون مثل اعلي لطالبتكم الصغيره

أ.م.د. نجلاء السيد مهدى

و

د / زينب حسين بكر

Abstract

Nurses' Performance during Weaning from Mechanical Ventilator for Patients with Chronic Obstructive Pulmonary Disease

Background: Chronic obstructive pulmonary disease (COPD) remains a major cause of morbidity and mortality in the intensive care unit, Mechanical ventilation is indicated when the patient's spontaneous ventilation is inadequate to maintain life. Weaning and extubation is a critical time during ICU stay. Nurses must be knowledgeable to support clinical practice toward improved patient's outcomes and successful weaning process. **Aim:** Assess the nurses' performance during weaning from mechanical ventilator for patients with chronic obstructive pulmonary disease. **Research design:** Descriptive study was used. **Setting:** Chest intensive care unit at Zagazig University Hospital at Sharqia Governorate in Egypt. **Sample:** Convenience sample of 30 nurses in Chest intensive care unit who had experiences more than 6 months. **Tool of data collection:** Data were collected by using self administered questionnaire nurses' attitude likert scale and Nurses' practice observational checklist. **Results:** the present study showed that, 53.3% of the studied nurses had satisfactory level of total knowledge, No nurses had satisfactory level of total practice and 63.3% of the studied nurses had positive attitude during weaning from mechanical ventilation for patients with COPD. Also, there were no significant correlations between total level of the nurses' knowledge, Total level of practice and total attitude. **Conclusion:** the study revealed that all of the studied nurses had unsatisfactory level of practice in caring for COPD patients during weaning from mechanical ventilator inspite of more than half of them had satisfactory knowledge and positive attitude. This supported statistically with no significant correlation between knowledge, practice, and attitude of the studied nurses. **Recommendations:** Replication of the current study on large sample and different hospitals settings to be able to generalize the results.

Keywords: Chronic Obstructive Pulmonary Disease, Mechanical Ventilator, Nurses Performance, Weaning.

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Manar Moharram Mohamed

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List of Abbreviations

Abb.	Full term
A/C	*Assist/Control*
AARC	*American Association for Respiratory Care*
AAT	*Alpha-1-Antitrypsin*
ABG	*Arterial Blood Gases*
ALI	*Acute Lung Injury*
ANCA	*Antineutrophil Cytoplasmic Antibody*
ARDS	*Acute Respiratory Distress Syndrome*
ARF	*Acute Respiratory Failure*
CBC	*Complete Blood Count*
CNS	*Central Nervous System*
COPD	*Chronic Obstructive Pulmonary Disease*
CPAP	*Continuous Positive Airway Pressure Ventilation*
CPT	*Chest Physiotherapy*
DKA	*Diabetic Ketoacidosis*
E ratio	*Expiration Ratio*
ECG	*Electro-Cardiography*
Echo	*Echocardiography*
ETT	*Endo-Tracheal Tube*
FEV1	*Forced Expired Volume in One Second*
FVC	*Forced Vital Capacity*
GOLD	*Global Initiative for Lung Disease*
Hb	*Hemoglobin*
I: E	*Inspiration to expiration ratio*
ICU	*Intensive Care Unit*
LLN	*Lower Limit of Normal*
LTOT	*Long-Term O2 Therapy*

List of Abbreviations (Cont...)

Abb.	Full term
MV	*Mechanical ventilation*
NIV	*Noninvasive Ventilation*
NPPV	*Non-Invasive Positive Pressure Ventilation*
$PaCO_2$	*Partial Pressure of Arterial Carbon Dioxide in Blood*
PaO2	*Partial Pressure of Arterial Oxygen in Blood*
PC	*Pressure Control*
PCV	*Pressure Control Ventilation*
PEEP	*Positive end Expiratory Pressure*
PEEPi	*Intrinsic Positive end Expiratory Pressure*
PLB	*Pursed-Lip Breathing*
PND	*Paroxysmal Nocturnal Dyspnea*
PPE	*Personal Protective Equipements*
PS	*Pressure Support*
PSV	*Pressure Support Ventilation*
RR	*Respiratory Rate*
RSBI	*Rapid Shallow Breathing Index*
Sao_2	*Saturation of O_2*
SBT	*Spontaneous Breathing Trial*
SIMV	*Synchronized Intermittent Mandatory Ventilation*
TNF	*Tumor Necrosis Factor*
URIs	*Upper Respiratory Infections*
V/Q	*Ventilation-Perfusion*
VAP	*Ventilator-Associated Pneumonia*
Vt	*Tidal Volume*
WHO	*World Health Organization*

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ABSTRACT

Background: Chronic obstructive pulmonary disease (COPD) remains a major cause of morbidity and mortality in the intensive care unit, Mechanical ventilation is indicated when the patient's spontaneous ventilation is inadequate to maintain life. Weaning and extubation is a critical time during ICU stay. Nurses must be knowledgeable to support clinical practice toward improved patient's outcomes and successful weaning process. **Aim:** Assess the nurses' performance during weaning from mechanical ventilator for patients with chronic obstructive pulmonary disease. **Research design:** Descriptive study was used. **Setting:** Chest intensive care unit at Zagazig University Hospital at Sharqia Governorate in Egypt. **Sample:** Convenience sample of 30 nurses in Chest intensive care unit who had experiences more than 6 months. **Tool of data collection:** Data were collected by using self administered questionnaire nurses' attitude likert scale and Nurses' practice observational checklist. **Results:** the present study showed that, 53.3% of the studied nurses had satisfactory level of total knowledge, No nurses had satisfactory level of total practice and 63.3% of the studied nurses had positive attitude during weaning from mechanical ventilation for patients with COPD. Also, there were no significant correlations between total level of the nurses' knowledge, Total level of practice and total attitude. **Conclusion:** the study revealed that all of the studied nurses had unsatisfactory level of practice in caring for COPD patients during weaning from mechanical ventilator inspite of more than half of them had satisfactory knowledge and positive attitude. This supported statistically with no significant correlation between knowledge, practice, and attitude of the studied nurses. **Recommendations:** Replication of the current study on large sample and different hospitals settings to be able to generalize the results.

Key words: Chronic Obstructive Pulmonary – Mechanical Ventilator – Weaning - Nurses' Performance

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is characterized by chronic inflammation throughout the central and peripheral airways, lung parenchyma, and pulmonary vasculature. This inflammation is caused by exposure to inhaled noxious particles and gases. Smoking causes 85% to 90% of all cases, although genetic factors, passive smoking, occupational exposure and air pollution can also play a role. The main symptoms include shortness of breath and cough with sputum production ***(Dennis et al., 2016)*.**

As of 2015, COPD affected about 174.5 million (2.4%) of the global population world wide. It typically occurs in people over the age of 40. Males and females are affected equally commonly. In 2015, it resulted in 3.2 million deaths. More than 90% of these deaths occur in the developing world. Which is expected to be third most common cause by 2020 ***(Vos et al., 2016).*** In Egypt, according to National Institute of Health, COPD was the 8th cause of death in 2016 in all ages, after ischemic heart disease, cerebovascular disease, cirrhosis hepatitis C, road injuries, lower respiratory infections, diabetes and chronic kidney disease ***(Egyptian National Institute of Health, 2016).***

Exacerbations (a sudden worsening of symptoms) are an important outcome measure in COPD due to their profound effect on the patient's quality of life and prognosis. It is commonly triggered by infection, environmental pollutants or cold winter.It has been estimated that patients with COPD