#### Nurses' Performance Regarding Weaning of Patient's from Mechanical Ventilation:

(A Suggested Guideline)

#### Thesis

Submitted for Partial Fulfillment of the Requirement of Master Degree in Medical Surgical Nursing

#### Bγ Dina Mohamed Rabea Osman

B.Cs of Nursing-Ain Shams University Demonstrator in Technical Health Institute

> Faculty of Nursing Lin Shams University 2017

#### Nurses' Performance Regarding Weaning of Patient's from Mechanical Ventilation:

(A Suggested Guideline)

#### Thesis

Submitted for Partial Fulfillment of the Requirement of Master Degree in Medical Surgical Nursing

#### Supervisors

#### Ass. Prof. Dr. Asmaa Hamdi Mohamed

Assistant professor of Medical Surgical Nursing Faculty of Nursing - Ain Shams University

#### Dr. Asmaa Said Ali

Lecturer of Medical Surgical Nursing Faculty of Nursing - Ain Shams University

> Faculty of Nursing Lin Shams University 2017



سورة البقرة الآية: ٣٢

## Acknowledgment

First and for most I feel always indebted to AUAH, The most kind and most merciful.

I wish to express my deepest thanks and sincere appreciation to **Dr. Asmaa Hamdi Mohamed**, Assistant professor of Medical Surgical Nursing, Faculty of Nursing, Ain Shams University for her great support and advice, her valuable remarks that gave me the confidence and encouragement to fulfill this work.

I wish to express my special gratitude and appreciation to **Dr. Asmaa Said Ali,** Lecturer of Medical Surgical Nursing, Faculty of Nursing, Ain Shams University for her great support and advice, her valuable remarks that gave me the confidence and encouragement to fulfill this work.

Last but not least, I would like to express my hearty thanks to all my family for their support till completion of this work.

Dina Mohamed Rabea Osman

# List of Contents

| Title                   | Page No. |
|-------------------------|----------|
| List of Tables          | 6        |
| List of Figures         | 10       |
| List of Abbreviations   | 12       |
| List of Appendices      | 14       |
| Abstract                |          |
| Introduction            | 1        |
| Aim of the Study        | 4        |
| Operational definitions | 5        |
| Review of Literature    | 6        |
| Subjects & Methods      | 34       |
| Results                 | 41       |
| Discussion              | 74       |
| Conclusion              | 84       |
| Recommendations         | 85       |
| Summary                 | 86       |
| References              | 93       |
| Arabic Summary          |          |

## List of Tables

| Table No.   | Title                                | Page No. |
|-------------|--------------------------------------|----------|
| Tables of R | Review                               |          |
| Table 1:    | Differences between basic modes: Vo  | olume-   |
|             | and Pressure-Controlled Methods      | 9        |
| Table 2:    | Definitions of ventilator parameters | 13       |
| Tables of R | desults                              |          |
| Table 1:    | Number and percentage distribution   | of the   |
|             | studied nurses according to          | their    |
|             | demographic characteristics (n=45)   | 42       |
| Table 2:    | Number and percentage distribut      | ion of   |
|             | the studied nurses according to      | their    |
|             | correct knowledge regarding          | the      |
|             | mechanical ventilator (n=45)         | 45       |
| Table 3:    | Number and percentage distribution   | of the   |
|             | studied nurses according to their of | correct  |
|             | knowledge regarding weaning o        | f the    |
|             | patient from the mechanical ven      | tilator  |
|             | (n=45)                               | 47       |

### List of Tables (Cont...)

| Table No. | Title  | Page No.                      |
|-----------|--|-------------------------------|
| Table 4:  | Number and percentage distribution studied nurses according to   |                               |
|           | knowledge regarding nursing role starting weaning process (n=45)   |                               |
| Table 5:  | Number and percentage distribution studied nurses according to knowledge regarding nursing role the weaning process (n=45)                             | their<br>during               |
| Table 6:  | Number and percentage distribution studied nurses according to knowledge regarding nursing role aft weaning process (n=45)                             | their<br>ter the              |
| Table 7:  | Number and percentage distribution studied nurses according to their probefore starting the weaning of the probeform the mechanical ventilator (n=45). | actice's<br>patient           |
| Table 8:  | Number and percentage distribution studied nurses according to their prograding monitoring the patients weaning from the mechanical vertical (n=45)    | actices<br>during<br>ntilator |

### List of Tables (Cont...)

| Table No. | Title  | Page                         | No. |
|-----------|--|------------------------------|-----|
| Table 9:  | Number and percentage distribution studied nurses according to their properties of their percentage distribution studied nurses according to their percentage distribution of their percentage distribution of the percen | ractice<br>sample            | 60  |
| Table 10: | Number and percentage distribution studied nurses according to their properties of the | ractice<br>1 tube            | 62  |
| Table 11: | Number and percentage distribution studied nurses according to their properties of the patient from the mechanism ventilator (n=45)  | ractice<br>ng the<br>nanical | 64  |
| Table 12: | Number and percentage distribution studied nurses according to their properties of the patient from the mechanism of the patient from the mechanism (n=45)   | ractice<br>during<br>nanical | 66  |

### List of Tables (Cont...)

| Table No. | Title   | Page            | No. |
|-----------|---|-----------------|-----|
| Table 13: | Relation between demogration characteristics of the studied nurses their knowledge about weaning of patient from mechanical ventilator (n=4)                        | and<br>the      | 69  |
| Table 14: | Relation between demogration characteristics of the studied nurses their competency in practices regard process of weaning the patient mechanical ventilator (n=45) | and arding from | 71  |
| Table 15: | Correlation between total level know and total level practices of the st nurses regarding weaning patient mechanical ventilation (n=45)                             | udied<br>from   | 73  |

## List of Figures

| Fig. No. | Title  | Page No.                       |
|----------|--|--------------------------------|
| Fig. 1:  | Distribution of the studied nurses at their attending training courses weaning of the patient from the med ventilator.                                       | about<br>chanical              |
| Fig. 2:  | Distribution of the studied nurses accordance taking active role in weaning of the from the mechanical ventilator  | patient                        |
| Fig. 3:  | Percentage distribution of the studied according to level of knowledge abmechanical ventilator.  | out the                        |
| Fig. 4:  | Percentage distribution of the studied according to their total knowledg regarding weaning the patient from mechanical ventilator                            | e level<br>om the              |
| Fig. 5:  | Percentage distribution of the studied according to their total knowledg regarding role of nurse before start weaning of the patient from the med ventilator | e level<br>ing the<br>chanical |

### List of Figures (Cont...)

| Fig. No. | Title Page  | e No.    |
|----------|---|----------|
| Fig. 6:  | Percentage distribution of the studied nurse according to their total knowledge lev regarding role of nurse during the weaning the patient from the mechanical ventilator       | el<br>of |
| Fig. 7:  | Percentage distribution of the studied nurse according to their total knowledge regarding role of the nurse after the weaning of the patient from the mechanical ventilator     | ng<br>ne |
| Fig. 8:  | Percentage distribution of the studied nurse according to their total knowledge lev regarding the weaning of the patient from the mechanical ventilator                         | el<br>ne |
| Fig. 9:  | Percentage distribution of the studied nurse according to their competency level regarding practice before starting the weaning of the patient from the mechanical ventilator   | ng<br>ne |
| Fig. 10: | Percentage distribution of the studied nurse according to their competency level regarding monitoring the patient during the weaning the patient from the mechanical ventilator | ng<br>of |

### List of Figures (Cont...)

| Fig. No. | Title   | Page No.                         |
|----------|---|----------------------------------|
| Fig. 11: | Percentage distribution of the studied according to their competency level reobtaining an atrial blood sample   | egarding                         |
| Fig. 12: | Percentage distribution of the studied according to their total competency lever practice regarding suctioning endotracheal tube                            | vel total<br>the                 |
| Fig. 13: | Percentage distribution of the studied according to their competency level reextubation technique during the weather the patient from the mechanical ventil | l nurses<br>egarding<br>aning of |
| Fig. 14: | Percentage distribution of the studied according to their competency lev provided after extubation  | el care                          |
| Fig. 15: | Number and percentage distribution studied nurses according their comblevel concerning weaning of patient mechanical ventilator                             | petency<br>nt from               |

# List of Abbreviations

| Abb.         | Full term                                       |
|--------------|---|
| AC           | Assist-Control                                  |
| <i>BP</i>    | Blood pressure                                  |
| <i>CMV</i>   | Controlled Mandatory Ventilation                |
| COPD         | Chronic obstructive pulmonary disease           |
| <i>CPAP</i>  | Continuous Positive Airway Pressure             |
| ETT          | Endotracheal tube                               |
| F/TV         | Frequency to tidal volume                       |
| FIO2         | Friction of inspired oxygen                     |
| GCS          | Glasgow Coma Scale                              |
| <i>MIP</i>   | Maximum inspiratory pressure                    |
| MV           | Mechanical ventilation                          |
| <i>PAV</i>   | Proportional assist ventilation                 |
| Paw          | Peak airway pressure                            |
| <i>PEEP</i>  | Positive end-expiratory pressure                |
| <i>Pplat</i> | Plateau pressure                                |
| <i>PSV</i>   | Pressure Support Ventilation                    |
| <i>RR</i>    | Respiratory rate                                |
| <i>RSBI</i>  | Rapid shallow breathing index                   |
| <i>SIMV</i>  | Synchronized intermittent mandatory ventilation |
| TV           | Tidal volume                                    |
| <i>VA</i>    | Alveolar ventilation                            |
| <i>VAP</i>   | Ventilator-associated pneumonia                 |
| VE           | Minute ventilation                              |

## List of Appendices

| Appendix No. | Title                             |
|--------------|-----------------------------------|
| I            | Protocol                          |
| II           | Tools of data collection          |
| III          | Suggested guidelines              |
| IV           | Validity and reliability of tools |

#### Abstract

**Introduction:** Mechanical ventilation is essential life-saving technology. Weaning a patient from mechanical is a challenge for critical care nurses who play a vital role in assessing patient's readiness for weaning. Aim: Study aimed to assess the nurses' performance regarding weaning of patients from mechanical ventilation and suggest nursing guideline regarding weaning of patient from mechanical ventilation. **Design:** Descriptive exploratory design was used in carrying out this study. Setting: This study was conducted at Cardiac Surgery Academic Institute affiliated to Ain Shams University Hospitals. Sample: A convenience sample consisted of 45 nurses. Tools: Nurses' characteristics Assessment Questionnaire, Nurses' knowledge assessment questionnaire, and Nurses' practice observational checklists regarding weaning from mechanical ventilator. Results: 73.3% of the studied nurses had satisfactory level of knowledge regarding weaning of patient from mechanical ventilation. Also the same percentage was competent during practicing care for mechanically ventilated patient. Conclusion: Most of the studied nursing were competent in performing their role regarding weaning of patient from mechanical ventilation. Recommendations: An orientation programme for staff newly appointed to the ICU should be conducted including education with regard weaning from mechanical ventilator. Extensive and ongoing in-service training programmes for ICU nurses to improve their knowledge and practice regarding weaning of patients from mechanical ventilator.

**Keywords:** Mechanical Ventilation, Nurses Performance, Weaning.