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A Study To Assess The Effectiveness Of Ventilator Bundle On Prevention Of Ventilator Associated Pneumonia Among Patients On Mechanical Ventilator At Selected Hospitals, Bhubaneswar

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Abstract
Statement of the Problem:
A study to assess the effectiveness of ventilator bundle on prevention of ventilator associated pneumonia among patients on mechanical ventilator at selected hospitals, BBSR was conducted by as a partial fulfillment of the requirements for the degree of Master of Science in Nursing at Manjari devi college of nursing, Bhubaneshwar affiliated to UTKAL UNIVERSITY VANIBIHAR.
Objectives:
1. To assess the ventilator associated pneumonia among patients on mechanical ventilator in experimental and control group.
2. To evaluate the effectiveness of ventilator bundle on prevention of ventilator associated pneumonia among patients on mechanical ventilator in experimental group and control group.
3. To associate the post test score on prevention of ventilator associated pneumonia among patients on mechanical ventilator with their selected demographic variables in experimental and control group.

1. Introduction

Chaurasia, 2002, Our body needs a constant supply of oxygen to support the body's metabolism. Respiration is one of the processes needed for survival and also provides the necessary energy for carrying on all essential life processes. It is the process by which an organism exchanges gases with its environment. The respiratory tract is the path of air from the nose to the lungs. It is divided into two sections: Upper Respiratory Tract and the Lower Respiratory Tract. Included in the upper respiratory tract are the Nostrils, Nasal Cavities, Pharynx, Epiglottis, and the Larynx. The lower respiratory tract consists of the Trachea, Bronchi, Bronchioles, and the Lungs. The organs of the respiratory system make sure that oxygen enters our bodies and carbon dioxide leaves our bodies. The respiratory system plays a vital role in the inhalation and exhalation of respiratory gases in the human body.

Dong L, 2009, The respiratory system allows for the inhalation of gases such as oxygen in the air which can then be transported by the blood around the body to supply tissues and cells, and the exhalation of waste gases such as carbon dioxide into the air. The goals of the respiration are to provide oxygen to tissues and to remove carbon dioxide. The physiology of respiration involves the following three process: 1) ventilation, or the movement of air between the atmosphere and the alveoli 2) diffusion of oxygen and carbon dioxide between the pulmonary capillaries and the alveoli and 3) transport of oxygen and carbon dioxide in the blood to and from the cell

Vangilder C A, 2006, Lung and breathing problems are common and 5th leading cause of death in world wide. In India, the respiratory disorder stands in the 3rd place including chronic obstructive pulmonary disorders, asthma, pneumonia, tuberculosis, interstitial lung diseases etc. When a patient is unable to maintain a patent airway, adequate gas exchange or both, more invasive support with intubation and mechanical ventilation is needed to save the life of patient. Mechanical ventilation is a method to mechanically assist or replace spontaneous breathing. It is also the process of a using of an apparatus to facilitate the transport of oxygen and carbon dioxide between the atmosphere and the alveoli for the purpose of enhancing pulmonary gas exchange. Roman physician **Galen** has been the first to describe the mechanical ventilation. Mechanical ventilation is indicated when the patient's spontaneous ventilation is inadequate to maintain life. It is indicated for physiologic and clinical reasons. Physiologic objectives include supporting cardio pulmonary gas exchange, increasing lung volume and reducing work of breathing.

1. Methodology:

The research approach was used for the study was quantitative evaluative approach and the research design was Quasi experimental post test only design. 40 patients on mechanical ventilator in that 20 patients in experimental and 20 patients in control group were selected for this study by using non probability convenience sampling techniques. Data was collected with the help of semi structured interview schedule. Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (chi-square test).

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2. Major findings of the study:

The findings revealed that in experimental group 6(30%) of them were in 21- 30 years and in control group 7(35%) of them were between 51- 60 years of age. Majority of the patients in experimental 14(70%) and control 15(75%) group were male. Most of the patients in experimental 9(45%) and control group 7(35%) were ventilated due to CNS Disease problems.

Most of the patients had undergone 2nd hourly suctioning in experimental group 12(60%) where as in control group 8(40%) patients had undergone 3rd hourly suctioning. Half of the patients in experimental 10(50%) and control group 11(55%) had the history of smoking habit. During the post test, in experimental group 5(25%) patients did not develop infection, 11(55%) patients had mild infection and 4(20%) patients have severe infection. In control group 7(35%) patients had mild infection and 13(65%) patients had severe infection. In experimental group the post test mean score was 1.7±1.04 and in control group the post test mean score was 2.95±1.76. The mean difference was 31.

The calculated 't' value was 5.20 which was greater than the table value 2.02, significant at $p \leq 0.05$ level. Hence the research hypothesis H_1 was retained. There was no association in experimental and control group on prevention of ventilator associated pneumonia with their selected demographic variables. This shows that the ventilator bundle was effective in preventing the ventilator associated pneumonia among patients on mechanical ventilator.

3. **DATA ANALYSIS**

There was no association found between the prevention of ventilator associated pneumonia with the selected demographic variables in experimental and control group. Hence research hypothesis H_2 was rejected at $p \geq 0.05$ level.

4. Results

In experimental group 6(30%) patients were between the age group of 20 – 30 years and in control group 7(35%) patients were between the age group of 51 – 60 years. Majority of the patients in experimental 14(70%) group and in control 15(75%) group were male. In experimental and control group 9(45%) and 7(35%) patients were ventilated due to CNS Disease problems respectively. Most of the patients had undergone 2nd hourly suctioning in experimental group 12(60%) and in control group 8(40%) patients had undergone 3rd hourly suctioning. Half of the patients in experimental group 10(50%) and in control group 11(55%) had the history of smoking habit. In experimental group 5(25%) patients had no infection, 11(55%) patients had mild infection and 4(20%) had severe infection. In control group 7(35%) had mild infection and 13(65%) patients had severe infection. In experimental group mean score was 1.7 ± 1.04 and in control group mean score was 2.95 ± 1.76, the mean percentage of experimental group was 28% and control group was 59%. The mean difference was 31.In experimental and control group the mean score was 1.7 ± 1.04 and 2.95 ± 1.76 respectively. The 't' value was 5.20 which is significant, at $p \leq 0.05$ level. Hence H_1 was retained. Thus, it become evident that ventilator bundle was effective in preventing the ventilator associated pneumonia. There was no association in experimental and control group on prevention of ventilator associated pneumonia with their selected demographic variables such as age, sex, reason for mechanical ventilation, frequency of suctioning, and history of smoking. Hence H_2 was rejected among patients on mechanical ventilator with their selected demographic variables at $p \geq 0.05$ level.

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