Introduction

Ventilator associated pneumonia (VAP) is defined as an inflammation of the lung parenchyma caused by infectious agents not present or incubating at the time that mechanical ventilation was started ***(Chastrer, 2002).***The predominant organisms responsible for infection are staphylococcus aureus and pseudomonas aeruginosa, but etiologic agents widely differ according to the number of patients in an intesive care unit, duration of hospital stay, and prior antimicrobial therapy ***(Fagon, 2002).***

Pneumonia is the second most common nosocomial infection in the united states ***(Tablan, et al., 2005).*** The risk for nosocomial pneumonia is highest in patients receiving mechanical ventilation because normal defense mechanisms in the lung are bypassed when this treatment is used ***(Arden, et al., 2000)***. Development of ventilator – associated pneumonia [VAP] increases morbidity and mortality in critically ill patients, goals of care and Hospital stays for patients with nosocomial pneumonia average [1 to 2] weeks longer than those for patients without pneumonia ***(Jarvis, 2003).***

Nosocomial pneumonia is a leading cause of death from hospital – acquired infections, with an associated crude mortality rate of approximately 30 percent. Ventilator associated pneumonia refers specifically to nosomomial bacteria pneumonia that has developed in patients who are receiving mechanical ventilation ***(Leu , et al., 2005).***The incidence of ventilator – associated pneumonia in the intensive care unit ranges from [10%]to [65%] ***(Hance , et al., 2002).*** Also Case fatality rates have been as high as ventilator associated pneumonia ***(Lode, et al., 2003).***

Likewise in Egypt, nosocomial infection, continue to be a leading cause of morbidity and mortality. Unfortunately, estimates of the number of nosocomial infections related morbidity and mortality vary widely because there is no material reporting system, no record, statistics or analysis concerning the problem and Egypt has no universal program or approach to control such infections ***(Rasslan & Abd El-Sabour, 1996).***A study was conducted in Zagazig University Hospital, Intensive Care Unit by ***Nassr (1996)*** revealed that the incidence of pneumonia among patients subjected to mechanical ventilation was 45.5%. Another study carried out at Respiratory Intensive Care Unit, in Ain Shams University Hospital, found that the incidence of respiratory tract infection among patients in this unit was 44.7% ***(Rasslan & Abd El-Sabour, 1996).*** A third study performed at Mansoura University Hospital, Intensive Care Units, demonstrated that blood stream, lower respiratory and urinary tract infection, as well wound and skin infection was 40.63%, 18.75%, 17.97% and 6.25%, 3.91%respectively ***(El-Daker, 1998).***

Ventilator associated pneumonia that occurs within 48 – 72 hours after tracheal intubation usually results from aspiration, which complicates the intubation process ***(Pingleton , et al 2005)***.But [VAP] that occur after this period is considered late – onset pneumonia. Early – onset ventilator associated pneumonia is most often due to antibiotic sensitive bacteria (e.g., oxacillin – sensitive staphylococcus aureus, haemophilus influenza and streptococcus poneumonia) whereas late onset [VAP] is frequently caused by antibiotic – resistant pathogens (eg., oxacillin – resistant staph.aureus, pseudomonas aeruginosa, acinetobacter species, and enterobacter species. ***(Kollef, et al., 2005).***

The pathogenesis of [VAP] usually requires that two important processes take place: bacterial colonization of the aerodigestive tract and the aspiration of contaminated secretions into the lower airway. Therefore, the strategies aimed at preventing [VAP] usually focus on reducing the burden of bacterial colonization in the aerodigestive tract, decreasing the incidence of aspiration, or both (***Craven, 2005).***

There are several clearly defined risk factors for [VAP] and awareness of these can facilitate early diagnosis and hence treatment.***(Hospital Infection Society, 2004)***. From those risk factors is the presence of invasive medical devices which is an important contributor to the pathogens and development of [VAP]. Also many patients have nasogastric tube that predispose them to gastric reflux and increase the potential for aspiration , endotracheal tubes facilitate bacterial colonization of the tracheobronchial tree and lower – airway aspiration of contaminated secretions through mucosal injury, the pooling of contaminated secretions above the endotracheal – tube cuff, and elimination of the cough reflex***.(Steger,2005).***Also the ventilator circuit and respiratory - therapy equipments may also contribute to the pathogenesis of [VAP] if they become contaminated with bacteria which usually originate in the patient's secretions. ***(Tablan, et al, 2005)***. Likewise, among patients at high risk for [VAP] are those who have chronic obstructive pulmonary disease , burns, neurological conditions, the acute respiratory distress syndrome, and witnessed aspiration; those who are reintubated; and those who receive paralytic agents or enteral nutrition***.(Cook, et al., 2004).***

Today's at the beginning of the twenty – first century, critical care nurse is challenged by expanding knowledge and technology. Technological advancements have lead to the development of more

sophisticated equipments and procedures. Critical care nurse is an integral part of the technology found in the critical care unit and she is constantly interacting with both the patient, to meet his needs, and the machinery surrounding him .one of these machines that is widespread in critical care is mechanical ventilator. ***(Millar and Burnard, 1995)***. So, we undertook an observational pre and post – intervention study to assess whether an educational programme focus on preventive practices for [VAP] could reduce the frequency rate.

Significance of the study

Ventilator-associated pneumonia (VAP) is frequent complication of mechanical ventilation and causes increased mortality, morbidity, and costs (Markowicz, et al., 2000).

From the researcher observations over a period of 8 years of working as a clinical instructor and assistant lecturer in Benha University Hospital, it has been observed that nearly all of patients who connected to the ventilators at the intensive care unit have (VAP) and that education related to ventilator associated pneumonia is nearly ignored or nurses might not be adequately aware of their role in this respect. The researcher findings would hopefully guide nurses and health care professionals in caring for such risky group of patients. It is also hoped that this effort will generate investigations into the topic. The scarcity of researches in this area in nursing was a strong stimulus for the investigator to conduct this study too. So, the current study was conducted to increase the nurse's knowledge and improve their skills related to ventilator associated pneumonia through implementing an educational training program for nurse's in this respect.