INTRODUCTION

Infection is the invasion and multiplication of pathogenic microorganisms in body tissue that results in cellular injury. These microorganisms are called infectious agents that capable of being transmitted to a patient by direct or indirect contact, through a vehicle or airborne route are called communicable agents ***(White, 2005).***

Nosocomial infections (NI) are an important clinical complication in patients at different hospital wards leading to considerable morbidity and mortality. They are usually associated with prolonged hospital stay and increased health care costs ***(youssef, 2009).***

The Intensive Care Unit (ICU) is one of the busiest units in the hospital and using some of the most sophisticated equipment and advanced medical practices. However, the ICU may also for experience higher infection rates due to the severity of illness of the ICU patients and to the frequent use of invasive devices. Invasive devices (e.g., intravascular catheters) bypass the patients' natural defenses against infection and placed them at risk of infection from their own endogenous microorganisms ***(Gary, 2009)***.

The incidence of (NI) varies from country to country. NI rates vary also with the type of hospital and type of ICU. In Egypt, ***EL-Shamy (2001)*** found that the incidence of NI in open heart surgery in the ICU was 30%. The number of infections that are acquired in hospitals is very difficult to measure. The presence of infection is often not accurately recorded in medical or nursing records and very few hospitals have system in place to collect and analyze information about infection ***(ELshenawi, 2003).***

Infection control is a quality standard patient care and is essential for the well being of the patients and the safety of both patients and staff ***(Hassan et al., 2004).*** It is measures practiced by health care personnel intended to prevent spread, transmission and acquisition of infectious agents or pathogens between patients, from health care workers to patient and from patients to health care workers in the health care setting ***(Association for Professionals in Infection Control and Epidemiology (APIC), 2007)***.

Many methods are used to control nosocomial infections. More than 50% of patients who are admitted to the ICU are colonized by an organism that is responsible for subsequent infection. Patients who have been previously admitted to hospital may be colonized by resistant microbes that could be contagious. Early diagnosis of potentially contagious disease is very important, so physicians should be alert to this possibility ***(Youniss , 2002).***The most important and most basic technique in preventing and controlling transmission of infection is hand hygiene. It is a general term that applies hand wash which refers to washing hands with plain soap and water ***(Perry & potter, 2006).***

Protective barriers like gloves, gowns, masks and eye shields provide a physical impediment to the transmission of infectious agents. The principles role of these barriers is to protect hospital staff from infectious agents that can be transmitted by blood and body fluids such as Human Immune deficiency Virus (HIV) and hepatitis B and C viruses ***(Marino & Sutin, 2007).***

Environmental cleaning services are generally provided a dedicated sanitation staff; however, in some institutions or in certain situations, the nurse might be called upon to perform some types of cleaning activity. In keeping with the principles of medical asepsis,

cleaning schedules should progress from the least soiled to the most soiled to prevent the inadvertent transfer of dirt and organisms from the dirty onto clean areas. Cleaning activities should also minimize turbulence to prevent the aerosolization of organisms. Each healthcare institution has unique cleaning requirements and schedules; healthcare workers should become familiar with their responsibilities to maintain a clean environment ***(National Center of Continuing Education, 2006).***

Infection control programs must focus on three general strategies: prevention of health care associated infections, containment of pathogens that pose a health risk, resistance to routine antibiotics, and the development of strategies to limit the emergence of resistant microorganisms through optimal and appropriate antimicrobial utilization ***(Weber, 2006)***.

Nurses serve an important role in preventing the transfer of organisms in two ways, first, as the health professionals who often spend the most time with patients; nurses have a greater opportunity for spreading organisms. It is imperative that nurses disinfect their hands before and after contact with patients and after performing a potentially hand-contaminating activity. The second way that nurses reduce hand to hand spread is to serve as patient advocates. With the number of health care workers involved in patient care each day, there is a significant opportunity for breaks in hand-hygiene technique, to the degree feasible, the nurse should observe the hand-hygiene activities of other professionals and discuss them when lapses in technique are observed ***(Smeltzer & Bare, 2009).***

Significance the of study

From previous experiences, the researcher observed that infection control measures in the Intensive Care Unit is not properly applied, despite the fact that caution is especially critical in this area, this observation was objectively supported by two studies done in this area. The previous study was done by ***Ghonaiem (2007),*** about Infection control measures applied in the intensive care unit, at Benha university hospital revealed to lack of nurse's knowledge and performance concerning infection control measures, at ICU at Benha University hospital.

In addition to the study results documented by ***Serag (2008),*** about Ventilator Associated Pneumonia: Impact of Designed Training Program on Nurse's Knowledge, Practices and on Patients outcome at The Intensive Care Units, Benha University Hospital, which denoted that Ventilator associated pneumonia, was apparently higher among mechanical ventilator ICU patients. Therefore the current study will be carried out in attempt to determine the impact of a designed training program on nurses' knowledge and practices at the Intensive Care Unit, Benha university Hospital.

It will beneficial in many ways, **firstly** it enriches the nurses with knowledge and practices about infection control measures at the ICU. **Secondly** it will improve rate of cure among patients and reduce hazards of infection, thus it reduce hospital stay .**Thirdly** it will help health professionals directly and indirectly in protecting themselves and others from infection hazards. **Fourthly** it will help hospital ICU staff to provide

cost effective management that will improve patients turnover and reduces burden upon hospital resources and personnel. **Fifth** and last it will help in constructing data base about this problem and it could generate an attention and motivation for further studies in this area. So this study was conducted in order to design, implement and evaluate the impact of a training program on nurse's knowledge and practices regarding infection control measures at the intensive care unit in Benha University Hospital.