Nurses' knowledge and Practice about Infection Control for Neonate under Mechanical Ventilation Therapy

Thesis

Submitted for Partial Fulfillment of Master Degree

in Pediatric Nursing

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List of Abbreviations

Abb.	Full term
A/C	Assist/Control
ABG	Arterial Blood Gases
BAPM	The British Association of Perinatal medicine
BPD	Bronco Pulmonary Dysplasia
Bpm	Breath Per Minute
C V	Cardio Vascular
CDC	Centers of Disease Control and Prevention
CPAP	Continuous Positive Airway Pressure
CXR	Chest X Ray
ENC	Essential Newborn Care
ETT	Endotracheal Tube
FaO2	The Effect on Alveolar Oxygen Fraction
FiO2	Fraction of Inspired Oxygen
NIBP	Non Invasive Blood Pressure
HCP	Health Care Practitioner
Hrs	Hours
MAP	Mean Airway Pressure
MCQ	Multiple Choice Question
MV	Mechanical Ventilation
NI	Nosocomial Infection
NICU	Neonatal Intensive Care Unit
PaCO2	Partial Pressure of Dioxide
PCV or PC	Pressure Control Ventilation
PEEP	Positive End Expiratory Pressure
PH	Acidity
PIE	Pulmonary Interstitial Emphysema
PIP	Peak Inspiratory Pressure

Abb.	Full term
PO2	Partial Pressure of Oxygen
PPE	Personal Protective Equipment
PSV or PS	Pressure Support Ventilation
Sec	Seconds
SIMV	Synchronized Intermittent Mandatory Ventilation
VALI	Ventilator Associated Lung Injury
VLBW	Very Low Birth Weight
VT	Tidal Volume
WOB	Newborn work Of Breath
Wt	Weight

ABSTRACT

Care of critically ill neonate in neonatal intensive care units has achieved an exceptional development – for this reason, nurses should be able to develop their practice and knowledge related to infection control to neonate under mechanical ventilation therapy. **Aim of the study:** The study was assess nurses' knowledge and practice regarding following universal precaution to control infection for neonate under mechanical ventilation. **Research design**: A descriptive. **Research settings**: The study was conducted in three Neonatal Intensive Care Units (NICU) at Children and Obstetric and Gynacology Hospitals, affiliated to Ain Shams University Hospitals, and Shipeen El-Kome teaching hospital affiliated to El-Monofia government. **Research subject:** A purposive sample composed of 30 nurses selected randomly from previously mention settings which out off 55 nurses totally. **Tools for data collection:** questionnaire sheet to assess nurses' knowledge, and observational check list to assess nurses' practice. **Results:**. Results of the study reveled that the mean practice score was indicated incompetent nurses' practice, while mean knowledge score were ranged from average to poor. **Conclusion:** The neonatal nurses did not follow the universal precaution as their score of practice were incompetent, nurses' knowledge ranged from poor to average and there is relationship between nurses' training and their knowledge and practice. **Recommendations**: The study was recommended that, in-service education programs are needed to upgrade nurse's knowledge and their level of practice for following universal precautions of infection control during management of mechanically ventilated neonates.

Keywords: Infection control; Mechanical Ventilated, Neonates.

Introduction

Newborn up to one month of age is particularly susceptible to infection due to their immunologic systems are immature. Infection of newborn is a major and may be fatal problem. It may occur while the newborn in the hospital or after discharge **(Kyle and Carman, 2013).**

Mechanical Ventilation (MV) is an essential life saving therapy, but more than 50% of complications in conditions that require intensive care are related to ventilator support, particularly if it is prolonged such as infection **(Henderson, 2011).**

Mechanical ventilation, in the neonatal settings, helps neonates breathe by assisting the inhalation of oxygen (O_2) into the lungs and the exhalation of carbon dioxide (CO_2). Depending on the neonate's condition, mechanical ventilation can help support or completely control breathing **(Nichols and Shalfner, 2015).**

Standard Precautions are the minimum infection prevention practices that apply to all neonatal care, regardless of suspected or confirmed infection status of the neonate. These practices are designed to both protect Health Care Practitioner (HCP) and prevent HCP from spreading infections among neonates **(Center of Disease**

Control and prevention [CDC], 2012; World Health Organization [WHO], 2013).

Infection of neonates under MV is the second most common hospital-acquired infection in neonatal intensive care units, infection of neonates under MV is accounts for up to 30% of nosocomial infections in NICU patients and complicates the course of 8 to 28% of patients receiving mechanical ventilation **(CDC, 2014).**

The prevention of infection for neonates under MV therapy is a major challenge, and a significant concern for neonatal nurses who care for mechanically ventilated patients. Neonatal nurses have an important role in reducing risk factors, identifying early symptoms, and implementing relevant preventive measures **(Edwards, 2009).**

Significance of the problem:

From clinical experience of the researcher, and the neonatal supervisor, that was clear that there was a gap between nurses' actual knowledge and their practice regarding observation following the universal precautions of neonate under mechanical ventilation therapy in Neonatal Intensive Care Unit (NICU) therefore, it is essential to conduct such study to high light on such problem.

Aim of the Study

The study aimed to assess nurses' knowledge and practice regarding following universal precaution to control infection for neonate under mechanical ventilation.

Research questions:

1. Are nurses following the universal precaution to infection control for neonate under MV therapy?
2. Are nurse having knowledge for universal precautions to infection control for neonate under MV therapy?
3. Are there relations between nurses' characteristics and their practice and knowledge for universal precaution to infection control for neonate under MV therapy?

Review of Literature

Part I: Neonate

The first hour after birth has a major influence on the survival, future health, and well being of a newly born infant. The health workers have an important role at this time. The care they provide during this period is critical in helping to prevent complications and ensuring survival. All mothers need help, support, and advice in the initial few days after delivery to ensure proper care of their newly born baby, Neonatal period is the interval from birth to 28 days of age. It represents the time of the greatest risk to the infant. Approximately 65% of all deaths that occur in the first year of life happen during this 4-week period **(Waldo, 2010).**

Neonatal needs the birth of a baby is a wonderful yet very complex process. Many physical and emotional changes occur for mother and baby.

The neonate must make many physical adjustments to life outside the mother's neonate. Leaving the uterus means that a baby can no longer depend on the mother's circulation and placenta for important physiologic functions The four basic needs of all babies at the time of birth (and for the first few weeks of life) are:(Warmth, Normal

breathing, Mother's milk, Prevention of infection) **(Whaley and Wondg, 2013).**

it is important to provide proper care to all the neonates immediately after birth. All newborns require essential newborn care to minimize the risk of illness and maximize their growth and development. This care will also prevent many newborn emergencies. For example, the umbilical cord may be the most common source of neonatal sepsis and also of tetanus infection, and good cord care can dramatically reduce the risks of these serious conditions **(Marilyn and David, 2013).**

Reflexes are the actions of the neonate in response to certain influential factors. It is so important in neurological and muscular maturation, though it does not seem to be highly specialized. Moro (Startle): The Moro reflex is a sudden reaction to a loud noise or change in position. It appears as jerky, generalized muscular activity with a flinging out of your baby's arms and legs, then bringing them back in towards the body **(Nettina, 2013).**

Rooting: When an object touches your baby's cheek, your baby turns his head toward the side touched, opens his mouth and begins to suck. Sucking and Swallowing: