Summary

Mechanical ventilation has become the most commonly used mode of life support today. Mechanical ventilation is widely used in management of the acutely ill neonates at NICU and it is very important to provide adequate ventilatory support to meet the neonate's oxygen demands. However, provision of intensive observation and care to neonates undergoing mechanical ventilation can significantly reduce neonatal mortality and morbidity. Therefore, improving the quality of nursing care and enhancing the role of the nurse in providing quality services to neonates can be attained through a series of lectures and practical training courses, developed and organized by members from senior nursing professionals. Application of training program will contribute to improve the health and wellbeing of neonates undergoing mechanical ventilation ***(Lefrak & Porter, 2004).***

Aim of the study:-

This study aimed to assess the quality of nursing care provided to neonates undergoing mechanical ventilation.

Research questions:-

- What is the quality of nursing care level provided to neonates undergoing mechanical ventilation at Benha City?

- What are the factors affecting the quality of nursing care provided to neonates undergoing mechanical ventilation at Benha City?

Research design:-

A descriptive design was utilized in the current study.

Subjects and methods of the current study was discussed under the following four designs:-

1- Technical design.

2- Operational design.

3- Statistical design.

4- Administrative design.

1-Technical design:-

Technical design included the settings, subjects, as well as tools of data collection.

Research Settings :-

This study was carried out at neonatal intensive care units affiliated to Benha University Hospital, Specialized Pediatric Hospital, and Benha Teaching Hospital.

Subjects:-

Data of the present study were gathered through 6 months period, from the above mentioned settings representing at Benha City, the subjects were consisted of :-

1- The nurses (70) working at the Neonatal Intensive Care Units in the previously mentioned settings regardless of their characteristics.

2- The neonates (70) undergoing mechanical ventilation at the study settings, regardless of their characteristics.

Tools and technique of data collection:-

A- Questionnaire format sheet (Appendix, II): That was designed by the researcher after reviewing related literatures, it was written in Arabic language and composed of open and closed ended questions to assess the

Part (1): Socio-demographic data of the studied nurses that include age, gender, educational level, job, type of hospital, years of experience and attending previous training program.

Part (2): Knowledge of the studied nurses as regards mechanical ventilation (definition, indications, types, and modes of mechanical ventilation).

Part (3): Knowledge of the studied nurses regarding quality of nursing care provided to neonates undergoing mechanical ventilation (concept of quality, and the factors affecting quality of nursing care provided to neonates undergoing mechanical ventilation…..etc.).

B- Medical record of the neonates undergoing mechanical ventilation:

(To check neonates diagnosis, gestational age, current age and birth weight….etc).

Scoring System of Nurses' Knowledge:-

Scoring system for knowledge of the studied nurses was calculated as the following:

- The total number of questions was 58 questions and the total score of 116 was given for questions of the questionnaire.
- The studied nurses' answers were compared with a model key answer, where (2) scores was given for completely correct answer, (1) for incompletely correct answer, and (0) for unknown or incorrect answer.
- According to the nurses' responses, their level of knowledge was categorized as the following:
  - Good level (75 ≤ 100%).
  - Average level (60 < 75%).
  - Poor level (<60%).

C- Observational checklists (Appendix, IV):

The observational checklists were adopted from the **Egyptian Ministry of Health and Population (2002), Bindler and Ball (2008) & Smith, et al., (2008)**. Certain modifications were done by the researcher in the adopted checklists to suit the nature of the study. It was used to assess the quality of nursing care for the neonates undergoing mechanical ventilation. It included the procedures of hand washing, vital signs, intravenous infusion, collection of blood sampling, endotracheal tube insertion, suction, nursing care for neonates before, during, and after connection and weaning from mechanical ventilation.

Scoring System of Nurses' Practice:-

- Scoring system for practice of the studied nurses was calculated as the following:
- The total scores of nurses' practice were 360 for all the nursing procedures carried out for the neonates undergoing mechanical ventilation.
- The nurses' practice was classified into either completely done (2), incompletely done (1), and not done (0).
- According to the nurses' actual practice, their level of practice was categorized as the following:
  - Good level (75 ≤ 100%).
  - Average level (60 < 75%).
  - Poor level (<60%).

2- Operational design:-

A) Preparatory phase:

A review of the past and current local and international related literatures to get acquainted with the various aspects of the research problem and to develop the study tools.

B) Pilot study :-

A pilot study was carried out, including seven nurses to test the validity, reliability, applicability and time consumed to filling the study tools. The necessary modification was done, then nurses involved in the pilot study were included in the study, where no radical modification was carried out in the data gathering tools and technique.

C) Field work:-

The field work was carried out from the first of Mars, 2011 to the end of August, 2011. The researcher was available at each study setting by rotation, two days per week during morning and afternoon shifts. Each nurse was individually interviewed using the questionnaire while their quality of nursing care was assessed by using observational checklists during their actual practice (nurses were not aware that the researcher is observing their performance). The researcher provide simple rewards such as pens to motivate the studied nurses during data gathering stage. Each neonate undergoing mechanical ventilation was observed by the researcher and data was collected from the medical record (This takes nearly 15 minutes for each neonate). A consent was obtained orally from parents of neonates under the study, ensuring complete privacy and total confidentially.

3- Statistical design:-

The collected data were organized, categorized, and analyzed, using frequencies, percentage, mean scores, standard deviation and chi-square. Data were presented in form of tables and figures.

4- Administrative design:-

An official approval was obtained from hospitals' administrators of each study setting where a clear explanation was given about the nature, importance and expected outcomes of the study.

Ethical consideration:-

Each study subject had the freedom to be involved in the study or to withdraw. Parents of the studied neonates consent was obtained before data collection ensuring complete privacy and total confidentially.

Limitation of the study:-

Lack of cooperation of some of the study subjects during data gathering stage.

Results of the study can be summarized as the following:-

- As regards settings of the studied nurses, it was found that 54.3%, 27.1% & 18.6% of the studied nurses were working at BSPH, BUH and BTH respectively.
- The mean age of the studied nurses was 26.5 ± 4.3 years. The mean years of experience were 6.2 ± 2.8 years
- Regarding nurses' qualifications, it was found that 80.0% of them had Diplom of Secondary Technical Nursing School.
- As regards nurses' years of experience, it was found that 40% of the studied nurses had ≥ 8 years.
- The present study revealed that, more than half (58.6%) of the studied nurses attending previous training program.
- The mean gestational age of neonates undergoing mechanical ventilation, was 33.7 ± 3.6 weeks and the mean neonate current age was 13.1 ± 6.5 days.
- More than three quarters of the studied nurses reported good level of knowledge regarding definition, indications and uses of mechanical ventilation as revealed by 80%, 91.5% &75.7% of them respectively.
- More than one third (34.3%) of the studied nurses had good level knowledge about concept of quality.

- The highest percentage of the studied nurses had poor quality of nursing care regarding heart rate, endotracheal tube insertion and suction procedures.
- Less than half (48.6%) of the studied nurses had an average score level about the total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and more than half (55.7%) of them had poor quality of nursing care.
- The present study revealed that, there was a highly statistical significant difference between the nurses' knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their quality of nursing care.
- The present study revealed that, there was a highly statistical significant difference between the nurses' knowledge and their academic qualifications.

It can be concluded from the present study that, there was an average level of the nurses' knowledge in relation to mechanical ventilation and their role in care of neonates undergoing mechanical ventilation, and good level of nurses knowledge in relation to quality of nursing care for neonates undergoing mechanical ventilation. The quality of nursing care provided to neonates undergoing mechanical ventilation at NICU was poor. The lack of supplies and equipment, were hindering quality of nursing care for neonates undergoing mechanical ventilation at NICU.

In the light of the present study findings the following recommendations are suggested :-

- Periodical educational training program for nurses working at NICU is mandatory, for the purpose of updating the knowledge of nurses, and to maintain efficient practice.
- Emphasize the importance of periodical monitoring for quality of nursing care for neonates undergoing mechanical ventilation, to detect areas of frequent errors and manage it accordingly.
- Raising the nurses' awareness about quality of nursing care and its application in care for neonates undergoing mechanical ventilation.
- Provide procedure manual handbooks containing all necessary information about nursing procedures related to quality of nursing care for neonates undergoing mechanical ventilation.
- The NICU should be adequately staffed and well equipped through three shifts, with systematic continuous supervision, to maintain the quality of nursing care for neonates undergoing mechanical ventilation.
- Conducing an orientation programs for the newly appointed nurses, to provide them with information related to mechanical ventilation, and quality of nursing care for neonates undergoing mechanical ventilation.