

Monitoring Quality of Care of Neonate with Respiratory Distress

Thesis

Submitted in Partial Fulfillment of science in nursing
Master Degree
Pediatric Nursing

By

Ayat Mohammad Abd ElHameed
(B.Sc. Nursing, 1998)

**Faculty of Nursing
Ain Shams University
2013**

Monitoring Quality of Care of Neonate with Respiratory Distress

Thesis

Submitted in Partial Fulfillment of science in nursing
Master Degree
Pediatric Nursing

Supervisors

Prof. Dr. Iman Ibrahim Abd El-Moneim

Professor and Head of Pediatric Nursing Department
Faculty of Nursing
Ain Shams University

Prof. Dr. Madiha Amin Morsy

Assistant Professor of Pediatric Nursing
Faculty of Nursing
Ain Shams University

**Faculty of Nursing
Ain Shams University
2013**

Monitoring Quality of Care of Neonate with Respiratory Distress

Protocol

Submitted for partial fulfillment of master
Degree in pediatric Nursing

By

Ayat Mohammed Abd El Hamid
(B. Sc. Nursing)

Under Supervision

Assist. Pro. Dr. / Iman Ibrahim Abd El- Moneim

Assist. Prof. of pediatric nursing

Dr/Iman Abd El Moneim
Faculty of Nursing
Ain Shams University

Dr/ Madiha Amin Morsi

Lecturer of pediatric Nursing

Madiha Amin Morsi
Faculty of Nursing
Ain Shams University

Faculty of Nursing
Ain Shams university

2007

Acknowledgement

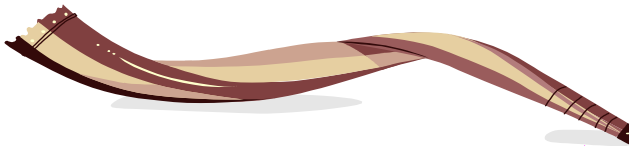
Thanks to Allah who have lightened my pathway to be a humble student for a noble profession.

I would like to express my deep appreciation to DR, Iman Ibrahim Abd El-Moneim, Professor and Head of Pediatric Nursing Department, Faculty of Nursing, Ain Shams University, for giving me the privilege of supervising this work, I am greatly indebted to her continuous guidance.

Special thanks are addressed to DR, Madiha Amin Morsy, Lecturer of Pediatric Nursing, Faculty of Nursing, Ain Shams University, for her fruitful guidance, kind meticulous supervision, and continuous encouragement. I do appreciate her help and support.

I would like to convey my deep thanks to all those who contributed by giving their time, effort and encouragement to the fulfillment of this work,

Finally, I wish to extend my appreciation to all nurses who provide care for neonates with respiratory distress, for helping me throughout this work,



Ayat Mohammad Abd ElHameed

CONTENTS

Title	Page
List of tables.....	i
List of figures.....	iv
List of abbreviations	vi
Abstract.....	viii
Introduction and Aim of the Study	1
Review of Literature	5
Quality of Nursing Care.....	5
Respiratory Distress (R.D).....	15
Management of Respiratory Distress.....	28
A) Medical management.....	28
B) Nursing management	55
Subjects and Methods	94
Results.....	101
Discussion.....	137
Conclusion and Recommendations.....	154
Summary	156
References.....	161
Appendices.....	--
Arabic summary.....	--

List of Tables

Table	Title	Page
	<i>Tables related to review</i>	
1	Downe's score.	18
2	Causes of acute neonatal respiratory distress according to the onset of the disease from birth.	19
3	Complications of Mechanical Ventilation	32
4	Equipment of Bubble CPAP.	35
5	Nasal versus Oronasal masks: Advantages and Disadvantages	48
6	The Apgar score	57
7	Normal blood gases level.	82
8	Some troubleshooting guidelines	87
	<i>Tables related to results</i>	102
1	Distribution of studied nurses according to their Sociodemographic characteristics	107
2	Distribution of neonates according to their characteristics	112
3	Studied nurses according to their application of neonatal standards regarding for mechanical ventilator	114
4	Studied nurses according to their application of neonatal standards regarding (nasal CPAP) and suctioning the neonates airways	116
5	Distribution of studied nurses according to their application of chest physiotherapy and taking capillary blood gases (CBG)	117
6	Distribution of studied nurses according to their application of neonatal standards regarding extubation from mechanical ventilation	118

List of Tables (Cont.)

Table	Title	Page
7	Distribution of studied nurses according to their total application of neonatal standards for respiratory distress	118
8	Studied nurses according to their knowledge regarding the quality	119
9	Studied nurses according to their knowledge regarding the anatomy and physiology of respiratory system and the respiratory distress	120
10	Studied nurses according to their knowledge regarding Causes and Evaluation of Respiratory Distress	121
11	Studied nurses according to their knowledge regarding Administration Oxygen therapy and Mechanical Ventilator	122
12	Distribution of studied nurses according to their knowledge regarding Noninvasive neonatal ventilation Devices (Nasal Cannula) and Management of ventilated neonates	124
13	Studied nurses according to their knowledge regarding dealing with ventilator alarms and troubleshooting	۱۲۵
14	Studied nurses according to their knowledge regarding infection control	126
15	Studied nurses according to their total knowledge regarding the application of neonatal standards	127
16	Relation between ages of studied nurses and their total level for application of standards	128
17	Relation between educational level of studied nurses and their total about items for application of standards	129

List of Tables (Cont.)

Table	Title	Page
18	Relation between experience of studied nurses and their total knowledge	130
19	Relation between training attendance of studied nurses and their total level for application of standards.	131
20	Relation between total knowledge as a factors for non compliance and studied nurses by their total level for application of the standards	132
21	Relation between ages of studied nurses and their total knowledge regarding application	133
22	Relation between educational level of studied nurses and their total knowledge about items for application of standards of care for neonate's with R.D.	134
23	Relation between experience of studied nurses and their total knowledge	135
24	Relation between training attendance of studied nurses and their total knowledge	136

List of Figures

Figure	Title	Page
	<i>Figures related to review</i>	
1	Quality Circles and benefits of quality	8
2	Criteria for evaluating respiratory distress	17
3	Mechanical Ventilator	29
4	Picture of baby on CPAP	35
5	Set Up of a Bubble CPAP system	38
6	Picture of baby on Nasal Prongs	40
7	Noninvasive Positive Pressure Masks.	41
8	Three Methods of CPAP Delivery	44
9	Head chamber	45
10	Baby in Head Chamber	45
11	Structure of an alveolus	50
12	Tube Sizes	54
13	Diagram of the nursing process	56
14	An Algorithm for intervention in endotracheal tube complications (Increase and decrease endotracheal tube: BVM, bag valve mask).	68
15	Steps of Hand Washing Technique	82
	<i>Figures related to results</i>	
1	Distribution of nurses according to their ages	103
2	Distribution of nurses according to their level of education	104
3	Distribution of nurses according to their years of experience	105
4	Distribution of nurses according to their training attendance	106

List of Figures (Cont.)

Figure	Title	Page
5	Distribution of neonates according to their chronological age (days)	109
6	Distribution of neonates according to their type of delivery	110
7	Distribution of neonates according to their diagnosis	111

List of Abbreviations

A/C	Assist Controlled Ventilation
AOP	Apnea of Prematurity
APRV	Airway Pressure Release Ventilation
BAL	Bronco Alveolar Lavage
BVM	Bag Valve Mask
CBGs	Capillary Blood Gases
CLD	Chronic Lung Distress
CMV	Controlled Mechanical Ventilation
CNS	Central Nervous System
CO ₂	Carbon Dioxide
CPAP	Continuous Positive Airway Pressure
CPT	Chest Physio Therapy
EDHS	Egyptian Demographic and Health Survey
EMOH	Egyptian Ministry Of Health
ETT	Endotracheal Tube
FiO ₂	Fractional Inspiratory Oxygen
FRC	Functional Residual Capacity
HFFI	High Frequency Flow Interruption
HFJV	High Frequency Jet Ventilation
HFOV	High Frequency Oscillatory Ventilation
HFPPV	High Frequency Positive Pressure Ventilation
HFV	High Frequency Ventilation
HMD	Hyaline Membrane Disease
I/E Ratio	Inspiratory/Expiratory Ratio
IgG	Imuno Globuline
IDM	Infant of Diabetic Mother
IMV	Intermittent Mandatory Ventilation
IT	Inspiratory Time
mmHg	Mellimeter of hydrargyrum
NC	Nasal Cannula
NICUs	Neonatal Intensive Care Units
NIPPV	NonInvasive Positive Pressure Ventilation
NIV	NonInvasive Ventilation
O ₂	Oxygen
PEEP	Post End Expiratory Pressure
PIP	Peak Inspiratory Pressure
PS	Pressure Support

List of Abbreviations

PS	Pressure Support
RD	Respiratory Distress
RDS	Respiratory Distress Syndrome
ROP	Retinopathy of Prematurity
SaO ₂	Oxygen Saturation
SIMV	Synchronized Intermittent Mandatory Ventilation
TPN	Total Parenteral Nutrition
TTN	Transient Tachypnea of Neonates
WOB	Work of Breathing

INTRODUCTION

Neonatal respiratory distress is the most common neonatal emergency and the main cause of admission to the neonatal intensive care units (NICUs). More than 50% of cases are followed for neonatal pneumonia, transient tachypnea and meconium aspiration **(El Nagar, 2009)**.

Neonatal respiratory distress occurs in approximately 5% of full term neonates, and in over 50% of very low birth weight, and premature neonates, in which respiratory distress is being the leading cause of neonatal death **(Rudlof & Levene, 2003)**.

The highest incidence of respiratory distress is inversely related to the degree of prematurity. However, it is estimated that 60-80% of neonates, born at 28 weeks of gestation will develop respiratory distress, 25% at 32 and 36 weeks of gestation and in about 5% beyond 37 weeks of gestation **(Kliegman, 2006)**.

According to the Egyptian Demographic and Health Survey (EDHS) in 2000, infants' mortality is 64/1000 births, and neonatal mortality constitutes 25/1000 births, this indicates that more than one third of infants' mortality is happening in Egypt. According to the study done in Maternity and Gynecological Hospital and Children's Hospital at Ain Shams University Hospitals respiratory distress occurs in 13.6% of live births, and responsible for 23% of neonatal mortality **(Ministry of Health, 2005)**.

Nursing care for neonates having respiratory distress requires closed monitoring and active nursing intervention. The pediatric nurse should be a highly trained and qualified to provide a standardized nursing care to neonates with respiratory distress at NICU (**Wilson et al., 2006**).

Appropriate measurement of quality of nursing care is an essential aspect for improving the quality of nursing care. There are several tools to measure the quality of nursing care. Observation is one of the methods used for measuring nursing actions (**WHO, 2003**).

Care of neonates with respiratory distress involves all the observation and intervention at the neonatal care unit. In addition, the nurse is concerned with the complex problems related to respiratory therapy. Continuous monitoring and close observation are mandatory because the neonate's status can change rapidly (**Hockenberry, 2005**).

The concepts of quality and how to achieve it are considered the key to survival. The goal for quality initiative has shifted from achieving accreditation to improve care and services philosophically (**Texas Health Resources, 2007**).

Whereas, quality in health care is defined as meeting or exceeding the neonates' needs and fulfilling his/her expectations, it is always the result of high intention, sincere efforts, intelligent direction and skillful execution, if

represented by a wisely choice of many alternatives (**Grossman & Valiga, 2005**).

The neonate has the right of quality nursing care. Nurses are key members of the neonatal care team and play a vital role in the delivery of quality neonatal services (**Lefrak & Porter, 2006**).

Health care environment consumers are taking a greater interest in their own health care and are seeking more and more information. Patients and families become more aware of medical errors, patient safety, surgical procedures, and general medical information. They are investigating their health care providers and facilities, and aware of the outcomes of surgical procedures, treatments, infection rates, malpractice claims and facility of accreditation designation (**Kliegman, 2006**).