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Nurses Performance in Relation to Quality Assurance of Nursing Care Given to Patients on Mechanical Ventilator

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Abstract

Quality assurance in nursing is a process that incorporates the systematic description, measurement, evaluation and, when necessary, implementation of measures to improve quality. This means establishing optimum standards of systematic and planned nursing practices and planning or providing nursing care that meets those standards in order to achieve the prescribed requirements for quality.

The present study was aimed to assess "The effect of planned teaching on the nurses performance in relation to quality assurance in selected aspects of nursing care given to patients on mechanical ventilator in selected hospitals of Ahmedabad, Gujarat."

ventilation became a standard technique for mechanical ventilation during the polio epidemic of the 1950s. As more and more complex patients survive resuscitation and are admitted to ICUs the level of ventilation required becomes more complex.

INTRODUCTION

A mechanical ventilator is a positive or a negative pressure breathing device that can maintain ventilation and oxygen delivery for a prolonged period.5 It is a machine that generates a controlled flow of gas into the patients airway. Oxygen and air are received from cylinders or wall outlets, the gas is pressure reduced and blended according to the prescribed inspired oxygen tension (FiO2), accumulated in a receptacle within the machine and delivered to the patient using one of the many available modes of ventilation.

NEED FOR THE STUDY:

Mechanical ventilation is the most common mode of life support in the operating theatre as well as in the modern intensive care unit (ICU). It is present in all types of critical care units like postoperative units, surgical ICUs, trauma ICUs, medical ICUs, burn units, weaning centers, and neurologic/neurosurgical ICUs. Positive pressure mechanical

STATEMENT OF THE PROBLEM

"The effect of planned teaching on the nurses performance in relation to quality assurance in selected aspects of nursing care given to patients on mechanical ventilator in selected hospitals of Ahmedabad, Gujarat"

OBJECTIVES OF THE STUDY:

- To assess the knowledge of quality assurance among nurses.
- To assess the knowledge of the nurses in selected aspects of nursing care given to patients on mechanical ventilator before and after planned teaching.
- To assess the practices of the nurses in selected aspects of nursing care given to patients on mechanical ventilator before and after planned teaching.
- To determine the association between nurses performance and selected demographical variables like age, professional education, specialization in critical care and years of experience.

- To prepare a nursing care manual to be followed for nursing care of patients on mechanical ventilator.

Donabedian's model of quality assurance served as the conceptual framework for this study.

REVIEW OF LITERATURE

The literature review is organized in the following manner:

- Literature related to mechanical ventilation.
- Literature related to nursing care of patients on mechanical ventilation.
- Literature related to infection control.
- Literature related to quality assurance.
- Literature related to effect of planned teaching.

OPERATIONAL DEFINITION

1. Effect –In this study, effect means change that takes place in the nurse's performance in providing quality care in selected aspects of nursing care given to patients on mechanical ventilator as evidenced by the change in the knowledge and practices scores of the subjects.

2. Planned teaching: In this study, planned teaching refers to the meaningful interaction between the investigator and the staff nurses, where the investigator imparts information using a nursing care manual.

3. Performance: In this study performance is subdivided into two aspects that is, Knowledge and Practices.

a) Knowledge - In this study, knowledge refers to the knowledge of the nurses regarding the functioning of mechanical ventilator and infection control. For the purpose of the study, the knowledge score obtained through written responses would be categorized as follows:

1. Excellent - above 80%
2. Good - 65 – 79%
3. Average - 50 – 64%
4. Poor - below 50%

4. Quality assurance: JACHO has defined quality assurance as a planned and systematic process for the monitoring and evaluation of quality and appropriateness of client care and for resolving identified problems.

In this study quality, assurance refers to the pre-teaching and post teaching assessment using a structured questionnaire and an observational check list in relation to the selected aspects of nursing care given to patients on mechanical ventilator.

5. Selected aspects: In this study selected aspects of nursing care refers to respiratory monitoring and infection control measures as performed and recorded by the nurses.

6. Nurses: Refer to the qualified registered individuals in nursing and are

working in critical care units for a minimum period of 2 months.

7. Selected Variables: Refers to those elements, which are thought to influence the study. It includes:

METHODOLOGY

This enabled the researcher to formulate the research methodology for the study. The research approach used was quasi-experimental with two group pretest – posttest design. In the present study, the independent variable is the planned teaching program in selected aspects of nursing care given to patients on mechanical ventilator and the dependent variable is the nurses' performance in caring for patients on mechanical ventilator.

Description of the preliminary tool

The structured questionnaire developed consisted of four parts.

Part I

It consisted of questions which deal with the demographic variables of the nurses such as age, professional qualification, and specialization in critical care nursing, and years of experience in the critical care unit.

Part II

It consisted of 7 questions related to the knowledge of the nurses regarding the importance of quality assurance in selected aspects of nursing care given to patient on mechanical ventilator. The subjects were asked to tick the most appropriate answer from the three options provided. There was no negative marking; each correct answer was given a score of one and the wrong answer as zero.

Part III

It consisted of 42 questions related to the knowledge of the nurses regarding concept of mechanical ventilation (4), ventilator settings (10), modes of ventilation (3), trouble shooting the alarms (6), complications of positive pressure ventilation (3), monitoring of patient status (6), arterial blood gas analysis (4), prevention of infection (6). There was no negative marking; each correct answer was given a score of one and the wrong answer as zero.

Part IV

It consisted of 50 questions related to the practice of the nurses regarding concept of mechanical ventilation (3), ventilator settings (10), modes of ventilation (5), trouble shooting the alarms (3), complications of positive pressure ventilation (1), monitoring of patient status (8), arterial blood gas analysis (5), prevention of infection (15). There was no negative marking; each correct answer was given a score of one and the wrong answer as zero.

The total score for knowledge and practice was measured in the following criteria:

1.	Excellent	above 80%
2.	Good	65 – 79%
3.	Average	50 – 64%
4.	Poor	below 50%

Tool

The tool consisted of a self administered questionnaire and an observation checklist. Split half technique for the structured questionnaire and interrater reliability for the observational checklist was used to find out the reliability of the tool.

RESULTS

Karl Pearson's co-relation co-efficient formula was used and it was found to be 0.86 and 0.89 in the pre and post test respectively, which indicates that the tool was highly reliable.

A total of 200 nurses were included i.e. 100 in experimental group and 100 in control group.

The data collection process was divided into 6 sessions for the experimental group; 1st session consisted of observing the staff nurses followed by administration of pre test. In 2nd session the planned teaching on mechanical ventilation was given. In 3rd session the planned teaching on ABG analysis and infection control was given. In the 4th session the nursing care manual was distributed. In the 5th session post test was administered and the staff nurses performance was observed and recorded. In the 6th session a repeat observation of the staff nurses performance was recorded after 15 days. The first five sessions were performed after a gap of one week each. For the control group there were only 3 sessions; 1st session consisted of observing the staff nurses followed by administration of pre test. After a week in 2nd session the post test was administered and the staff nurses performance was observed and recorded. In the 3rd session a repeat observation of the staff nurse performance was recorded after 15 days.

The findings of the study revealed that in both the groups majority of the nurses were in the age group of 21 -30years, had general nursing and midwifery qualification, did not have specialization in critical care nursing and were with 1-2 years of experience. Knowledge related to quality assurance showed improvement in the experimental group after the planned teaching which was statistically significant at 0.05level of significance. Knowledge and Practice scores for care of patient on mechanical ventilator did not show any change in the pretest and post test scores for the control group but there was a statistically high significant difference between the knowledge and practice scores for the experimental group with $p < 0.05$.

Thus inferring that planned teaching was effective in improving the nurse's performance and thereby helping them to provide quality care to the patients.

Section A

Description of baseline characteristics

Sr. No	Age (years)	Control group		Experimental group	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	21 – 30	91	91	92	92
2	31- 40	9	9	8	8
3	> 40	-	-	-	-
4	Total	100	100	100	100
Professional qualification					
1	GNM	78	78	92	92
2	B.Sc Nursing	22	22	8	8
3	P.B.BSc Nursing	-	-	-	-
4	Total	100	100	100	100
Specialization in critical care nursing					
1	Nil	68	68	72	72
2	6 month	12	12	6	6
3	1year	20	20	22	22
4	Total	100	100	100	100
Years of experience in critical care unit					
1	Less than one year	30	30	23	23
2	1-2yrs	46	46	46	46
3	2.1- 3 yrs 11months	15	15	22	22
4	4- >4 years	9	9	9	9
5	Total	100	100	100	100

Section B

To assess the knowledge of quality assurance among subjects of control and experimental group.

Group	Mean	SD	t value	Significant p value
Control	3.02	.80	-4.189	0.000

Section C

Area wise analysis of knowledge score among the subjects of control and experimental group in pretest and posttest.

Sr. no	Area	Mean Difference	SD	T	Sig (2-tailed)
1	Pretest and posttest scores of concept of mechanical ventilation	-1.52	.84	-17.95	.000
2	Pretest and posttest scores of ventilator parameters	-15.17	3.66	-41.41	.000
3	Pretest and posttest scores of monitoring patient status	-7.58	2.86	-26.42	.000
4	Pretest and posttest scores of infection control	-6.98	1.79	-38.82	.000
5	Total pretest and posttest knowledge scores	-31.25	6.23	-50.15	.000

Section D

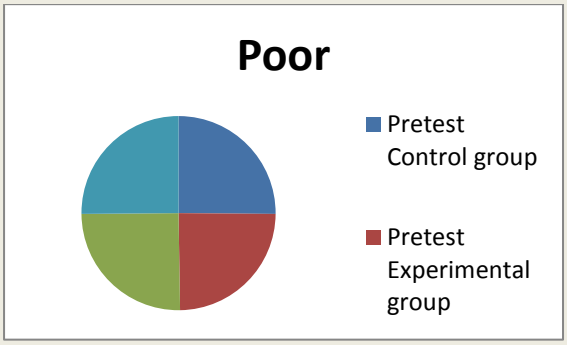
Area wise analysis of practice score among the subjects of control and experimental group in pretest and posttest.

Sr. no	Area	Test	Mean	SD	SE
1	Ventilator parameter	Pretest practice score	1.84	2.12	.21
		Posttest 1 practice score	1.56	2.04	.20
		Posttest 2 practice score	1.56	2.04	.20
2	Monitoring patient status	Pretest practice score	4.60	.69	.06
		Posttest 1 practice score	4.59	.71	.07
		Posttest 2 practice score	4.59	.73	.07
3	Infection control	Pretest practice score	2.12	1.13	.11
		Posttest 1 practice score	1.99	1.12	.11
		Posttest 2 practice score	1.99	1.12	.11
4	Suctioning	Pretest practice score	6.50	1.29	.12
		Posttest 1 practice score	6.22	1.50	.15

	Posttest 2 practice score	6.15	1.38	.13

Section E

Overall comparison of knowledge and practice score as per criterion in control group and experimental group.



Section F

Association between demographic data and nurse's performance in control and experimental group.

Association between demographic data and nurses performance in control and experimental group.

Sr. No.	Demographic data	Chi- square value	df	p value	Inference
1	Age	.968	2	.616	Not significant
2	Qualification	.968	2	.616	Not significant
3	Specialization in critical care	4.337	4	.362	Not significant
4	ICU experience	13.982	6	.030	Significant

Implications

The implications of the study does suggest the use of the nursing care manual as a ready reference and a tool to measure the quality of care provided to the patient. The manual can also be used to teach the student nurses regarding care of patient on ventilator. Ongoing in-service program and orientation program in the critical care units for the nurses should be encouraged by the nursing administrators.

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