



## **Assess the effectiveness of a nursing care protocol on practice of staff nurses regarding the care of mechanically ventilated patients in the critical care unit of a selected hospital**

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### **ABSTRACT**

Mechanically Ventilated patients presents as one of the most complex and challenging aspects of critical care nursing practice. They are highly dependent on skilled nurses for providing care. In order to provide better quality care the nurses need good practice regarding care of patients on mechanical ventilator. The aim of the study was to assess and compare the practice of staff nurses regarding the care of mechanically ventilated patients before and after implementation of nursing care protocol, then to determine the association of practice with selected baseline variables. One group pre-test post-test design was adopted to conduct the study on 55 nurses working in critical care unit of St. John's medical college hospital, Bangalore. The study subjects were selected using purposive sampling technique. An observational checklist was used to assess the practice of staff nurses in the care of mechanically ventilated patients, before and after implementation of the nursing care protocol. The data were analyzed using descriptive and inferential statistics. The findings revealed that in the pre test 94.54% of staff nurses had average practice, 3.63% had poor practice and only 1.81% had good practice where as in Post test 52.72% had good practice, 47.27% had average practice and none had poor practice. There was a significant difference in the total practice scores when the mean score of pretest  $59.58(\pm 7.20)$  was compared with the post test mean score  $76.32(\pm 6.52)$  ( $p < 0.001$ ). There was no significant association between the practice scores and the baseline variables at 0.05 level of significance.

### **KEY WORDS:**

Mechanical ventilator, practice, observational checklist, nurses, nursing care protocol



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## **INTRODUCTION:**

A critically ill patient presents a major challenge and consequent reward to nursing. The nurse should provide essential individualized care directed towards the survival of the patient. Each individual nurse is accountable to take appropriate measures to save the life of the patient under her care. Most of the patients in critical care units are mechanically ventilated.<sup>1</sup>

Although mechanical ventilation is essential to maintain ventilation and oxygenation, it can cause adverse effects. Patients on mechanical ventilation are prone to develop complications. Most common complications are alveolar hypoventilation, alveolar hyperventilation, skin breakdown especially pressure ulcers, deformities, contractures, fluid and electrolyte imbalance, pneumothorax, ventilator-associated pneumonia (VAP) and so on.<sup>2</sup>

In order to prevent all these complications and improve the prognosis of patients on ventilator the nurses in ICUs should provide safe and competent care. All ICU nurses should be aware about the potential hazards a patient is exposed to while caring for the patients on ventilator and should try to prevent or minimize these hazards.<sup>3</sup> Adherence to guidelines in order to avoid complications related to mechanical ventilation will help to improve the health status of patients on ventilator.<sup>4</sup>

The nurse coordinates efforts of the health care team, teaches and supports the client and the family, monitors the client's response to ventilation, intervenes to maintain oxygenation and ventilation and ensures that the client's complex needs are met. In order to provide a better comprehensive care to the mechanically ventilated patient, the nurse should have good practice regarding the mechanical ventilation and also have to follow procedures according to the scientific protocols to provide better care to that patients.<sup>5</sup>

## **MATERIAL AND METHODS:**

One group pre-test post-test design was adopted to conduct the study on staff nurses working in critical care unit of St. John's medical college hospital, Bangalore. In order to get within group variance of 20 with the effect size of 0.5 and the power of 95% the

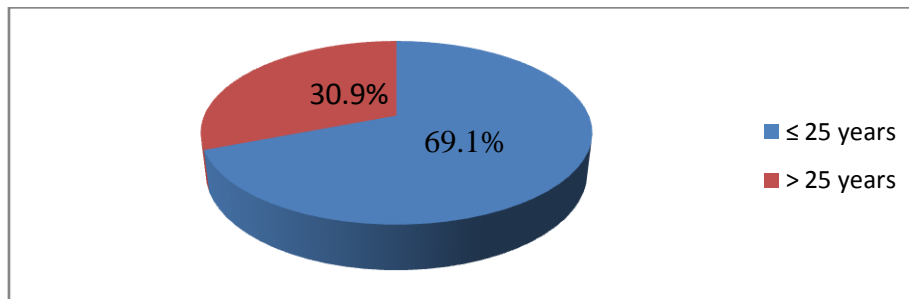


required minimum sample size is 30 and the selected sample was 55 using purposive sampling technique. The staff nurses who were taking care of patients on mechanical ventilator with work experience of at least 1 month were included as study samples. Head nurses, executives and staff nurses of ICU who were not willing to participate in the study were excluded. A proforma was used to elicit the baseline variables and an Observational checklist to assess the practice of staff nurses regarding care of patients on mechanical ventilator consisted of 90 items on 8 aspects (airway maintenance, recoding of vital signs, monitoring of the ventilator system, suctioning, eye care, oral care, skin care, patient safety and comfort). Each aspect had a set of steps (related to practice) which had to be performed by the staff nurses. Each step described one action. The action which is done by the staff nurses was scored “1” and the action or the item which was not done was scored as “0”.

The data was collected after obtaining administrative permission and ethical clearance. The existing Practice of the staff nurses was assessed using observational checklist before implementing the nursing care protocol, after which the nursing care protocol was implemented by the nurse mentor to the subjects. After 1 week of implementation of protocol, the practice of the nurses was reassessed to observe the change in practice using same observational checklist. The data was analyzed using descriptive and inferential statistics. Mean and standard deviation was used to assess the practice of staff nurses and Paired t-test was used to assess the difference in the practice of staff nurses before and after implementation of nursing care protocol.

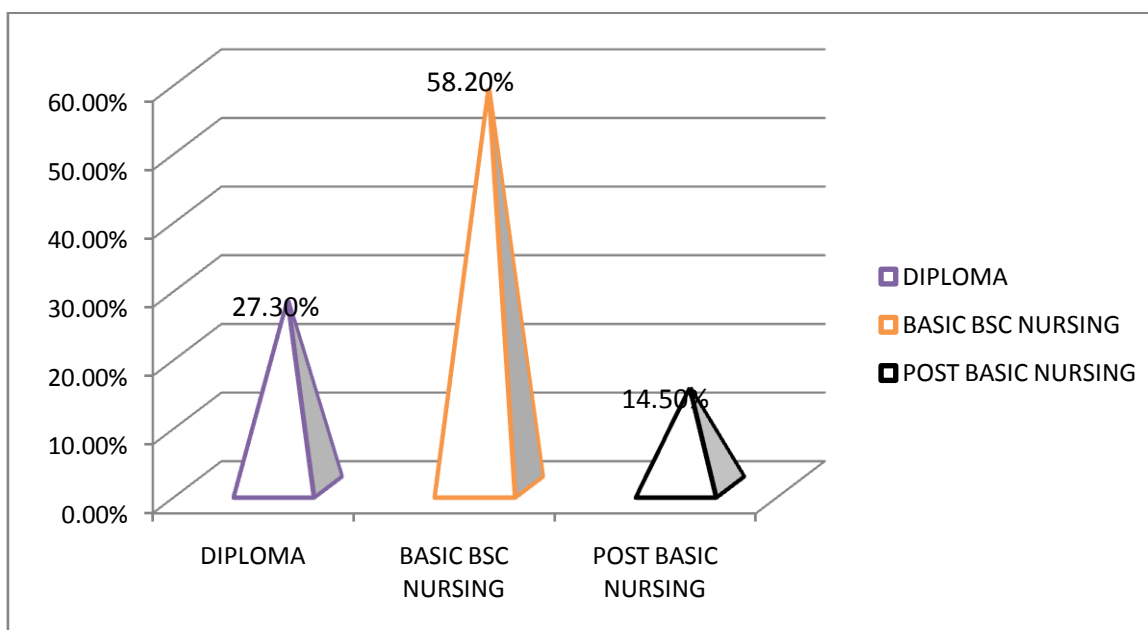
**RESULTS:**

**Section 1: Description of selected baseline variables of staff nurses**



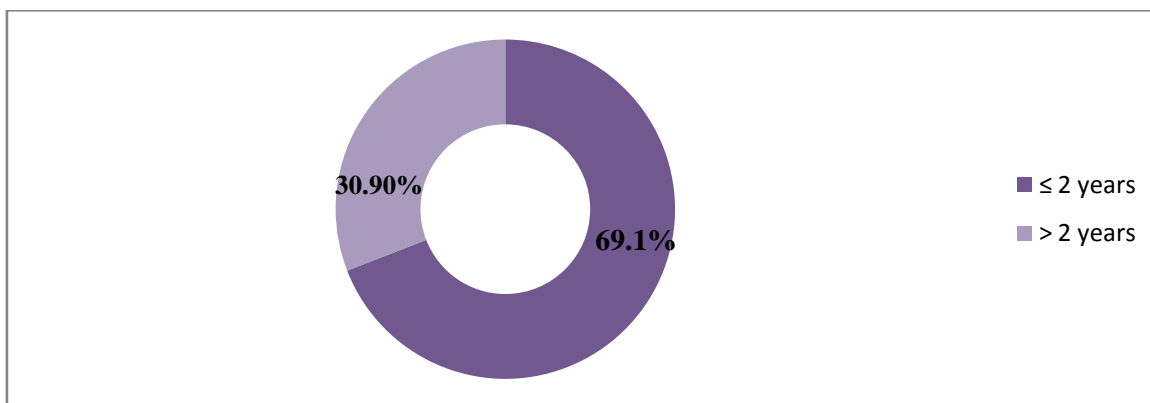
**Figure 3: Distribution of subjects according to age**

From the above figure it is evident that (69.1%) of the subjects are in the age group of  $\leq$  25 years and only 30.9% are in the age group of  $>$  25 years.



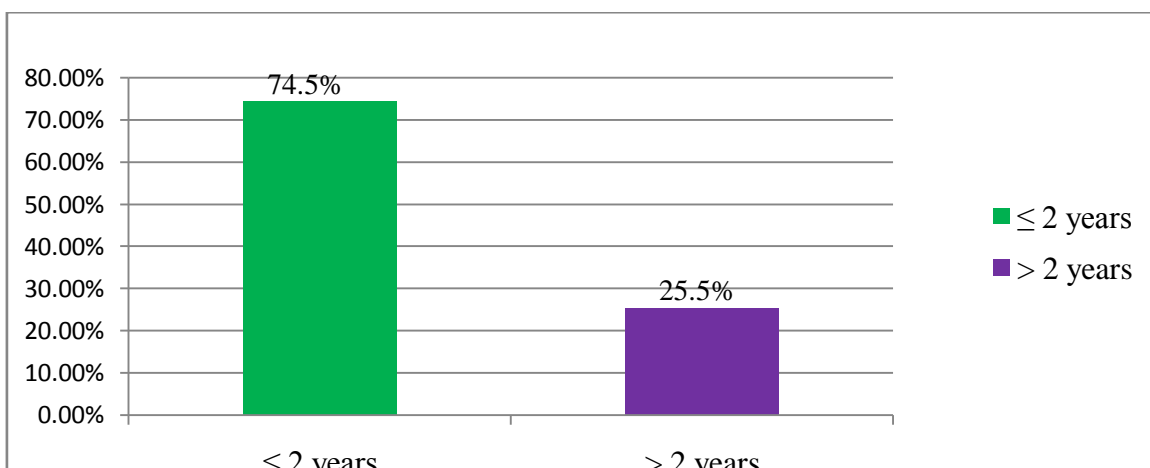
**Figure 4: Distribution of subjects according to professional qualification**

The figure shows that (58.20%) of the subjects are Basic B.Sc Nursing holders, 27.30% of the subjects are diploma holders and only 14.50% of the subjects are post basic degree holders.



**Figure 5: Distribution of Subjects According To Professional Experience**

The figure shows that (69.10%) of the subjects have  $\leq 2$  years of experience and only 30.90% have  $> 2$  years of experience



**Figure 6: Distribution of subjects according to ICU experience**

The figure depicts that (74.5%) of the subjects have  $\leq 2$  years of ICU experience and only 25.5% have  $> 2$  years of ICU experience.

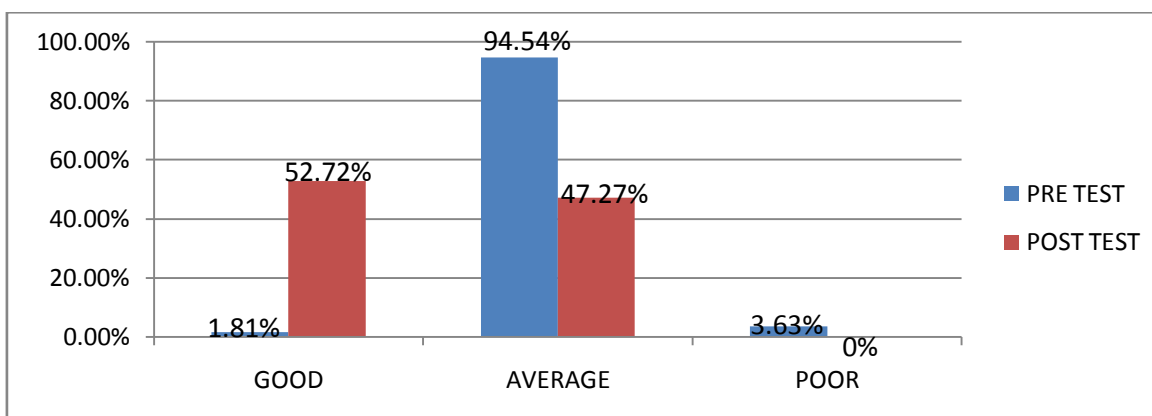


**Section II:** Description of practice of staff nurses before and after implementation of nursing care protocol.

Table 1: Range, Mean, SD of overall practice of staff nurses before and after implementation of nursing care protocol. n=55

PARAMETER	MAX. SCORE	PRE TEST			POST TEST		
		Range	Mean	SD	Range	Mean	SD
Practice	90	47-79	59.58	7.27	65-87	76.33	6.52

Table 1, depicts that the pretest mean score was  $59.58 \pm 7.27$  with a range of 47-79 and post test mean score of  $76.33 \pm 6.52$  with a range of 65-87. There is a mean difference of 16.74 between pre and post test.



**Figure 7: Level of Practice of samples in the pre test and post test**

It is evident from the above figure that in the pre test 94.54% of staff nurses have average practice, 3.63% have poor practice and 1.81% has good practice. Post test depicts that 52.72% have good practice, 47.27% have average practice and none have poor practice.



**Section III:** Comparison of practice scores of staff nurses before and after implementation of protocol.

Table 2: Range, mean, standard deviation and paired t-test to compare

Practice scores of staff nurses before and after implementation of protocol.

PARAMETER	MAX. SCORE	PRE TEST			POST TEST			PAIRE D t TEST	P VALUE
		RANGE	MEA N	S D	RANG E	MEA N	SD		
PRACTICE	90	47-79	59.58	7.20	65-87	76.32	6.52	13.72	<0.001

n=55

Table 2, describes that the post test score of  $76.32 \pm 6.52$  compared to pretest score  $59.58 \pm 7.20$  is significant at 0.001 (paired  $t=13.72$ ).

**Section IV:** Association of practice with baseline variable.

The association of practice with baseline variables was not significant. Therefore the hypothesis is rejected.



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## **DISCUSSION:**

The present study findings revealed that there was a mean difference of 16.74 from the pre test practice score to that of post test practice score with  $< 0.001$  level of significance especially in almost all the care aspects like airway maintenance, monitoring of ventilator system, suctioning, skin care, patient safety and comfort. The pretest scores also showed good practice in certain aspects like airway maintenance and suctioning and improved even more in the post test since the staff nurses had hourly respiratory monitoring chart and also due to the awareness of being watched by the superiors as they are having less years of experience in the care of patients on mechanical ventilator.

There was average practice (50-75%) seen in the pre test scores of care aspects like monitoring ventilator system, eye care, skin care, patient safety and comfort has become good practice in the post test ( $>75\%$ ).

The present study also revealed that staff nurses had poor knowledge in pretest practice scores in aspects of care like oral care (15.19%) which was improved to 50.90% in the post test. This may be because before implementation of protocol, the mouth care, eye care was given only twice a day but after implementation of protocol, the frequency improved.

The similar study findings was evident in other study, to assess the knowledge and practice of staff nurses before and after implementing the guidelines for open and closed suctioning, showed an increase in the post practice scores and the steps of both suctioning was carried out correctly and also the findings was  $< 0.05$  level of significance.<sup>6</sup>

## **CONCLUSION:**

The protocol showed a positive impact in improving nurse's practices and in improving the condition of the patients. The investigator believes that the nursing care protocol prepared as per the recent guidelines would be an effective tool in providing extensive care for the patients on mechanical ventilator.





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## **RECOMMENDATIONS:**

- Patient outcome measures can be assessed with the use of protocols.
- Comparative study can be done in different ICU's.
- Similar studies can be undertaken to develop various protocol.
- A similar study can be replicated on large group from different hospitals, thereby to generalize the findings.

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