Knowledge of Nurses Regarding Non Invasive Ventilation (NIV) Therapy

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Let us never consider ourselves finished nurses …. We must be learning all of our lives.

Florence Nightingale

Abstract: *Undoubtedly, Nurses play a vital role in terms of patient outcomes in any health care settings. She needs to be knowledgeable and skillful as she needs to deal with a wide range of needs and problems of her patients. The success of any therapeutic regimen of patients during the hospital stay mostly lies with the nursing care received by the patient. Non Invasive Ventilation (NIV) therapy is a newer form of treatment in the management of patients with Respiratory failure. The use of NIV therapy continues to be more in an intensive care setting and increasingly higher in wards, as there are not enough beds available in an intensive care unit. In order to be able to assist patients on NIV therapy, the nurses need detailed, concrete practical information and education about various aspects of care required by patients on NIV therapy. Therefore, a descriptive study to assess the knowledge of nurses regarding NIV therapy and to associate between knowledge of nurses and selected demographic variables was done using simple random sampling technique. The study findings revealed that majority of nurses (68%) had inadequate knowledge regarding NIV therapy. There was statistically significant association between knowledge of nurses and class attended on NIV (p=0.022) and cared for patients with NIV therapy (p=0.027).*

Keywords: Knowledge, Non - Invasive Ventilation therapy, Nurses

1. Introduction and Need for the Study

Knowledge is awareness of facts or information. Knowledge can be gained through various means of learning in Nursing. Nurses gain scientific knowledge through formal /informal training or education and experience. Nurses are expected to apply the gained knowledge into practice in order to provide quality nursing care. Nurses working in the multispecialty wards face many challenges in terms of patient care management. Nurses are expected to take care of patients with any type of diseases and treatment. Therefore, it is imperative for the nurses to keep updating their clinical knowledge regarding various treatment modalities and trends in patient care management.

Patients receiving oxygen therapy using snugly fitting face mask connected to a machine without an endotracheal tube or tracheostomy is called Non Invasive Ventilation (NIV) therapy (1). It is an emerging trend in the management of Acute Respiratory Failure (ARF) and Obstructive Sleep Apnea (OSA) (2) &(3). Among the health care professionals nurses play a vital role in monitoring, caring, educating and identifying patients at risk of developing complications. It is now frequently used in Intensive Care Units (ICUs) and in the wards. But often nurses were found to be hesitant to handle the NIV machine due to lack of knowledge regarding the parameters required to set in NIV machine and the care required by these patients. Henceforth, the need was felt to conduct a descriptive study among nurses.

Statement of the Problem

A descriptive study to assess the knowledge of nurses regarding Non Invasive Ventilation (NIV) therapy in selected multispecialty private wards of Tertiary care Training and Research hospital in Vellore district, Tamil Nadu.

Objectives

The objectives of the study were to
- To assess the knowledge of nurses regarding NIV therapy
- To associate the study findings of knowledge with selected demographic variables of nurses

2. Methodology

Research Approach: Non experimental approach

Research Design: Descriptive design

Setting of study: Selected wards of multispecialty private wards of Tertiary care Training and Research hospital at Vellore district, Tamil Nadu.

Population: The study population comprised of Nurses working in selected multispecialty private wards of Tertiary care Training and Research hospital in Vellore district of Tamil Nadu

Sample: The sample size consisted of 100 Nurses working in the selected hospital in Vellore district, Tamil Nadu

Sampling: Computer assisted simple random sampling
Inclusion Criteria: Nurses who have completed more than one year of experience, who consented to participate in the study and Nurses who were available at the time of data collection

Tool / Instrument
A structured questionnaire was prepared by the investigator to collect data for the present study. The questionnaire consisted of two sections

Section I: Demographic data of Nurses
Section II: Knowledge of nurses regarding NIV therapy which consisted of 15 single choice questions.

Scoring and interpretation procedure:
Section I- Demographic data was scored and the data was analyzed using descriptive statistics
Section II- The total score of Knowledge questionnaire was 15. The each correct answer was given score 1 and the wrong answer was given score 0. The scores were converted to percentage and interpreted as follows:
< 50% - Inadequate knowledge
51 – 74% - Moderately adequate knowledge
> 75% - Adequate knowledge

Validity of the tool: The content validity of the instrument was ensured by four nursing and one medical expert with the Content Validity Index score of 0.97 (4.93/5 = 0.97).

Data Collection
After obtaining the permission from College of Nursing Research Committee, the investigator prepared the list of nurses to be included in the study based on the inclusion criteria using computer assisted simple random sampling. The principal investigator and co-investigators met participants on site, explained the purpose of the study. After obtaining the written consent, the data was collected using the self-administered structured questionnaire.

Data Analysis
Data was analyzed using descriptive and inferential statistics using SPSS 16.0. Descriptive statistics was reported using Mean+/-SD for continuous variable. Categorical variable was reported using Frequency and percentage. Chi-square/ Fisher's exact test was done to find the association between the knowledge level of nurses and demographic variables. P value <0.05 was considered statistically significant.

3. Results

Section I: Description of demographic variables

Table 1: Distribution of Nurses based on the Demographic variables (N=100)

Variables	Number	Percentage (%)
Age in Years		
20-30	44	44
31-40	44	44
41-50	12	12
Gender		
Male	3	3
Female	97	97
Professional qualification		
GNM	91	91
BSc (N)	5	5
PBBSc (N)	4	4

| Years of experience in current hospital		
1-5 years	34	34
5-20 years	62	62
Above 20 years	4	4

Table 1 shows that majority of nurses (44 %) were between the age of 20 to 30 years and 31 to 40 years, 91 % of nurses had received General Nursing and Midwifery (GNM) as their professional qualification and majority of nurses (62 %) were having above 5 years to 20 years of experience.

Figure –1: Distribution of Nurses based on the attendance of class on NIV therapy (N=100)

Nurses who attended class on NIV therapy

- Yes - 26 %
- No - 74 %
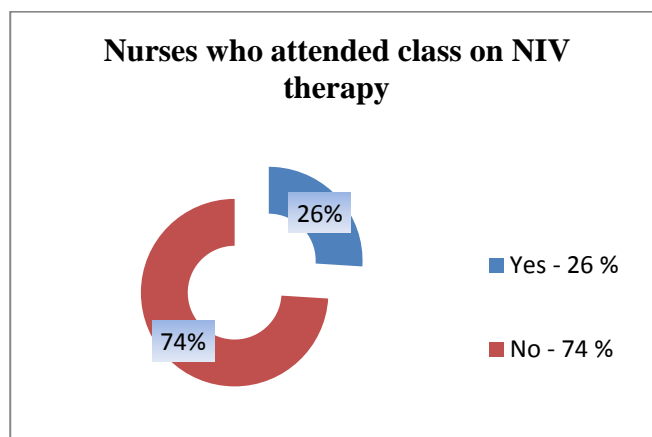
The figure shows that 74 % of nurses did not had any in-service class on NIV therapy

Figure –2: Distribution of Nurses based on care provided to patients with NIV therapy (N=100)

Nurses who cared for patients with NIV therapy

- Yes - 66 %
- No - 34 %
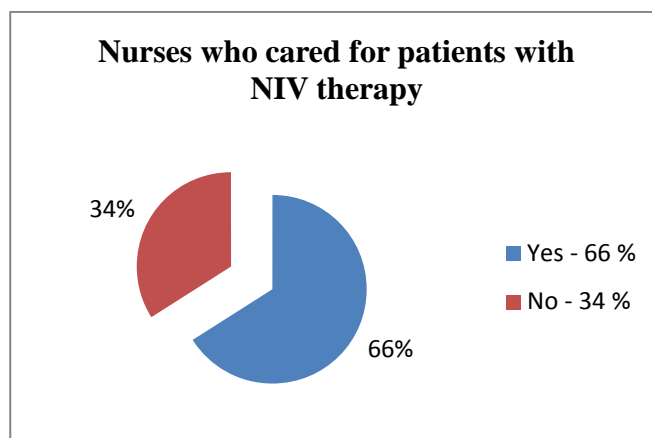
The figure depicts that majority of the nurses (66%) had taken care of patients on NIV therapy in the past.
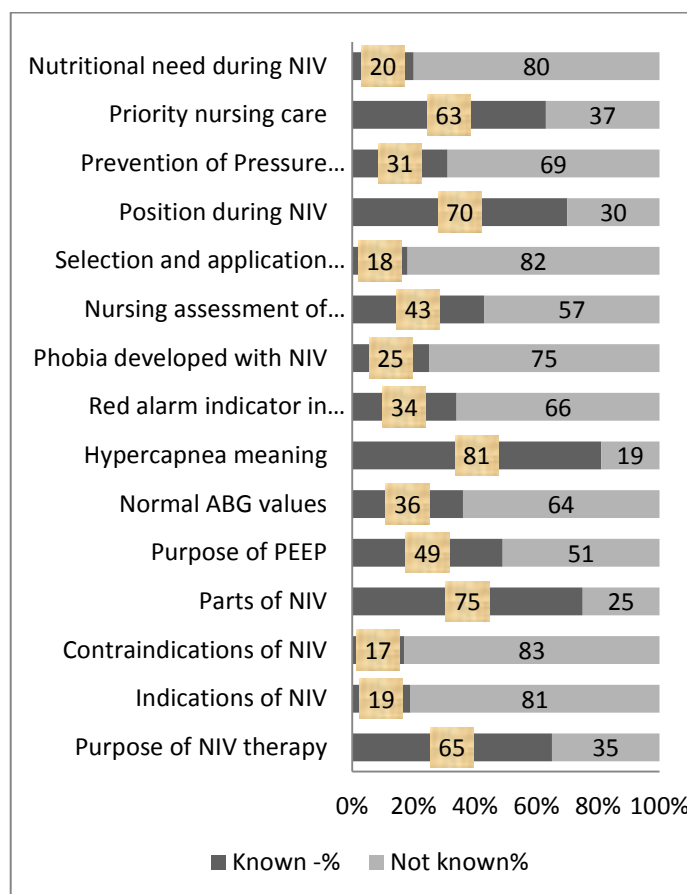
Section II

Figure – 3: Overall adequacy of knowledge among nurses regarding NIV therapy (N=100)
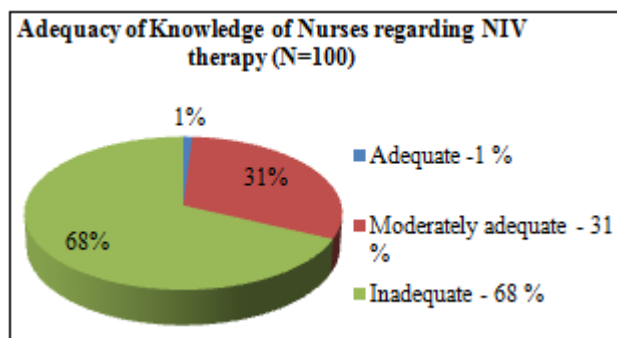
The figure reveals that 31 % of nurses had moderately adequate knowledge and 68 % of nurses had inadequate knowledge regarding NIV therapy

Figure – 4: Nurses knowledge on specific aspects of care regarding NIV therapy (N=100)

The figure reveals that nurses had adequate knowledge on parts of NIV machine (75%) and the meaning of Hypercapnia (81%).Nurses had moderately adequate knowledge on the purpose of NIV therapy (65 %) and position maintained during NIV therapy (70 %). Nurses had inadequate knowledge on selection and application of face mask for NIV (18 %).

Table –2: Association between knowledge and demographic variables of nurses

Demographic Variables	Adequate & Moderately adequate knowledge (> 51 %)		Inadequate knowledge (<50%)		p Value
	N	%	N	%	
Age (Years)					
20 – 30	17	38.6	27	61.4	
31 – 40	13	29.5	31	70.5	0.341
41 - 50	2	16.7	10	83.3	
Gender					
Female	31	32	66	68	0.451
Male	1	33.3	2	66.7	
Years of Experience					
1-5	11	32.4	23	67.6	
5-10	17	45.9	20	54.1	
10-15	2	14.3	12	85.7	0.106
15-20	2	18.2	9	81.8	
>20	0	0	4	100	
Educational Qualification					
GNM	32	35.2	59	64.8	
BSc (N)	0	0	5	100	0.095
Post Basic BSc (N)	0	0	4	100	
Attendance of NIV Class					
Not attended	19	25.7	55	74.3	*0.022
Attended	13	50	13	50	
Taken Care of Patients with NIV					
Not cared patients with NIV	6	17.6	28	82.4	*0.027
Cared patients with NIV	26	39.4	40	60.6	

*p<0.05 - significant

Table -3 shows that there was statistically significant association between knowledge of nurses and nurses who had attended and cared patients with NIV therapy (p <0.05). There was no association found between knowledge of nurses and Gender, years of experience and educational qualification.

Note: For the purpose of statistical calculation, adequate and moderately adequate knowledge scores were combined and Fischer's test of exact probability was used.

4. Discussion

This study was done among 100 nurses who were working in a selected multispecialty private wards of Tertiary care Training and Research hospital at Vellore district, Tamil Nadu. The study aimed to assess the knowledge of nurses and association with demographic variables.

The first objective of the study was to assess the knowledge among nurses regarding NIV therapy

In this study, 31 % of nurses had moderately adequate knowledge and 68 % of them had inadequate knowledge regarding NIV therapy. Only 18 % of nurses were aware of

the application of NIV mask and ensuring fitness of mask with 2-finger rule. The study result was supported by the findings of a study done in three university hospitals from Spain which compared nurses' knowledge regarding NIV therapy between four multispecialty ICUs and one Surgical ICU. Only 23.1 % of the nurses were aware of selection and application of face mask ensuring 2-finger rule for patients with NIV therapy (4).

The inadequate knowledge could be because of lack of formal training during the course of education and during on the job training about NIV therapy. There is a paucity of published data identified on assessing the knowledge of nurses regarding NIV therapy nationally and internationally. Therefore, it would be recommended to conduct similar studies in various settings. Among the 100 nurses, majority of nurses equally (44 %) were between the age group of 20 to 30 years and 31 to 40 years and 97 % of them were female nurses.

The second objective of the study was to associate the study findings of knowledge with selected demographic variables of the health care professionals

The study revealed that the demographic variables such as age, gender, years of experience and educational qualification of nurses had no significant association with knowledge level of nurses. Out of 100 nurses, 26 % had attended formal/informal class on NIV therapy and 66 % of nurses cared for patients with NIV therapy. There was a significant association between knowledge of nurses with formal/informal NIV class attended (p =0.022) and cared for patients with NIV therapy (p = 0.027).

However, the study results are contradicted by Merve Tarhan et al. in their study done among 147 nurses assessing their knowledge regarding Non Invasive Mechanical Ventilation (NIMV) at Istanbul. It was reported that there was a significant association between knowledge and gender and educational qualification of nurses as it was reported that female nurses and post graduate nurses had higher level of knowledge than others (p >0.05) (5).

The significant association between knowledge and formal/ informal class attended by the nurses is satisfying and bringing hope that the knowledge gap which was identified among nurses would certainly be improved. Therefore, conducting regular in-service education program would help nurses to improve their knowledge and skills regarding NIV therapy. There is a little literature to support the study findings and further studies are needed to support these findings. It would be also beneficial for patients having extended roles of nurses in the selected field of patients' care mainly focusing on patient education and ensuring the quality patient care.

5. Conclusion

The effective NIV practices require trained personnel. Nurses who have active role in NIV practices should receive basic training regarding indications, treatment initiation, roles and responsibility of nurses etc, This training program should include both theoretical information and technical skill related to NIV. Nurses who are knowledgeable about the specific aspects of nursing care of patients with NIV therapy may be able to provide better individualized patient education and ongoing psychological support to patients and their families.

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