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RESEARCH ARTICLE

ASSESSMENT OF THE EFFECTIVENESS OF PTP ON KNOWLEDGE AND PRACTICE OF ENDOTRACHEAL TUBE SUCTIONING AMONG NURSING STUDENTS IN INTENSIVE CARE UNITS

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Abstract

A Quasi experimental study was conducted to assess the effectiveness of PTP on knowledge and practices of endotracheal suctioning among (46) nursing students posted in intensive care units with purposive sampling techniques. The objectives of the study were to assess the existing knowledge and practice of endotracheal tube suctioning, to evaluate effectiveness of PTP, to find association of pretest knowledge and practice score with selected variables. The major findings revealed that mean post knowledge score was higher than pre-test knowledge t value i.e. 2nd year GNM had 12.2, 3rd year GNM had 12.1, and basic BSc had 7.8. With regards to practice, the pre-test and post-test analysis revealed that the mean post practice score was higher than pre-test t-value i.e. 2nd year GNM 16.8, 3rd year GNM 12.9, 2nd Basic BSc 10.2. Thus, the paired t- test result showed significant gain in knowledge ($p < 0.05$). Statistical analysis using ANOVA test reveals that no demographic variable have significant association with pre-test knowledge and practice among nursing students regarding Endotracheal tube suctioning. Thus the study proved, planned teaching programme on knowledge and practice of Endotracheal tube suctioning was scientific, logical and effective strategy.

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Introduction:-

Respiration is a basic human need that man tends to ignore unless they feel some difficulty in breathing. Respiration is a physiological function that is almost synonymous with being alive.

Approximately 1.5 million persons receives mechanical ventilation annually in the United States, of these up to 25% requires prolonged mechanical ventilation. Where as in India there is no clear picture of incidence of mechanical ventilated clients.

Patient experiences difficulty in breathing as a threat to life itself. Patent airway is very essential for effective breathing. Airway patency is usually maintained by action of the mucocilliary system when normal amount of mucus is produced when airway clearance cannot be accomplished via involuntary physiological mechanism the collaborative nursing intervention is needed such as endotracheal tube suctioning to achieve optimal patient outcomes.

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Endotracheal tube suctioning helps in maintaining patent airway by removing tracheobronchial secretions using sterile technique, it improves oxygenation and reduce work of breathing by preventing complications like hypoxia, cardiac Dysrhythmia's, mucosal damage

Problem Statement:

A study to assess the effectiveness of a planned teaching programme on knowledge and practices of endotracheal tube suctioning among nursing students posted in intensive care units in selected hospital

Objectives:-

1. To assess the existing knowledge and practice of endotracheal tube suctioning among nursing students posted in intensive care units.
2. To evaluate the effectiveness of planned teaching programme on knowledge and practice of endotracheal tube suctioning among nursing students.
3. To find out the association of pre-test knowledge and practice score with selected demographic variables.

Assumptions:

The study assumethat:-

1. Nursing students may have some amount of knowledge regarding endotracheal tube suctioning.
2. Nursing students may have improper practice regarding endotracheal tube suctioning.
3. Effective planned teaching programme may improve the knowledge and practice of ETS of nursing students posted in intensive care units.

Hypothesis:

H1: There will be significant change in post-test knowledge and practice score after implementation of planned teaching programme.

H2: There will be significant association between knowledge and practices of nursing students with demographic variables

Methodology:-

Research approach:

Quantitative evaluative approach

Research design:

Quazi experimental, One group, pre-test post-test.

Setting of the study:

Intensive care units of selected Hospitals.

Research variables:

Dependent variables: In the present study, independent variable was knowledge and practice endotracheal tube suctioning.

Independent variables: In present study, dependent variables were Planned teaching programme regarding endotracheal tube suctioning..

Demographic variables:

This included age, gender, duration of hospitalization, Previous knowledge about disease condition.

Target Population:

The target population is aggregate of cases about which the researcher would like to generalize.

Accessible Population:

The accessible population for this study were the subjects students posted in ICUs of selected Hospital.

Sample Size:

The sample size of the present study was 46 subjects with intercostal drainage.

Sampling Technique:

In this study purposive sampling technique was adopted to select the subjects. Purposive sampling is a non-probability sampling technique where subjects were chosen to be part of the sample with a specific purpose in mind and according to the study objectives.

Criteria for Samples Selection:**Inclusion Criteria:**

Subjects who
Students who were posted in intensive care units.

Exclusion Criteria:

Those who were not willing to participate
Students who were absent at the time of planned teaching programme.

Description of Tool:**Part I:**

Socio demographic variables.

It deals with Sociodemographic data on different variables such as type of course, previous posting in ICU, and previous experience of ETS.

Part II:

It consists of 30 items on structured knowledge questionnaire regarding Anatomy of trachea, knowledge of ETS, knowledge of ETS procedure. Each item has four options with one most appropriate answer. The maximum score for the correct response to each item was one and for wrong answer the score was zero. Thus for 30 items, the maximum obtainable score was 30. Area of knowledge score were:

Part 1: structured questionnaire related to Anatomy and physiology

Part 2: Structured questionnaire related to knowledge of ETS

Part III:

Structured questionnaire related to procedure of ETS

1.	Anatomy of trachea	6	MCQ question
2.	Knowledge of ETS	11	MCQ question
3.	Knowledge of ETS procedure	13	MCQ question
Total items		30.	

Reliability:

The tool is developed and used for data was a structured knowledge questionnaire to assess knowledge, and observational checklist to assess the practice. The content validity of the tool was established by 10 experts. The tool was found to be reliable and feasible. The reliability of the tool was high that is (knowledge was $r = 0.83$ and practice was $r = 0.81$).

Data collection procedure:

A formal written permission was obtained from the authorities of selected hospital. The final study was conducted from 23rd nov 2015 to 23rd dec 2015. Actual data collection was done on 46 nursing students meeting the criteria for the study.

Schedule for data collection:

1. From 23 -28. 11. 2015, 8 subject's practice of ETS was assessed every day using observational checklist.
2. Then approached the subjects, informed them regarding the objectives of the study and obtained the consent after assuring the subjects about the confidentiality of the data.

3. Whole group on 30th November 2015 pre-test was administered a self-structured tool prepared by the investigator. After pre-test, planned teaching programme followed with demonstration of ETS by dividing the subjects.
4. On 7th day after pre-test i.e. on 7th December 2015 post-test was given followed with their practice was assessed from 8th -20th December 2015.
5. The data was analysed by statistical tests.

Plan for data analysis:

In data analysis was planned to include descriptive and inferential statistics. The following plan of data analysis was made with the opinion of experts. The analysis was done based on the objectives and hypothesis.

Descriptive statistics:

Frequency and percentage distribution were used to analyse the demographic data and level of knowledge of nursing students in selected hospital.

Inferential statistics:

Paired t' test was used to assess the effectiveness of PTP on knowledge and practice regarding ETS among nursing students posted in ICUs.

ANOVA test was used to find out the association of pre-test knowledge and practice score with selected demographic variables and finding were documented in tables, graphs, and diagrams.

Results:-

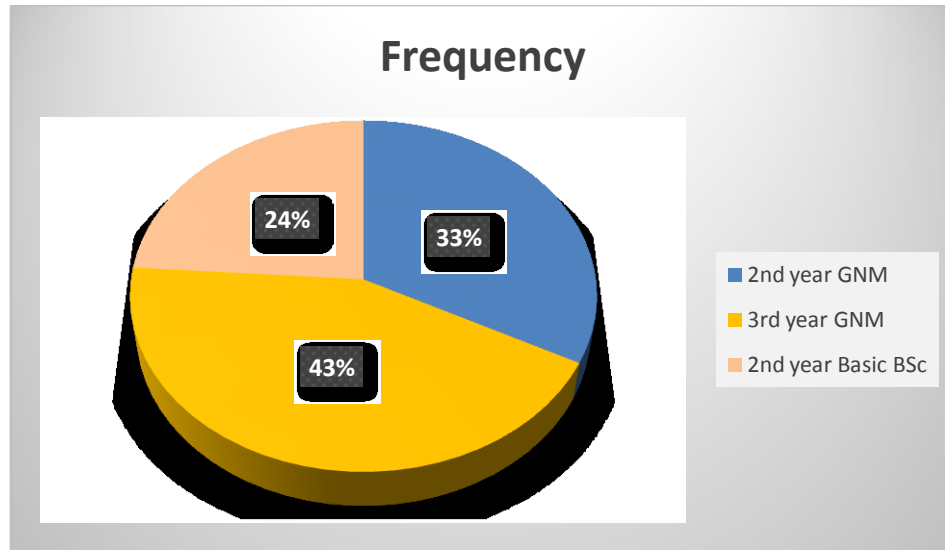
Section I: frequency distribution of subjects with regard to demographic variables

This section deals with percentage wise distribution of subjects according to their demographic variables. Purposive sampling technique was used to draw the subjects who were nursing students posted in ICUS. The data obtained to describe the sample characters including type of course, previous posting in ICU, and previous experience of ETS.

Table 1:- Frequency Distribution of subjects with regard to demographic variables. n=46

Type of course	Frequency	Percentage
2 nd year GNM	15	32.6%
3 rd year GNM	20	43.4%
2 nd year Basic BSc	11	23.9%
Previous posting ICU	Frequency	%
2 nd year GNM	10	66%
3 rd year GNM	20	100%
2 nd year Basic BSc	6	54.5%
Previous experience of ETS	Frequency	%
2 nd year GNM	2	13.3%
3 rd year GNM	18	90%
2 nd year Basic BSc	2	13.3%

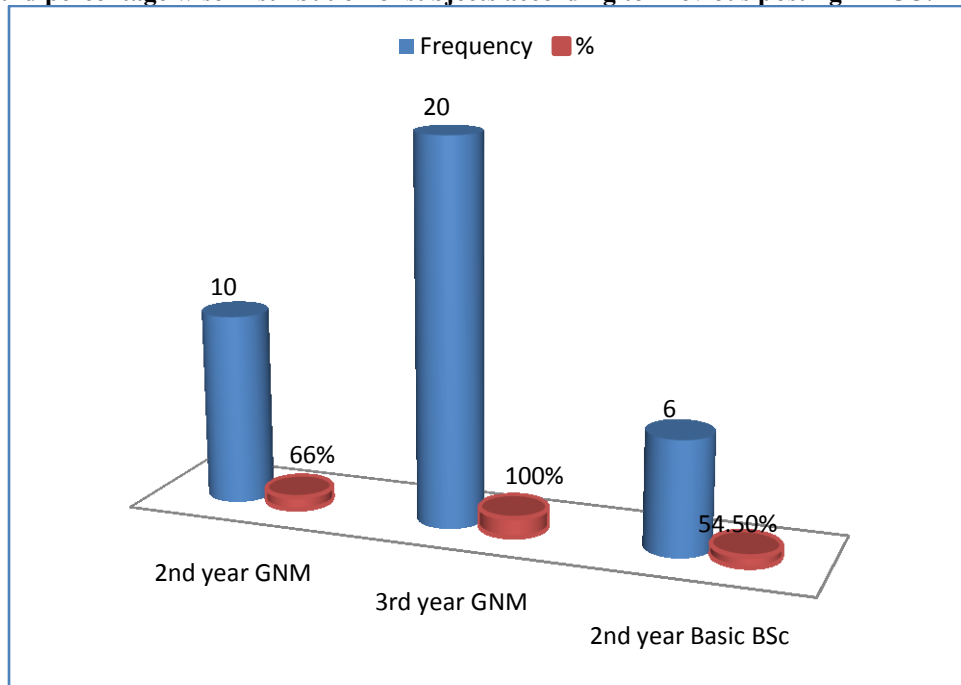
Frequency and percentage wise distribution of subjects according to type of course.



Graph No. 1:-

The pie diagram shows that majority of the subjects i.e.20 (43.3%) belongs to 3rd year GNM, 15(32.6%) belongs to 2nd year GNM, 11(23.9%) belongs to 2nd year basic BSc nursing students.

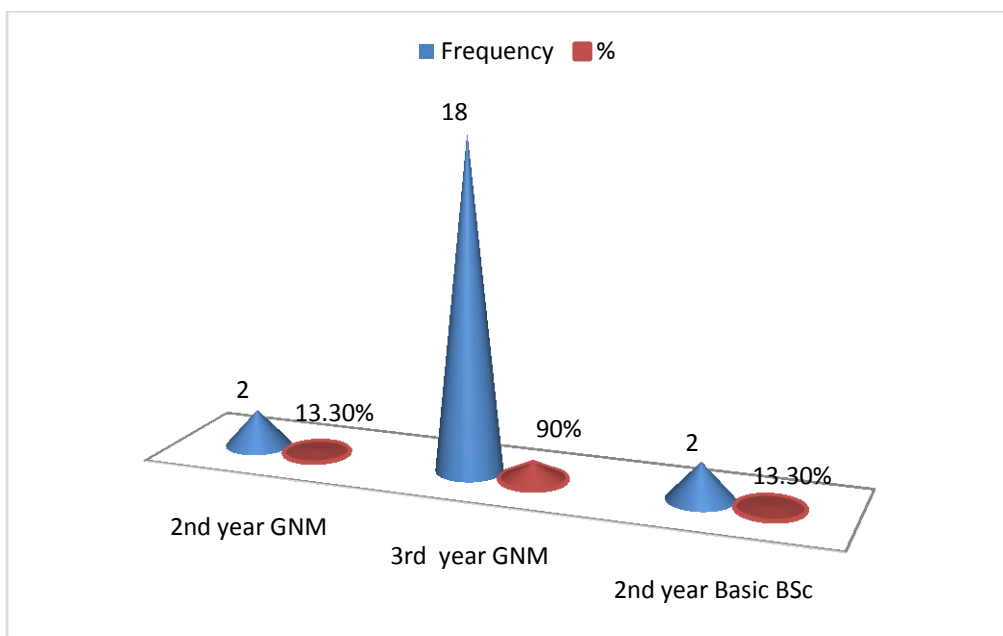
Frequency and percentage wise Distribution of subjects according to Previous posting in ICU.



Graph No. 2:-

Above,cylinder bar diagram shows that majority of the subjects i.e. 20(100%) belongs to 3rd year GNM, 10(66 %) belongs to 2nd year GNM, 6(54.5 %) belongs to 2nd year basic BSc nursing students which were previously posted in ICU.

Frequency and percentage wise Distribution of subjects according to previous experience of ETS posted in ICU.



Graph No. 3:-

Above, cone diagram shows that majority of the subjects i.e. 18 (90 %) belongs to 3rd year GNM, 2 (13.3%) belongs to 2nd year GNM, 2 (13.3 %) belongs to 2nd year basic BSc nursing students had previous experience of ETS posted in ICU.

Section II: Pre-test score of knowledge and practice of ets among nursing students posted in icu

Table 3: Pre-test knowledge score n =46

Knowledge of ETS	Frequency	Percentage
Poor(score) 0-10	0	0%
Average (score)11-20	28	61%
Good (score) 21-30	18	39%

In the above table No.3, shows pre-test knowledge score majority of 28 (61%) of the nursing students have average knowledge (Score11-20), 18 (39%) have good knowledge (Score 21-30), and none of them have poor knowledge score (0-10) regarding ETS.which shows that there is inadequate knowledge about ETS among nursing students.

Table 4: Pre-testpractice score n=46

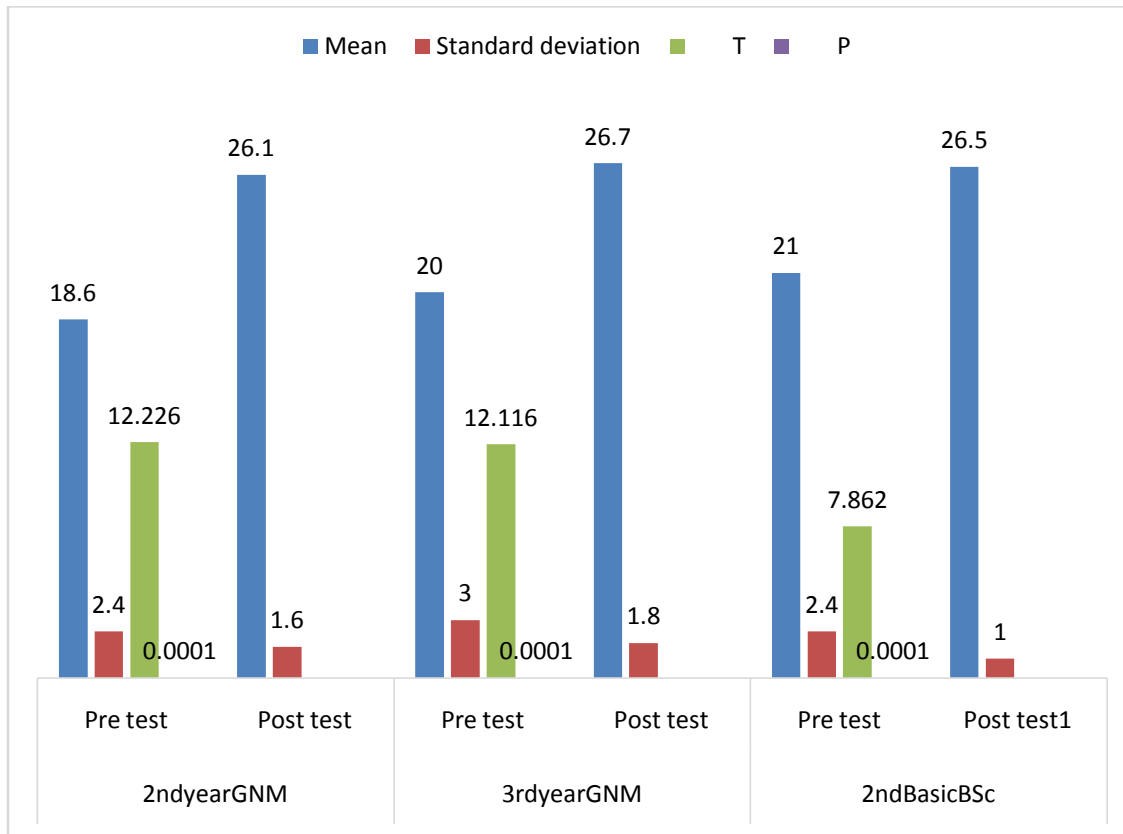
Practice of ETS	Frequency	Percentage
Poor score(0-9)	12	26%
Average score(10-18)	34	74%
Good score(19-26)	0	0%

In the above table No 4, shows pre-test practice score majority of 34 (74%) of the nursing students have average knowledge (Score11-20), none of them have good knowledge (Score 21-30), and 12 (26%) of them have poor knowledge score (0-10) regarding ETS.which shows that there is poor practice among the nursing students.

Section III: Comparison Of Pre-Test And Post Test Score Of Knowledge And Practice Of Ets Among Nursing Students.

Table 5:- Comparison of pre-test and post knowledge of ETS using paired t test n=46

Course wise		Mean	Standard deviation	Paired t	P
2ndyearGNM	Pre test	18.6	2.4	12.226	0.0001
	Post test	26.1	1.6		
3rdyearGNM	Pre test	20	3.0	12.116	0.0001
	Post test	26.7	1.8		
2ndBasicBSc	Pre test	21	2.4	7.862	0.0001
	Post test1	26.5	1.0		

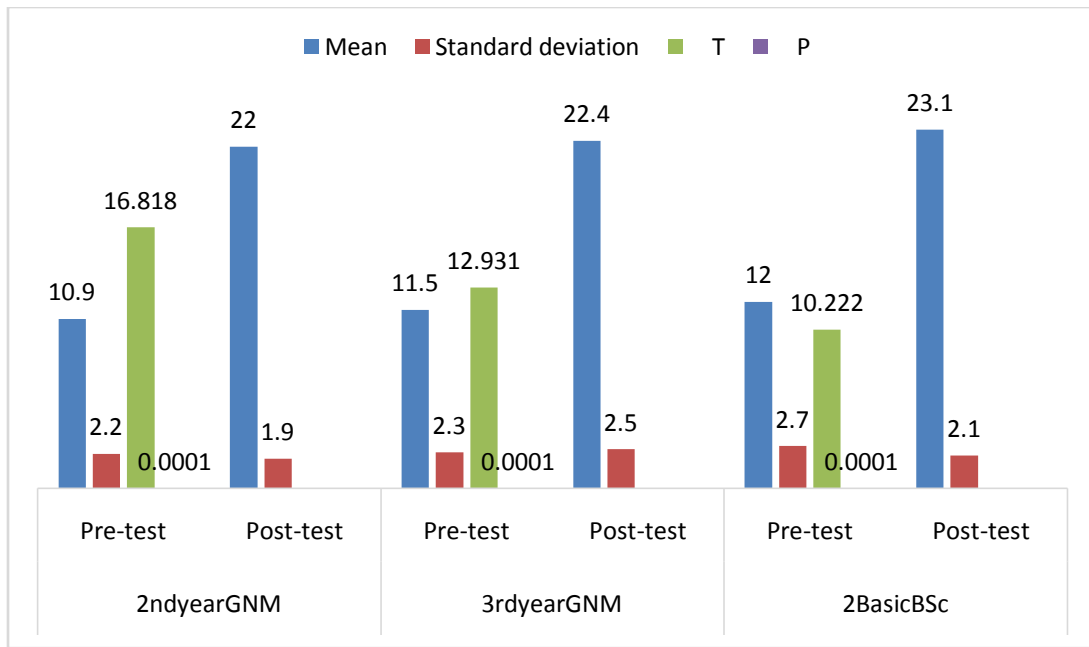


Graph No 4:-

Above multiple bar diagram No 4 shows that, Paired t- test values determined in comparison of course wise pre-test and post-test knowledge scores of nursing students' were 12.2, 12.1, 7.8, with degree of difference (14), (19), (10). Corresponding P values were 0.0001, which were small (less than 0.05). For each knowledge section hence post-test values were greater than the pre-test value in course wise comparison. Thus, PTP proved to be significantly effective in improving the knowledge of nursing students regarding ETS.

Table 6: Comparison of pre-test and post-test practice of ETS using paired t-test n=46

Course wise		Mean	Standard deviation	Paired t	P
2 nd yearGNM	Pre-test	10.9	2.2	16.818	0.0001
	Post-test	22	1.9		
3 rd yearGNM	Pre-test	11.5	2.3	12.931	0.0001
	Post-test	22.4	2.5		
2Basic BSc	Pre-test	12	2.7	10.2220	0.0001
	Post-test	23.1	2.1		



Graph No. 5:-

The above multiple bar diagram No 5 shows, Paired t –test values determined in comparison of course wise pre-test and post-test practice scores of nursing students’ were 16.8, 12.9, 10.2, with degree of freedom (14),(19), (10) degree of freedom. Corresponding P values were 0.0001, which were small (less than 0.05). For each practice section hence, post-test value were greater than the pre-test value in course wise comparison. Thus, the PTP proved to be significantly effective in improving the knowledge of nursing students regarding ETS.

Section IV: Effectiveness Of Ptp In Improving Knowledge And Practice Of Ets Among Nursing Students.

Table 7:- Effectiveness of PTP in improving Knowledge of ETS n=46

Knowledge	Pre-test		Post-test	
	Frequency	%	Frequency	%
Poor(0-10)	0	0%	0	0%
Average(11-20)	28	61%	0	0%
Good (21-30)	18	39%	46	100%

In the above table No. 7, pre-test knowledge score majority of 28(61%) of the nursing students have average knowledge (score 11-20), 18(39%), have good knowledge (score 21-30), none of them have poor knowledge score (0-10), regarding ETS.

In post-test knowledge score majority of 46 (100%) of the nursing student have good knowledge (score 21-30), hence the PTP was effective regarding ETS. Hence, H1 is accepted.

Graph No 6:- Effectiveness of PTP in improving Knowledge of ETS.

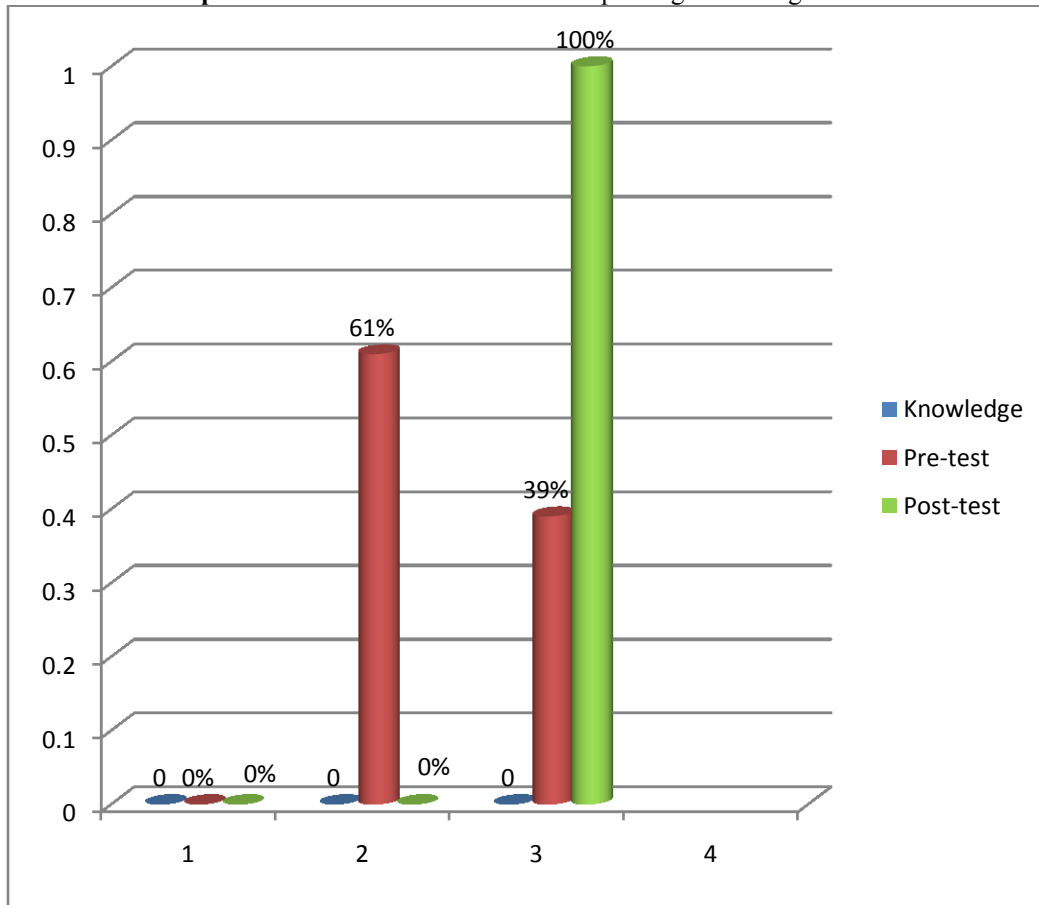


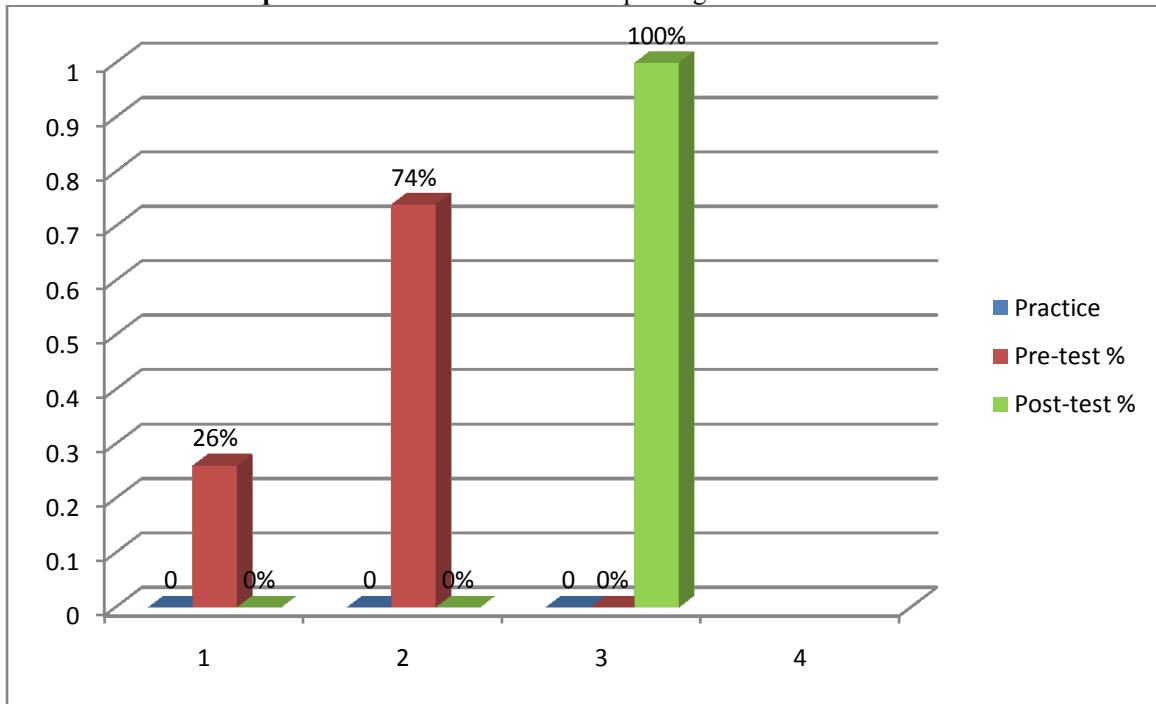
Table 8:- Effectiveness of PTP in improving Practice score of ETS n=46

Practice	Pre-test		Post-test	
	Frequency	%	Frequency	%
Poor(0-9)	12	26%	0	0%
Average(10-18)	34	74%	0	0%
Good(19-26)	0	0%	46	100 %

The above table No.8 shows, pre-test practice score majority of 34(74%) of the nursing students have average knowledge (score 11-20), none of them have good practice (score 21-30), 12(26%) of them have poor knowledge score (0-10), regarding ETS.

In post-test practice score majority of 46 (100%) of the nursing student have good knowledge (score 21-30), hence the PTP was effective regarding ETS on nursing students posted in ICU. Hence H1 is accepted.

Graph 7:- Effectiveness of PTP in improving Practice score of ETS.



Section V: Association between the pre-test knowledge and practice score with selected demographic variables.

Association between pre-test knowledge score and practice score regarding ETS with demographic variables was assessed using ANOVA test.

Table 9:- ANOVA test for association between Pre-testKnowledge score regarding ETS with demographic variables n=46

Variables		Mean	Standard deviation	F	P
Type of course	2ndyear GNM n=15	18.6	2.41	2.556	0.0894
	3rdyear GNM n=20	20	3.06		
	2ndBasic BSc n=11	21	2.4		
Previous posting in ICU	2ndyear GNM n=10	18.6	1.7	1.495	0.2391
	3rdyear GNM n=20	18.3	1.8		
	2ndBasic BSc n=6	20	3.0		

Pre-test knowledge of type of courses that is 2nd year GNM (18.6 ± 2.41), 3rd year GNM (20 ± 3.06), 2nd Basic BSc (21 ± 2.4), since p values corresponding type of course demographic variables were large (greater than 0.05), there is no significant association with pre-test knowledge of nursing students with type of course. ($F=2.556$, $P=0.0894$). Pre-test knowledge of previous posting in ICU that is 2nd year GNM (18.6 ± 1.7), 3rd year GNM (18.3 ± 1.8), 2nd Basic BSc (20 ± 3.0), since p values corresponding demographic variables i.e. previous posting in ICU were large (greater than 0.05), there is no significant association with pre-test knowledge of nursing students with type of course. ($F=1.495$, $P=0.2391$). Hence H₂ is rejected.

Table 10:-ANOVA test for association between Pre-test Knowledge score regarding ETS with demographic variables n=46

Variables		Mean	Standard Deviation	F	P
Type of course	2 nd year GNM n =15	10.6	1.7	1.559	0.225
	3 rd year GNM n =20	11.1	2.3		
	2 nd Basic BSc n =11	12.6	3.0		
Previous posting in ICU	2 nd year GNM n =10	22.2	1.9	0.055	0.946
	3 rd year GNM n =20	22.4	2.5		
	2 nd Basic BSc n =6	22.1	2.1		

Pre-test practice score of type of courses that is 2nd year GNM (10.6 ± 1.7), 3rd year GNM (11.1 ± 2.3), 2nd Basic BSc (12.6 ± 3.0), since p values corresponding demographic variables i.e. type of course were large (greater than 0.05), there is no significant association with pre-test practice of nursing students with type of course. ($F=1.559$, $P=0.225$). Pre-test practice of previous posting in ICU that is 2nd year GNM (22.2 ± 1.9), 3rd year GNM (22.4 ± 2.5), 2nd Basic BSc (22.1 ± 2.1), since p values corresponding demographic variables i.e. previous posting in ICU were large (greater than 0.05), there is no significant association with pre-test practice of nursing students with type of course. ($F=0.055$, $P=0.946$). Hence H₂ is rejected

Discussion:-

The findings of the study are discussed under the following headings:

1. Data result related to demographic variables
2. Data findings related to existing knowledge (pre-test)
3. Data result related to comparison pre-test and post test
4. Data findings related to the effectiveness of PTP
5. Data result related to association between pre-test and demographic variables.

Nursing Practice:

1. Evidence based care practice is in greater need to improve the quality of patient care. High quality and cost effective care is only possible through research in this area of nursing profession.
2. Health promotion, maintenance and prevention.
3. Patient safety and quality of health care.

4. Patient centered care and coordination.
5. A good knowledge on endotracheal tube suctioning among staff nurses will be imperative in order to provide quality of care.

Nursing Education:

1. Nurse educator play an important role in providing adequate knowledge to the student nurses about endotracheal tube suctioning in ICU.
2. The nursing students should be educated proper techniques of endotracheal tube suctioning.
3. The nurse educator should periodically organise special training programme for the staff nurses.
4. The nurse educator can organise workshop on endotracheal tube suctioning.

Nursing Administration:

The nurse as an administrator can organise and conduct teaching programme for the staff nurses in order to enhance their knowledge and improve their skill and nursing practice.

Nursing Research:

1. The findings of the study will provide guidelines for new nurse investigator to take up similar studies in different setting.
2. The results of the study can be published in nursing journal.
3. Development of evidence based practice and translational research.
4. The findings of the study can be presented in various local, state, national and international conferences related medical surgical nursing.

Conclusion:-

The findings of the study showed that the post-test knowledge and practice score was higher than the pre-test knowledge score range. The mean post-test knowledge and practice score also was higher than the pre-test knowledge and practice score.

The comparison of pre-test knowledge and practice showed that there was significant gain in the knowledge and practice scores of nursing students after PTP. This shows that PTP was effective.

The study concluded that that nursing students posted in ICU had inadequate knowledge and practice regarding endotracheal tube suctioning. The planned teaching programme had great potential for improving knowledge and practice of ETS.

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