Research Paper

Effectiveness of Conventional Teaching (CT) and Video Assisted Teaching (VAT) on Neonatal Endotracheal Intubation in Terms of Knowledge and Practice among Nursing Students

Preeti[1], Uma Deaver[2], Parvinder Kaur[3]

[1]M.Sc. Nursing Student, [2]Faculty at Maharishi Markandeshwar College of Nursing, [3]Ex Faculty at Maharishi Markandeshwar College of Nursing, Maharishi Markandeshwar Deemed University, Mullana, Ambala, Haryana

Corresponding Author: Preeti

ABSTRACT

Introduction: Birth of a child is a special moment of joy for the parents but the first few minutes after birth are full of concern and rapid physiological adaptation. Most babies go through the transition successfully as a matter of routine, however, 10% of babies who do not start breathing immediately and need special care to initiate breathing.

Aims & Objectives: The aim of the study was to assess the knowledge and practices among nursing students. The conceptual framework of the study was based on CIPP (context, input, process and product) model by Stufflebeam.

Methodology & Theoretical Orientation: The research approach adopted for the study was quasi-experimental and design was non-equivalent control group pretest-posttest design. The study was at College and Institute of Nursing, Ambala, Haryana. A total of 64 BSc third year nursing students who were in the age group of 19-24 years selected by simple random technique and conveniently assigned into CT (n=32) and VAT (n=32) group. The tool used for the study consisted of structured performa regarding sample characteristics, structured questionnaire and structured observational checklist to assess the knowledge and practices of students. Data collection was done in January 2017. Descriptive and inferential statistics were used to analyze the data.

Findings: The major findings revealed that within the groups the post test scores were significantly higher than the pre-test scores in both the groups whereas, in comparison, the mean post-test knowledge score of CT group (21.50±3.09) was nearly equal to the mean post-test score of VAT group (21.16±4.07) and mean post-test practice score of CT group (32.47±5.14) was slightly higher than the mean post-test score of VAT group (29.61±6.46) but computed 't' value of mean post-test knowledge and practice score of both CT and VAT group (0.38, 1.90) were found to be statistically non-significant at 0.05 level of significance.

Conclusion & Significance: Both CT and VAT were found to be equally effective in improving knowledge and practices of nursing students regarding neonatal ET intubation. So, VAT can be combined with CT to enhance better learning and skill development of nursing students.

Keywords: Conventional Teaching, Video Assisted Teaching, Neonate, Endotracheal Intubation, Knowledge, Practice.

INTRODUCTION

The newborn baby survival is dependent on his ability to adapt to extra uterine

environment. This involves adaptation in cardio pulmonary circulation and other physiological adjustment to replace placental function and maintain homeostasis. Simultaneously newborn has to make major adjustment in respiratory and circulatory system as well as in maintaining body temperature. [1] Approximately 10 % of the newborn require some resistance to begin breathing at the birth whereas only 1% needs extensive resuscitative measure to survive. These initial adaptations are crucial to subsequent wellbeing of neonate and should be facilitated by trained and skilled personnel. [2]

Substantial global progress has been made in reducing child deaths since 1990. The number of under-five deaths worldwide has declined from 12.7 (12.6, 13.0) million in 1990 to 5.9 (5.7, 6.4) million in 2015-16,000 every day compared with 35,000 in 1990. The world as a whole has been accelerating progress in reducing the under-five mortality rate-its annual rate of reduction increased from 1.8 percent in 1990-2000 to 3.9 percent in 2000-2015 Between 1990 and 2015, 62 of the 195 countries with available estimates met the Millennium Development Goal (MDG) 4 target of two-thirds reduction in the under-five mortality rate between 1990 and 2015. Despite these gains, progress remains insufficient to reach MDG 4 globally. [3]

Speedily progress in child survival urgently requires greater attention to ending preventable child deaths in Southern Asia and sub-Saharan Africa. Southern Asia has the 2nd highest under-five mortality rate in the world-about 1 child among 19, dies before age of five. Mainly child deaths are caused by diseases that are preventable or treatable with proven, cost-effective and quality-delivered interventions. Infectious diseases and neonatal complications are responsible for the vast majority of under-five deaths globally. [4]

According to WHO and Maternal and Child Epidemiology Estimation Group 2015 the main causes of neonatal deaths were preterm birth complications (35 per cent), intrapartum related complications (24 per cent), and sepsis (15 per cent). Most deaths of children under age five are caused by diseases that are readily preventable or treatable with proven, cost-effective interventions. [5]

A study to evaluate the effectiveness of advanced neonatal nurse practitioners (ANNPs) in resuscitation of preterm babies at birth against the standard set by junior medical staff. A Retrospective analysis of resuscitation details, other basic data, and clinical outcomes of 245 preterm (< 33 weeks gestation) babies born in Liverpool Women's Hospital. Resuscitation teams led by ANNPs provided the same resuscitation interventions as those provided by medically led teams. Although babies resuscitated by ANNP led teams were no more likely to be intubated, they were intubated more quickly and received surfactant sooner (p=0.0001) than babies resuscitated by medically led teams. Babies attended by ANNP led teams were less likely to be hypothermic on admission to the neonatal unit (p=0.013). [6]

Intubation attempts often are unsuccessful, and successful attempts frequently take >30 seconds. Greater experience is associated with greater success rates and shorter duration of successful attempts. Flow signals and exhaled carbon dioxide $(ETCO_2)$ may be useful in determining Endotracheal Tube (ETT) position more quickly than clinical assessment alone. Infants frequently deteriorate during intubation attempts. [7]

Conventional (lecture cum demonstration)- also known as chalk and talk method . Here, teachers are active and students are passive. This method follows the different criteria- planned; teacher knows the objective and purposes of demo, and active involvement of students and teacher in fixing and arranging articles. This method should be simple, clear cut, and completed within sufficient time. Advantages of this method are- active

participation of both teacher as well as students, more efficient, save time and money and also helpful to promote discussion. [8]

Video assisted teaching- is a method of teaching through video which provide educational material for particular topic which is to be learned. These videos might be downloaded from the internet. Video is the most unique and dramatic media devised by man for communication and is a form of self-instruction in which material can be presented via text, visual, sound and motion digital files, providing a multimedia approach to learning. [8]

OBJECTIVES
1. To assess and compare the knowledge regarding neonatal ET intubation among nursing students before and after administration of CT and VAT.
2. To assess and compare the practices regarding neonatal ET intubation among nursing students before and after administration of CT and VAT.
3. To determine the relationship between the knowledge and practices regarding neonatal ET intubation among nursing students in CT and VAT group.
4. To determine the association of knowledge and practices regarding neonatal ET intubation among nursing students with their selected sample characteristics in CT and VAT group.

Subject and method: The research approach adopted for the study was quasi-experimental and design was non-equivalent control group pretest-posttest design.

The convenience sampling technique was used to select the setting for study. Maharishi Markandeshwar College of Nursing (M.M.C.O.N) and Maharishi Markandeshwar Institute of Nursing (M.M.I.N), Mullana, Ambala and total of 70 B.Sc. 3rd year nursing students were selected by simple random technique. The selected students were

assigned to CT group and VAT group by using convenience sampling method, 35 in CT group and 35 in VAT group. Paper and pencil technique was used to collect data from Structured knowledge questionnaire and Observation technique was used to collect data from structured checklist.

Ethical approval to conduct the study was obtained from Institutional Ethical Committee of M.M. university, Mullana, Ambala. Informed consent was obtained from the respondents and respondents were assured about the confidentiality of their responses

Intervention protocol: Power point slides, demonstration and video clip on endotracheal intubation.

Data collection procedure-For CT group, pretest was conducted on first day to assess the knowledge and practices regarding neonatal ET intubation. On day 2nd, CT was administered in the same group and later on 15th day posttest was held after intervention. For VAT group, pretest was conducted on first day to assess the knowledge and practice regarding neonatal ET intubation. On day 2nd, VAT was administered in the same group and later on 15th day posttest was held after intervention. 3 subjects were not present at the time of posttest in both groups of CT and VAT. So, finally 32 nursing students were analyzed in both groups

Data analysis: Descriptive and inferential statistics were used to analyze the data. Level of significance for the present study was taken as $p < 0.05$.

RESULT
The result of the study shows both groups (CT and VAT) were homogeneous and comparable in terms of selected variables of nursing students.

Table 1 shows, Both the groups were homogenous and comparable in terms of level of knowledge score. Chi-square was applied to compare CT and VAT group in terms of

level of knowledge scores (χ^2=0.28, p=0.59). Computed chi value was found to be non significant at 0.05 level of significance.

Table 1: Comparison of CT and VAT group in terms of level of knowledge score of nursing students before administration of CT and VAT
N=64

Level of knowledge scores	Actual range of score	CT group (n=32) f (%)	VAT group (n=32) f (%)	χ^2	df	p value
Very good	27-34	----	---			
Good	22-26	---	---			
Average	18-21	7(21.9)	1 (3.1)	0.28	1	0.59[NS]
Below average	0-17	25(78.1)	31(96.9)			

Table 2 reveals the nursing students in CT and VAT group had below average practice scores in pre test i.e. 100%. This infers that CT and VAT groups were homogenous and comparable in terms of level of practice score

Table 2: Comparison of CT and VAT group in terms of level of practice score of nursing students before administration of CT and VAT
N=64

Level of practice Scores	Actual range of score	CT group (n=32) f (%)	VAT group (n=32) f (%)	χ^2	df	p value
Very good	43-54	---	---			
Good	35-42	---	---	--	--	--
Average	28-34	---	--			
Below average	>27	32 (100)	32 (100)			

Figure 1 depicts that majority of nursing students in CT and VAT group had average knowledge score i.e. 46.9% followed by 40.6% in CT group and 28.1% in VAT had good knowledge score after administration of CT and VAT.
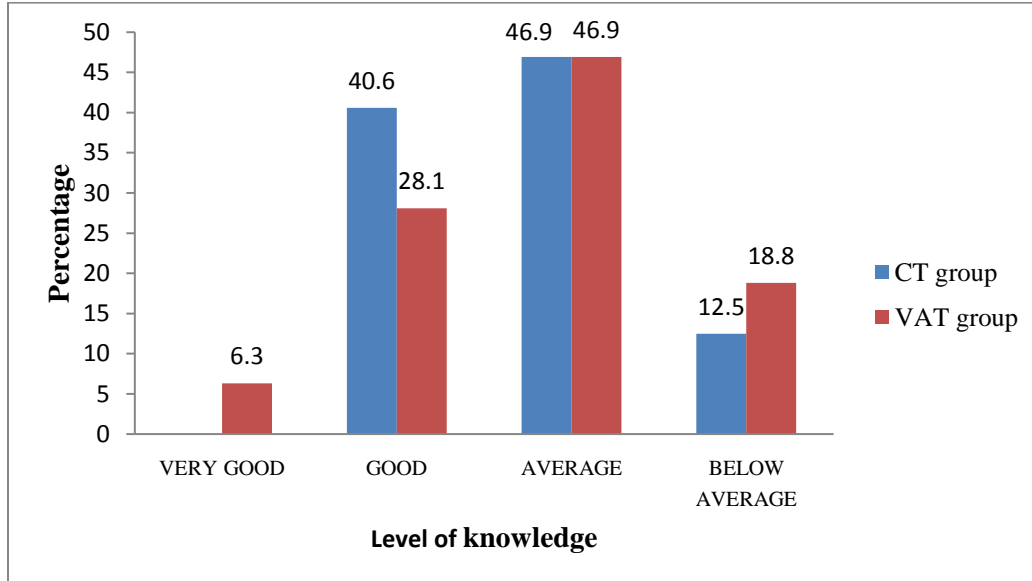

Figure 1: bar diagram showing distribution of CT and VAT group in terms of level of knowledge after administration of CT and VAT

Figure 2 shows that majority of nursing students in CT and VAT group had average practice score i.e. 40.62% followed by 37.5% in CT group and 21.8% in VAT had good practice score after administration of CT and VAT.
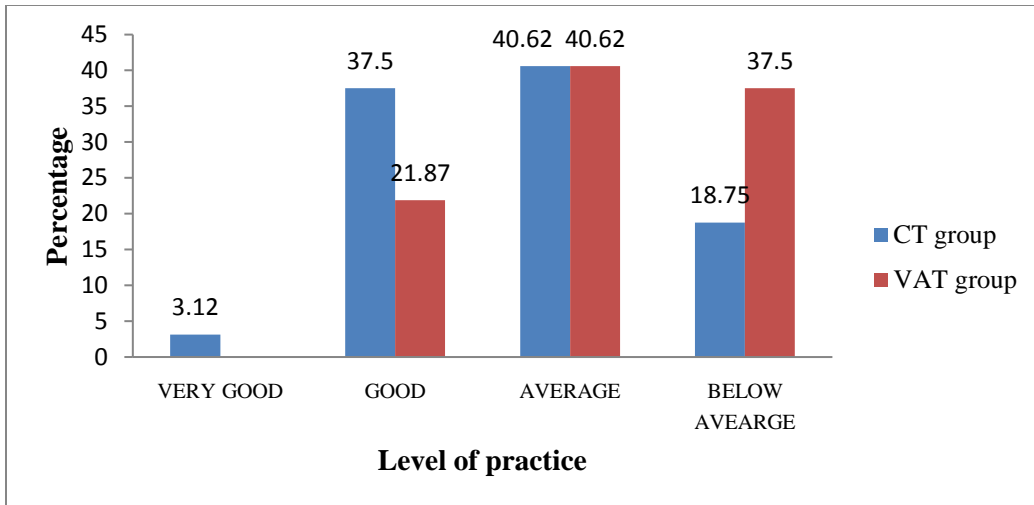
Figure 2: Bar diagram showing distribution of CT and VAT group in terms of level of practice after administration of CT and VAT

The data presented in table 3 reveals that in both the groups, CT and VAT were effective in increasing the knowledge of nursing students regarding neonatal ET intubation.

Further finding revealed that mean difference of VAT group was 8.19 which was slightly higher than the mean difference of CT group 7.16.

Table- 3: Mean difference and t value of mean pre-test and post-test knowledge score of nursing students within CT and VAT group N=64

Group	Assessment	Mean	M_D	SDD	SE_{MD}	't'value	p value
CT group (n=32)	Pre test	14.34					
	Post test	21.50	7.16	4.22	0.75	9.59	0.00*
VAT group (n=32)	Pre test	12.97					
	Post test	21.16	8.19	3.18	0.56	14.53	0.00*

*Significant (p≤0.05)   NS Non significant (p≥0.05)

The data presented in table 4 reveals that in both the groups, CT and VAT were effective in increasing the skills of nursing students regarding neonatal ET intubation. Further

finding revealed that mean difference of CT group was 25.84 which was slightly higher than the mean difference of VAT group 23.71.

Table- 4: Mean difference and t value of mean pre-test and post-test practice score of nursing students within CT and VAT group N=64

Group	Assessment	Mean	M_D	SDD	SE_{MD}	't'value	p value
CT group (n=32)	Pre test	6.63					
	Post test	32.47	25.84	2.62	0.99	26.07	0.00*
VAT group (n=32)	Pre test	5.97					
	Post test	29.69	23.71	5.96	1.05	22.49	0.00*

*Significant (p≤0.05)   NS Non Significant (p≥0.05)

Table 5 shows that in VAT group there was significant positive correlation between posttest of knowledge and practices score as evidenced by the computed r value (0.59) which was found statistically significant at 0.05 level of significance and In CT group there was no significant correlation between pre test of knowledge and practices score as evidenced by the computed r value (0.30)

which was non-significant at 0.05 level of significance.

Table-5: Correlation between knowledge and practice score of nursing students in CT and VAT group N=64

Correlation (post-test)	Groups (n=32)	Knowledge	Practice
Knowledge	CT	XX	0.31 (0.07)[NS]
Practice	VAT	0.59(0.01)**	XX

**- moderate positive correlation   *Significant (p≤0.05)
r(30)=.29   NS Non Significant (p≥0.05)

DISCUSSION

The CT was effective in enhancing the knowledge and practices of nursing students. In present study, the mean posttest knowledge was significantly higher than the mean pretest knowledge score regarding neonatal ET intubation. Similar findings were reported in an interventional study conducted by Mehvishkhalid et al to evaluate the efficacy of lecture cum demonstration method on nursing students in terms of knowledge and skills of using partograph. Pal College of nursing findings showed that, the overall mean pre and post-test knowledge score was found to be 7.87 & 16.63 and standard deviation 2.27 & 2.19. And overall mean pre and post-test skills score was found to be 3.02 & 6.41 and standard deviation 0.90 & 0.89. Paired t test shows statistical significance at partograph. [9]

The VAT was effective in enhancing the knowledge and practices of nursing students. In present study, the mean posttest knowledge was significantly higher than the mean pretest knowledge score regarding neonatal ET intubation. Similar findings were reported in an interventional study conducted by Sreelekharajesh et al to assess the effectiveness of video assisted teaching programme on knowledge regarding non pharmacological pain relieving intervention for children among staff nurses in selected hospital. The result suggest that in the pre-test more than half (53.3%) of the staff nurses had average knowledge, 40% of them had poor knowledge and 6.7% had good knowledge regarding non-pharmacological pain relieving interventions before the video assisted teaching program, but in the post test there was significant improvement in the knowledge scores 80 % of nurses had good knowledge. [10]

CONCLUSION

The major findings revealed that within the groups the post test scores were significantly higher than the pre-test scores in both the groups whereas, in comparison, the mean post-test knowledge score of CT group (21.50±3.09) was nearly equal to the mean post-test score of VAT group (21.16±4.07) and mean post-test practice score of CT group (32.47±5.14) was slightly higher than the mean post-test score of VAT group (29.61±6.46) but computed 't' value of mean post-test knowledge and practice score of both CT and VAT group (0.38, 1.90) were found to be statistically non-significant at 0.05 level of significance. Both CT and VAT were found to be equally effective in improving knowledge and practices of nursing students regarding neonatal ET intubation. So, VAT can be combined with CT to enhance better learning and skill development of nursing students.

REFERENCES

1. Katrina Joseph. Maternal and child health (NSE 422) group 16 assignment physiology and the care of new born [internet]. Katrina joseph. 2016 [cited 2017 may 17]. Available from: http://slideplayer.com/slide/8859350/
2. Chadha IA. Neonatal resuscitation: Current issues. Indian J Anaesth [Internet]. 2010 Sep [cited 2017 May 17]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21189881
3. WHO | World Health Organization. WHO [Internet]. 2015 [cited 2017 May 17].Available from: http://www.who.int/gho/child_health/en/
4. Unicef. Committing to Child Survival: A Promise Renewed - Progress Report 2013. [cited 2017 May 17].
5. Alkema L, Chao F, You D, Pedersen J, Sawyer CC. National, regional, and global sex ratios of infant, child, and under-5 mortality and identification of countries with outlying ratios: a systematic assessment. Lancet Glob Heal [Internet]. 2014 Sep [cited 2017 May 17]. Available from:

http://linkinghub.elsevier.com/retrieve/pii/S2214109X14702803

6. Aubrey WR, Yoxall CW. Evaluation of the role of the neonatal nurse practitioner in resuscitation of preterm infants at birth. Arch Dis Child Fetal Neonatal Ed [Internet]. 2001 [cited 2017 May 18]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11517201

7. CP, Omar Kamlin CF, Davis PG, Morley CJ. Endotracheal Intubation Attempts During Neonatal Resuscitation: Success Rates, Duration, and Adverse Effects [Internet].2006 [cited 2017 May 17]; Available from: https://pdfs.semanticscholar.org/8260/0ba487598a0e5c53436bf720015bd7c68604.pdf

8. Basavanthappa BT. Nursing Education. New delhi: Jaypee Publication; 2003.8, 78,81,104.

9. Mehvish Khalid, Dr Ratna Prakash. Efficacy of lecture cum demonstration method on nursing students' knowledge and skills of using partograph, in selected nursing institution of Dehradun, uttrakhand. Int J Sci Res. 2016;5(9):1067-69.

10. Sreeleka Rajesh. Effectiveness of video assisted teaching programme on knowledge regarding non pharmacological pain relieving intervention for children among staff nurses in selected hospital. Asian J Multidisciplinary studies. 2014;2(10):122-29

******