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Comparative study to evaluate effectiveness of Traditional teaching and Video Assisted simulation on knowledge regarding orogastric tube insertion in premature infants among 3rd year B.Sc students

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Abstract

Background: Insertion of gastric tubes in newborns hospitalized in neonatal intensive care unit is one of the most commonly performed nursing procedures which is indicated for gastric decompression, administration of medications and mainly for feeding the gastric tube process, and despite being a standard procedure for nurses working in NICU, it is not risk free and involves decisions that may compromise patient safety.

Methodology: A quantitative approach with quasi experimental two group pre-test – post-test design was adopted for the study. The samples from the selected nursing college of Belagavi district were selected using convenient sampling technique. The sample consisted of 60 3rd year B.Sc Nursing students. The tools used for data collection was structured knowledge questionnaire.

Results: With respect to traditional teaching and video assisted simulation, the statistical paired 't' implies that the difference in the pretest and post-test value was found statistically significant at 5% level ($P < 0.05$) with a paired 't' value of 11.98 and 34 respectively. There exists a statistical significance in the difference of knowledge score indicating the positive impact of traditional teaching and video assisted simulation. The statistical significance of the mean gain in post-test knowledge score difference tested between the Experimental group I and experimental group II is 5.52 found significant at 0.05 level [$t'_{(58)} = 2.00, (p < 0.05)$]. As mean knowledge score of experimental group II is higher than mean knowledge score of experimental group I, indicates that, video assisted simulation is more effective method of teaching than traditional teaching.

Conclusion: Study results showed Video assisted simulation was found more effective teaching strategy than traditional teaching. Thus, it can be concluded that newer methods of teachings to be included in curriculum of nursing for the effective communication of messages to students to improve their knowledge and skills.

Keywords: Traditional teaching, video assisted simulation, nursing students, orogastric tube insertion

Introduction

Low birth weight is defined by world health organization as neonate with birth weight less than 2500gm (5.5lb) which includes both preterm and small for dates babies (SFD). Preterm is defined as babies born before 37 weeks of pregnancy are completed. There are subcategorized based on gestational age, extremely preterm (less than 28 weeks), very preterm (28 to 32 weeks), moderate to late preterm (32 to 37 weeks). Preterm birth complications is the second largest cause of under-5 mortality. Small for dates babies are neonates with birth weight of less than 10th percentile for their gestational age and also termed as light for dates, intrauterine growth retardation.

In 2013 nearly 22 million newborn –an estimated 16% of all babies born globally that year had low birth weight. In 2010, an estimated 14.9 million babies (uncertainty range 12.3-18.1 million) were born preterm ranging from about 5% in several European countries to 18% in some African countries and among regions south Asia has highest rate accounting of 60% of preterm birth where 52% of global live birth occur.

Complications associated with low-birth-weight babies include acute respiratory distress syndrome, birth asphyxia, meconium aspiration syndrome, fetal hypoxia and intrapartum death due to placental dysfunction, congenital malformation, symptomatic hypoglycemia and Hypokalemia, inappropriate thermoregulation, Hyper-bilirubenemia, pulmonary haemorrhage, increase risk of infections, poor growth potential, development of diabetes

mellitus, hypertension and coronary artery disease.

Inefficient gastrointestinal and hepatic functions of low birth weight babies includes poor coordination sucking and swallowing reflexes leading to feeding difficulties, incompetent esophageal sphincter resulting in regurgitation and aspiration, gastro oesophageal reflux, malabsorption syndrome leading to nutritional deficiencies, malnutrition, abdominal distention.

Enteral nutrition is preferred to total parenteral nutrition because the former avoids complications related to vascular Catherization, sepsis, adverse effects of TPN, and fasting. Early parenteral nutrition in these babies remains critical and should be used as an adjunct to enteral nutrition.

Insertion of gastric tubes in newborns hospitalized in neonatal intensive care unit is one of the most commonly performed nursing procedures which is indicated for gastric decompression, administration of medications and mainly for feeding the gastric tube process, and despite being a standard procedure for nurses working in NICU, it is not risk free and involves decisions that may compromise patient safety.

Important aspects to increase safety in using Gastric Tube are measuring the insertion length, assessing placement /positioning of distal end of the tube, and in maintaining correct positioning. The occurrence of errors in gastric tube placement is very frequent: studies show proportion of 47.5 to 59% inadequate placement between neonatal and pediatric patients.

The above evidence statistics of incidence of low birth weight babies complications i.e. morbidity and mortality associated with intervention errors in improving nutritional status, review of literature related to risk associated with adaptation of low birth weight babies in extra uterine environment highlights on complexity of feeding in low birth weight babies till advancement to full term enteral to oral feeds.

Objectives

1. To assess knowledge regarding orogastric tube insertion in premature infants before and after exposure to Traditional teaching and Video Assisted simulation among 3rd year B.Sc Nursing students.
2. To compare effectiveness of Traditional teaching and Video Assisted simulation methods regarding orogastric tube insertion in premature infants among 3rd year B.Sc Nursing students.

Hypothesis

H₁: There will be significant difference in the mean pre knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature infants

Results

a. The findings related to socio-demographic variables of participants

Table 1: Frequency and percentage distribution of socio-demographic variables of participants N: (30+30)

Sl No	Demographic variables	Exp Gp – I (Traditional Teaching)		Exp Gp – II (Video Assisted Simulation)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Age (in yrs)				
	a) 18-19	07	23.3	05	16.7
	b) 20-21	17	56.7	23	76.7
	c) 22 and above	06	20	02	6.7
2	Gender				

among those who had exposed to Video Assisted simulation and those who had exposed to Traditional teaching.

H₂ :The mean post test knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature infants will be higher than mean pretest knowledge after exposed to Traditional teaching.

H₃ : The mean post test knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature Infants will be higher than the mean posttest knowledge after exposing to Video Assisted simulation.

H₄ : There will be significant difference in the mean post knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature infants among those who had exposed to Video Assisted simulation and those who had exposed to Traditional teaching.

Methodology

Research Approach: Quantitative Research Approach

Research Design: Quasi experimental two group pre test – post test design

Sampling technique: Non-Probability; Convenient Sampling Technique

Sample size: 60 (30 in each group)

Setting of study: Selected Nursing College of Belagavi district.

Tool used for data collection: Following tools used for the data collection

- **Part I: Demographic data:** It consists of 8 items related to demographic data of participants
- **Part II: Structured knowledge questionnaire:** This section consists of 25 structured multiple choice items with the multiple options for each item to assess the knowledge of participants regarding orogastric tube insertion.

Procedure of data collection

Data was collected after obtaining administrative permission from authority of selected nursing college of Belagavi district. Investigator approached and introduced to B.Sc (N) students. The purpose of the study was explained and the willingness of the participants was ascertained. Written consent was taken from the participants. A self administered structured knowledge questionnaire was given to 60 nursing students to collect data and the tool was collected after 45-60 minutes. Structured teaching programs Traditional teaching was administered to first group and Video Assisted simulation was administered to second group followed by pre test. Post test was conducted after 8 days by using same structured knowledge questionnaire which was used during pre test.

	a) Male	11	36.7	06	20
	b) Female	19	63.3	24	80
Religion					
3	a) Hindu	12	40	15	50
	b) Christian	16	53.3	13	43.3
	c) Muslim	02	6.7	02	6.7
	d) Other	00	00	00	00
Type of family					
4	a) Nuclear	23	76.7	21	63.3
	b) Joint	07	23.3	09	36.7
Previous Knowledge					
5	a) Yes	22	73.3	19	63.3
	b) No	08	26.7	11	36.7
Source of Information					
6	a) News papers	16	53.3	13	43.3
	b) Family & friends	10	33.3	11	36.7
	c) Social Media	04	13.3	06	20
	d) Other	00	00	00	00

B. Area wise and total distribution of pretest and posttest knowledge scores of respondents.
Pretest knowledge scores:

Table 2: Mean, median, mode, standard deviation and range of pretest knowledge scores of Respondents regarding orogastric tube insertion
 N: 30+30=60

Groups	Number of Items	Mean	Median	Mode	Standard deviation	Range
Experimental group - I	25	12.50	12	12	4.04	6-23
Experimental group - II	25	11.83	12	12	3.34	6-18

Table 2 reveals total pretest knowledge score of respondents regarding orogastric tube intubation -
 In experimental group I respondent’s knowledge score mean was 12.50, median was 12, mode was 12 with standard

deviation 4.04 and score range was 6-23.
 In experimental group II respondent’s knowledge score mean was 11.83, median was 12, mode was 12 with standard deviation 3.34 and score range was 6-18.

Posttest knowledge scores

Table 3: Mean, median, mode, standard deviation and range of post test knowledge scores of Respondents regarding orogastric tube insertion N: 30+30=60

Groups	Number of Items	Mean	Median	Mode	Standard deviation	Range
Experimental group - I	25	14.56	15	16	3.71	8-23
Experimental group - II	25	16.36	17	17	2.99	11-22

Table 3 reveals total post test knowledge score of respondents regarding orogastric tube intubation -
 In experimental group I respondent’s knowledge score mean was 14.56, median was 15, mode was 16 with standard

deviation 3.71 and score range was 8-23.
 In experimental group II respondent’s knowledge score mean was 16.36, median was 17, mode was 17 with standard deviation 2.99 and score range was 11-22.

C. Distribution respondent’s pretest and post test scores according to their level of knowledge in experimental group I and II

Table 4: Frequency and Percentage distribution of respondents according to level of Knowledge regarding orogastric tube insertion among 3rd year B.Sc nursing students N: 30+30=60

Groups	Level of Knowledge					
	Pre test			Post test		
	Poor f (%)	Average f (%)	Good f (%)	Poor f (%)	Average f (%)	Good f (%)
Exp I	5 (16.7%)	22 (56.4%)	3 (10%)	1(3.3%)	23 (76.7%)	6 (20%)
Exp II	5 (16.7%)	22 (56.4%)	3 (10%)	00	14 (46.7%)	16 (53.3%)

The data presented in the Table 4 depicts the respondent’s level of knowledge during pretest and posttest regarding orogastric tube insertion;

Experimental Group I

With regard to pretest level of knowledge it shows that, maximum 22(56.4%) respondents were having average

knowledge, 5 (16.7%) respondents were having poor knowledge and remaining 3 (10%) respondents were having good knowledge.

During post-test maximum 23 (76.7%) of respondents were having average knowledge, 6(20%) of respondents were having good knowledge and remaining 1 (3.3%) of respondents were having poor knowledge regarding

orogastric tube insertion.

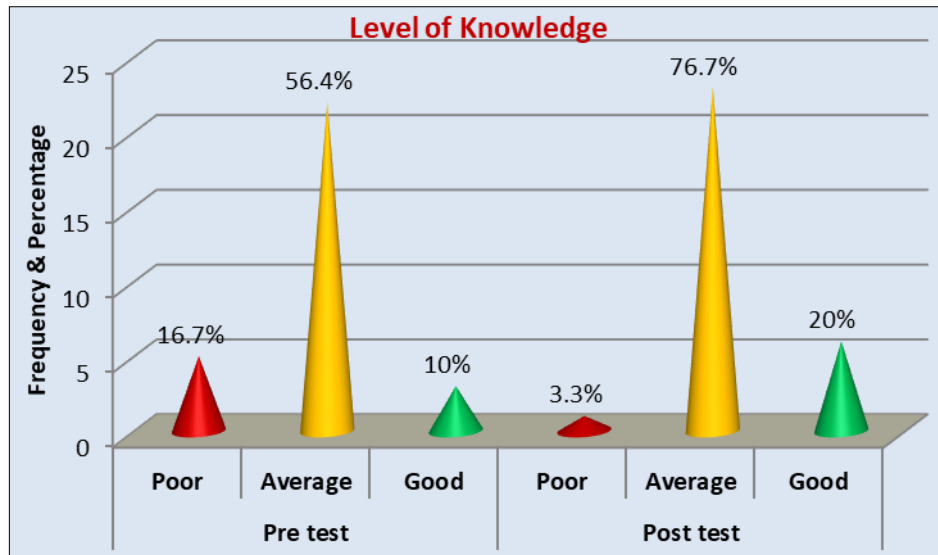


Fig 10: Pretest and posttest level of knowledge of participants in experimental group I
Experimental Group II:

With regard to pretest level of knowledge it shows that, maximum 22(56.4%) respondents were having average knowledge, 5 (16.7%) respondents were having poor knowledge and remaining 3 (10%) respondents were having good knowledge.

During post test maximum 16 (53.3%) of respondents were having good knowledge, and remaining 14 (46.7%) of respondents were having average knowledge regarding orogastric tube insertion.

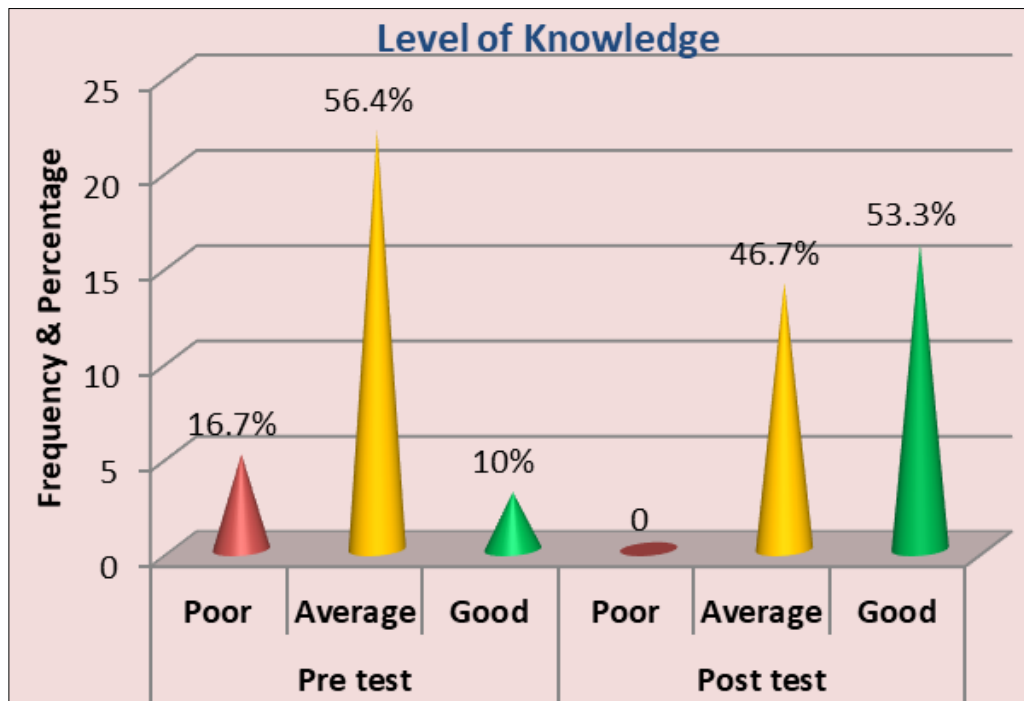


Fig 11: Pretest and posttest level of knowledge of participants regarding In experimental group II

D. Effectiveness of structured teaching Programme

Table 5: Mean, standard deviation, standard error of difference and ‘t’ value of pre-test and post-test knowledge scores of exp gp I and exp gp II N: 30+30=60

Groups	Aspects	Mean	Sd	SEMD	Paired t Test
Exp Gp - I	Pre-test	12.50	4.04	0.17	11.98*
	Post-test	14.56	3.71		
Exp Gp - II	Pre-test	11.83	3.34	0.13	34*
	Post-test	16.36	2.99		

Table 5 indicates the overall mean knowledge scores of pre-test and post-test scores of experimental group I and experimental group II.

Experimental group I

The findings reveal that the post-test mean knowledge scores was found higher [mean=14.56, SD of 3.71] when compared with pre-test mean knowledge score value which was 12.50 with SD of 4.04.

The statistical paired 't' implies that the difference in the pretest and post-test value was found statistically significant at 5% level ($P < 0.05$) with a paired 't' value of 11.98. There exists a statistical significance in the difference of knowledge score indicating the positive impact of traditional

teaching.

Experimental group II

The findings reveal that the post-test mean knowledge scores was found higher [mean=16.36, SD of 2.99] when compared with pre-test mean knowledge score value which was 11.83 with SD of 3.34.

The statistical paired 't' implies that the difference in the pretest and post-test value was found statistically significant at 5% level ($P < 0.05$) with a paired 't' value of 34. There exists a statistical significance in the difference of knowledge score indicating the positive impact of video assisted simulation.

D. Comparing the pre-test and post test scores between the two experimental groups

Table 6: Mean difference, standard deviation of the difference and standard error of the mean difference and 't' value of pre-test and post test knowledge scores of respondents between experimental group I and experimental group II N: 30+30=60

Area	Knowledge score	Mean _D	SD _D	SEMD	Independent 't' test	Significance
Pretest	Exp group-I	0.67	0.7	0.82	1.52	NS
	Exp group-II					
Post test	Exp group-I	4.53	0.35	0.76	5.52	S
	Exp group-II					

Table 6 reveals that, difference of knowledge scores between two groups, it reveals that, In pretest, the statistical significance of the mean gain in pre test knowledge score difference tested between the Experimental group I and experimental group II is not found significant at 0.05 level [$t'_{(58)} = 2.00$, ($p < 0.05$)]. Thus, the findings do not support the hypothesis H₁. Hence, it is inferred that, there will not be significant difference in the mean pre knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature infants among those who had exposed to traditional teaching and those who had exposed to video assisted simulation. Both the groups have similar level of knowledge.

In posttest, the statistical significance of the mean gain in post-test knowledge score difference tested between the Experimental group I and experimental group II is 5.52 found significant at 0.05 level [$t'_{(58)} = 2.00$, ($p < 0.05$)]. Thus, the findings support the hypothesis H₄. Hence, it is inferred that, there will be significant difference in the mean post knowledge scores of 3rd year B.Sc Nursing students regarding orogastric tube insertion in premature infants among those who had exposed to video assisted simulation and those who had exposed traditional teaching. As mean knowledge score of experimental group II is higher than mean knowledge score of experimental group I, indicates that, video assisted simulation is more effective method of teaching than traditional teaching.

Conclusion

The conclusions drawn from the study were as follows

1. Knowledge of 3rd year B.Sc Nursing students regarding orogastric tube insertion in both experimental groups during pretest was moderate and is increased as good after teaching programs.
2. Structured teaching programs was effective to enhance knowledge of student nurses regarding orogastric tube insertion
3. Video assisted simulation was found more effective teaching strategy than traditional teaching

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