

Research Article

Assess the Effectiveness of Computer Assisted Teaching (CAT) on Knowledge gain about Neonatal Resuscitation among B.Sc. Nursing 3rd Year Students of Selected Nursing Colleges at Bhopal, Madhya Pradesh, India

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A B S T R A C T

The present study was conducted to assess the effect of computer assisted teaching on knowledge gain of students on Neonatal Resuscitation. An experimental design was chosen with pre-test and post-test of experimental and control group. The sample size was 60 B.Sc. Nursing 3rd Year students divided into two groups as 30 in experimental and 30 in control group. The tools used for conducting the study included demographic data, self-structured questionnaire to assess knowledge of experimental and control group. The experimental group was given computer assisted teaching as an intervention and the control group was used for comparison only without interventions. The data were analyzed with statistics and unpaired t-test was done. The study clearly shows that there was a significant gain in knowledge of students in experimental group with computer assisted teaching which emphasizes that neonatal resuscitation. Therefore, the students can be benefited with computer assisted teaching to improve knowledge on neonatal resuscitation and they can practice these interventions in clinical area in future.

It is a true experimental study with 30 samples each in control and experimental group of BSc nursing third year student to assess the effect of computer assisted teaching on knowledge gain of the students regarding Neonatal Resuscitation. The study group showed rise in knowledge score with CAT where as the control group did not demonstrate increase in post-test knowledge score as this was not exposed to the intervention. Therefore computer assisted teaching helps in imparting knowledge subject and improving the score. The Purpose of the research was to improve knowledge on Neonatal Resuscitation so that student can assess the condition of neonates and it will help in improving in nursing care and also they can assess the prognosis of the condition of the patient and planning nursing care accordingly.

Keywords: Computer Assisted Teaching, Effectiveness, Neonatal Resuscitation

Introduction

Neonatal resuscitation also known as newborn resuscitation is the resuscitation of newborn children with birth asphyxia. About a quarter of all neonatal deaths globally are caused by birth asphyxia.¹

The intrauterine involves a complex and rapid orchestration of physiologic changes. The newly born infant is subjected to multiple unfamiliar stimuli and infant must make the transition from dependence on placental gas exchange to spontaneous air breathing and pulmonary gas exchange. This transition occurs without difficulty. It is estimated that 5% to 10% of newly born infants will require some degree of active resuscitation for this transition to occur. An individual trained in neonatal resuscitation must be in attendance at every delivery. Neonatal resuscitation skills are essential for all health care providers who are involved in the delivery of newborns.²

Neonatal Asphyxia accounts for 20.9% of neonatal deaths. Although the vast majority of newly born infants (90%) do not require intervention to breathe during transition from intrauterine to extra uterine life, approximately 10% of the newborns require some assistance to begin breathing at birth, and about 1% require extensive resuscitative measures.³

Neonatal resuscitation skills are essential for all health care providers who are involved in the delivery of newborns. The transition from fetus to newborn requires intervention by a skilled individual or team in approximately 10% of all deliveries.⁴

Problem Statement

Assess the Effectiveness of Computer Assisted Instruction (CAI) on knowledge gain about Neonatal resuscitation among B.Sc. Nursing 3rd Year Students of selected Nursing Colleges at Bhopal.

Objectives of the Study

The objective of the study was:

- Assess the knowledge score of B.Sc. Nursing 3rd Year Students in experimental group and control group on the Neonatal resuscitation.
- Develop Computer Assisted Instructions (CAI) program on the Neonatal resuscitation.
- Assess the effects of Computer Assisted Instructions (CAI) of the experimental group regarding knowledge gain on the Neonatal resuscitation.
- Compare the knowledge of experimental and control group regarding the Neonatal resuscitation.

Null Hypothesis

H₁: There will be no significant difference in the knowledge score of the B.Sc. Nursing 3rd Year Students of the

experimental group with computer assisted instructions on the Neonatal resuscitation.

H₂: There will be no significant difference in the knowledge score between control and experimental group after computer assisted instructions to experimental group regarding on the Neonatal resuscitation.

H₃: There will be no significant association between experimental and control group with their selected demographic variables on the Neonatal resuscitation.

Materials and Methods

The research approach adopted in the study was evaluative approach to assess the effectiveness of computer assisted instructions on gain of knowledge regarding Neonatal resuscitation. True experimental research design was used with pre-test and post-test of experimental and control group. The study was conducted at selected colleges of Nursing at Bhopal, Madhya Pradesh, India. A sample is a portion of the study that has been selected to represent the population of interest. The samples were 60 B.Sc. Nursing 3rd Year Students who fulfilled the inclusive criteria out of that 30 were taken in the experimental group and 30 were taken as control group. The purpose of using a sampling technique is to increase representativeness and to decrease bias and sampling error. In this study a total of 60 B.Sc. Nursing 3rd Year Students were selected by systematic random technique for 6 weeks.

Variables under Study

Independent Variable: The computer assisted instructions on Neonatal resuscitation.

Dependent Variable: Knowledge is a dependent variable which is dependent on computer assisted instructions.

Demographic Variables

Age, Religion, Academic qualification and Source of knowledge about Neonatal resuscitation.

Criteria for Sample Selection

Inclusion Criteria

Application of Neonatal Resuscitation is applied on unconscious neonates and taught to 3rd BSc Nsg. Students in Child Health Nursing in 3rd year BSc nsg. Hence it is justified.

- B.Sc. Nursing 3rd Year Students present at the time of data collection.
- B.Sc. Nursing 3rd Year Students willing to participate in the study.

Exclusion Criteria

Students writing supplementary exam already know about the subject therefore effect of CAT will not be accurately assessed.

- B.Sc. Nursing 3rd Year Students writing supplementary exams.

Sampling Technique

Development and Description of the Tool

The investigator used the following steps for preparation of the tools for the study:

- Extensive review of literature; The investigator did an extensive review of related literature from books, journals, manuals; reports published researches, newspapers and internet to develop study instruments.
- Consultation with experts from the field of study.
- Preparation of the final draft of the tools after testing reliability and validity of the tools.
- Validity and reliability of self constructed tool is done before application. It was tested by test and retest method.

Section A: Demographic variables.

Section B: Self constructed Questionnaire with thirty items to assess knowledge of B.Sc. Nursing 3rd Year Students on Neonatal resuscitation.

Section C: Preparation of Computer Assisted Instructions on Neonatal resuscitation. Power point presentation of 45 minutes was prepared based on lesson plan for better comprehension.

Scoring Procedure

The respondent was given one point for each correct answer and zero for incorrect one. For each part, the scores of the items were summed up. These scores were converted into a percent score.

The scoring was interpreted as below:

- Inadequate knowledge-score less than 50%
- Moderate knowledge-score between 51-75%
- Adequate knowledge-more than 75%

Intervention

The computer assisted instructions programme of 45 minutes duration was shown to B. Sc Nursing 3rd Year Students of the experimental group and the control group did not receive the manipulation i.e. Computer assisted instructions and they continued with college routine as earlier.

Method of Data Collection

An informed written consent was taken from the samples and the permission to conduct the study was obtained from the authorities. The data was collected in the following phases.

Phase 1: The structured questionnaire consisting of 30 items was administered on B.Sc. Nursing 3rd Year Students

of experimental and control group to assess the pre-test knowledge score on Neonatal resuscitation.

Phase 2: The computer assisted instructions session of 45 minutes was carried out for B.Sc. Nursing 3rd Year Students of the experimental group while the samples in the control group continued with the normal routine of their college.

Phase 3: The same questionnaire was again administered on seventh day for both experimental and control group.

The demographic variables of B.Sc. Nursing 3rd Year Students are given in Table 1, as below:

Table 1. Frequency and percentage distribution of subjects as per age, religion, academic qualification, source of knowledge [N=60 (Experimental - 30 and Control - 30)]

Characteristics	Category	Subjects Group			
		Experimental		Control	
		N	%	N	%
Age Group (in years)	21-24	24	80	23	76.66
	25-29	03	10	05	16.66
	30 and above	03	10	02	6.66
Religion	Hindu	28	93.33	26	86.66
	Muslim	01	3.33	00	00
	Christian	01	3.33	04	13.33
Academic Qualification	12 th standard	26	86.66	25	83.33
	Basic graduation	03	10	04	13.33
	PGDCA	01	3.33	01	3.33
Source of Knowledge	News Papers and Magazines	00	00	02	6.66
	Relatives	04	13.33	04	13.33
	Any other	26	86.66	24	80

It is observed from in Table 1, that in experimental group a majority of B.Sc. Nursing 3rd Year Students 24 (80%) belongs to 21-24 years of age, 03 (10%) were between 25-29 years-old and 03 (10%) student was found in the age group of 30 and above.

In control group 23 (76.66%) students belong to 21-24 years of age, then 05 (16.66%) Students were between 25-29 year of age and 02 (6.66%) students was found to be 30 and above in age group.

In religion a majority of Students that is 28 (93.33%) were Hindus, 01 (3.33%) students were Muslims and 01 (3.33%) Students were Christian in the experimental group.

In control group a majority of B.Sc. Nursing 3rd Year Students that is 26 (86.66%) were Hindus, 00 (00%) were Muslims and 04 (13.33%) Students were Christians.

In academic qualification a majority of B.Sc. Nursing 3rd Year Students that is 26 (86.66%) were 12 standards passed, 3 (10%) had completed Basic graduation and 01 (3.33%) student had done PGDCA in the experimental group.

In control group a majority of B.Sc. Nursing 3rd Year Students that is 25 (83.33%) were 12 standards passed, 04 (13.33%) had completed Basic graduation and 01 (3.33%) had done PGDCA.

The source of knowledge for a majority of B. Sc Nursing Students was any other like workshop seminars and conferences i.e. 26 (86.66%) then 4 (13.33%) students gained knowledge from relatives in experimental group.

In Control group the source of knowledge for a majority of B. Sc Nursing Students was any other like workshop seminars and conferences i.e. 24 (80%) then 04 (13.33%) students gained knowledge from relatives and 02 (6.66%) gained information from magazines and newspapers.

In pre-test of the experimental group 21 (70%) students had inadequate knowledge and 09 students (30%) had moderate knowledge but after computer assisted instructions on the subject in post-test 07 (23.33%) of them had demonstrated moderate knowledge whereas 23 (76.66%) of them had demonstrated adequate knowledge score.

In the control group a majority of B.Sc. Nursing 3rd Year Students in pre-test that is 22 (73.33%) had inadequate knowledge score and 08 (26.66%) of them had moderate knowledge score. In post-test 23 (76.66%) of them showed inadequate knowledge and 07 (23.33%) of them had shown moderate knowledge score.

Table 3 shows post-test mean of experimental group is 21.76 with standard deviation 1.6 whereas in control group the post-test mean is 11.33 and standard deviation is 1.1. The obtained t-value is 1.2. Since the Calculated Value (CV) is more than Table Value (TV) at the 0.005 levels and at 29 degree of freedom therefore the null hypothesis is rejected that infers that there is a significant difference with computer assisted instructions on knowledge gain among B. Sc Nursing 3rd Year Students of the experimental group.

Table 2. Frequency and Percentage distribution of overall knowledge score of experimental and control group [N=60 (Experimental - 30 and Control - 30)]

S. No.	Level of knowledge	Experimental group				Control group			
		Pre-test		Post-test		Pre-test		Post-test	
		f	%	f	%	f	%	f	%
1.	Inadequate (<50%)	21	70	-	-	22	73.33	23	76.66
2.	Moderate (51-75%)	09	30	07	23.33	08	26.66	07	23.33
3.	Adequate (>75%)	-	-	23	76.66	-	-	-	-

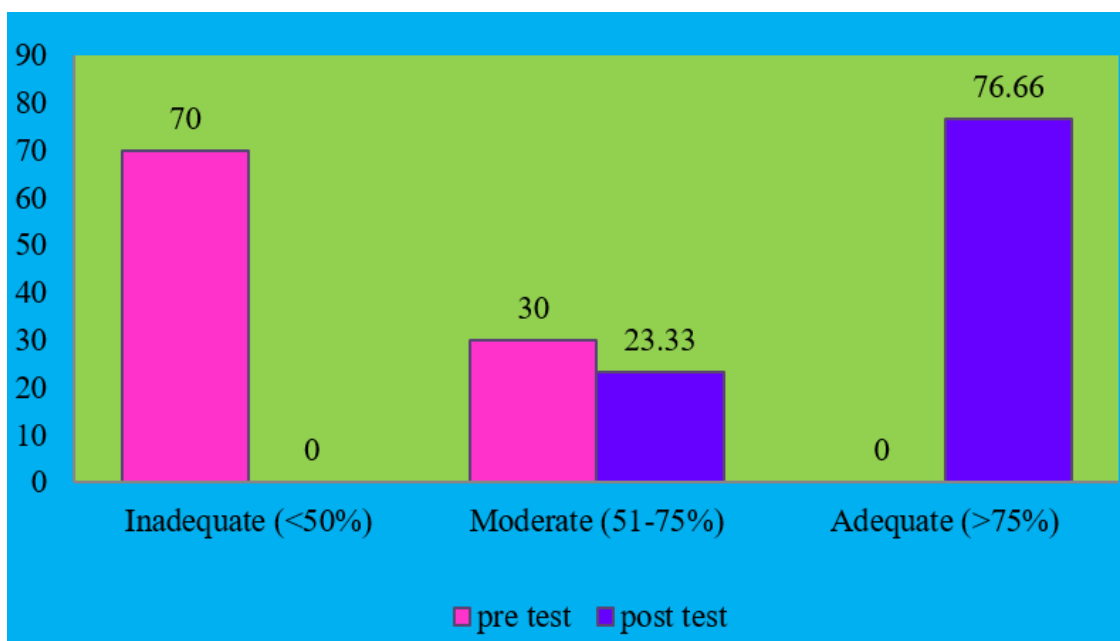


Figure 1. Bar graph showing the level of knowledge of the experimental group

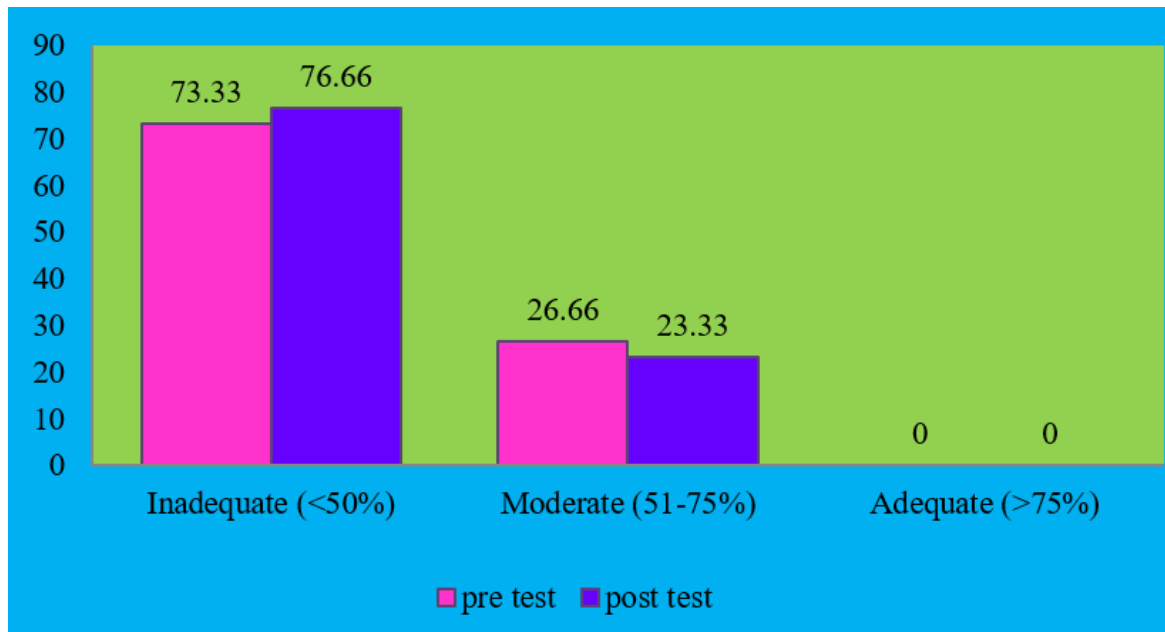


Figure 2. Bar graph showing the level of knowledge of control group

Table 3. Comparison of overall pre-test and post-test mean, standard deviation, mean difference and paired - 't' value between experimental and control group [N=60 (Experimental - 30 and Control - 30)]

S. No.	Group	Mean		Standard deviation		Mean difference	Paired t-test
		Pre-test	Post-test	Pre-test	Post-test		
1.	Experimental	11.5	21.76	1.133	1.6	10.26	1.2 (df=29)
2.	Control	10.73	11.33	1.366	1.1	0.6	0.46818 (df=29)

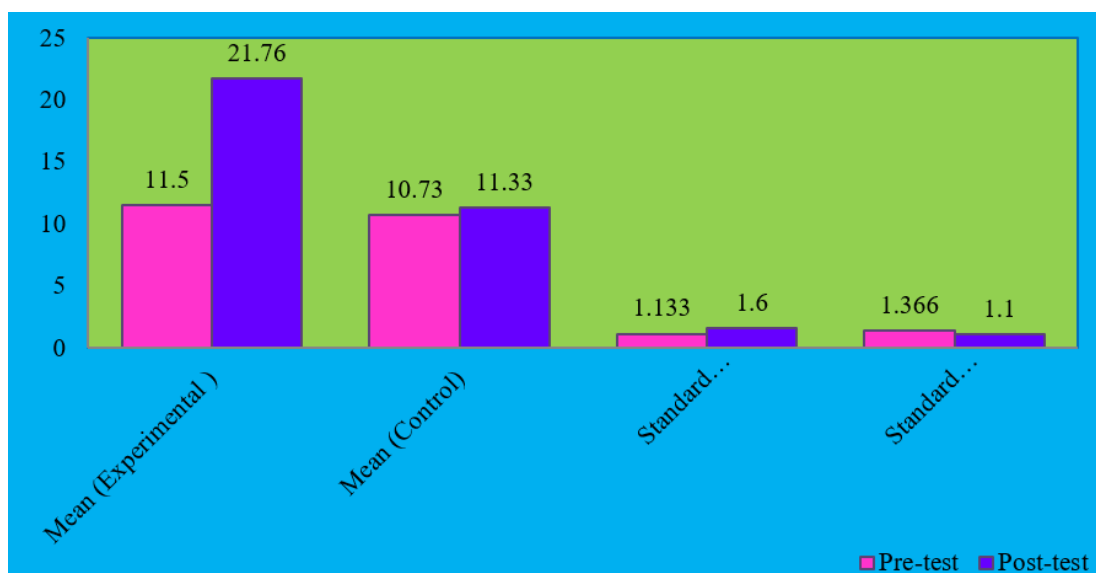


Figure 3. Bar graph showing the comparison of overall pre-test and post-test mean, standard deviation between experimental and control group

Discussion

In another study conducted by Waikhom Ranjana Devi 2017 in evaluative approach to assess knowledge regarding CPR FOR CHILDREN among student nurses. Pre-experimental

one group pre-test post test research design was used and comprised of 100 student nurses. The overall mean knowledge score of pre test was 15.26 and post test was 39.6 and mean difference was 18.43 with SD of 4.07. It

shows there will be a significant difference between pre-test and post-test knowledge score of student nurses regarding CPR for children.⁶

Assessment of Knowledge Score

The overall percentage of knowledge in experimental group for pre-test was inadequate i.e. 70% B.Sc. Nursing 3rd Year Students and the level of knowledge score was moderate in 30% of B.Sc. Nursing 3rd Year Student and the post-test knowledge score increased after computer assisted instructions to 23.33% as moderate knowledge and 76.66% of B.Sc. Nursing 3rd Year Students showed adequate knowledge score.

These findings are supported by a study conducted by Curran et al., (2004) a randomized pretest-posttest control group study design involving 60 3rd-year medical students. At a 4-month, post-training interval, experimental group was exposed to ANAKIN and control group to a training video. Both groups assessed at an 8-month, post-neonatal resuscitation training interval. Computerized simulator system was as effective as video for maintaining resuscitation skills of medical students, and students were very satisfied with experience of remote computer simulation training.⁵

Conclusion

The study showed an increase in knowledge score on neonatal resuscitation had increased after computer assisted instructions on the subject. Hence, we should include computer assisted instructions to promote knowledge on the subject among students.

Conflict of Interest: None

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