

Research Article

Assess the Effectiveness of Computer Assisted Teaching (CAT) on Knowledge gain about GCS with Coma Patient 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 GCS with Coma patient. 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 GCS is helpful to assess the level of consciousness. Therefore, the students can be benefited with computer assisted teaching to improve knowledge on GCS 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 glass coma scale. 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 GCS so that student can assess the condition of unconscious patient 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, Glasgow Coma Scale, Unconsciousness

Introduction

The nervous system is a complex collection of nerves and specialized cells known as neurons that transmit signals between different parts of the body. It is essentially the body's electrical wiring.¹

Coma is a deep sleep in which a person cannot be awakened; unable to respond the painful stimuli in a normal or acceptable way.² Coma patients exhibit a complete sleep and are unable to respond, feel, speak or move. Comas can be caused by natural or medically induced. It is a medical emergency which presents therapeutic challenges.³

The term 'coma' derived from the Greek word "koma", meaning deep sleep. It is impairment in consciousness. Coma is characterized by the total absence awareness and consciousness. Comatose patients have no eye opening. As opposed to states of transient unconsciousness such as syncope or concussion, coma must last for at least 1 hour.⁴

The Glasgow Coma Scale

It provides a practical method for assessment of impairment of conscious level in response to defined stimuli. "The Glasgow Coma Scale is an integral part of clinical practice and research across the World. The experience gained since it was first described in 1974 has advanced the assessment of the Scale through the development of a modern structured approach with improved accuracy, reliability, and communication in its use" Sir Graham Teasdale.⁵

Problem Statement

Assess the Effectiveness of Computer Assisted Instruction (CAI) on knowledge gain about GCS with coma patient. 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 III Year Students in experimental group and control group on the GCS with coma patient.
- Develop Computer Assisted Instructions (CAI) program on the GCS with coma patient.
- Assess the effects of Computer Assisted Instructions (CAI) of the experimental group regarding knowledge gain on the GCS with coma patient.
- Compare the knowledge of experimental and control group regarding the GCS with coma patient.

Null Hypothesis

H₁: There will be no significant difference in the knowledge score of the B.Sc. Nursing III Year Students of the experimental group with computer assisted instructions on the GCS with coma patient.

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 GCS with coma patient.

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

Methods

The research approach adopted in the study was evaluative approach to assess the effectiveness of computer assisted instructions on gain of knowledge regarding GCS with Coma Patient. 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 & 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 during 6 weeks.

Variables under Study

Independent Variable: The computer assisted instructions on GCS with Coma Patient.

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

Criteria for Sample Selection

Inclusion Criteria

Application of Glass coma scale is applied on unconscious patient and taught to 3rd BSc Nsg. Students in medical - surgical-II 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.

Development and Description of the Tool

The following 3 steps was used by investigator 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.

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 GCS with Coma Patient.

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.

Section A

Demographic variables: Age, religion, academic qualification and source of knowledge about GCS with coma patient.

Section B

Self constructed Questionnaire with thirty items to assess knowledge of B.Sc. Nursing III Year Students on GCS with Coma Patient.

- Eye Opening (E)
- Verbal Response (V)
- Motor Response (M)

Section C

Preparation of Computer Assisted Instructions on GCS with Coma Patient. Power point presentation of 45 minutes was prepared based on lesson plan for better comprehension involving two sensory organs i.e. eyes and ears.

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.

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 & Control-30)]

Charact-eristics	Category	Subjects group			
		Experimental		Control	
		N	%	N	%
Age group (in years)	21-24	26	86.66	24	80
	25-29	03	10	06	20
	30 & above	01	3.33	00	00
Religion	Hindu	23	76.66	25	83.33
	Muslim	01	3.33	00	00
	Christian	06	20	05	16.66
Academic qualification	12 th standard	28	93.33	25	83.33
	Basic graduation	01	3.33	04	13.33
	PGDCA	01	3.33	01	3.33
Source of Knowledge	Television	21	70	22	73.33
	News bulletin	04	13.33	01	3.33
	News paper	05	16.66	07	23.33

It is observed from Table 1, that in experimental group a majority of B.Sc. Nursing 3rd year students 26 (86.66%) belongs to 21-24 years of age, 03 (10%) were between 25 -29-year-old and 01 (3.33%) student was found in the age group of 30 and above.

In control group 24 (80%) students belong to 21-24 years of age, then 6 (20%) Students were between 25 -29 year of age and no students was found to be 30 and above in age group.

In religion a majority of Students that is 23 (76.66%) were Hindus, 01 (3.33%) students were Muslims and 6 (20%) Students were Christian in the experimental group.

In control group a majority of B.Sc. Nursing 3rd year students that is 25 (83.33%) were Hindus, 00 (00%) were Muslims and 05 (16.66%) students were Christians.

In academic qualification a majority of B.Sc. Nursing 3rd year students that is 28 (93.33%) were 12 standards passed, 01 (3.33%) 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 3rd Nursing Students was television i.e. 21 (70%) then 04 (13.33%)

students gained knowledge from news bulletin and 05 (16.66%) students gained knowledge newspaper in experimental group.

In Control group the source of knowledge for a majority of B. Sc 3rd Nursing Students was television i.e. 22 (73.33 %) then 1(3.33%) students gained knowledge from news bulletin and 07 (23.33%) from newspaper.

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 06 (20%) of them had demonstrated moderate knowledge whereas 24 (80%) of them had demonstrated adequate knowledge score.

Table 2. Frequency and percentage distribution of overall knowledge score of experimental and control group [N=60 (Experimental-30 & 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	06	20	08	26.66	07	23.33
3.	Adequate (>75%)	-	-	24	80	-	-	-	-

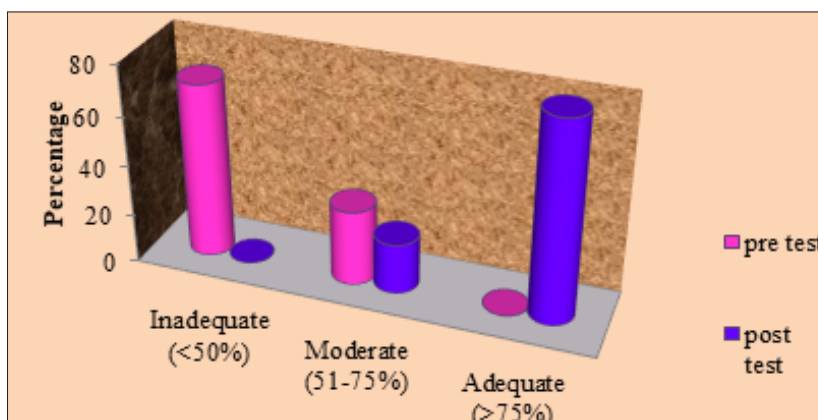


Figure 1. Bar graph showing the level of knowledge of the experimental group

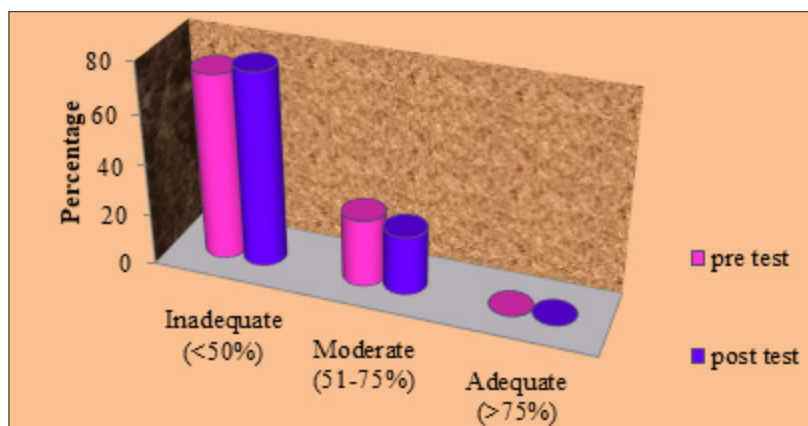
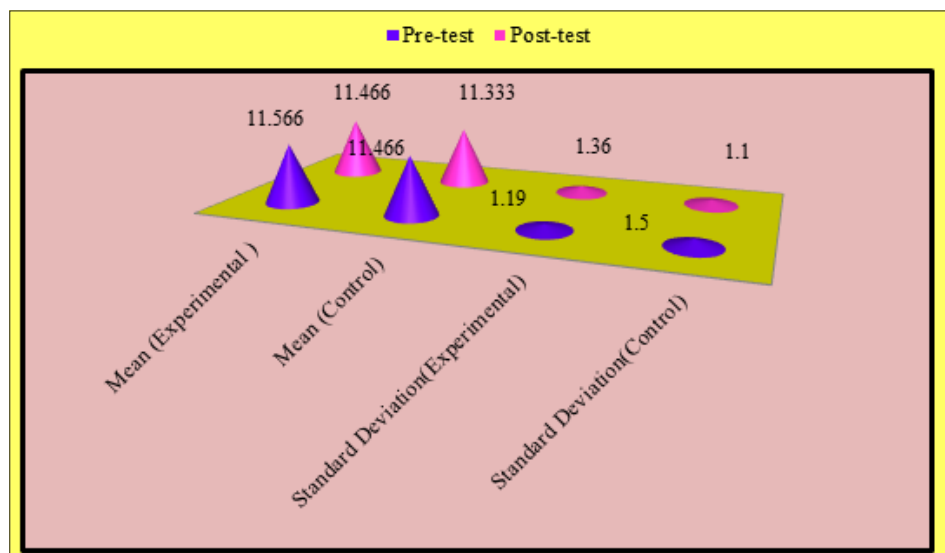


Figure 2. Bar graph showing the level of knowledge of control group

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 & Control-30)]

S. No.	Group	Mean		Standard deviation		Mean difference	Paired t -test
		Pre-test	Post-test	Pre-test	Post-test		
1.	Experimental	11.566	11.466	1.19	1.36	0.1	1.2 (df=29)
2.	Control	11.466	11.333	1.5	1.1	0.133	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**

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 11.466 with standard deviation 1.36 whereas in control group the post-test mean is 11.333 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 & 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.

Discussion

These findings are supported by a study conducted by Wesley Cajaiba et al. (2016) on the assessment of nurses knowledge on glass coma scale at a university hospital, concluded that In the assessment of best score possible for Glasgow scale (question 3) nurses who had graduate more than 5 years ago presented a lower percentage success rate ($p=0.0476$). However, in the question 7, which evaluated what interval of the scale indicated moderate severity of

brain trauma injury, those with more years of experience had higher percentage of correct answers ($p=0.0251$). In addition, nurses from emergency service had more correct answers than nurses from intensive care unit ($p=0.0143$) in the same question. Nurses graduated for more than 5 years ago had a lower percentage of correct answers in question 7 ($p=0.0161$). Nurses with more work experience had a better score ($p=0.0119$) to identify how assessment of motor response should be started.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 students and the post-test knowledge score increased after computer assisted instructions to 20% as moderate knowledge and 80% of B.Sc Nursing 3rd year student showed adequate knowledge score.

Conclusion

The study showed an increase in knowledge score on GCS with coma patient had increased after computer assisted instructions on the subject. Hence, we should include computer assisted instructions to promote knowledge on the subject among students to improve comatose patient condition.

Conflict of Interest: None

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