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Effectiveness of computer assisted instructions on knowledge regarding standard norms of nurse-patient ratio among B.Sc. nursing students of selected nursing colleges at Bhopal (M.P.)

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Abstract

Nurse-patient ratio influence many patient outcomes most markedly in hospital mortality. The present study was conducted to assess the effectiveness of computer assisted instruction on knowledge regarding standard norms of nurse-patient ratio among B. Sc. Nursing students of selected nursing college at Bhopal (M.P.). An experimental design was chosen with pre test and post test of experimental and control group. The sample size was 60 B. Sc. Nursing IV Year students divided into two groups at 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 instruction 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 knowledge of students in experimental group with computer assisted instruction in knowledge regarding standard norms of nurse-to-patient ratio.

Keywords: Effectiveness, computer assisted instructions, standard norms, nurse-patient-ratio

Introduction

Nursing services are an integral part of any health care organization. Nursing deficiency and their inadequate service to patients put the quality of care and patients' wellbeing at risk. Sufficient staffing is essential to incur quality of patients' wellbeing and care. A study carried out in 12 European countries and United States found that, enhanced working atmosphere and minimal patient-nurse ratio enhance quality of care, patients' wellbeing and their satisfaction [1]. Besides, higher nursing ratio in the unit intensifies their time spending with suffering people, which consecutively influence the result of patients' care [2]. Hence, sufficient staffing level is necessary to develop the quality of patient care. A study found that higher patient-nurse ratio unconstructively related with the quality of care and profession result but not related with the effect of patient care [3].

As per Indian Nursing Council (2002) each hospital must have enough number of nurses to deliver enhanced healthcare services to the patients. Their results exposed that sufficient nurse-patient ratio makes safe and quality care sure and deliver clear principles for nursing progresses patient care and assign improved nursing workloads. It as well empowers nurses to reclaim self-assurance and influence over their working environment [4].

Nursing education is a combination of teaching theory and practical demonstration even today. It is practiced that theory is taught in classroom and practicals are demonstrated in laboratory.

Power point is a powerful tool for learning. It is basically electronic slides where a person can embed files such as texts, music, pictures, diagram or whatever else you like. The benefit is that you are engaging students not just through words, but also through visuals. Some students learn better by hearing, but others learn better by seeing. Once, Power point resources are created, they can be exchanged with colleagues or modified to suit the specific needs of subject groups and classes without any reprographics cost.

Problem statement

Assess the effectiveness of Computer-Assisted Instructions on knowledge regarding standard norms of nurse-patient ratio among B. Sc. Nursing students of selected nursing colleges at Bhopal (M.P.)

Objectives of the study

The objective of the study

- Assess the knowledge score on standard norms of nurse-patient ratio among B. Sc. Nursing students of selected college of nursing at Bhopal in both group.
- Assess the effectiveness of Computer-Assisted Instructions on knowledge regarding standard norms of nurse-patient ratio among B. Sc. Nursing students of selected college of nursing at Bhopal in experimental group.
- Compare the knowledge of experimental and control group regarding standard norms of nurse-patient ratio among B. Sc. Nursing students of selected college of nursing at Bhopal.

Null Hypothesis

H1: There will be no significant difference in the knowledge score regarding standard norms of nurse-patient ratio among B.Sc. Nursing Students of the experimental group with computer assisted instructions.

H2: There will be no significant difference in the knowledge score between control and experimental group after computer assisted instructions to experimental group regarding standard norms of nurse-patient ratio.

H3: There will be no significant association between experimental and control group with their selected demographic variables regarding standard norms of nurse-patient ratio.

Methods

Evaluative research approach was adopted in the study to assess the effectiveness of computer assisted instructions of knowledge regarding standard norms of nurse-patient ratio. A true experimental research design with pre-test and post-test of experimental and control group was used during the study. The study was conducted at selected nursing colleges at Bhopal, Madhya Pradesh, India for 6weeks. The samples were 60 B.Sc. nursing IV year students who fulfilled the inclusion criteria sampling criteria out of that 30 were taken in the experimental group and 30 were taken as control group. In this study, a total of 60 B.Sc. nursing IV year students were selected by systematic random technique.

Variables under study

Independent variable

The power point presentation as computer assisted instructions on knowledge regarding standard norms of nurse-patient ratio.

Dependent variable

Knowledge is a dependent variable which is dependent on computer assisted instructions.

Demographic variables

Age, Religion, Academic qualification and Source of knowledge regarding nurse-patient ratio.

Sample: IV Year B.sc Nursing Students.

Sample size: Total 60 (30 each in Control and experimental group).

Criteria for sample selection

Inclusion criteria

- B.Sc. Nursing IV Year Students willing to participate in the study.

Exclusion criteria

- B.Sc. Nursing IV Year Students writing supplementary exams.

Duration of study: 6 weeks.

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.

Section A: Demographic variables

Section B: Self constructed Questionnaire with thirty items to assess knowledge of B.Sc. Nursing IV Year Students on knowledge regarding standard norms of nurse-patient ratio.

Section C: Preparation of power point presentation as Computer Assisted Instructions on knowledge regarding standard norms of nurse-patient ratio.

Scoring procedure

Each question had 04 options from which the sample had to choose only 01 (one) correct answer. The right answer was scored as 01 and the wrong option was scored as zero. The scoring was interpreted as below:

- Inadequate knowledge-score less than 50%
- Moderate knowledge-score between 51-74%
- Adequate knowledge-more than 75%

Intervention

The computer assisted instructions (PPT) of 45 minutes duration was shown to B.Sc Nursing IV Year Students of the experimental group and the control group did not receive the intervention 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 IV Year Students of experimental and control group to assess the pre-test knowledge score on standard norms of nurse-patient ratio.

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

Statistical analysis

Data was organized then analyzed for the knowledge of students on standard norms of nurse-patient ratio among B. Sc. Nursing students. The data were analyzed in terms of frequency, percentage, mean and standard deviation. Unpaired t-test is used to test the significant difference in the knowledge between the experimental and the control group.

Findings

The demographic variables of B.Sc. Nursing IV Year Students are given in Table as below:

It is observed from in table 1, that in experimental group a majority of B.Sc. Nursing IV Year Students 25 (83.33%) belongs to 21-24 years of age, 05 (16.66%) were between 25 -29 year old and no student was found in the age group of 30 and above.

In control group 22 (73.33%) students belong to 21-24 years of age, then 8 (26.66%) 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 17 (56.66%) were Hindus, 04 (13.33%) students were Muslims and 9 (30%) Students were Christian in the experimental group.

In control group a majority of B.Sc. Nursing IV Year Students that is 20 (66.66%) were Hindus, 03 (10%) were Muslims and 07 (23.33%) Students were Christians.

In academic qualification a majority of B.Sc. Nursing IV Year Students that is 24 (80%) were 12 standards passed, 01

(3.33%) had completed B.Sc and 04 (13.33%) could not complete graduation. 01 (3.33%) student had done PGDCA in the experimental group.

In control group a majority of B.Sc. Nursing IV Year Students that is 25 (83.33%) were 12 standards passed, 03 (10%) had completed B.Sc. and 02 (6.66%) could not complete graduation.

The source of knowledge for a majority of B.Sc Nursing Students was news paper and magazines i.e. 25 (33.33%) in the experimental group and the same was found in control group. Besides 05 (16.67%) B.Sc. Nursing IV Year Students acquired knowledge on standard norms of nurse-patient ratio through their clinical posting and the same percentage was applicable to control group of B.Sc. Nursing Students.

In pre-test of the experimental group 28 (93.33%) students had inadequate knowledge and 02 students (6.67%) had moderate knowledge but after computer assisted instructions on the subject in post-test 04 (13.33%) of them had moderate knowledge whereas 26 (86.67%) of them had adequate knowledge score.

Table 1: Frequency and percentage distribution of subjects as per age, religion, academic qualification, source of knowledge

Characteristics	Category	Subjects Group			
		Experimental		Control	
		N	%	N	%
Age Group (in years)	21-24	25	83.33	22	73.33
	25-29	05	16.66	08	26.66
	30 & above	00	00	00	00
Religion	Hindu	17	56.66	20	66.66
	Muslim	04	13.33	03	10
	Christian	09	30	07	23.33
Academic qualification	12th standard	24	80	25	83.33
	B.Sc completed	01	3.33	03	10
	B.Sc not completed	04	13.33	02	6.66
	Any other	01	3.33	00	00
Source of knowledge	News Papers & Magazines	25	83.33	25	83.33
	Clinical Posting	05	16.66	05	16.66
Any other	00	00	00	00	

N=60 (Experimental-30 & Control-30)

In the control group a majority of B.Sc. Nursing IV Year Students in pre-test that is 28 (93.33%) had inadequate knowledge score and 02 (6.67%) of them had moderate knowledge score. In post-test 27 (90%) of them showed inadequate knowledge and 03 (10%) of them had shown moderate knowledge score.

Table 3, Shows post test mean of experimental group is 22.33 with standard deviation 1.5 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 & 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 IV Year Students of the experimental group.

Discussion

The overall percentage of knowledge of B.Sc Nursing IV Year in experimental group for pre-test was inadequate i.e. 93.33% and it was moderate for 6.67% Students. The post test knowledge score increased after computer assisted instructions to 13.33% to moderate knowledge and 86.67% Students showed adequate knowledge score. So the hypothesis (H2) is rejected that means there was a significant difference in the knowledge gain between control and experimental group with CAI. The post test revealed that experimental group had gain the knowledge gain where as control group didn't gain the knowledge after post test.

Table 2: Frequency and percentage distribution of overall knowledge score of experimental and control group

S. No.	Level of knowledge	Experimental group				Control group			
		Pre-test		Post-test		Pre-test		Post-test	
		f	%	f	%	f	%	f	%
1.	Inadequate (<50%)	28	93.33	-	-	28	93.33	27	90
2.	Moderate (51-74%)	02	6.67	04	13.33	02	6.67	03	10
3.	Adequate (>75%)	-	-	26	86.67	-	-	-	-

N=60 (Experimental-30 & Control-30)

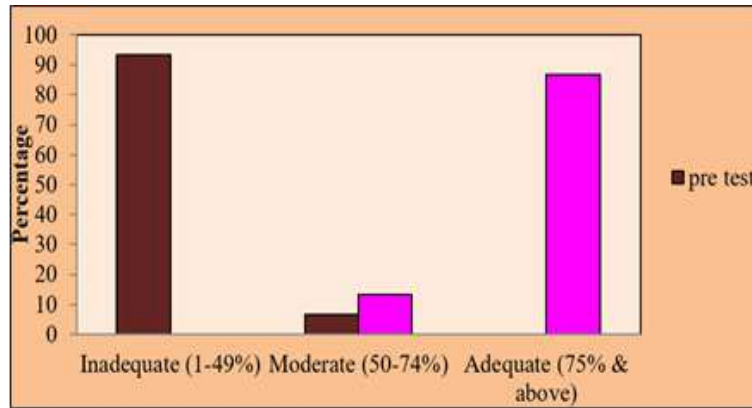


Fig 1: Bar graph showing the level of knowledge of the experimental group

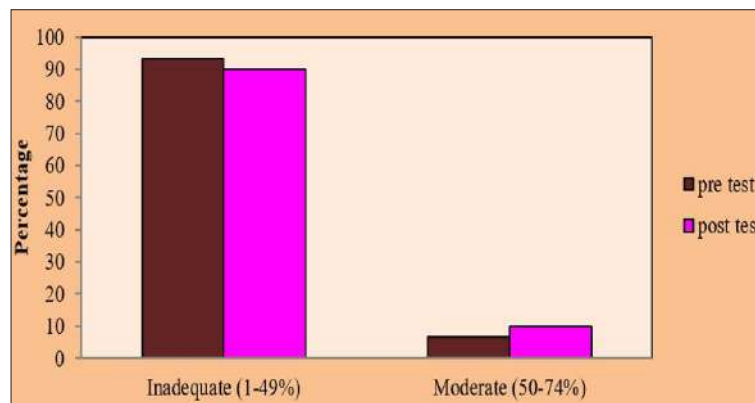


Fig 2: Bar graph showing the level of knowledge of control group

Table 3: Comparison of overall pre-test and post-test mean, standard deviation, mean difference and paired -t’ value between experimental and control group

S. No.	Group	Mean		Standard deviation		Mean Difference	Paired t-test
		Pre-test	Post-test	Pre-test	Post-test		
1.	Experimental	11.633	22.33	1.2665	1.5	10.697	1.2(df=29)
2.	Control	11.466	11.33	1.3	1.1	0.136	0.46818 df-29

N=60 (Experimental -30 & Control-30)

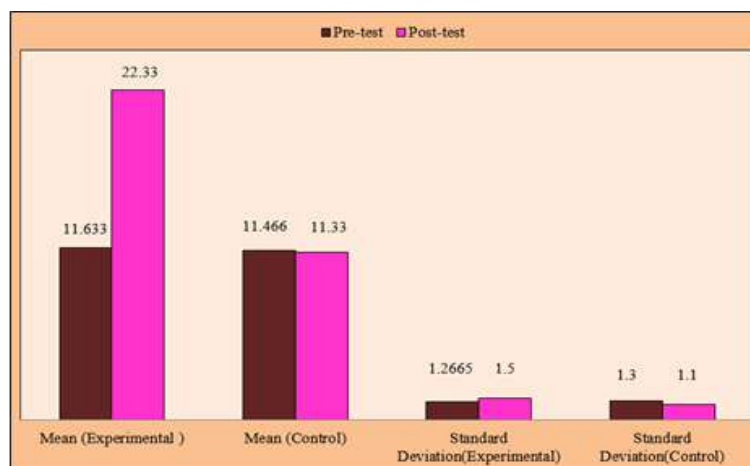


Fig 5: Bar graph showing the comparison of overall pre-test and post-test mean, standard deviation between experimental and control group

The above finding was supported by a study conducted by Eleazar *et al.* on effectiveness of planned teaching programme on prevention and early detection of cervical cancer for school teachers of selected schools in Mangalore. Purposive sampling technique was used for the selection of 50 school teachers. The study revealed that the mean knowledge scores (30.68) obtained by the school teachers

after conducting planned teaching programme was higher than mean pre-test knowledge scores (17.26). There was significant difference between mean post-test and pre-test knowledge scores ($t_{49}=26, p<0.05$). The study concluded that planned teaching programme was an effective teaching method for providing knowledge to school teachers^[5]. The present study has demonstrated a marked gain in

knowledge after CAT this is supported by an experimental study, conducted by Souza D *et al.* on effectiveness of planned teaching programme on pre-eclampsia for primigravida women in a selected community at Mangalore. The study revealed that there was a significant difference ($t(29)=3.66$, $p<0.001$) between pre-test and post-test knowledge scores of the respondents indicating significant increase in knowledge after planned teaching programme^[6].

Conclusion

The study showed Computer Assisted Teaching (CAT) had increased the knowledge of students regarding standard norms of nurse-patient ratio.

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