

## A Study to Assess the Effect of Online Continuous Nursing Education Programme in Improving the Knowledge of Nurses Regarding Critical Care

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**Abstract: Aims and Objectives:** Assess the effectiveness of e-learning program in continuous education of nursing professionals in terms of Knowledge gain.

**Methodology:** A study to assess effectiveness of E-learning in Continuing Education of nursing personnel was conducted in All India Institute of Medical science, New Delhi. One group pretest post test design was used. Purposive sampling was used in which Nursing officers (N=150) working in AIIMS and successfully completed the critical care module of e-learning program was included in the study. Data to assess the knowledge gain (Pretest post test scores) was collected from the data base

**Results:** There was significant difference in mean pretest and post test scores of nursing personnel in each of the four Critical care module (t-4.69, t-5.1, t-3.25, t-5.9 respectively) at 0.05 level of significance which is significant for df(149) which means there is significant improvement in the knowledge level of nursing personnel who attended the e-learning course.

**Conclusion:** Organizing one to one teaching for staff in a tertiary care hospital is a big challenge for nursing administration. The findings of the present study suggest the adoption of e-learning as a method of teaching in continuous nursing education.

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### I. Introduction

Innovations in health care have made dramatic changes in health care delivery in the last decades. Organizations are struggling to impart the technological advances to their employees in order to ensure quality health care. Nurses being the pillar of health care delivery system need to get immediate attention in this regard. Hence Needs to enhance the in-service training of nurses is an inevitable requirement of the day.

### Background

Evidence based practice is key to quality health care. Health care professionals are required to be updated about the recent changes in their practice to ensure a high quality patient care. Newly employed registered nurses require in-service training in order to update them regarding the latest developments in nursing practice.<sup>[1]</sup> Organizing one to one teaching for staff in a tertiary care hospital is a big challenge for administration. E-learning brings a unique solution by delivering online learning for nurses despite geographical location, time, or distribution devices. Research has already proved that E-learning as well as lecture method equally promote competency of the nurses on documentation. Therefore, e-learning can be used to facilitate the implementation of nursing educational programs.<sup>[2]</sup>

### Need of the study

The online eLearning is equivalent, possibly superior to traditional learning which suggests the policy makers should encourage its adoption in their organization to ensure quality improvement. (Pradeep Paul George<sup>[3]</sup> et al,2018). It is also reported that the web-based method seems to be as effective as the face-to-face method and is recommended, as complementary to the face-to-face method in the continuing education of nurses.(AlirezaKhatony (2009)<sup>[4]</sup> ). Dr. Wasmiy A. Dalhem (2014)<sup>[5]</sup> reported that e-learning as an educational tool still remains comparatively low in usage compared to other tools . E learning as an underutilized possibility in our education system suggests the need for further studies to prove its benefits in terms of different variables.

### Objectives

1. Assess the effectiveness of e-learning program in continuous education of nursing professionals in terms of Knowledge gain.

## II. Review of literature

Christian Schulz-Quach<sup>[6]</sup> et al, 2014 studied medical students' acceptance, knowledge, and self-estimation of competence in palliative care after e-learning. The results reveals that e-Learning is a promising approach in Undergraduate palliative care education and well-accepted by medical students. It may be able to increase students' knowledge in palliative care. However, it is likely that there are other approaches needed to change students' self-estimation in palliative care competencies. It seems plausible that experience-based learning and encounters with dying patients and their relatives are required to increases students' self-estimation in palliative care competencies.

Sandra M. Salter et al 2015,<sup>[7]</sup> This systematic review of the literature examines the quality of e-learning effectiveness studies in pharmacy, describes effectiveness measures, and synthesizes the evidence for each measure. E-learning in pharmacy education effectively increases knowledge and is a highly acceptable instructional format for pharmacists and pharmacy students. However, there is limited evidence that e-learning effectively improves skills or professional practice. There is also no evidence that e-learning is effective at increasing knowledge long term; thus, long-term follow-up studies are required. Translational research is also needed to evaluate the benefits of e-learning at patient and organizational levels.

Dr. Wasmiy A. Dalhem (2014)<sup>[8]</sup>, conducted a descriptive study to assess the impact of e-learning on the nurses' professional knowledge and practice and the factors influencing the effective utilization of e-learning in HMC (Hamad Medical Corporation). 70 nursing staff participated (29% of the population targeted) in responding to the questionnaire survey. The results conveyed the positive impact of integrating e-learning courses as part of the educational opportunities provided for staff.

Lotte van de Steeg et al (2015),<sup>[9]</sup> conducted a study to test the effectiveness of an e-learning course on nurses' delirium knowledge. A before-and-after study design, using an e-learning course on delirium. The course was introduced to all nursing staff of internal medicine and surgical wards of 17 Dutch hospitals. 1,196 invitations for the e-learning course were sent to nursing staff, which included nurses, nursing students and healthcare assistants. Test scores on the final knowledge test (mean 87.4, 95% CI 86.7 to 88.2) were significantly higher than those on baseline (mean 79.3, 95% CI 78.5 to 80.1). The e-learning course significantly improved nursing staff's knowledge of delirium in all subgroups of participants and for all question categories.

## III. Materials and Methods

**Study design:** One group pretest post test design

O<sub>1</sub> X O<sub>2</sub>

**Setting:** All India Institute of Medical Science, New Delhi.

### Sample and sampling technique:

Samples: Nursing officers who have completed Critical care module of e-learning program in AIIMS, New Delhi.

Sample size: 150

Sampling Technique: Purposive sampling was used in which Nursing officers working in AIIMS who have successfully completed the critical care module of e-learning program was included in the study.

Inclusion criteria:

- ✓ Nursing officers working in AIIMS, New Delhi
- ✓ Nursing officers who have successfully completed Critical care module of e-learning program.
- ✓ Nursing officers who are willing to participate in the study.

Exclusion criteria:

- ✓ Nursing officers in administrative roles.

### Method of Data collection

E-learning is an initiative to provide online continuous nursing education. E-learning works on moodle plat form which is an open source platform that provides personalized learning environment for the users. Users can access it through their laptops, smart phones, tablets etc. Every user has a unique user id and password with which they can access their profile. The User will be asked to fill some of the demographic data while registering the E-learning module. Critical are module has four submodules in it which include Care of unconscious patient, Critical care, mechanical ventilation, and Cardio pulmonary resuscitation. Each module has a pretest, followed by content and a post test. The user has to complete the pretest before moving on to the chapters.

### Data collection:

E-learning courses are already on board. The demographic data and the data to assess the knowledge gain (Pretest post test scores) was collected retrospectively from the data base.

**Description of tool**

Part A: Demographic data which has 5 items in it; the user has to fill it while registering for the course.

Part B: Questionnaire to assess the knowledge of nursing personnel in each module. A total of four questionnaires was developed, each questionnaire has ten items in it. The total score for each module is 10.

Content validity of the tool:

The content was developed by an expert team for each module. For the content validity of the tool, it was given to 5 experts along with the questionnaires. The experts were requested to judge the items based on its relevance, adequacy of the content, organization, clarity and feasibility. The changes suggested by the experts were incorporated in the content as well as in the tools.

Reliability of the tool:

Reliability of the tool was established using test retest method. The questionnaire was administered to 20 samples to check the reliability. Each of them was found reliable with coefficient of correlation 0.98, 0.87, 0.76, 0.82 respectively.

**IV. Results**

**Demographic data**

**Table1 Frequency distribution and percentage of nursing personals based on gender, qualification and years of experience N=150**

No	Demographic data	Frequency	%
1	Gender		
	<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>	64 86	43 57
2	Qualification In nursing		
	<ul style="list-style-type: none"> <li>• Diploma /Degree In nursing</li> <li>• Masters in Nursing</li> </ul>	128 22	85 15
3	Years of experience		
	a. <5 years	56	37
	b. 5-10 years	78	53
	c. 10 – 20 Years	16	10

The most of the nursing professionals (85%) who completed the study had an educational qualification of Degree /Diploma in Nursing. Majority of nursing professionals had an experience of 5 to 10 years. 53% of the Nursing professionals belong to the category of 10 to 15 years of experience.

**Table-2 Mean, mean difference, standard deviation, standard error of mean difference and “t” value of pre-test and post-test scores of nursing personnel in e-learning module.**

Module No.	Module		Mean	MD	SD <sub>D</sub>	SE <sub>MD</sub>	t' value
1	Care of Unconscious patient	Pretest	7.22	1.09	2.04	0.17	4.69
		Post test	8.31				
2	CPR	Pretest	7.44	0.93	2.24	0.18	5.1
		Post test	8.37				
3	Critical care	Pretest	8.01	0.51	1.93	0.16	3.25
		Post test	8.52				
4	Mechanical Ventilation	Pretest	7.23	1.02	2.08	0.17	5.9
		Post test	8.24				
		Post test	8.4				

t(149)=1.655 ,p<0.05,significant at 0.05 level of significance.

The data presented in the Table 2, shows that the mean post-test score of nursing personnel in submodule,Care of Unconscious patient(8.31) is significantly higher than the mean pre-test scores (7.22) with ‘t’ value 4.69 at 0.05level of significance which is significant for df(149). The mean post-test score of nursing personnel in the submodule, Cardiopulmonary resuscitation (8.37) is significantly higher than the mean pre-test scores (7.44) with ‘t’ value 5.1 at 0.05level of significance which is significant for df(149). The mean post-test score of nursing personnel in submodule, Critical Care (8.52) is significantly higher than the mean pre-test

scores (8.01) with 't' value 3.25 at 0.05 level of significance which is significant for df(149). The mean post-test score of nursing personnel submodule, Mechanical ventilation (8.24) is significantly higher than the mean pre-test scores (7.23) with 't' value 5.9 at 0.05 level of significance which is significant for df (149).

## V. Discussion

In this study we assessed the effectiveness of E learning method in Continuous nursing education of nursing personnel in terms of knowledge gain. We found that e-learning has significant effect on the knowledge scores of nursing personals. This study reports a significant improvement in the knowledge scores of nursing personnel before and after completing the E learning module. There are similar findings reported by other researchers which enforce the results of this study. The study done by Christian Schulz-Quach<sup>[6]</sup> et al . in medical students about palliative care also reported that e learning has increased students' knowledge in palliative care. Lotte van de Steeg et al (2015),<sup>9</sup> has also reported that the e-learning course significantly improved nursing staff's knowledge of delirium in all subgroups of participants and for all question categories.

As per the systematic review of the literature by Sandra M. Salter et al 2015<sup>[7]</sup> E-learning in pharmacy education effectively increases knowledge and is a highly acceptable instructional format for pharmacists and pharmacy students. The impact of e-learning on the nurses' professional knowledge and practice by Dr. Wasmiy A. Dalhem (2014) <sup>[8]</sup> also conveyed the positive impact of integrating e-learning courses as part of the educational opportunities provided for staff. Considering the inconvenience of traditional method of teaching practices in in-service education in a tertiary care hospital setting, e-learning is effective and adoptable mode of teaching in terms of imparting knowledge to nursing personals.

However, this study did not assess practical outcome of e-learning and did not assess the long term knowledge outcome. Further studies need to be done to explore the possibilities of this method in nursing education.

## Recommendations:

1. Study to assess effectiveness of e-learning in terms of practice outcome
2. Study to assess long term effect on knowledge of learner
3. Develop strategies to improve clinical practice through learning.

## VI. Conclusion

E-learning has made significant improvement in the knowledge level of nursing personnel regarding care of unconscious patients. The E-learning has significantly improved the knowledge level of nursing personnel about Cardiopulmonary resuscitation. It has also improved the knowledge level of nursing personnel about Critical care and Mechanical ventilation. Thus it is observed that there is a significant overall improvement in the knowledge level of nursing personnel who has attended the e-learning course. E-learning can be adopted a method of teaching in continuous nursing education of nursing personals.

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