

# Comparing Two Training Methods on the Level of Delirium Awareness in Intensive Care Unit Nurses

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## Abstract

**Background:** Lack of correct diagnosis of delirium and considering it as an iatrogenic disease are the most important reasons for lack of correct detection of delirium by health care team. Appropriate training of the nurses on delirium can play an important role in its early diagnosis and prevention.

**Objectives:** The current study aimed to compare the effects of two training methods on the level of delirium awareness in nurses in the intensive care units (ICUs).

**Patients and Methods:** The present study was a pretest-posttest clinical trial on two groups conducted in the hospitals affiliated to Tehran University of Medical Sciences in 2014. The qualified subjects were divided into two groups (n=35 for each) of workshop training and continuous electronic training by random number tabulation. The four-hour workshop training was applied in two days and training content was uploaded on Tehran University of Medical Sciences website for continuous electronic training. The data were collected by a questionnaire containing demographic characteristics and multiple-choice questions on delirium awareness including delirium definition, epidemiology, causes and risk factors, complications, diagnosis and diagnostic means, prevention and treatment with reliability coefficient of  $r = 0.85$ . The data were collected before and after the intervention as self-reporting. After collecting the data, the level of awareness of nurses was analyzed through descriptive and analytical statistics of paired and independent T-tests using SPSS ver. 16.

**Results:** The results showed that 88.1% of the subjects were female. Comparison of mean  $\pm$  SD showed a significant difference in the electronic training group before and after the intervention ( $P < 0.002$ ) (before:  $5.16 \pm 4.6$ ; after:  $5.33 \pm 5.1$ ). However, there was no significant difference before and after the intervention in the workshop training group (before:  $5.16 \pm 3.4$ ; after:  $5.23 \pm 5.1$ ). Comparing the mean  $\pm$  SD of the results in both groups of workshop and electronic training, there was no significant difference between them before the intervention. However, comparison of mean  $\pm$  SD of the results after the intervention showed a significant difference between these two groups ( $P = 0.035$ ).

**Conclusions:** Given the results of the study, it can be concluded that electronic training had a more effective role in training the nurses regarding the awareness of delirium and can be recommended as a helpful training method in retraining courses targeting the nurses.

**Keywords:** Delirium, Workshop Training, Electronic Training, Nurse

## 1. Background

Delirium is a cognitive disorder usually of sudden onset and accompanied by impaired orientation and short term memory, altered sensory perception (hallucination), abnormal thought processes, and inappropriate behavior (1). This neuropsychiatric disorder is induced by health care conditions and the main cause of its incidence is unknown (2). The rate of its incidence in patients admitted to intensive care unit (ICU) is reported as 11% - 87% (3) and based on research, almost all patients connected to mechanical ventilation are affected by this disorder (4). This disorder leads to complications such as increased mortal-

ity and morbidity rates, increased length of ICU and hospital stay (5), prolonged weaning phase, hospital-acquired pneumonia, urinary incontinence, skin problems, bed sore, permanent disability and lack of improvements in cognitive status (6). The patients hospitalized in ICUs are at higher risk of delirium than other patients due to factors such as multiple organ dysfunction, using sedatives and analgesics and having no visiting hours (4). Although the main cause of this disorder is unknown, its early diagnosis and prevention or its treatment in primary stages avoids deterioration of patient condition and inducing complications (7). In this regard, ICU nurses play a more impor-

tant role in preventing and detecting this disorder than other members of healthcare team, since they spend more time with the patients and are able to detect it faster compared to others (8). Nurses try to eliminate or reduce factors inducing delirium (9). In the North American nursing diagnosis association (NANDA) nursing diagnosis list, delirium diagnosis is received a special attention, characterized as acute confessional state, potential ability to hurt and damage, potential factor for violence, altered thinking process, altered sensory perception, stress, and impaired verbal communication (10). Treating delirium symptoms is mainly based on nursing interventions and focuses on non-pharmacological strategies (11). Delirium is a part of intensive care unit psychosis, has no bad effects on disease process, cannot be easily diagnosed and differentiated from other mental disorders, and health care team believe that it is of inevitable iatrogenic nature (the result of intentional/unintentional performance, therapeutic factors and treatment process). Therefore, recognition and awareness of delirium is difficult for healthcare teams. However, about 80% of the delirium cases can be prevented by correct diagnosis. Correct and early detection of factors inducing delirium, screening patients and applying delirium prevention approaches can be helpful in this regard (12).

Studies show that a large number of treatment team members are not skilled enough to detect and prevent delirium and always encounter problems. Raising awareness and training of nurses can prevent up to 60% of delirium cases (13, 14). Researches show that using training programs and appropriate means have a helping role in detection of delirium (15). Before training, selection of educational approach is of great importance (16). Selection of educational approach is influenced by multiple factors such as educational goal, opportunities, previous experiences, interests and characteristics of the audience, learning principles governing the educational content and educational facilities and sources. Today, several traditional and modern educational approaches are employed. Among traditional training approaches, workshop approach has high popularity due to direct relationship between learner and teacher. In this training approach, there is the possibility for learners to have access to teachers in case of any problems in learning, and interactions among teachers can also be effective in learning (17). However, increasing the rate of developments in science, major changes in the lives of today people, viewing education from a new angle, and efforts to establish justice in education are some of the reasons for the presence of information technology in education and changes in educational approaches (18). Electronic training is considered as an individual training where learners are able to

reach educational objectives given their own talents and they in fact learn how to learn and learning is offered in multiple formats such as on-line learning, computer-based learning, network learning, web-based learning and off-line learning, each with their own continuous training subcategories (18, 19). Among the most important subcategories of electronic training with an important role in today's nursing education is continuous internet-based training which plays a major role in continuity of professional growth of nurses and provides the nurses with continuous target-oriented learning (20). Of course, using this method requires special facilities and coordination of factors such as management and support, characteristics of learners and teachers and educational content. Some believe that using workshop training in medical sciences, especially medicine, nursing and midwifery is more fitting than other training methods such as electronic training due to multiple interactions (21). Given what said above, increasing rate of developments in science arises the need for electronic training which is not dependent on time and place.

## 2. Objectives

The researcher did not find any study comparing electronic and workshop training regarding delirium training; therefore, the present study was conducted by the purpose of comparing the effects of two training methods on the level of delirium awareness in ICU nurses

## 3. Patients and Methods

The present study was a pretest-posttest clinical trial on two groups conducted in 2014 in the hospitals affiliated to Tehran University of Medical Sciences. After approval of the ethical committee of Tehran University of Medical Sciences, the names of ICU nurses qualified with the inclusion criteria (willingness to participate in the study, having at least B.S in nursing, access to internet and computer and lack of experience of presence in delirium retraining courses) were numbered and they were divided into two groups ( $n = 35$  for each, and  $n = 40$  considering subjects loss) of workshop training and continuous electronic training by random number tabulation.

The purpose of the study was explained to participants and they were reminded that they could leave the study whenever they wished. To measure the level of delirium awareness in nurses, a questionnaire was prepared including demographic characteristics and 30 multiple-choice questions on delirium awareness including delirium definition (one question), epidemiology (one ques-

tion), causes and risk factors (five questions), complications (three questions), diagnosis and diagnostic means (seven questions), prevention (eight questions), and treatment (five questions). Scores 0 and 1 were used to score the questionnaire. Score 0 was given to incorrect responses and score 1 to correct ones. The numbers of 1, 2 and 3 were considered as the representatives of low levels of awareness (total score lower than 10), intermediate level of awareness (total score of 10 - 19), and high level of awareness (total score of 20 - 30). To evaluate the content validity of the questionnaire and educational content, they were given to ten faculty members of Tehran University of Medical Sciences (two psychiatrists, eight faculty members of nursing department) and modifications were applied. To determine the reliability coefficient, validated questionnaire was given to ten people qualified with inclusion criteria of the study and after two weeks, they filled out the same questionnaire and its correlation was calculated ( $r=0.85$ ). At the end, these people were removed from the sample.

Educational content was identical for both groups. Approved by experts in center of continuous electronic education of Tehran University of Medical Sciences, the educational content was uploaded on the website (<http://cme.tums.ac.ir>). Submitting their informed consent, all nurses of the continuous training group were given username and passwords as they were already familiar with the system. The questionnaire of delirium awareness was given to these nurses before entering the website. The continuous training program contained a self-learning text and some interactional questions. After the program, they filled out the awareness questionnaire again.

In the workshop training group, the researcher held a four-hour workshop in two days after obtaining the written informed consents from the nurses. Before the workshop, the questionnaire of delirium awareness was given to the subjects. The workshop was started by the scenario used in the continuous training part presenting delirium subject and continued by asking some questions from the participants. After the workshop, the questionnaire of delirium awareness was again filled out by the participants.

After collecting the data, the level of delirium awareness in nurses was analyzed using descriptive and analytical statistics (comparison of mean  $\pm$  SD, paired T-test to compare means before and after the training in each group and independent T-test to compare means of awareness levels before and after training between the two groups) by SPSS ver.16.

#### 4. Results

Most of the studied subjects in both groups were female (88%). The subjects had no significant differences in terms of age, gender, marital status, level of education, organizational position, and the ward they worked in; while they were significantly different in terms of working experience ( $P = 0.020$ ). Based on independent T-test, the variable of working experience had no significant relationship with the electronic and workshop training groups (working experience relationship with the workshop training:  $P = 0.110$ ; working experience relationship with the electronic training:  $P = 0.490$ ) and was not considered as interfering (Table 1).

**Table 1.** Demographic Characteristics of Nurses in Two Groups<sup>a</sup>

Group	Workshop Training	Electronic Training	Result
<b>Gender</b>			Fisher exact test, $P = 0.41$
Female	35 (92)	37 (88)	
Male	3 (8)	5 (12)	
<b>Age</b>			$T = 0.902$ , $df = 41$ , $P = 0.162$
20 - 30	11 (29)	21 (50)	
31 - 40	11 (29)	10 (24)	
41 - 50	9 (24)	5 (12)	
51 <	7 (18)	6 (14)	
<b>Marital statuses</b>			$= 0.005$ , $df = 1$ , $P = 0.943$
Single	7 (18)	8 (19)	
Married	31 (81)	34 (81)	
<b>Work experience</b>			$T = 16.616$ , $df = 7$ , $P = 0.020$
1 - 10	27 (71)	21 (50)	
11 - 20	7 (18)	12 (28)	
21 - 30	4 (10)	9 (21)	
<b>Educational level</b>			Fisher exact test, $P = 0.505$
Bachelor	32 (84)	36 (86)	
Master	4 (16)	6 (14)	
<b>Organizational position</b>			Fisher exact test, $P = 0.26$
Nurse	37 (98)	40 (95)	
Head of nurse	1 (3)	2 (5)	

<sup>a</sup>Values are expressed as No. (%).

In addition, the results showed that before the intervention, low level of awareness in the workshop training

group was 20 (59%) and high level of awareness was 2 (5%), while after intervention, they were 9 (26%) and 3 (9%), respectively. Low and high levels of awareness in the electronic training group were respectively 27 (69%) and 2 (6%) before the intervention and 9 (23%) and 13 (32%) after the intervention, respectively.

Comparison of means and standard deviations showed a significant difference before and after the intervention in the electronic training group ( $P < 0.002$ ); while there was no significant difference before and after the intervention in the workshop training group ( $P = 0.807$ ) (Table 2).

**Table 2.** Mean  $\pm$  SD Level of Awareness After and Before the Intervention in Two Groups<sup>a</sup>

Awareness Level	Electronic Training	Workshop Training	T-test
Before	5.16 $\pm$ 4.6	5.16 $\pm$ 3.4	$P = 0.075$
After	5.33 $\pm$ 5.1	5.23 $\pm$ 5.1	$P = 0.035$
Paired t-test	$P = 0.002$	$P = 0.807$	

<sup>a</sup>Values are expressed as Mean  $\pm$  SD.

Comparison of means and standard deviations of the results in the two groups of workshop and electronic training showed no significant difference before the intervention ( $P = 0.075$ ); while this comparison showed a significant difference ( $P = 0.035$ ) between the two groups after the intervention.

## 5. Discussion

Results of the study showed a significant difference between the two groups of electronic and workshop training regarding the level of delirium awareness of the ICU nurses. In a study entitled training personnel in delirium detection, Siddiqi (2008) stated that preparing educational packages and presenting them as lectures and workshop scan play a key role in training for and detection of delirium and in turn its prevention and treatment (22). Also, comparing group discussions and electronic training, Tabet et al., showed that group discussion was more effective in training nurses to prevent delirium than electronic training. These researchers stated that this significant difference was due to unfamiliarity of nurses with electronic training, lack of adequate management and technical support. Also, they indicated that they did not pay attention to advance organizers when preparing the content of electronic training, while in the group discussion, the link between advanced organizers and new materials was formed automatically and following the social interactions among participants (23).

Paying attention to advance organizers, encouraging reflection, preparing appropriate training content to the level of learners, having no technical problems, and being able to work with computer are important in planning electronic training programs. Additionally, the key to success in electronic training, based on studies, is appropriate content, coordination of content and electronic training standards and using various technologies (18, 24).

In the workshop training, interactions among learners and teachers have the key role in learning (25). In a four-hour structured workshop for training journal reviewers and improving their performance, Callaham et al. showed that although workshop training is a traditional method, it allows for more possibility to reflect due to presence of the teacher (26). Using a training method depends on knowledge, attitude, and trust of learners. Using workshop training can be usually effective in elementary learners (27). Khatoni et al. revealed that the effect of electronic training and traditional training (workshop) on the level of awareness of avian flu among nurses were identical. Therefore, they recommend that nursing managers employ electronic training to educate nurses given the modernity of the today's world and nurses' shortage of time (28). In a study entitled comparing the effect of lecture-based training and that of electronic training following Merrill and Reigeluth pattern on learning and motivation in individuals targeted for continuous medical education, Emrani et al. concluded that there was no statistically significant difference between lecture-based training and electronic training (29).

Abdelaziz et al., in a study entitled evaluating electronic learning program in comparison to traditional lecture-based training for M.S students of nursing, stated no statistically significant difference between these two methods regarding training nursing students. The authors indicated that the lack of skills related to working with computer in students influenced the ability of the student to effectively communicate with the teacher and other classmates. Despite the fact that students considered electronic methods useful, most of them still preferred teacher-oriented and face-to-face education. One of the important points mentioned by the students was having no computer in home or dormitory. Most of them studied the program in coffee-nets which did not allow studying wherever they wanted. In addition, noisy and crowded environment made it difficult for them to study. As another problem, some families did not let their children go to coffee-nets. Another problem was far distance of some coffee-nets; therefore, the student should travel a long trip and in turn lost a lot of time. Most of the students preferred more focus on program instead of acquiring new computer skills. Therefore, they preferred to study the pro-

grams electronically and though CD-ROMs (the compact disc used as a read-only optical memory device for a computer system) rather than on internet and this could eliminate problems related to inadequate bandwidth of internet at home and costs (30).

It seems that by developments in technology and increasing the rate of achievements in science, nurses would probably prefer to use electronic training to learn whenever they want or maybe electronic training would be more welcomed as the individual can study the materials over and over. On the other hand, it can be pointed out that in electronic training if students have no advanced organizers regarding the component being trained, they have the opportunity to study; while in workshop training, students should participate in a workshop in a certain time and place and have no opportunity for more study or repetition. One limitation of this research was the low speed of the internet which was disconnected several times during the continuous training. The researcher recommends that continuous training be compared with other electronic training methods such as using CDs as well.

Given the results and points mentioned above, it can be concluded that using electronic training can be effective in training nurses working in wards for delirium awareness and in retraining courses. As nurses working in wards are familiar with practical dimensions of clinical issues, they can, by electronic training, strengthen theoretical dimensions of their clinical issues and update their information whenever and wherever they want.

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