The Effect of Increasing Of the Visiting Hours of Patients in Intensive Care Units (ICU) In Reducing the Severity of Delirium in Ebne Sina Hospital of Tehran

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Abstract: *This study aimed to examine the effect of increasing visiting hours of patients in intensive care units (ICU) in reducing the severity of Delirium in Ebne Sina Hospital of Tehran. This study used a quasi-experimental study with two groups of experimental and control which carried out in the form of pre-test and post-test. The study population was including all patients with delirium hospitalized in ICU1 and ICU2 in Ebne Sina Hospital of Tehran that using an available sampling method, 30 patients hospitalized for delirium were selected as samples. Intervention method was in a way that visiting hours of the studied group (ICU1) was increased and the researcher also visited the studied group two times in a day in the morning and evening that each of them lasted 30 minutes, and psychological examination performed by the researcher. The patient's relatives and friends were asked to talk more with the patient during the visiting and recall the memories with him. The severity of delirium of patients during hospitalization and after moving to the ICU1 and ICU2 was measured by questionnaire of disorder assessment of delirium (MDAS). The obtained data was analyzed using univariate and multivariate analysis of variance tests. The results showed that increasing the visiting hours improved the consciousness, disorientation, and memory impairment in patients with delirium.*

Keywords: Delirium, visiting hours, consciousness, disorientation, memory impairment

Introduction

Delirium is a common problem in patients hospitalized in the intensive care unit and its incidence in critically ill patients is more than 80 percent. A review of various studies indicates that the incidence of delirium depending on the severity of the illness, the used scale and very different causes of hospitalization has been reported. So that Koster according to Dyer et al (2009) in a systematic review of 26 studies that were relevant and valid, reported the incidence of delirium from zero to 73.5 percent after surgery. Delirium has some complications such as increased hospital length of stay in ICU, increased mortality, negative impact on the survival of 6 months, separating from ventilator, hospital Pneumonia, the risk of recurrence of delirium, risk of falls, urinary incontinence and skin disorders, permanent disability and lack of improvement in cognitive status (zolfaghari et al, 2012).

Recently, the word "delirium" has been used in two ways. Usually, until the early nineteenth century, it has been used for thought disorder, but later it was used as organic brain disorder with disturbance of consciousness and symptoms associated with it (Berrios, 1981). In 1909, Karl Bonhoeffer, professor of psychiatry in Berlin, defined the delirium as a stereotype pretending of acute brain failure. He introduced several "exogenous reaction" or psychiatric syndromes that are caused by outside disturbances of brain. These reactions were including the delirium, hallucinosis, epileptic stimulation, the auroral mode and amnesia (which in Bonhoeffer definition, it had used as irrelevant thinking). Delirium in DSM III is used as an equivalent to acute psychiatric syndrome.

According to DSM- IV – TR, delirium is a disturbance of consciousness and cognitive changes that occur within a short time. The characteristic symptom of delirium is destruction of consciousness that usually occurs in associated with the general degradation of cognitive functions. Abnormalities in mood, perception and behavior are some of common psychological symptoms, and tremor, astterixis, nystagmus,

ataxia and urinary incontinence are common neurological symptoms. Classically, delirium starts fast (within a few hours to several days) and have a short and fluctuate period and once the causal factors are identified and resolved, rapid recovery could be achieved but each of these characteristic specifications may vary in different patients.

Hence, today delirium is an acute and transient impairment of brain function. Although the core of this syndrome is disturbance of consciousness and attention deficits, but general deficits are also observed in all areas of mental of thought, mood, perception, language and speech, sleepiness, psychomotor and cognitive and other areas. Symptoms of this syndrome are different and its severity in the evening and the early hours of the night is more intense that difficult the quality of diagnosis of delirium. Some of causes of delirium can be drug poisoning, tumor, trauma, infection, cardiovascular disorders, metabolic disorders, endocrine and nutritional.

Risk factors for delirium which are listed in different studies are including age, gender, depression, dementia, anxiety and blood transfusion. In the elderly, decreasing in renal clearance increases the risk of poisoning, for example, with benzodiazepines and this increase predisposes the incidence of delirium. In the case of delirium after surgery, intraoperative and postoperative bleeding, metabolic disorders and cerebral perfusion abnormalities are effective (Asaei et al, 2008).

Studies show that OBSs (Organic Brain Syndrome) are including delirium and dementia. Usually, words such as "dementia" and "delirium" are used about mental disorders caused by lesions released and diffused in the two hemispheres of the brain. This is because the focal lesions, although associated with psychiatric symptoms, each one has their own signs and special characters and if this kind of diseases are called dementia or delirium, we have provided less information regarding the lesions to the reader. On the other hand, diffused brain lesions with clinical symptoms are not entirely appropriate and predictable and words such as dementia and delirium, therefore, do not represent clinically well-defined and clear images, but they are the conditions that change over time. The major differences between dementia and delirium are listed in the following table (Moazzami, 2012). Although delirium is part of a range of psychiatric disorders, including dementia, organic mood disorder, organic anxiety disorder and is characterized with general cognitive disorders like dementia, but its distinguishes from other mental illnesses is that delirium is potentially reversible that distinguishes it from dementia (Keely, 2010; Hazhirpor, 2012). In addition, in this regard it is stated that delirium is usually associated with emotional instability, hallucinations or perceptual errors and inappropriate behavior, impulsive, irrational, or violent and mainly occurs in the form of a reversible acute disorder, but it may be converted to an irreversible disorder (Arjomand, 2006).

The causes of delirium can be categorized as follows:

1) Delirium is due to diseases or treatment of underlying medical conditions.
2) Delirium is due to drug abuse or drug withdrawal
3) Delirium has several reasons
4) Delirium causes are unknown.

Perhaps the most common causes of delirium are prescription drugs and acute infections, especially in the elderly. In more than 40% of cases, delirium is due to prescription drugs, and the abovementioned causes should always be considered as a cause. Many prescription drugs can be a cause to delirium, especially sedatives such as benzodiazepines, Narcotic Analgesics and those drugs that have anticholinergic properties. The major causes of delirium include: central nervous system disease, Systemic disease and drug intoxication or drug withdrawal. In assessing patients with delirium, clinician should consider any medications that the patient takes may have age relationship with the incidence of delirium. (Kaplan and Sadok, 2008).

Table 1- Common causes of delirium

Disorders of central nervous system	Convulsion, epilepsy, migraine, head trauma, brain tumor, brain hemorrhage and ...
Metabolic disorders	Electrolyte abnormalities, Diabetes, hypoglycemia, insulin resistance
Systemic Disease	Infections such as malaria, plague, etc, trauma, burns, nutritional deficiencies, changes in body fluids, heat exhaustion, high altitude

Medicines	Analgesics such as morphine, antibiotics, antiviral and antifungals medicines, steroids, anesthetics, cardiovascular drugs, blood pressure medications, anti-cancer drugs, Anticholinergic drugs, serotonin syndrome
Non-prescription drugs	Herbaceous Herbs, teas and food supplements
Medicinal Plants	Foxglove, hemlock, oleander
Heart	Heart failure, arrhythmias, myocardial infarction, aids heart rate, cardiac surgery
Pulmonary	Chronic obstructive pulmonary disease, hypoxia, acid-base disorders
Glands	Adrenal crisis or adrenal insufficiency, thyroid disease, parathyroid disease
Blood	Anemia, Leukemia, blood dwarf, stem cell transplant
Renal	kidney failure, uremia
Cancer	Primary brain cancer, metastases, paraneoplastic syndrome
Drugs	Intoxication or withdrawal
Poisons	Heavy metals and aluminum

According to DSM -IV- TR, the incidence of delirium is 0.4% of the total population with age above 18 years and 1.1% in those aged 55 and above. Approximately 10 to 30 percent of the patients in general surgery wards, and 15 to 25 percent of the patients in the wards experience delirium during hospitalization. About 30% of the patients in surgical intensive care units and cardiac intensive care units and 40 to 50 percent of the patients in the recovery stage after surgery of hip fracture are experiencing a period of delirium. The highest incidence of delirium occur following cardiology surgery and its incidence in some studies has been reported more than 90 percent. About 20 percent of the patients with severe burns and 30 to 40 percent of the patients with acquired immunodeficiency syndrome are experiencing periods of delirium during hospitalization period. Delirium occurs in 80% of patients dying. Thus, with regard to the mentioned contents, the challenge is that despite all the special treatment tools which are considered for the patients with delirium and professionals, from doctors to nurses, who have completed specialized courses, yet mortality, complications, duration of hospitalization in these patients is high. Existing treatments methods are ineffective for many patients and a large percentage of patients do not respond to the existing treatments for delirium, therefore, the search for effective treatments is necessary.

Neurologists and psychiatrists insist that in the treatment of delirium, the presence of a constant companion of friends and acquaintances or relatives of the patient with delirium in the room is very effective (Arjomand et al., 2006). Hence, the support measures is one of the treatments, that in this method the relatives and friends of the patient should be encouraged to come to visit the patient and communicate with him/her and demonstrate their social protection and speak and appease with the patient. Therefore, the aim of this study is to examine the effect of increasing visiting hours of patients in intensive care units (ICU) in reducing the severity of Delirium in Ebne Sina Hospital of Tehran.

Method

Population, sample and sampling

Considering that the aim of this research was the effect of increasing visiting hours of patients in intensive care units (ICU) in reducing the severity of Delirium in Ebne Sina Hospital of Tehran, this study used a quasi-experimental study with two groups of experimental and control which carried out in the form of pre-test and post-test. The study population was including all patients with delirium hospitalized in ICU1 and ICU2 in Ebne Sina Hospital of Tehran. The studied sample was including 30 patients with delirium hospitalized in intensive care units of ICU1 and ICU2 in Ebne Sina Hospital of Tehran, who were classified into two 15 people groups as experimental and control groups. In this study, the patients with delirium who hospitalized in ICU1 were chosen as the experimental group and the patients with delirium who hospitalized in ICU2 were chosen as the control group.

Research tools and methods for data collection

In this study, the patients with delirium who hospitalized in ICU1 were chosen as the experimental group and the patients with delirium who hospitalized in ICU2 were chosen as the control group. First, after obtaining permission from the respected hospital management and official approval of the ICU1 and ICU2 and families and relatives of the patients, the procedure was performed as follows:

When the patient with delirium was hospitalized in ICU1 or ICU2, the researcher goes to the patient and the questionnaires (MDAS) are completed as pre-test, and when the doctor after 48 to 72 hours permits the transfer of the patients with delirium under study to other sections, the researcher goes again to the patient and the questionnaires (MDAS) are completed as post-test. According to the aim of the study, that increasing in visiting hours reduces the severity of delirium, and the research plan, visiting hours for all the inpatients of ICU1 and ICU2 was an hour daily. With the approval of wards officials, the visiting hours for the patients with delirium hospitalized in ICU1 where included the experimental group of the study, increased to one and a half hours daily, but the visiting hours did not increase for the patients with delirium hospitalized in ICU2 where included the control group of the study. In fact, during this period the control group did not receive any particular program. The severity of delirium in hospitalized patients and after transferring to the ICU1 and ICU2 were measured by questionnaire of disorder assessment of delirium (MDAS).

Research findings

Table 2: Descriptive statistics of the study

Variable	Mean	Standard deviation	Number	Minimum	Maximum
Age	64.30	14.07	30	32	72

Table 3: Descriptive statistics of the scores of severity of delirium in groups

Group		Pre-test			Post-test		
		Number	Mean	Standard deviation	Number	Mean	Standard deviation
Improved consciousness	Experiment	15	5.40	0.51	15	1.40	0.51
	Control	15	5.53	0.52	15	4.40	0.74
	Total	30	5.47	0.51	30	2.90	1.65
Improved disorientation	Experiment	15	5.33	0.62	15	1.33	0.62
	Control	15	5.40	0.63	15	4	0.54
	Total	30	5.37	0.62	30	2.67	1.47
Improved memory impairm	Experiment	15	5.27	0.60	15	1.20	0.41
	Control	15	5.53	0.52	15	4.20	0.56
	Total	30	5.40	0.57	30	2.70	1.60
Total	Experiment	15	16	1.06	15	3.93	1.16
	Control	15	16.40	1.35	15	12.33	1.23
	Total	30	16.20	1.21	30	8.13	4.43

Table 3 indicates that the average scores of pretest for the severity of delirium in experimental and control groups do not have many differences, but the average scores of post-test for the two groups show a clear difference. There is a decline in the scores of post-test in experimental group and the average has decreased from the specified amount. Thus, increasing intervention in increasing the visiting hours in reducing the severity of the patients with delirium has been effective.

The main research question: increasing in visiting hours can be effective in reducing the severity of delirium in patients with delirium?

Table 4: The results of multivariate analysis of variance on the difference between pre-test and post-test scores in the experimental and control groups of patients with delirium (x=30)

Name of the test	Amount	F	Df hypothesis	Df error	Significance level
Pillais Trace	0.939	40.12	8	21	0.001
Hotteling's Trace	0.061	40.12	8	21	0.001
Wilks Lambda	15.283	40.12	8	21	0.001
Roy's Largest Root	15.283	40.12	8	21	0.001

As it could be seen in Table 4, the significant levels of all tests allows the usability of multivariate analysis of variance, this suggests that there are significant differences between the patients with delirium in experimental and control groups at least in one of the dependent variables.

And this shows that increasing in visiting hours reduced the severity of delirium in the patients. And the effect of pre-test score is significant in a significant level of $P<0.001$. Thus, the severity of delirium in the pretest stage had an impact on his/her score in the post-test score.

The first sub-question: increasing in visiting hours can be effective in improving consciousness in patients with delirium?

Table 5: The results of univariate variance of the scores of consciousness of patients with delirium in experimental and control groups (n=30)

Variable	Sum of squares	Degree of freedom	Mean of squares	F	Significance level (p)
Consciousness	67.500	1	67.500	16.87	0.001

As it could be seen in Table 5 and Figure 1, there are significant differences between the patients with delirium in the experimental group who had an increasing in visiting hours and the patients of control group who had no increasing in visiting

hours in terms of consciousness ($P< 0.001$, F=16.87). So the answer to the first sub-question is yes, in other words, increasing in visiting hours improved consciousness of the patients with delirium in the experimental group.
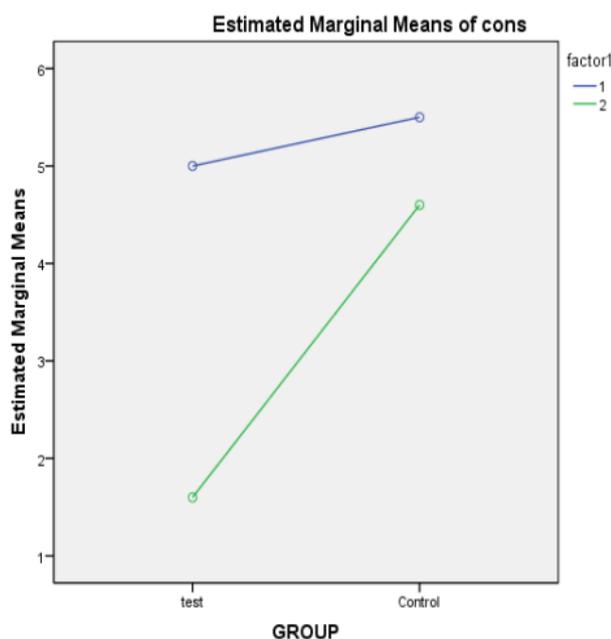

Figure 1: Graphical form of the results of the investigation of averages of consciousness scores of patients with delirium in the experimental and control groups

The second sub-question: increasing in visiting hours can be effective in improving disorientation of patients with delirium?

Table 6: The results of univariate variance of the scores of disorientation of patients with delirium in experimental and control groups (n=30)

Variable	Sum of squares	Degree of freedom	Mean of squares	F	Significance level (p)
Disorientation	53.333	1	53.333	16	0.001

As it could be seen in Table 6 and Figure 2, there are significant differences between the patients with delirium in the experimental group who had an increasing in visiting hours and the patients of control group who had no increasing in visiting hours in terms of disorientation (P< 0.001, F=16). In other words, increasing in visiting hours improved disorientation of the patients with delirium in the experimental group.
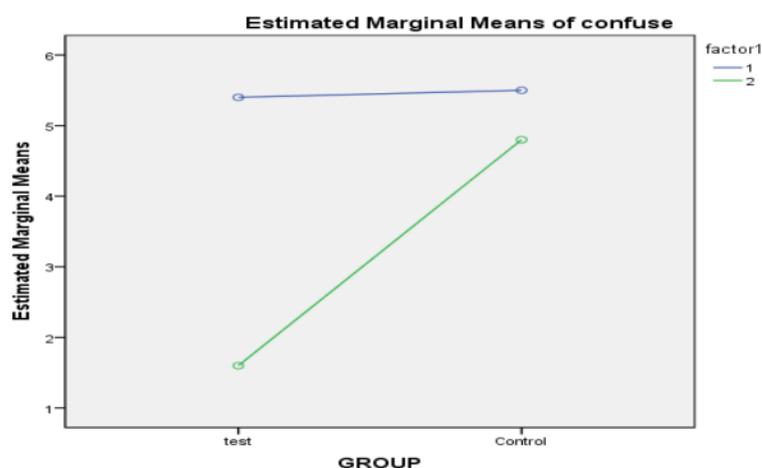

Figure 2: Graphical form of the results of the investigation of averages of disorientation scores of patients with delirium in the experimental and control groups

The third sub-question: increasing in visiting hours can be effective in improving memory impairment in patients with delirium?

Table 7- The results of univariate variance of the scores of memory impairment of patients with delirium in experimental and control groups (n=30)

Variable	Sum of squares	Degree of freedom	Mean of squares	F	Significance level (p)
Memory impairment	67.500	1	67.500	27.79	0.001

As it could be seen in Table 7 and Figure 3, there are significant differences between the patients with delirium in the experimental group who had an increasing in visiting hours and the patients of control group who had no increasing in visiting hours in terms of memory impairment (P< 0.001, F=27.79). In other words, increasing in visiting hours improved memory impairment of the patients with delirium in the experimental group.
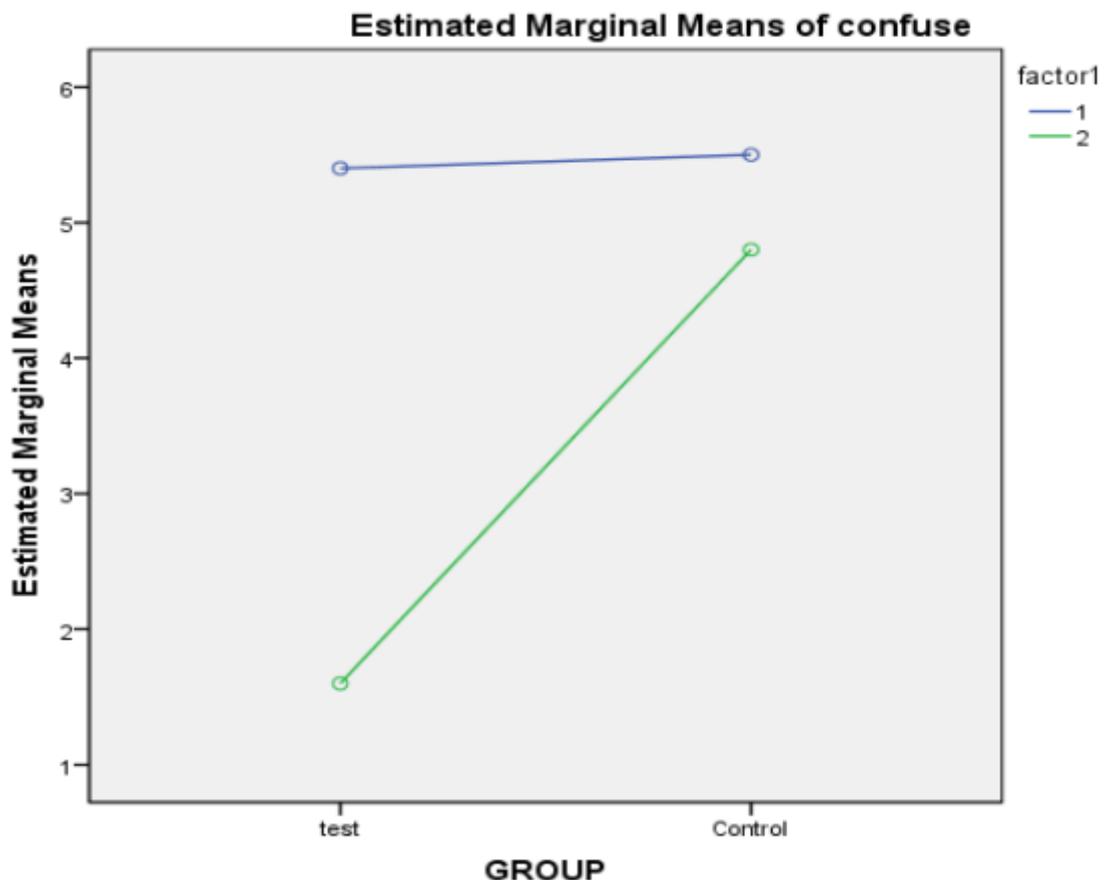
Figure 3. Graphical form of the results of the investigation of averages of memory impairment scores of patients with delirium in the experimental and control groups

Discussion and conclusion

The aim of this study was to examine the effect of increasing in visiting hours in intensive care patients (ICU) on reducing the severity of delirium in Ebne Sina Hospital of Tehran. Therefore, according to previous studies and relying on th existing frameworks and theories in this field, objectives and hypotheses were raised and to respond to them, a suitable methodology was designed. Research findings indicate that there is a significant relationship between increasing the severity of visiting and improving consciousness, disorientation and memory impairment in the patients with delirium, therefore the effectiveness of increasing in visiting hours on improving the overall status of the patients with delirium were approved. The result of this research is consistent with the result of Zolfaghari et al (2012). Thus, according to the results of this study and high numbers of patients with delirium in the hospitals of our country, the presence of a psychiatrist for early detection and control of delirium in medical and surgical hospitals is necessary.

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Conflict of Interests

The author declared no conflict of interests.

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