



# Comparing Changes in Pain and level of consciousness in Open Endotracheal Suction Catheters with Two Sizes: 12 and 14: a Randomized Clinical Trial

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## ABSTRACT

suction can be several complications including pain and increased intracranial pressure and consequently the associated loss of consciousness. The aim of this study was to compare the effect of open endotracheal tube suction catheter with two different sizes 12 and 14 on the pain and level of consciousness intensive care units. In this clinical trial 36 patients in one group and under suction catheter with two sizes 12 and 14, respectively. Episodes of pain in the first to three were evaluated based on the criteria Cpot. Changes in level of consciousness, coma new 4-point criteria measured and recorded. Paired t-test to compare changes and the correlation between pain and average pain level of consciousness of the Pearson correlation coefficient was used. In the third episode, pain during suctioning had the highest score and this amount was significant difference between large and small catheter ( $p = 0.000$ ). A significant relationship between pain and mental status changes were observed in any of the episodes suction. Using a small catheter to suction pressure in the brain and lead to smaller changes in level of consciousness, so to catheters in intensive care unit patients is recommended.

**Keywords:** Suction catheter, pain, level of consciousness

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## INTRODUCTION

In fact, the level of consciousness of two hemispheres of the brain by neurons in the brainstem is to maintain this level of consciousness, useful and natural activity of both hemispheres of the brain is needed and when for any reason, including brain trauma, vascular problems, and metabolic. Function is distorted hemisphere will have the decreased level of consciousness [1].

Measurement methods and criteria of consciousness including coma GCS score of 4 in the meantime, coma scale score of 4 who was discussing and presenting it in recent years, as more accurate and reliable standard a few years more of GCS used [2].

On the other hand, intensive care and pain among patients with decreased level of consciousness is an important phenomenon in the early hours of admission, due to the use of painkillers and relaxants somewhat reduced, but with the beginning of procedures such as suction can be resumed [3].

Pain in patients with decreased level of consciousness is difficult But it can be observable behavioral indicators to assess pain in this group of patients used one of these indicators, Observational pain assessment tool (Critical Care Pain Observation Tool) [4].

Increased pain and lack of understanding of this issue because of neglect or inability to explore the pain, can cause changes in the level of consciousness in the intensive care unit Back level of consciousness was that it would be delayed or cause damage to vital organs such as the brain in the long term due to increased intracranial pressure [5].

On the other hand, early detection of pain in patients with decreased level of consciousness can be hospitalized in intensive care to calm the patient; no change indices increased intracranial pressure and increase the chances of return of the patient [6].

Due to the anonymity and lack of sufficient information and studies on the impact of suction on pain and level of consciousness in the intensive care unit patients with decreased level of consciousness, This study aimed to compare the effect of suction endotracheal tube suction catheter to open with two different sizes 12 and 14 the intensity of pain and level of consciousness in a hospital intensive care unit patients martyr Beheshti in Yasouj.

## MATERIALS AND METHODS

The study is a clinical trial was the pretest-posttest design with two interventions was done. The study population included patients admitted to the intensive care unit, an endotracheal tube and support breathing by a ventilator with volume mode. According to a study Etemadifar et al and bilateral partners and the level of significance and power  $\alpha=0.05$  and 90% test power, and with respect to the standard deviation of the mean oxygen saturation in their study was 5.25 [7] and also with respect to the change forecast at 4.2 percent oxygen

saturation and power of 90%, a sample size of 34 patients in each group were calculated. Loss of samples taken at 10% and finally 38 patients in each group were selected as sample. Inclusion criteria for hospital stays in intensive care units, an endotracheal tube and ventilator connection with the fashion volume, a minimum age of 18 years and maximum 60 years, before suctioning patients were hemodynamically stable in their more than 90 and less than 140 systolic blood pressure, heart rate less than 100 and more than 50 beats per minute and blood oxygen saturation greater than 90 percent and also exclusion criteria included leaving tracheal tube from any cause during the study a need to change the mode of fashion volumetric pressure ventilator, suction requires less than 3 times, a blood clotting disorder and thrombocytopenia diseases, lack of narcotic and muscle relaxant, an underlying respiratory disease, the positive inotrope drugs such as dopamine and crippled limbs up and down the trunk.

Sampling was based on objective and researcher for the study after obtaining a referral from the University of martyr Sadooghi in Yazd, referred to martyr Beheshti hospital and after explaining the process and satisfaction of the authorities referred to special care units and who meet the inclusion criteria are samples (note that this study was the case with repeated measurements, so all samples are eligible under the intervention) choose and research process was explained to the parent or sick family members and patients were enrolled after obtaining written consent. For each patient, the use of small or large suction catheter was determined randomly. Each patient three times per day, each time under a small suction catheter three times per day under suction with great catheter.

Data recorded in the first 5 minutes prior to the intervention, the pain and the level of alertness was measured and recorded. For the study, researchers chose one person trained and skilled in the case of research, data and determine the level of consciousness as fourth grade given him the necessary training and then suction unit patients was conducted by the researcher under the guidelines. Aspiration was performed when necessary and indications for airway suctioning of the discharge, coughing, and airway pressure below the ventilator, reducing O<sub>2</sub>SAT, quivering nostrils, respiratory effort and splash in the endotracheal tube. Pressure 120 mm Hg in a timely manner consistent suction device used in both fixed and Novin S1800 and Manufacturing Company with brands searchers happiness. The maximum suction time was 10 seconds.

In this study patients per day in three turns with both the size of the catheters were suction. Suctioning procedure for the patient 100 percent oxygen for two minutes then separated from the ventilator and suction action during the ten seconds that the pain and the level of consciousness in the first episode was recorded by a colleague. It connected to the ventilator patient for 30 seconds, then for the second time from isolated devices and suction action was over ten seconds the pain and consciousness for the second time by the fellow was recorded.

Patient for 30 seconds was connected to the ventilator and suction was performed for the third time in the same way ad information was recorded in the same way.

To gather the data in this study is a data collection form consists of three parts: The first part includes demographic information such as age and sex of the patient's medical history data

were recorded and observed. The second part of the patient's clinical information, including cause of admission, endotracheal tube size, suction catheter size and mode of mechanical ventilation were recorded, based on a patient's file and view.

The third part includes the amount of pain and consciousness in various stages of suction catheter to be CPOT analogue scale pain scores upon scores were between 0 and 8 were recorded. CPOT scale is valid and reliable study Noghabi et al the reliability and validity of this scale has been approved by Noghabi et al. The Kuder-Richardson reliability through reliability is 77 percent. The method of calculating the level of consciousness with 4-point scale was as follows The overall score benchmark 4 score of 16 means that each of the items included ocular response, motor response, brainstem reflexes and breathing had 4 score [1]. Given the normal distribution of data, parametric tests were used. To compare the changes mean for the relationship between pain and pain of paired t-test and Pearson's correlation coefficient was used alertness.

### FINDINGS

The mean change in pain intensity at different stages of small suction catheter-based pain assessment tool CPOT was scored from 0 to 8 and showed The pain in the first episode suction  $0.14 \pm 3.9$  and  $0.15 \pm 4.1$  in the second episode of suction to the amount reached and this is the third episode was  $0.16 \pm 4.3$  which represents an increase suction pain episodes was increasing. Results showed significant mean pain intensity in patients with small catheter in the first and second episodes ( $p = 0.000$ ) as well as the second and third episodes ( $p = 0.006$ ).

**Table 1** The mean change in pain intensity at different stages large and small suction catheter

P value	Correlation coefficient with GCS	
0/326	0/168	Episode first small catheter
0/202	0/218	Episode second small catheter
0/187	0/225	Episode third small catheter
0/193	0/222	The first episode of great catheter
0/381	0/151	The second episode of great catheter
0/272	0/188	The third episode of great catheter

**Table 2** Comparison between pain and level of consciousness in small and large suction catheter

	Small catheter	Great catheter	value T	P Value
	Mean and standard deviation	Mean and standard deviation		
The first episode suction	3.954±0.149	4.593 ± 0.160	7.667	0.000
The second episode suction	4.167±0.156	4.954±0.158	11.589	0.000
The third episode suction	4.315±0.162	5.056±0.157	12.438	0.000

As shown in Table 2, between pain and level of consciousness at all stages large and small suction catheter there was no significant correlation.

## DISCUSSION

The results showed that pain levels by increasing the number and duration of episodes of large and small suction catheter more and the findings, the study findings Topolois [8], Ordoon [9], Fallahi Nia [4] and Ghazanfari [5] and partners to increase long-term pain in patients with persistent and consistent suction and suction on the level of consciousness great little impact and only the pain in these patients has increased. In a study by Harada that are inconsistent with the findings of this study, it was found that in comparison with both large and small suction catheter cannot be definitely stated that areas such as pain, mortality, changes in physiological parameters and also increases the level of consciousness. Harada in their study, due to the lack of consistency to their small sample size and time changes noted in the study [10-12].

Chen et al study which was conducted in China because Chen et al study on critically ill patients in the intensive care unit had been revealed all patients had a decreased level of consciousness and were suction pain showed a significant change in the level of consciousness of the patient did not happen but that these findings, this study confirms findings [13, 14].

Karahan et al in their study of the physiological changes caused by suction intensive care patients showed Large and small suction catheter can be physiological changes in the patient's pain and make the findings were consistent with study But in the later part of his long suction suggest that this painful and can cause increased intracranial pressure that in turn can cause changes in the level of consciousness. The results of this study are inconsistent with the non-compliance can be attributed to small sample size in this study, the duration of suction that In both studies were different, the size of the catheter used and the time changes and the indicators attributed [15].

### CONCLUSION

The pain intensity during suction catheter is larger than a small catheter And patients feel more pain they are experiencing a large catheter The findings suggest that better than small catheter that is less negative pressure, To suction secretions from patients in intensive care units That patients are constantly suctioning used. The suction can be long and many times pain and increased intracranial pressure, which can Reduces the level of consciousness so should as much as possible, should minimize the duration and the number of suction.

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