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# The effect of deep-slow and regular breathing on pain intensity of burn dressing

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**ABSTRACT**

**Aims**: Burn pain is one of the severest and most consistent types of pain. Patients who suffer from burn usually experience the highest level of pain at the time of dressing change. The aim of the present study is "determining the effect of deep-slow and regular breathing on pain intensity of dressing in patients with burns".

**Methods:** This study is a randomized clinical trial in two intervention and control groups which investigate the pain in 68 patients referring to the burn ward of Kashani hospital of Shahrekord in the period of March 2011 to August 2011 through random and convenient sampling, these patients were in one of intervention or control group. Data were collected with visual analogue scale and analyzed by using SPSS, descriptive statistic test, independent t-test and chi-square.

**Results:** At first the mean of dressing pain intensity score before and after intervention in intervention group was 5.82, 3.66 and in control group was 5.3, 4.8 respectively. There was significant difference between the pain intensity after dressing in intervention and control groups (p=0.04).

**Conclusions:** Using deep-slow and regular breathing can be an important factor in reducing pain intensity during burn dressing.

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## 1. Introduction

From the time that a man comes into existence feels pain which is always with him with his first normal function that is the first breathing in ectopic environment [1]. Pain is the most important factor that makes the patients to ask for help from health-care systems [2] International Council of Nurses (ICN) mentions patients' pain relieving as one of the five main stages of nursing responsibilities [3]. Pain society of America has recommended in this regard to the care providers that they have to consider investigating and recognizing pain as the fifth vital sign [4]. Among this a major group that experience a severe pain is the patients who are suffering from burn. About two million burn injury occurs in the United States annually that three to five percent of these burning are very severe that need hospitalization [5].

Statistically, prevalence of burning in third world countries are the same as those in

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European and Northern American countries but the severity of lesions in burn patients of developing countries is a lot. Also most of the burns are directly related to economic and cultural poverty and the age range of 15 to 30 years old are more vulnerable [6]. High frequency of severe burns and the results that this damage has for the society including; death, illness and social and economic costs is a good reason for the health experts and the society to have a special attention to the burn victims [7]. Also the statistic in Iran shows that in 2008, number of the hospitalized patients in Shahid Motahari burn center was 2749 and from April to December 2009, this number was 1929 which is a remarkable number.

Burn injuries is often painful and debilitating [8]. In the study of Mohamadian 2257 cases of burn was reported in Chaharmahal Bakhtiari in 2012 that 55.57% of that happened in women and 44.43% of that happened in men and the ratio of woman to man was 1.25 [9]. Pain which is caused by burn is very severe and burn wound is there until complete improvement. This pain needs high amount of narcotic and sometimes it is resistant to narcotic. In addition to washing the wounds, dressing and physiotherapy which are doing consecutively increases severity of pain [10, 11].

Patients usually experience pain with the highest level during the treatment especially when it comes to changing dressing [12] that if it is not controlled, several physiological, psychological and social outcomes threat the patient [8]. Acute pain which is not relieved leads to depression, decrease of life quality [13], prolongation of stress response after burn injury, patient's discomfort and dissatisfaction, delayed improvement, prolongation of hospitalization time [8] and problems in accepting treatment measures by the patient [14].

Also pain increases a person's metabolism which exacerbates malnutrition, immunosuppression and susceptibility to infection [15]. Based on this, burn pain relief should be the first priority of all the care decisions. The usual method of controlling pain in burn patients includes; using narcotic analgesic with anti-anxiety drugs [16].

Although narcotics and sedatives reduce discomfort and pain of burn dressing, usually they are not enough [17]. Melzak and Val's valve control theory (1965) was the first theory that stated psychological factors in perceiving pain [18]. This theory includes; physiologic, psychological , cognitive and feeling pain aspects and explains how to control pain by thought, emotions and behavioral methods [19] and also leads the researches towards cognitive behavioral methods of pain management [18].

Since pain is not only a sensory experience and it is also counted an emotional and cognitive experience [20], it is important to use non-pharmacological methods in addition to pharmacological ones to reduce patients' discomfort and pain. Different methods such as: music therapy, study, meeting relatives, massage and also deep-slow and regular breathing are among these non-pharmacological methods [21].

Deep-slow and regular breathing is one of the appropriate non-pharmacological methods which can be used for acute pain such as pain due to the change of burn patients' dressing [22]. There are different types of this technique that includes: blowing with a straw into a glass of water, counting numbers; two, three and four in inspiratory and expiratory. Among the advantages of these methods, it can be pointed to being non-invasive, safe, not having adverse allergic effects, long-term use and simple technique [4].

There were many studies about the effect of every one of non-pharmacological methods of distraction on different patients' pain intensity in recent years and these studies supported using these methods. Since in our country, the effect of deep-slow and regular breathing on burn patients' pain intensity was not evaluated or at least it is not available, this study had been done for "determining the effect of deep-slow and regular breathing on pain intensity of burn patients' dressing".

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## 2. Methods

It was a clinical trial study which had been done on adult male patients hospitalized in burn ward of Ayotallah Kashani hospital of Sharekord. By considering confidence: 0.95% means: 1.96 and test power: 0.80 means 0.84, sample size for every group was 33 people that totally by counting fall of the samples, it was considered 34 people for every group, so 68 patients were chosen from March 2011 to August 2011 through simple sampling method and they were in an intervention or control group randomly.

Age, education level, drug addiction or psychotropic drugs variables were matched. Samples were chosen from the patients that 10 to 25% of all of their bodies were burned, they had second degree burn, they could speak, they were dressed with the usual method of the ward, they were in acute phase of burn (48 to 72 hours after burn), they did not have face and neck burns, they did not have known mental disorders in the past or present, they did not have neurological disorders and as the result numbness in burned limbs and they did not have sever vision and hearing problems.

After obtaining ethics committee approval, the researcher referred to the research environment and by taking written consent from the samples who were qualified and explaining the aims of the study and the importance of that and giving right to choose participating in the study or withdrawing from it at any time and to ensure them about confidentiality of the taken information (demographic features, burn percent, physicians' directions) completed necessary information through using patients' file and getting information from the nurses of the ward and the patients themselves. Deep-slow and regular breathing method and the way of doing that was taught to the patient by the researcher on that same day and it was done with the agreement of the patient , individually and orally when the patient was resting without any tension. A written guide was given to the people of the intervention group. Education was given to the patient in ten minutes through the following method and the educations were used simultaneously.

1. Put the tongue in the floor of the mouth motionless.
2. Breathe slowly, deeply and regularly (deep and slow inspiratory-expiratory-rest).
3. Don't speak during the process.

Samples' skill was evaluated by the researcher during the process. After educating patients it was asked them to practice in order to achieve enough skill in this regard. In addition, patients' demographic information questionnaire was completed by the researcher and by using patient's file and asking questions from the patient. The intensity of burn dessert pain was assessed by Visual Analog Scale of pain (VAS). This scale included ten-centimeter horizontal line which showed continuum with the marked ends "without pain=0 and the severest pain". It was asked the samples of the study to mark the point of the scale (horizontal line) which shows the severity of their pain or say its number to the researcher, then that distance was estimated and the level of pain intensity was achieved. This tool was used widely and due to the standardization its validity and reliability were proved [23].

After completing training course, at the time of dressing change, when there was the list of the patients according to their entry to the dressing room in the ward (intervention or control group), necessary coordination took place regarding this issue with the charge of dressing room. People of intervention group had done deep-slow and regular breathing during dressing for 15 to 45 minutes, and after getting out of the dressing room and returning to the bed completed VAS scale for measuring pain intensity after dressing.

People of control group also completed VAS scale for measuring pain intensity without any intervention (only routine interventions) after dressing, when they got out of dressing room and returned to the bed.

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## 3. Results

The mean age of the patients in intervention and in control groups was 35.2±10.02 and 34.7±10.04 respectively.

The history of drug addiction in intervention and control groups was 28% and 29% respectively. It should be mentioned that in all of these phases, room of the people in intervention group was separated from the room of the people in control group. The education level of 40% of the patients in intervention group and 42% of the patients in control group was diploma. In statistical analysis by using chi-square test, there was no statistical difference among the groups from the approach of all the mentioned variables and also marital status, economical status, receiving painkiller before dressing ($p<0.05$).

Frequency distribution of pain intensity after dressing in two intervention and control groups is in table 1 separately. Considering table 2 after measuring pain intensity of the patients of both groups by using VAS, after intervention, the mean score of pain intensity of burn dressing in intervention group was achieved 3.06±146 and in control group, it was 4.8±1.38 that according to the report of independent t this difference between two groups is significant ($p=0.04$).

## 4. Discussion

Findings of this study indicate that the mean of pain intensity in the samples of the study in control group without using deep-slow and regular breathing was 4.8 and in intervention group with using deep-slow and regular breathing, it was 3.06. Therefore patients felt the least pain intensity when they used deep-slow and regular breathing. This difference between the mean of pain intensity was statistically significant. In another study which had been done by Manzari et al. about the effect of therapeutic communication program on burn patients' pain intensity, results showed that therapeutic communication has caused decrease of patients' pain intensity after dressing change [24]. In the study of Rafieyee et al. with the subject of investigating the effect of jaw relaxation on burn dressing pain intensity, results showed that using non-pharmacological methods of pain relief such as jaw relaxation can cause decrease of burn dressing pain intensity [25].

Jahanban et al. in their study found that in relieving pain and suffering of burn patients, it is necessary to consider psycho-emotional and behavioral response of patients in addition to pain intensity [26]. Also Patreson et al. in their study showed that high score of pain at the time

Table 1: Frequency distribution of pain intensity after dressing in two intervention and control group

| | Pain intensity score | | | | | | | | | | Total (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | <2 | | 2-3.99 | | 4-5.99 | | 6-7.99 | | 8-10 | | |
| Group of the study | F | P | F | P | F | P | F | P | F | P | |
| Intervention group | 4 | 11.1 | 12 | 35.2 | 8 | 23.5 | 7 | 20.5 | 3 | 8.8 | 34 (100) |
| Control group | 3 | 8.8 | 7 | 20.5 | 8 | 23.5 | 10 | 29.4 | 6 | 17.6 | 34 (100) |

F=Frequency
P= percent

Table 2: comparing the mean of pain intensity after dressing in two intervention and control group

| Groups of the study | Before intervention | | After intervention | | Significant level |
|---|---|---|---|---|---|
| | mean | Standard deviation | mean | Standard deviation | |
| Intervention group | 5.82 | 1.46 | 3.06 | 0.95 | p=0.02 |
| Control group | 5.3 | 1.38 | 4.8 | 1.1 | p=0.07 |
| Significant level | p=0.75 | | p=0.04 | | |

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of dressing (by using VAS) after the event of burn patients is important. Also the high score of pain at the time of hospitalization is stronger predictive indicators in compare with the size or the extent of the burn and hospitalization duration [27]. Controlling burn pain from the initial care of emergency room to the rehabilitation care phase is still as a treatment challenge and although it has been considered as an important clinical problem during the last two decades, burn pain is still reported untreatable [28].

## 5. Conclusions

So by considering the raised issues, it can be justified that during dressing change, excitation data of spinal valve is more than inhibition data of relaxation and as the result, the related valve is opened in spinal cord and the information related to pain is transmitted to the brain. Finally, considering the achieved findings of this study and citing other similar researches that used non-pharmacological methods of controlling pain for reducing patients' pain intensity, it can be concluded that deep-slow and regular breathing can also be used as a method that which has not been used for dressing pain intensity of the burn patients and it can be used along with other palliative methods in different patients.

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