Study on effect of surface stroking technique on pain severity in Arthroscopic knee surgery patients

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Abstract: Pain as a main social problem has involved millions of people. Usually pharmaceutical methods use for treating pain but they have side effects which make them less effective. surface stroking technique is one of the effective ways for reducing pain after surgery. The aim of this study was to evaluate the effect of surface stroking technique on pain severity in in Arthroscopic knee surgery patients. This is a clinical trial study on 60 arthroscopic knee surgery patients who were hospitalized in men's orthopedic ward of Al-Zahra and Kashani hospitals. A two part questionnaire was used for collecting data. Samples were selected using easy continuity method and then they were randomly divided into two groups. In intervention group, besides routine treatments, patients were taking surface stroking technique by the researcher for 20 minutes each day and pain severity was evaluated before and after the surface stroking technique. Data was analyzed using descriptive and inferential statistics and SPSS software. Results showed that there was a meaningful different between mean score of pain severity before and after the surface stroking technique in intervention group ($p < 0.001$) but this difference wasn't meaningful in control group ($p = 0.32$). Also comparing the mean score of pain severity in both groups before any interventions showed that there were no meaningful differences ($p=0.34$) but this difference was meaningful after interventions ($p = 0.001$). Considering surface stroking technique as a safe and effective intervention, it could be used as an easy, cheap and executable method for treating pain in all medical health care centers and even at patient's home.
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1. Introduction

from the first seconds after birth human being experience pain caused by the very first action he does in this world, breathing(Nikbakht Nasrabadi, 1996) .Pain is a problem that would never be healed properly and accompanies almost every surgical procedure(Hamdy, 2001).One of the most common surgical procedures on muscular skeletal system is arthroscopic knee surgery which has drawn lots of attention because of its reduced post operational effects. Nurses' fear of patient's addiction to drugs and drug's side effects and also considering this surgery as a no aggressive operation, leave patients with unhealed pain And the only factor for releasing these patients from hospital is reduced pain severity(Ebmezar, 2005).

Therefore reducing patients' pain is one of the main medical goals which are often executed by giving them narcotic drugs but these drugs usually have side effects that make them less effective. So they must be used less or be replaced by other methods. (Pouresmail et al., 1999).another category for reducing pain includes non-pharmaceutical treatment. These treatments may completely not heal patient's pain but it can be a help along with other treatments. surface stroking technique is a non medical treatment used for treating acute pain (Jewell Rich G., 2002).

During past years, many studies conducted on using complementary therapies for reducing pain severity in patients and for supporting these methods but busy schedule of nurses, time limitations for bonding a relation between nurse and patient and lack of research background to support them are problems that have challenged using of these methods (Richards KC, Gibson R, Overton-McCoy al., 2000).Existence f doubt among society and even among physicians is one of the main obstacle toward using of these methods by nurses (Potter PA, Perry AG., 2004). This necessitate a powerful and complete research background to support usage of these methods because existence of a scientific guide which is appropriate for nurses can help them to high quality and more scientific health services to patients. Therefore, this study was conducted to assess the effect of surface stroking technique on pain severity in arthroscopic knee surgery patients in men's orthopedic ward.

2. Material and Methods

This is a clinical trial study which conducted on two groups (intervention and control) and in one step. Independent variable was surface stroking technique and dependent variable was pain severity. Samples were all of the men who had arthroscopic knee surgery and were hospitalized. Inclusion criteria included willingness for participating in me study, receiving surface stroking technique, being fully conscious after surgery, having pain of moderate level (scoring of 4-6 in pain severity scale of 10), receiving analgesics based on physicians' prescription, age range of 15-55 years old, having Iranian nationality, being Muslim and speaking Persian. Having history of muscle-skeletal pain, being mentally retarded, being blind, having active mental disorder, having the history of breaking and surgery in lower limb, having addiction to drugs, pain killers and psychotropic substances and having limitations like spinal damages and neurological diseases were exclusion criteria. Data was gathered using a two part questionnaire (it was completed by the researcher). First part included demographic data like employment status, marital status, educational status and age of the patient.

Second part was for measuring pain severity in patients before and after intervention using 10-scale pain assessment tool. This is a standard tool and is one of the most valid and simple ways to measure pain severity and has been used widely in researches inside and outside the country and it has reliability and validity (Closs et al., 1998).The researcher entered research environment a day before patients' surgery and after introducing themselves, explaining goals of the study and receiving written consent from patients, divided them randomly into two groups and intervention and control based on ethical issues and inclusion and exclusion criteria. First patients' demographic data was filled in the questionnaire. The researcher entered the medical center on the surgery day. After surgery, getting into ward and becoming conscious again, selected patients entered the study. Sampling was done using simple continuous method and then 60 patients were selected and randomly divided into two groups. In the intervention group, first the pain severity was measured before applying the intervention. Then researcher gave surface stroking technique for patient's healthy foot, hands and upper parts of the shoulders shallowly for 20 minutes and then measured pain severity again. In control group, at the beginning of the experience and after 20 minutes without applying any intervention pain severity was measured and recorded in the questionnaire. Therefore data was gathered for 4 months, from March 2009 to June 2010 and then was analyzed using descriptive (mean and SD) and inferential (independent t, paired t and chi square) statistics.

3. Results

Results showed that mean (SD) of age in intervention and control group was 29.47 (7.17) and 29.33 (7.39) respectively. Results of t-test showed that there was no significant difference between both groups considering age range, so they were similar considering this variable.

The mean score of pain severity in intervention group before and after receiving surface stroking technique is mentioned in table 1. Statistical paired t with $p < 0.001$ showed that mean score of pain severity in intervention group before and after surface stroking technique has changed significantly.

Table 1. The mean score of pain severity in the intervention group

Intervention group	before massaging		after massaging		Paired t-test	
Mean	SD	Mean	SD	P value	T	
Score of pain severity	5.1	0.84	4.03	0.76	P<0.001	12.99

The mean score of pain severity in the control group at the beginning of the study and after 20 minutes was measured as it is mentioned in table 2. Results of paired t-test with p=0.32 showed that there was no significant difference between the score of pain severity at the beginning of the study and after 20 minutes in the control group.

The mean score of pain severity (SD) before applying intervention was 5.1 (0.84) and 4.9 (0.76) in the intervention and the control groups, respectively. Results of paired t-test showed that there was no significant difference between the mean score of pain severity before applying intervention in both groups.

The mean score of pain severity (SD) after applying intervention was 4.03 (0.76) and 4.83 (0.83) in the intervention and the control groups, respectively. Results of independent t-test showed a significant difference between the mean score of pain severity after applying intervention in both groups ($p = 0.001$).

4. Discussions

Since variables like age, marital status, educational status and employment might have effects on pain severity in patients (Grealish and Lomasney, 2000). Whiteman B so both groups were evaluated to be similar regarding these variables. Results of statistical tests showed that there was no

significant difference between both groups and both groups were similar regarding these variables.

Results showed that there was a significant difference between the mean score of pain severity before and after surface stroking technique in the intervention group ($p < 0.001$). It means that there pain severity was reduced after receiving massage therapy; but considering that the mean difference of pain severity before and after intervention is about "1" and pain is still in the average range, so this method cannot remove all of the patient's pains. Hardener mentioned that the aim of using non medical treatments for pain is to help and complete medical treatments. Applying these methods my not remove all pains but these interventions could be helpful to other pain treatments (Herdtner, 2000).

In Buckley study which was conducted to assess the effect of touching methods on pain severity after surgery in arthroscopic knee patients, results of paired t-test with $p < 0.001$ showed that the mean score of pain severity (SD) in the intervention group was reduced from 5.01 (0.78) to 4.02 (0.65), which confirm the results of the present study (Buckley, 2007).

Wang et al study was conducted to assess the effect of massaging arms and legs after abdominal surgery and the results of paired t-test showed that the mean score of pain severity (SD) after massaging reduced from 4.6 (0.95) to 2.35 (0.76) ($p < 0.001$, $t = 8.154$)(Wang and Keck., 2004). So these results also confirm the results of the present study.

Regarding this matter, Brunner wrote that to decrease the pain after orthopedic surgery complementary medicine methods like mind concentration, inculcating and back massaging could be useful (Smeltzer et al., 2008).

Researchers believe that the difference between mean scores of pain severity is significant in the intervention group because of the specified time duration considered for massaging patients in this group. Probably the time duration of massaging in this study was enough to see the parasympathetic respond and functioning of endocrines which increase the secretion of endorphins and could reduce pain severity in patients.

Table 2. The mean score of pain severity in the control group

Control group	at the beginning of the study		after 20 minutes		Paired t-test	
Score of pain severity	Mean	SD	Mean	SD	P value	T
	4.9	0.76	4.38	0.75	0.32	1

Results of pain severity in the control group showed that there was no significant difference between the mean score at the beginning of the study and after 20 minutes ($p = 0.32$). It means that their pain severity didn't change significantly after 20 minutes.

In a similar study by Richards to assess the effect of massaging on the pain severity of patients in special wards, results showed that after 10 minutes, the mean score of pain severity in the control group did not change significantly (Richards, 1998). Researcher believes that the mean score of pain severity did not change in the control significantly after 20 minutes because routine treatments were not enough to reduce patient's pain and couldn't reduce their pain severity significantly.

There other reason might be that in this study all sample were male and this could have an effect on patient's psychodynamic and physiologic responds toward pain and cause a different result than those studies that had both female and male samples.

Results showed that the mean score of pain severity in both groups was not significantly different at the beginning of the study. This means that pain severity was similar in both groups at the beginning of the study before applying any intervention.

Results showed that there was a significant difference between the mean score of pain severity of the intervention group and the control group after 20 minutes of applying intervention. This difference shows that surface stroking technique could reduce the pain severity in the intervention group's patients.

Bagheri et al (2006) study was conducted to assess the effect of massage therapy on the pain severity of stoke patients and results showed that the mean score of pain severity was reduced from 2.3 to 1.3 after 20 minutes of massage therapy (independent t-test with $p < 0.01$).

Finally, based on the results of the present study and previous similar studies, it could be concluded that among different methods of massaging, light massaging technique or stroking because of its special characteristics like being mild, having no side effects, not being painful and not needing complicated tools could be more helpful than other kind of massaging for reducing pain severity after orthopedic surgeries, in patients who have mild to severe pains and the duration of rehabilitation programs in acute phase is short and limited to hospitalized duration. It is suggested to apply this kind of massaging, which is practicable in a short time, at this phase to prevent or reduce secondary

complications, moving dysfunctions of involved organ and pain severity. By teaching this method to health care providers, patients and their families and encouraging them to apply it after discharging from hospital, it could have an effective role to control pain severity in patients and reduce treatment expenses for families and health care system. Therefore the quality of treatment and caring and also patients' lives would be increased.

The Authors declare that have no conflict of interest in this study and ethical committee approved the study.

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