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# The effect of music therapy on postoperative pain intensity in patients under spinal anesthesia

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**Aims**: Music as a non-pharmacological and inexpensive nursing intervention can be used easily as complementary technique and can be effective in reducing pain with other methods. The aim of this study was to investigate the effect of music therapy on postoperative pain intensity in patients under spinal anesthesia.

**Methods**: In this semi-experimental study which has been done in 2011 in the operation room of Baqiyatallah and Khanevadeh hospital in Tehran, sixty male in ASA (American society of Anesthesiological) 1 between 18-44 years old undergoing urological and abdominal surgeries with spinal anethesia were studied. Patients were randomly divided into two groups of thirty persons. Patients in music group listened to Huan Sepastian Bakh's music about six minutes after induction of spinal anesthesia to the end by headphones. The control group did not receive any intervention. About three hours after surgery and before receiving any narcotic drugs, postoperative pain was measured and recorded by visual analog scale. Also consumption of narcotic drugs was recorded in the 24 hours after surgery.

**Results**: Comparison of pain intensity after the operation has been done in two groups by using Manvitni test. Findings of the study showed that music group shows a significant decrease compared to the control group (p=0.005). Pethedine consumption had a significant difference after surgery in both groups (p=0.041).

**Conclusion**: Hearing the music during surgery with spinal anesthesia can reduce postoperative pain. The researcher offers to use music as a complementary method in patients in order to reduce prospective pain.

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## 1. Introduction

Pain is a problem that is almost along with all the surgeries. Studies showed that almost 53 million surgeries have been doing in America annually and 30% of patients suffer from mild

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pain, 30% moderate pain and 40% severe pain after the surgery [1]. So relieving that is one of the medical aims. Different actions like using narcotic analgesic drugs in order to relieve the pain are used. But side effects of these drugs such as; respiratory depression, nausea and vomiting threaten the patients. Also using these drugs imposes high expenses to treatment health system and it has the danger of addiction and dependency [2]. Pain caused by surgery causes mental, security and behavioral reactions that can have negative effect on anesthesia process and the recovery after the surgery.

Music is an inexpensive, non-pharmacological, noninvasive nursing interaction that has no side effects that can be effective along with other methods. [3, 6-8]. Although music effect mechanism in reducing the pain is not clear completely, increasing of Mio receptors on the cells surface and increasing of Endorphins are said as the probable mechanism in this context [3].

There has been lots of studies about effect of music on pain level and using narcotic drugs of patients before and after surgeries. Sen and et.al in 2010 divided seventy patients undergoing caesarean section surgery into two groups of control and experimental group, experimental group heard the music for one hour after the surgery via headphone. Then pain after surgery and the amount of analgesic drugs were assessed in both groups. The results showed that music after the surgery in experimental group compare to control group caused reducing the pain and amount of analgesic drugs [9]. Study of Vajoli and et.al in 2011 showed that music after surgery causes reducing of the pain in patient undergoing abdominal surgery [10]. But the effect of music during spinal anesthesia was limited. There has been no study in our country about effect of music during spinal anesthesia or at least it is not in access. So this study has been done with the aim of investigating the music effect during spinal anesthesia on analgesic drugs consumption and also intensive pain after surgery in the patients above.

## 2. Methods

In this semi-experimental study, the effect of independent variable of music on dependant variables of pain intensity and analgesic drugs consumption have been studied in patients undergoing spinal anesthesia. This semi-experimental study has been done in 2011 in operation room of Baqiyatallah and Khanevadeh hospitals in Tehran. Sixty male in ASA 1 between 18-44 years old undergoing urological and abdominal surgery with spinal anesthesia were studied. Sampling method of this study at first was based on aim and then the samples were divided randomly into two groups of experimental (headphone with music) and control (without intervention). Criteria of entering the study included: complete conciseness, reading and writing ability , having hemodynamic stability, not having antianxiety and analgesic drugs consumption, not having hearing disorders, not having addiction to cigarette narcotics, sedatives and alcohol and ..., not having mental and anxious sickness history, not having surgery or spinal anesthesia history and the surgery was in morning shift selectively. Exit criteria included; occurrence of any complication during surgery and anesthesia and showing dissatisfaction for continuing the study and also using general anesthesia and sleeping aid during the study.

Number of samples were determined at least 16 persons from the study society for every group by using Poukak method and Gigi table (f (a,b) =10.5 and B=0/1 and a=0/05 ) that for making up the probable downfall of the samples 14 persons were added and at the end 30 persons were studied in every group. Data collection tools in this study included three parts; first part was the demographic characteristics paper, second part was document checklist of narcotic drugs and the third part included visual criteria of pain.

work method: for choosing the samples, in the



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Table1: Distribution of the researching samples according to the characteristics of demographic.

| | variables | Music group | | Control group | |
|---|---|---|---|---|---|
| | | Frequency distribution | relative | Frequency distribution | relative |
| Age rank | 18-28 | 26 | 86/7 | 27 | 90 |
| | 29-39 | 2 | 6/7 | 1 | 3.3 |
| | 40-50 | 2 | 6/7 | 2 | 6.7 |
| Marital status | single | 19 | 63.3 | 18 | 60 |
| | married | 11 | 36.7 | 12 | 40 |
| education | primary | 4 | 13.3 | 5 | 16.7 |
| | secondary | 5 | 16.7 | 8 | 26.7 |
| | diploma | 12 | 40 | 12 | 40 |
| | University education | 9 | 30 | 5 | 16.7 |
| occupation | labor | 4 | 13/3 | 3 | 10 |
| | employee | 8 | 26.7 | 8 | 26.7 |
| | Self-employment | 11 | 36.7 | 11 | 36.7 |
| | unemployed | 7 | 23.3 | 8 | 26.7 |
| economic | poor | 22 | 73.3 | 21 | 70 |
| | average | 77 | 23.3 | 8 | 26.7 |
| | good | 1 | 3.3 | 1 | 3.3 |
| Surgery type | abdominal | 5 | 16.7 | 5 | 16.7 |
| | urological | 25 | 83.3 | 25 | 83.3 |

Table (2): Frequency distribution and relative frequency distribution of pain intensity mean in two groups of music and control.

| Pain intensity average / group | Music group | | | Control group |
|---|---|---|---|---|
| | Frequency distribution | relative | relative | Frequency distribution |
| (painless )0-1 | 0 | 0 | 0 | 0 |
| (mild pain) 2-3 | 4 | 13.3 | 0 | 0 |
| (moderate pain) 4-5 | 8 | 26.7 | 5 | 16.7 |
| (severe pain) 6-7 | 10 | 33.3 | 7 | 23.3 |
| (intolerable pain)8-10 | 8 | 26.7 | 18 | 60 |

morning of the surgery in the scrub room , the patients were visited and in the case of having entering criteria to the study and showing written satisfaction based on participating the research, after necessary explanations, at first patients were chosen based on aim and they were divided randomly into two groups. Work procedures were explained for every patient completely. All the patients were 5% under spinal anesthesia by 2 cc of Lidocaine

During the operation, normal serum of Salin or Ringer was used for all the patients. Operation position was flat in all the patients, the time for doing the surgery was between half an hour to one hour and in the case of prolongation of the operation ( more than one hour) the sample was removed. From six minutes after spinal anesthesia to one minute before surgical wound closure, the patient heard the music continuously [9]. For music therapy of the



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Table3: Comparison of mean and standard deviation of the amount of Petedian consumption (according to milligram) after the operation in two groups by using the statistic test of independent T.

| group | music | control |
|---|---|---|
| Pedetin (average ± standard deviation | 14/00±1709 | 22/33 ± 18/78 |
| Independent T test(p) | | 0/041 |

patients of experimental group 1, headphone and Marshal Company's MP3 player and a gentle music were used. The time of hearing the music and also the time of the operation and the operation type were documented for every patient. There was no intervention in the control group. the pain after the operation was measured and documented by visual analog scale of pain for three hours after the end of the operation. According to this criteria zero shows that there is no pain and 10 shows the most level of experienced pain by the person. Also the amount of narcotic drugs consumption was documented during 24 hours after the operation. The used gentle music in this study was some parts of gentle music of Sepastian Bakh[11]. Changing the music and the album and also the volume was in the control_of the patient.

In order to analyze the data, SPSS16 software and descriptive-analytical tests were used. For determining demographic characteristics, descriptive statistics (distribution tables) was used and for comparing amount of narcotic drugs consumption in two groups, independent T-test was used. In order to facilitate description of the data and regulation of the related table, it was considered like this; intensity of 0-1 as the lack of pain, pain intensity of 2-3(mild pain), pain intensity of 4-5 (moderate pain), pain intensity of 6-7 (severe pain) and pain intensity of 8-10 (intolerable pain).

## 3. Results

The mean age of the samples was 24/13_+6/25 years old. With considering the study society, the samples homogeneity in (marital status, age, occupation, education, economic position and surgery type) did not have significant difference (p>0.05). (Table 1)

The average and the standard deviation of pain intensity was 5.96±1.77 in the music group and it was 7.40_+1.54 in control group. According to that the data related to pain after the surgery were in rank, they were considered as the abnormal assumption_and by using Manvitni's nonparametric test the mean of postoperative pain intensity was compared in two groups. The test showed significant difference (p=0/005)

Comparison of the mean of narcotic drugs consumption after the operation was done by using independent t-test. The results showed that Petedian consumption after the operation had significant difference in two groups (p=0/041). (Table 2)

## 4. Discussion

Most of the using methods for reducing the postoperative complications such as; pain and the amount of analgesic drugs consumption are based on drugs intervention. Our effort in this study is the effect of music as a non-pharmacological and inexpensive intervention in reducing the postoperative complications.

In this study it has been seen that postoperative pain level and also the amount of narcotic drugs consumption (Petedin) in music group had significant reduction in compare with the control group. This point shows that the effect of music during the operation is in the operative pain level reduction and the amount af narcotic drugs consumption after the operation. Sene and et.al in 2010 showed that music after caesarian section operation causes pain reduction after the operation and also it causes



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reduction of narcotic drugs consumption [12]. been shown that music causes pain reduction in patients under abdominal surgery[10].Zhang [9] and Lepage [13] emphasized on the effect of music on necessary analgesic reduction during spinal anasthesia in their studies. Also in studies of Alerd[8], Down[5] and Tilver[14], it has been indicated that the music has effect on posoperative pain reduction which is similar to the results of this study.

Some researchers believe that music as the senses deviation acts like a mask on the annoying sounds of the operation and leads to reduction of stress and anxiety and reduction of narcotic drugs consumption in the following.

In this study it has been seen that almost 60% f the patients in music group and almost 83% of the patients in control group suffer from intensive and intolerable pain. Intensive pain after the operation is inevitable and most of the patients exaggerate in explaining their pains. In legal point the fear of addiction to the narcotics which is the optional treatment of the moderate to the severe pain had caused that there was no prescription of narcotic drugs for years. these believes and legal issues have still high prevalence among underdeveloped countries and in many cases, patients' pain after the operation has been considered as a kind of exaggeration and applying for giving narcotic, so prescription of analgesia method and even narcotic which is the simplest analgesia method is inevitable[16]. Using the used methods in reducing the postoperative intensive pain is necessary. In this study music has been used as a complementary method in reducing the postoperative pain.

## 5. Results

The findings of the study indicate the significant effect of music on reducing the postoperative pain and amount of narcotic drugs consumption. So music can be used as a complementary and noninvasive method in relieving postoperative pain and it can cause Also in Vajouki and etal's study in 2011 it has reducing the narcotic drugs consumption after the operation in patients under spinal anesthesia.

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