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The effects of massage and music on pain, anxiety and relaxation in burn patients: Randomized controlled clinical trial

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ABSTRACT

Aim: The aim of this study was to evaluate the effects of massage and music on pain intensity, anxiety intensity and relaxation level in burn patients.

Introduction: Pain and anxiety are common among burn patients, but there are many physical and psychological consequences.

Methods: This randomized controlled clinical trial with factorial design 2×2 included 240 burn patients admitted at Shahid Motahari Burns Hospital, Tehran, Iran, between September 2013 and May 2015. The patients were allocated into the following groups: (i) control ($n=60$) receiving the conventional primary care, (ii) music group ($n=60$) receiving their favorite songs, (iii) massage group ($n=60$) receiving Swedish massage, and (iv) music-plus-massage group ($n=60$) receiving a combination of their favorite songs and Swedish massage, for 20 min once a day for 3 consecutive days, using random permuted blocks of sizes 4 with a 1:1 ratio. To collect the data before and after the intervention, a specific Visual Analogue Scale (VAS) was applied for pain intensity, anxiety intensity, and relaxation level. The data were analyzed using SPSS, version 21.

Results: Our findings showed a decrease in pain and anxiety intensity and an increase in relaxation level in all three intervention groups as compared to the control group, indicating there was no significant difference among the interventions applied. Furthermore, following application of each intervention, pain and anxiety intensity decreased and relaxation level increased in the intervention groups as compared to before intervention.

Conclusion: Our results revealed that music, massage and a combination of both interventions were effective on reducing pain and anxiety intensity and increasing relaxation level. Due to easy, low-cost and availability of the interventions applied, these complementary therapies are suggested for the burn patients. Although application of a single complementary therapy is cost-effective, further studies are required to determine the most effective and cost-effective method to improve the burn care.

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1. Introduction

Tissue damages resulting from burns are considered as one of the most traumatic injuries and global health crises. Physical and psychological consequences following pain are so common among burn patients that eventually result in chronic pain [1,2]. There are different types of burn pain as follows: (i) background pain including rest pain and pain following burn, (ii) breakthrough pain including an unexpected increase in pain intensity, and (iii) procedural pain including pain due to procedures such as wound dressing [3]. Anxiety that is closely associated with pain is experienced following burns and during wound healing process [4]. It means that pain causes anxiety and stress that consequently exacerbate the pain [5].

Although complete pain relief probably looks unrealistic, the aim is the reduction of pain as much as possible [3]. The most common method to control the pain in burn patients is the use of opioid analgesics along with anti-anxiety drugs. The use of narcotic analgesics cannot fully relieve pain in burn patients. The non-pharmacological therapies are used to reduce the need for analgesics in order to limit their side effects, indicating that after anxiety reduction and pain relief, the cycle of pain and anxiety will be broken and minimized [5].

Massage is identified as the art of touching and manipulating the soft tissues in order to achieve therapeutic results, including peace of mind, comfort, as well as healing and repair [6]. Massage as a tradition method increases the oxygen absorption. Furthermore, massage can increase cell proliferation that leads to eliminate the waste and detoxify the body, resulting in peace of mind and relaxation [7]. Swedish massage is applied to decrease the symptoms associated with some medical disorders. This massage includes the following five techniques to improve the blood flow to the soft tissues: (i) effleurage, (ii) petrissage, (iii) friction, (iv) tapotement, and (v) vibration [8].

Music affects the central nervous system and causes distraction from the pain, leading to a state of relaxation in a patient [9]. Musical intervention means regular use of music to provide, maintain and improve physical and mental health; therefore, in a therapeutic environment or stressful situation, music directly causes desired changes in emotions and behavior of an individual [10]. Selection of a familiar, favorite and cultural music is considered as the key point of this intervention [11]. In a systematic review, Chi and Young have indicated that for maximizing the effectiveness, the music type must be based on self-interest and individual preferences [12]. In a meta-analysis, music has been described as an effective method in reducing pain and anxiety after surgery [13], but better quality methodological studies are needed to evaluate the effect of music [13,14].

Pain management in burn patients is a complicated and challenging problem for nurses, so it should be considered at the top of research priorities [4]. In addition, it is necessary to evaluate the complementary therapies such as massage and music. Therefore, the aim of this study was to evaluate the effects of massage and music on pain intensity, anxiety intensity and relaxation level in burn patients.

2. Method

2.1. Study design

This randomized controlled clinical trial with factorial design 2×2 included all burn patients admitted to Shahid Motahari Burns Hospital, Tehran, Iran, between September 2013 and May 2015. The participants were compared in terms of pain intensity, anxiety intensity and relaxation level before and after interventions.

2.2. Sample

The burn patients were selected by convenience sampling method based on the following criteria: (i) over 18 years old, (ii) no damage to respiratory system (after examination of respiratory system), (iii) burn involving 10–45% of total body surface area (TBSA), (iv) ability to communicate, (v) three days after burns occurred (none of participants were in acute phase of burn), (vi) being hospitalized during study (to access study samples for three consecutive days), (vii) absence of difficulty hearing or deafness, and (viii) neurological disorders and numbness. After a pilot study, we assumed a required sample size of 60 individuals for each group to determine the changes in pain score with a 95% confidence level, 80% power, effect size of 12.5 (Cohen's $d=12.5$), and 5% drop-out rate. Therefore, participants ($n=240$) were divided into 4 following groups using random permuted blocks of sizes 4 with a 1:1 ratio: (i) control group ($n=60$), (ii) massage group ($n=60$), (iii) music group ($n=60$) and (iv) music-plus-massage group ($n=60$). Study flow diagram for recruitment and allocation to study groups is shown in Fig. 1.

2.3. Intervention protocols

2.3.1. Music intervention

On the first day of the study, the researchers asked the patients to introduce 4 favorite songs without words. After the preferred songs were prepared for the music group, patients were asked to lie in a bed or chair in comfortable position in their room. Headphone (without blocking ambient noise) was placed on the patient's ear and their favorite songs were played using MP3 player for 20min once a day for three consecutive days, while the patient was asked to close eyes and focus on music. During three days, the same favorite songs were played for each patient. Adjusted volume control was determined by the patients. A researcher was in the room with the patient to control the treatment process.

2.3.2. Massage intervention

Swedish massage was performed on patients of the massage group for 20min once a day for three consecutive days by a researcher who was already trained to perform this massage. The patients were asked to lie in a comfortable position and covered with a clean sheet. Only, the specific body part being massage was undraped. Swedish massage was applied only on the healthy tissues, at a distance greater than 4–5cm from the burned tissues, using pure bitter almond oil.

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