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# Itching, Pain, and Anxiety Levels Are Reduced With Massage Therapy in Burned Adolescents

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Burn can be among the most severe physical and psychologic traumas a person may face. Patients with burns commonly have severe itching and pain. Severe itching has also been associated with anxiety, sleep disturbance, and disruption of daily living activities. The addition of complementary treatments to standard care may lead to improved pain management and may offer a safer approach for reducing pain and procedural anxiety for patients with burns. The authors conducted an experimental study to examine whether the effects of massage therapy reduced burned adolescents' pain, itching, and anxiety levels. Sixty-three adolescents were enrolled in this study shortly after admission (mean days =  $3 \pm 0.48$ ) at a burn unit in a large university hospital from February 2008 to June 2009. The measures including the pain, itching, and state anxiety were collected on the first and last days of the 5-week study period. The participants had an average age of  $14.07 \pm 1.78$  years and came usually from the lower socioeconomic strata. The authors observed that massage therapy reduced all these measures from the first to the last day of this study ( $P < .001$ ). In most cultures, massage treatments are used to alleviate a wide range of symptoms. Although health professionals agree on the use of nonpharmacologic method for patients with burns, these applications are not yet common. (J Burn Care Res 2010;31:429–432)

Burns are injuries to the tissue that result from heat, electricity, radiation, or chemicals.<sup>1,2</sup> Burns cause pain in serious degrees and an unpleasant situation.<sup>3,4</sup> Burn can be among the most severe physical and psychological traumas a person may face. In various studies, it has been found that burns have an important place among application causes to emergency clinics.<sup>5,6,7</sup> Although burns are frequently observed in children and the elderly, adolescents are also much affected from them.<sup>1</sup> Polat et al<sup>7</sup> has determined that the frequency of burns is 2.7%, and burns are observed equally (50%) in both preschool and adolescence period. Severe burns that need private, intensive, and long-term care can be painful and stressful for young patients.<sup>8</sup> Because of the significance of body image in adolescents, the condition

that changes the physical appearance causes pain, anger, and anxiety in them.<sup>9,10</sup>

Patients with burns commonly have severe itching; the reported incidence is as high as 87% for adult patients with burns. Severe itching has also been associated with the anxiety, sleep disturbance, and disruption of daily living activities.<sup>11</sup> The addition of complementary treatments to standard care may lead to a greater pain management and may offer a safer approach for reducing pain and procedural anxiety for patients with burns. For example, in controlled studies, it has been reported that anxiety, pain, itching, and levels of cortisone hormone of adult patients with burns who received daily massage therapy were also reduced. Besides, these studies have suggested that the staff members such as nurses working in burn unit may apply similar massage techniques during standard care.<sup>8,11,12</sup> Although alternative or complementary treatments may be helpful in the reduction of itching or pain in patients with burns, these interventions are not commonly used.<sup>11</sup>

A search of the literature reveals that there is no published work on the effect of massage therapy in adolescents. For this reason, we conducted an experimental study to examine whether the effects of massage therapy reduced pain, itching, and anxiety levels of adolescents with burns.

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## METHOD

### Participants

Sixty-three adolescents were enrolled in this study shortly after admission (mean = 3 ± 0.48 days) at a burn unit in a large university hospital from February 2008 to June 2009. Between the dates of the study, all adolescents who were admitted to clinic and accepted the study conditions were included in this study. Female participants were less than males. The participants had an average age of 14.07 ± 1.78 years and came usually from the lower socioeconomic strata. The economic strata of the participants were described as income more than expenditure (high), income = expenditure (middle), or income less than expenditure (lower) using self-report by the subject. The participants did not differ in demographic variables (Table 1).

The sampling criteria of the study were as follows:

- Age between 12 and 18 years,
- Second or third degree of burn, and
- Having no developmental problem or other disabilities that would make the communication difficult and no chronic diseases.

After informed consent was obtained, the participants chosen by nonprobability convenience sampling method were assigned to massage therapy (massage group) or standard medical care (control group). The clinic doctor rated the patients with burns according to the admission dates, and so the massage and control groups were made up. The participants in each group were comparable in cause of burn, degree of burn, and percentage of body burn (Table 2).

### Treatment Procedures

**Standard Treatment.** During the study period, all adolescents with burn injuries continued to receive their standard medical care, which included physician's examinations and medications (for itching, pain, and anxiety). No significant differences were found between the two groups in the type of medication they received. The patients were given topical agents, such as silver sulfadiazine, used on the burn wounds. Routine care of patients with burn injuries at the Atatürk University Burn Center was given to all subjects. After admission, wound care and debridement were done twice daily with a combination of narcotic analgesics, antipruritic, and benzodiazepine sedatives for comfort. Silver sulfadiazine cream was applied on the wounds to reduce bacterial colonization. Thirty-one participants who were receiving standard care were assigned to the control group.

Table 1. Demographic data

Variables	Massage Group	Control Group	P Value; $\chi^2$ Test
Age (yr)			
12-14	21 (65.6)	18 (58.1)	$P = .60; \chi^2 = 0.38$
15-18	11 (34.4)	13 (41.9)	
Sex			
Male	18 (56.3)	16 (51.6)	$P = .61; \chi^2 = 0.39$
Female	14 (43.8)	15 (48.4)	
Economic status			
Middle	12 (37.5)	8 (25.8)	$P = .50; \chi^2 = 1.38$
Lower	14 (43.8)	14 (45.2)	
High	6 (18.8)	9 (29.0)	
Total	32 (100)	31 (100)	

Data are represented as n (%).

**Massage Therapy.** Thirty-two participants who were receiving standard care were assigned to the massage therapy group. These patients received 15-minute massage therapy sessions twice a week during 5 weeks.<sup>11</sup> The massage therapies were held just before the medical treatments and dressing in the mornings. The massages were conducted by trained massage therapist. The therapies were done by the same therapist. Johnson & Johnson butter (Baby Oil NaturalCalm, pH 5.5; Johnson & Johnson, New Brunswick, NJ) was used as a lubricant throughout the massage, and the following massage techniques were applied: 1) the strokes with moderate pressure were applied to the healthy tissues around the localized wound areas (not skin grafted), 2) by using the pads of their fingers, the therapists conducted pressing movements along the edges of the wound and moving toward the center of

Table 2. Burn characteristics

Variables	Massage Group	Control Group	P Value; $\chi^2$ Test
Cause of burn			
Scalding liquid	10 (31.3)	8 (25.8)	$P = .88; \chi^2 = 0.24$
Flame	14 (43.8)	15 (48.4)	
Electric burn	8 (25.0)	8 (25.8)	
Body burn (%)			
11-20	20 (62.5)	19 (61.3)	$P = 1.00; \chi^2 = 0.01$
21-25	12 (37.5)	12 (38.7)	
Burn degree			
Second degree only	20 (62.5)	15 (48.4)	$P = .31; \chi^2 = 1.27$
Second and third degree	12 (37.5)	16 (51.6)	
Total	32 (100)	31 (100)	

Data are represented as n (%).

the wound, 3) by using moderate pressure, the therapists performed circular, transverse, and vertical strokes on the wound surface area, 4) pinching and lifting around the wound areas with their fingers, and the therapists then rolled the skin in all directions, and 5) long gliding strokes were applied at the end of the massage to the entire affected area.

**Assessments**

All the participants were assessed on the first and last days of the 5-week study period. All participants received a 5-week massage therapy. The measures including the pain, itching, and state anxiety were collected on the first and last days of the study.

**Itching Rating.** The evaluative dimension of itching was determined by a Visual Analog Scale (VAS) model. The scale ranged from 0 to 10; 0 was no itching, and 10 was the worst possible itching. The patient was asked to view the scale and state the number that represented his or her present level of itching.

**Visual Analog Pain Scale.** Pain was also evaluated with VAS according to the numerical values (0–10) starting with “no pain” and ending with “unbearable pain” on a 10-cm horizontal or vertical line. VAS is considered easily understandable and practicable for children of 5 years and older.<sup>13,14</sup> VAS has been used successfully in school-aged children.<sup>15</sup>

**State Trait Anxiety Inventory.** The State Trait Anxiety Inventory (STAI) measures how a person feels at the present moment with a 4-point Likert scale. The questionnaire consists of 20 items with answer choices of 1, not at all/almost never; 2, somewhat/sometimes; 3, moderately so/often; and 4, very much so/almost always. Typical statements rated by the participant are “I feel nervous,” “I feel calm,” and “I am jittery.” The STAI scores increase in response to stress and decrease in relaxing conditions. The STAI has adequate concurrent validity and internal consistency. The reliability and validity studies of the Turkish version were made by Öner and Le Compte.<sup>16</sup>

**Hypothesis of the Research**

Hypothesis I: massage therapy reduces the pain of adolescents with burn. Hypothesis II: massage ther-

apy reduces the itching of adolescents with burn. Hypothesis III: massage therapy reduces the anxiety levels of adolescents with burn.

**Data Analysis**

The recorded data have been analyzed using SPSS Software Program, version 10.0 for Windows (SPSS, Inc., Chicago, IL). The descriptive properties of demographic data and burn characteristics are given as percentiles and mean. Chi-square tests were used for the comparison of control and massage groups. Paired-sample t test was used to compare intragroup measures. The confidence interval was 95%; *P* < .05 was considered to be statistically significant.

**Ethical Considerations**

An ethical approval was obtained from the Research Ethics Committee at Hospitals. Oral information about this study was provided to all adolescents and their families who participated in this study. An informed consent was verbally obtained from voluntary participants.

**RESULTS**

The demographic variables and burn characteristics of adolescent were expressed in number values (percentages; Tables 1 and 2). The cause of burn in both participants of massage group and control group of this study is flame, 62.5% of massage group and 61.3% of control group, and the percentage of body burn is 11 to 20%. It is obvious that there is no difference between demographic data and burn characteristics of two groups. In Table 3, the comparison of the first and last day measurements for itching, pain, and anxiety levels of massage and control groups is given. In this study, adolescent patients with burns who received massage therapy reported reduced itching, pain, and anxiety levels (*P* < .001). It was found that itching measure of the control group is the difference for the first and last day measurements (*P* < 0.05) but no difference was observed for other measures (*P* > .05). We calculated the average delta change between prestate and poststate in ratings for itching, pain, and anxiety levels for the massage and control groups. In Table 4, the comparison of the average delta change between massage and control groups is

**Table 3.** Intragroup comparisons of the mean values for the measures on the first and last day in the groups

Measures	Massage Group		<i>P</i>	Control Group		<i>P</i>
	First Day	Last Day		First Day	Last Day	
Itching	6.12 ± 1.23	2.53 ± 0.67	<.001	5.59 ± 0.79	5.50 ± 0.80	<.05
Pain	6.03 ± 1.12	2.56 ± 0.71	<.001	5.78 ± 0.94	5.65 ± 0.97	>.05
State anxiety	46.71 ± 8.49	37.28 ± 9.75	<.001	46.06 ± 7.02	45.96 ± 6.94	>.05

**Table 4.** Intergroup comparisons of the average delta change between prestate and poststate in ratings for the measures

	Massage Group	Control Group	P
Itching	3.46 ± 1.16	0.09 ± 0.30	<0.001
Pain	3.59 ± 1.26	0.12 ± 0.34	<0.001
State anxiety	9.43 ± 8.94	0.09 ± 0.30	<0.001

## LIMITATIONS

One limitation of our study was the small sample size. Future studies need to be conducted with larger samples before the findings can be accepted with a greater degree of confidence.

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AQ: K

AQ: J given. It shows that there is more significant difference between average delta changes of two groups.

## DISCUSSION

In most cultures, massage treatment are used to alleviate a wide range of symptoms. In many countries, massage therapy is seen as an alternative or complementary treatment. However, the number of the works showing the effects of massage therapy in adolescents with burns is limited in the literature. For this reason, there is little knowledge about the effect of massage on postburn tissue in children and adolescent.<sup>17,18</sup>

Pruritus represents a common and distressing feature of burn wounds. Antihistamines, doxepin, massage therapy, and transcutaneous electrical nerve stimulation are effective strategies to combat pruritus in patients with burns.<sup>19</sup> In this study, although it is observed that there is a significant difference in itching measure of control group according to the first and last day measurements, it is obvious that the itching measure of massage group is more significant. This finding support the results of another massage therapy study that showed reduced itching.<sup>11,20</sup>

Although health professionals agree on the use of nonpharmacologic method for patients with burns, these applications are not yet common. However, massage applied by professional people is known to be more effective than other methods used for pain reduction (such as acupuncture and cold exposure).<sup>17</sup> In this study, pain measured by using VAS reduced in the massage group compared with the control group. Similar findings have been reported for patients with burns who received massage therapy.<sup>11</sup>

The participants showed significant decreased in state anxiety levels from first to last day in the massage therapy group but not in the control group. But this is not surprising inasmuch as decreased anxiety levels have occurred in virtually all massage therapy studies.<sup>11,12,21,22</sup>