ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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# The Use and Benefits of Wet Cupping Therapy for Patients with Musculoskeletal Disorders

## Kas-İskelet Sistemi Rahatsızlığı Olan Bireylerin Hacamatı Kullanma ve Yarar Görme Durumları

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**ABSTRACT Objective:** The objective of this study was to determine how individuals with musculoskeletal disorders (MSDs) use wet cupping therapy (WCT) and benefit from it. **Material and Methods:** This cross-sectional and descriptive study was conducted with 347 patients who had MSDs for at least six months and who agreed to participate in the study between June 2018 and January 2019. The data were obtained through a semi-structured questionnaire composed of three sections that was developed by the researchers. Descriptive statistics, $\chi^2$ test and logistic regression analysis were used for evaluation of the data. **Results:** It was found that patients who exercised regularly due to MSDs who benefitted from WCT was higher than that of patients who did not regularly exercise (OR=12.835; 95% CI 1.834-89.806). It was found that the frequency of benefiting from cupping was higher in the individuals undergoing WCT bimonthly than in those who underwent WCT when they had specific health problems (OR=176.11; 95% CI 2.718-11410.96). It was found that the level of benefiting from cupping was higher in the individuals experienced discomfort (nausea and vertigo) during WCT was higher than that of those who had no discomfort (OR=32.461; 95% CI 2.825-372.979). **Conclusion:** The majority of the patients with MSDs benefited from WCT and it reduced the symptoms associated with these diseases.

**Keywords:** Musculoskeletal system; cupping therapy; traditional medicine; pain management

**ÖZET Amaç:** Bu çalışmanın amacı, kas-iskelet sistemi hastalığı (KİSH) olan bireylerin hacamatı kullanma ve hacamattan yarar görme durumlarının belirlenmesidir. **Gereç ve Yöntemler:** Bu kesitsel ve tanımlayıcı çalışma, en az 6 aydır KİSH olan ve çalışmaya katılmayı kabul eden 347 hasta ile Haziran 2018-Ocak 2019 tarihleri arasında gerçekleştirilmiştir. Veriler, araştırmacılar tarafından geliştirilmiş 3 bölümden oluşan yarı yapılandırılmış bir anket aracılığıyla elde edilmiştir. Verilerin değerlendirilmesinde tanımlayıcı istatistikler, $\chi^2$ testi ve lojistik regresyon analizi kullanılmıştır. **Bulgular:** KİSH nedeniyle düzenli egzersiz yapanların hacamattan yarar görme durumu, düzenli egzersiz yapmayanlara göre daha yüksek bulunmuştur (OR=12.835; 95%CI 1.834-89.806). Hacamat yaptırma sıklığı 2 ayda bir olanların hacamattan yarar görme durumu, hacamat yaptırma sıklığı şikâyetim oldukça şeklinde ifade edenlerden daha yüksek bulunmuştur (OR=176,11; 95% CI 2,718-11410,96). Hacamat sırasında rahatsızlık yaşayanların (mide bulantısı ve baş dönmesi) hacamat uygulamasından yarar görme durumu, rahatsızlık yaşamayanlara göre daha yüksek bulundu (OR=32.461; 95% CI 2.825-372.979). **Sonuç:** KİSH yaşayan bireylerin büyük çoğunluğu hacamattan yarar görmektedir ve hacamat hastalığa bağlı yaşanan semptomları azaltmaktadır.

**Anahtar Kelimeler:** Kas-iskelet sistemi; hacamat; geleneksel tıp; ağrı yönetimi

Musculoskeletal disorders (MSDs) are a common health disorder in Turkey and worldwide. They affect muscles, ligaments, tendons, nerves, bones and joints, involve chronic, inflammatory and degenerative conditions, play a role in the development of comorbid diseases, lead to a decrease in quality of life and the development of psychological problems, and are considered a disability.[1-3] In a study conducted to determine the global burden of disease in 2017, it was reported that there had been a 19.9% increase in MSDs from 2007 to 2017, and back pain was among the top 10 diseases causing the highest disability-ad-

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justed life years in the world in 2017. It was reported to be in seventh place in 2017.[4] According to the 2016 data from the Turkish Statistics Institute, the prevalence of back pain/spinal disc herniation was 27.1%, the prevalence of neck pain/cervical disc hernia was 18.1%, and the prevalence of arthrosis was 7.7%. The percentage of hospitalization related to MSDs was 4.3% according to the 2017 data. In the distribution of causes of death in the International Classification of Diseases in 2018, according to diagnostic groups and gender, the percentage of the deaths related to the musculoskeletal system was 0.28%.[5]

The goals of the treatment of MSDs is to reduce pain, increase the opening and functional capacity of the joint, prevent contractures, maintain and improve muscle strength, prevent injuries, treat comorbidities, prevent treatment complications, increase the quality of life and decrease dependence by training the patients and their families.[6] One of the complementary and alternative treatment methods used frequently in the management of MSDs is cupping therapy.[7,8] Wet cupping therapy (WCT) is one type of this, and is a popular and traditional treatment method in Asia, the Middle East and Central Europe.[8-10] The word for cupping in Turkish is "hacamat"; this means "sucking" and is derived from the Arabic word "hajm". In the Islamic world, cupping is called "Al-hijamah", and it is regarded as the best treatment method, one which was used by the Prophet Muhammad in Turkey as well as in other Islamic countries.[8,9] In addition, cupping was included as one of the 15 treatment methods adopted by the Regulation on Traditional and Complementary Medicine Practices published on 27 October 2014 in the Official Gazette by the Republic of Turkey's Ministry of Health.[10]

WCT is commonly used in the treatment of MSDs such as neck pain, cervical disc hernia, lumbar pain, spinal disc herniation, arthritis, gout, carpal tunnel syndrome, as well as skin disorders such as acne, psoriasis and eczema and other problems such as migraine, headache, stroke, anemia, asthma, hypertension, infertility, the common cold, influenza, sinusitis, depression, Alzheimer's disease, concentration impairment, hypercholesterol, gum diseases and cataracts.[8,11-13] Recent studies on the effectiveness of cupping therapy in MSDs found that it alleviates chronic back pain and the effects of carpal tunnel syndrome, improves the mobility of patients, causes no side effect, reduces pain and provides comfort in patients with knee pain.[13-16] Although it is well known that cupping therapy is widely used in MSDs, the number of studies on its effectiveness is limited.[17,18]

Therefore, the aim of this study was to determine how individuals with MSDs used WCT and for which disorders, and to determine whether they benefited from it or not.

### RESEARCH QUESTIONS

In this study, answers are sought to the following fundamental questions:

- Is there a relationship between benefiting from WCT and the characteristics of the participants?
- Are there any variables that explain whether WCT will be beneficial?

## MATERIAL AND METHODS

### RESEARCH TYPE

The research was planned as a cross-sectional and descriptive.

### RESEARCH POPULATION AND SAMPLE

The population of the study was conducted between June 2018 and January 2019 with the patients who attended a cupping therapy center in the province of Antalya due to MSDs in Turkey (n:415). The sample selection was not performed and the whole universe was involved in the study. Sixty eight individuals who did not meet the inclusion criteria were excluded from the study. The results include data from 347 patients with MSDs. The participation rate in the study was 83.61%. The inclusion criteria of the study comprised the following:

- Being diagnosed with MSDs at least six months before the start of the research,
- Being aged 18 years and older,
- Absence of mental or any other psychiatric disorder according to medical records,
- Being able to speak, read, and write in Turkish, and
- Volunteering to participate in the research.

### INSTRUMENTS

The data were obtained through a semi-structured questionnaire composed of three sections that was developed by the researchers after consulting the literature. The questionnaire was adapted and modified from several similar previous studies.[3,13-20] The questionnaire was prepared on the basis of the study's objective and the content was evaluated by three physicians experienced in the field of rheumatology and "complementary therapy". It was the pilot-tested on five patients with MSDs to estimate the time needed to administer it and to test the questionnaire for clarity and logical flow. Some questions were changed after the pilot-testing and the survey was then finalized. The first part of the questionnaire includes data concerning demographic features (10 questions), the second part includes questions related to MSDs (11 questions), and the third part includes data concerning the "WCT" (10 questions).

### DATA COLLECTION

The data were collected between June 2018 and January 2019. Patients were informed about the purposes of the study and the voluntary and confidential nature of the study were emphasized. After the patients had read the consent form, the researchers collected the data using the face-to-face interview technique in the waiting room prior to treatment. Data collection lasted approximately 20-25 minutes.

### DATA ANALYSIS

Statistical analyses to evaluate the data were carried out using the IBM Corp. Released 2012. IBM SPSS Statistics for Windows, version 21.0. Armonk, NY: IBM Corp. Number, percentage, chi-squared test and logistic regression analysis were used to evaluate the data. A two-sided p value $<0.05$ was considered significant for all analyses.

### ETHICAL APPROVAL

Before data collection, ethics committee approval was gained from the Ethics Committee for Non-interventional Clinical Studies at Burdur Mehmet Akif Ersoy University (decision date and number: 01.11.2017/GO 2017/141). Written permission was obtained from the Director's Office at the Cupping Therapy Center. Written consent of the patients who participated in the study was obtained after they had read an informed consent form. This study was conducted by considering the Good Clinical Practices of the World Medical Association (WMA) Helsinki Declaration.

## RESULTS

### PARTICIPANTS' SOCIODEMOGRAPHIC AND DISEASE CHARACTERISTICS

The mean age of the participants was 43.04±14.88 (minimum: 18, maximum: 84) and 30.8% of them were between the ages of 31-43. 57.6% of the participants were female, 72.3% of them were married and 34.8% of them were high school graduates (Table 1). Of the participants 33.6% had lower back pain and 22.0% of them had spinal disc hernia. 59.7% had a disease duration of between 1 and 5 years, 36.6% of them had family members with MSDs, 40% of them had pain related to MSDs and named it as the most disturbing complaint. It was also found that 34.6% of them had a disease other than MSDs, and 69.7% of them used drugs for MSDs regularly, 19.3% of them had been hospitalized due to MSDs while 9.2% of them had undergone surgery due to MSDs (Table 2).

### WET CUPPING THERAPY USE CHARACTERISTICS

Of the participants 18.7% underwent cupping therapy once a month and 42.9% of them thought that it was beneficial. According to their statements, 89.0% of the participants had knowledge about cupping therapy and 38.2% of them had received that information about from the Cupping Therapy Center; 28.8% of the participants said they had sufficient information about cupping therapy, 59.9% of them said they knew the purpose of cupping therapy, 28.2% of them said they knew the side effects of cupping therapy, 86.2% of them believed they had benefited from it, and 38.1% of those who benefited from it said they had experienced pain relief. 12.6% experienced discomfort during the treatment and 47.6% of those who experienced discomfort also experienced nausea, 88.8% of them stated that they would choose cupping therapy if they had another MSD while 88.2% of them would recommend cupping therapy to others (Table 3).

**TABLE 1:** Distribution of participants according to some sociodemographic characteristics participants' characteristics.

| | | n | % |
|---|---|---|---|
| Age | 18-30 years | 82 | 23.6 |
| | 31-43 years | 107 | 30.8 |
| | 44-56 years | 91 | 26.2 |
| | 57-69 years | 49 | 14.2 |
| | 70 years or over | 18 | 5.2 |
| Gender | Female | 200 | 57.6 |
| | Male | 147 | 42.4 |
| Marital status | Married | 251 | 72.3 |
| | Single | 80 | 23.1 |
| | Divorced or having a died spouse | 16 | 4.6 |
| Educational status | Illiterate | 14 | 4.0 |
| | Literate | 36 | 10.4 |
| | Primary school | 94 | 27.1 |
| | High schools | 121 | 34.8 |
| | University or higher | 82 | 23.7 |
| Income level | Good | 90 | 25.9 |
| | Average | 237 | 68.3 |
| | Low | 20 | 5.8 |
| Employment status | Unemployed | 89 | 25.6 |
| | Civil servant | 67 | 19.3 |
| | Worker | 49 | 14.1 |
| | Private sector employee | 44 | 12.7 |
| | Retired | 43 | 12.4 |
| | Shop keeper | 23 | 6.6 |
| | Student | 19 | 5.5 |
| | Farmer | 13 | 3.8 |
| Main place of residence | City center | 262 | 75.5 |
| | District | 67 | 19.3 |
| | Village/town | 18 | 5.2 |
| Social security status | Yes | 339 | 97.7 |
| | No | 8 | 2.3 |
| Status of smoking | Yes | 155 | 44.7 |
| | No | 192 | 55.3 |
| Status of alcohol consumption | Yes | 34 | 9.8 |
| | No | 313 | 90.2 |
| Total | | 347 | 100.0 |

## WET CUPPING THERAPY BENEFITING STATUS

A statistically significant relationship was found between the genders of the participants (p=0.02) and whether they benefited (p=0.02), 55.2% of the female participants and 44.8% of the men benefitted. There was a statistically significant relationship between the knowledge of the participants about cupping therapy and whether they found their own level of knowledge about cupping therapy sufficient, knowing the purpose of cupping therapy, knowing the side effects, experiencing discomfort during cupping therapy, choosing it if another MSD developed, recommending it to others and benefiting from it (p<0.01). The percentage benefiting from cupping therapy was 91.6% for those who knew about cupping therapy while it was 8.4% for those who knew nothing about it. It was found that 30.4% of those who thought they had sufficient knowledge about cupping therapy benefitted from it, while this percentage was 57.2% for those who thought they had had partial knowledge about cupping therapy, and 12.4% for those who thought they had insufficient

**TABLE 2:** Musculoskeletal disorders-related characteristics of the participants.

| Musculoskeletal disorders-related characteristics of the participants | n | % |
|---|---|---|
| Musculoskeletal disorders* | | |
| Lumbar pain | 203 | 33.6 |
| Spinal disc hernia | 133 | 22.0 |
| Cervical disc hernia | 76 | 12.6 |
| Neck pain | 76 | 12.6 |
| Rheumatoid arthritis | 41 | 6.7 |
| Osteoarthritis | 40 | 6.6 |
| Ankylosing spondylitis | 9 | 1.5 |
| Vasculitis | 9 | 1.5 |
| Fibromyalgia | 8 | 1.3 |
| Systemic lupus erythematosus | 4 | 0.6 |
| Gout | 3 | 0.5 |
| Familial Mediterranean Fever | 3 | 0.5 |
| Duration of the musculoskeletal disorder | | |
| <1 year | 70 | 20.2 |
| 1-5 years | 207 | 59.7 |
| 6-10 years | 50 | 14.4 |
| ≥11 | 20 | 5.7 |
| Presence of a musculoskeletal disorder in another family member | | |
| No | 220 | 63.4 |
| Yes | 127 | 36.6 |
| Degree of relationship with the family member | | |
| First degree relative | 124 | 97.6 |
| Second-degree relative | 3 | 2.4 |
| Complaints related to a musculoskeletal disorder which causes the highest discomfort* | | |
| Pain | 326 | 40.0 |
| Limitation of movement ability | 208 | 25.6 |
| Fatigue | 160 | 19.6 |
| Excessive stiffness | 92 | 11.4 |
| Joint swelling | 10 | 1.2 |
| Joint deformation | 5 | 0.6 |
| Other** | 13 | 1.6 |
| Having another disease in addition to musculoskeletal disorders | | |
| No | 227 | 65.4 |
| Yes | 120 | 34.6 |
| Disease | | |
| Cardiovascular diseases | 45 | 37.5 |
| Endocrine diseases | 31 | 25.8 |
| Neurological diseases | 23 | 19.2 |
| Respiratory system diseases | 7 | 5.8 |
| Urinary system diseases | 6 | 5.0 |
| Digestive system diseases | 3 | 2.5 |
| Dermatologic diseases | 3 | 2.5 |
| Psychiatric diseases | 2 | 1.7 |
| Frequency of undergoing a medical examination due to musculoskeletal disorders | | |
| When a specific complaint occurs | 207 | 59.7 |
| 1-2 times a year | 43 | 12.4 |
| 3-4 times a year | 56 | 16.1 |
| 5 or more times a year | 41 | 11.8 |
| Regular use of drugs for musculoskeletal disorders | | |
| Yes | 242 | 69.7 |
| No | 105 | 30.3 |
| Exercising regularly due to musculoskeletal disorders | | |
| Yes | 107 | 30.8 |
| No | 240 | 69.2 |
| Hospitalization in last year due to a musculoskeletal disorder | | |
| Yes | 67 | 19.3 |
| No | 280 | 80.7 |
| Having an operation due to a musculoskeletal disorder | | |
| Yes | 32 | 9.2 |
| No | 315 | 90.8 |

*More than one choice was selected; **The choice of 'other' includes weakness, crepitation, redness and temperature increase in the site of the joint.

**TABLE 3:** Characteristics of the participants for wet cupping therapy usage.

| | n | % |
|---|---|---|
| Frequency of undergoing WCT | | |
| Once a month | 65 | 18.7 |
| Bimonthly | 26 | 7.5 |
| Trimonthly | 61 | 17.6 |
| Twice a year | 41 | 11.8 |
| Once a year | 30 | 8.6 |
| Other** | 124 | 35.8 |
| Reason for undergoing WCT | | |
| It is beneficial | 149 | 42.9 |
| It is a Sunna of Prophet Muhammad | 121 | 34.9 |
| Conventional medical treatments provide no improvement | 70 | 20.2 |
| It improves defense of the body | 7 | 2.0 |
| Having knowledge about WCT | | |
| No | 38 | 11.0 |
| Yes | 309 | 89.0 |
| Source of knowledge about WCT | | |
| Cupping therapy center | 118 | 38.2 |
| Neighborhood | 71 | 23.0 |
| Relatives | 48 | 15.5 |
| Television and radio | 46 | 14.9 |
| Magazines and articles | 26 | 8.4 |
| Finding own knowledge about WCT sufficient | | |
| Yes | 100 | 28.8 |
| Partially | 193 | 55.6 |
| No | 54 | 15.6 |
| Knowing the dates of WCT applications | | |
| Yes | 136 | 39.2 |
| No | 211 | 60.8 |
| Knowing the rules of WCT | | |
| Yes | 219 | 63.1 |
| No | 128 | 36.9 |
| Knowing the purpose of WCT | | |
| Yes | 208 | 59.9 |
| Partially | 116 | 33.5 |
| No | 23 | 6.6 |
| Knowing side effects of WCT | | |
| Yes | 98 | 28.2 |
| No | 57 | 16.5 |
| Partially | 192 | 55.3 |
| Benefiting from WCT* | | |
| No | 48 | 13.8 |
| Yes | 299 | 86.2 |
| Benefits of WCT | | |
| Decreasing pain | 114 | 38.1 |
| Elimination of fatigue | 66 | 22.1 |
| Elimination of sleeping problems | 49 | 16.4 |
| All of the above | 70 | 23.4 |
| Experiencing health problems during WCT | | |
| No | 305 | 87.4 |
| Yes | 42 | 12.6 |
| Health problems during WCT | | |
| Nausea | 20 | 47.6 |
| Vertigo | 9 | 21.4 |
| Nausea and vertigo | 13 | 31.0 |
| Choosing WCT if another MSDs develops | | |
| Yes | 308 | 88.8 |
| No | 39 | 11.2 |
| Recommending WCT to others | | |
| Yes | 306 | 88.2 |
| No | 41 | 11.8 |

WCT: Wet cupping therapy; MSDs: Musculoskeletal disorders; *More than one choice was selected; **When I have a specific complaint.

knowledge about cupping therapy; 61.9% of those who knew the purpose of cupping therapy benefitted from it, while 33.8% of those who partially knew the purpose benefitted, and only 4.3% of those who did not know the purpose benefitted; 31.1% of those who knew the side effects of cupping therapy benefitted from it, while 15.1% of those who did not know the side effects benefitted, and 53.8% of those who had no idea about the side effects benefitted. It was found that 9.4% of the patients experienced discomfort during the application of cupping therapy and 90.6% did not experience any discomfort. 98.3% of those who thought they would choose cupping therapy if another MSD developed benefitted from the treatment, while this was the case for 1.7% of those who thought that they would not choose cupping therapy in that situation; 97.7% of those who would recommend cupping therapy to others benefitted from it, while this was the case for 2.3% of those who would not recommend cupping therapy to others (Table 4).

When the logistic regression analysis of the interpretation of the status of benefiting from cupping therapy was examined, the constant was not statistically significant for the model (p=0.99), while the effect of some explanatory variables on the status of benefiting from cupping therapy (model fit) was found to be statistically significant (p<0.01). The percentage of patients who exercised regularly due to MSDs who benefitted from cupping therapy was 12.83 times higher than that of patients who did not regularly exercise (p=0.01). The percentage of patients undergoing cupping therapy bimonthly who benefitted was 176.11 times higher than that of the patients who underwent cupping therapy when they had complaints (p=0.01). Those who found their level of knowledge about cupping therapy to be sufficient had a 47.48 times higher level of benefit compared to those who found their level of knowledge to be insufficient (p=0.03). The level of benefit of individuals who experienced discomfort during cupping therapy was 32.46 times higher than

**TABLE 4:** Distribution of characteristics of the participants according to their status of benefiting from wet cupping therapy and significance (p) levels.

| | | Status of benefiting from WCT | | |
|---|---|---|---|---|
| | | Yes | No | |
| **Characteristics** | | **number (%)** | **number (%)** | **p value** |
| Gender | Female | 165 (55.2) | 35 (72.9) | [1]0.02 |
| | Male | 134 (44.8) | 13 (27.1) | |
| Status of having knowledge about WCT | Yes | 74 (91.6) | 35 (72.9) | [1]<0.01 |
| | No | 25 (8.4) | 13 (27.1) | |
| Status of finding own knowledge about WCT sufficient | Yes | 91 (30.4) | 9 (18.8) | [1]<0.01 |
| | Partially | 171 (57.2) | 22 (45.8) | |
| | No | 37 (12.4) | 17 (35.4) | |
| Status of knowing purpose of WCT | Yes | 185 (61.9) | 23 (47.9) | [1]<0.01 |
| | Partially | 101 (33.8) | 15 (31.3) | |
| | No | 13 (4.3) | 10 (20.8) | |
| Status of knowing side effects of WCT | Yes | 93 (31.1) | 5 (10.4) | [1]<0.01 |
| | No | 45 (15.1) | 12 (25.0) | |
| | I have no idea | 161 (53.8) | 31 (64.6) | |
| Status of experiencing discomfort during WCT | Yes | 28 (9.4) | 15 (31.2) | [1]<0.01 |
| | No | 271 (90.6) | 33 (68.8) | |
| Status of choosing WCT if another MSDs develops | Yes | 294 (98.3) | 14 (29.2) | [1]<0.01 |
| | No | 5 (1.7) | 34 (70.8) | |
| Status of recommending WCT to others | Yes | 292 (97.7) | 14 (29.2) | [1]<0.01 |
| | No | 7 (2.3) | 34 (70.8) | |

WCT: Wet cupping therapy; MSDs: Musculoskeletal disorders; [1]Chi-square test.

**TABLE 5:** Results of logistic regression analysis for benefiting from wet cupping therapy.

| | Status of benefiting from WCT | | | | |
|---|---|---|---|---|---|
| **Variable** | **B*** | **SE**** | **95% C.I. for EXP(B)***** | **Exp (B)******** | **p value** |
| Constant | 46.849 | 10755.167 | - | 2.219E+20 | 0.99 |
| Regular exercising due to a MSDs [1] | 2.552 | 0.99 | (1.834-89.806) | 12.835 | 0.01 |
| Frequency of undergoing WCT[2] | 5.171 | 2.128 | (2.718-11410.962) | 176.112 | 0.01 |
| Finding own knowledge about WCT sufficient[3] | 3.860 | 1.812 | (1.362-1655.704) | 47.482 | 0.03 |
| Experiencing discomfort during WCT[4] | 3.480 | 1.246 | (2.825-372.979) | 32.461 | <0.01 |
| | n=34 $R^2$= 0.44 (Cox &Snell) $R^2$=0.79 (Nagelkerke) | | | | |
| | $X^2(2)$=200.935 p<0.01 2LL*****$_{model}$= 77.996 | | | | |

WCT: Wet cupping therapy; MSDs: Musculoskeletal disorders;
[1]Reference group "Regular exercising";
[2]Reference group "Undergoing WCT if a disorder develops";
[3]Reference group "Finding own knowledge about WCT sufficient";
[4]Reference group "Experiencing no discomfort during WCT";
*Coefficient; **Standard error; ***Confidence interval; ****Odds ratio; *****Log likelihood/Maximum likelihood.

that of those who had no discomfort (p<0.01) (Table 5).

## DISCUSSION

WCT, which is one of the oldest methods within traditional medicine, is used as complementary therapy in many regions of the world for health problems which do not respond to conventional treatment methods, as well as for many chronic diseases, especially MSDs.[8] For this reason, this study was conducted to determine how individuals with MSDs use WCT and benefit from it and was discussed with the relevant literature.

In our study, 86.2% of the individuals with MSDs benefited from WCT, and 38.1%, 22.1% and 16.4% of those benefiting from WCT had reduced pain, fatigue and sleep problems, respectively. Studies have shown that individuals reduce pain severity, stiffness and disability decreased after the application of cupping therapy and that they used fewer painkillers and that they benefited from cupping application.[18,21-23] Our findings are consistent with the literature in that WCT reduced pain in MSDs in various regions.

According to the Turkey Statistical Institute's 2016 data, MSDs prevalence was higher in women. It was determined to develop most low back pain, spinal disc hernia, neck pain and cervical disc hernia.[5] More than half of the patients with MSDs in this study who benefitted were women, and the majority of the patients complained of lumbar and neck pain, spinal disc hernia and cervical disc hernia. In the literature, the studies on cupping therapy and MSDs revealed that most of the patients with back and neck pain were female.[13,18,21,22,24-26] The results of the present study are consistent with the literature. Women may attend WCT centers as a result of their higher level of interest in complementary treatments.

In this study, a statistically significant relationship was found between benefiting from WCT and recommending WCT to others. Kavadar et al. reported that 71.0% of individuals who underwent cupping therapy would recommend it to other patients with MSDs.[26] In their study, Lee, Charn, Chew and Ng found that 66.7% of individuals who had arthritis and other MSDs and who were using complementary and traditional treatment methods recommended these methods to their families and friends.[27] Patients probably recommend cupping therapy to other patients who have similar diseases but have not benefitted from conventional treatment as a result of the idea that "since I have benefited, you may also benefit".

There was a statistically significant relationship between benefiting from WCT and the patients' level of knowledge, finding own level of knowledge sufficient, knowing the purpose of the treatment and knowing the side effects. In addition, the level of benefiting from WCT of those who found their level of knowledge sufficient was 47.48 times higher than that of the individuals who found their knowledge in-

sufficient. In the literature, parallel with our study, it is stated that information is generally obtained from family, friends, relatives, social media and the mass media.[19,20,22,28] This situation may be the result of the importance in Turkey of continuous communication between different generations, and the frequent use of traditional or complementary medicine by older family members. With the opening of Traditional and Complementary Medicine Centers in hospitals by the Ministry of Health, it has made it easier for the public to get information from these treatment centers. In addition, the Prophet Muhammad discussed cupping therapy in the Qur'an, the hadiths provide information about cupping, and it is a sunna.[29] This may explain why the patients had knowledge about WCT and felt that their knowledge about its administration, purpose andside effects was sufficient.

WCT is a cheap, useful and beneficial method without any dangers or side effects when it is carried out by qualified people who know how to apply it.[30] In this study, it was found that those who experienced discomfort during WCT experienced 32.46 times the benefit of those who had no discomfort. It was determined that only 12.6% of the individuals had non-serious problems such as nausea and dizziness due to WCT. In the literature, parallel with our study, it is stated that no serious or life-threatening side effects have developed after cupping therapy.[21,31] WCT can alleviate other diseases of individuals, and the level of benefit felt by people suffering from discomfort during WCT may be high because of this.

In our study, it was found that the patients who underwent WCT bimonthly had a 176.11 times higher benefit than those who underwent WCT when they had specific complaints. When WCT applied regularly, it plays a role in preventive medicine by providing for the excretion of pathogenic substances both from the general circulation and from the interstitial area in the region where it is applied.[8] Individuals who do not have any health problems can undergo WCT from two to four times a year for preventive medicine while individuals with diseases can undergo it between five and seven times in a year, or once a month when WCT is their only treatment.[30] A high frequency of application may increase the risk of early and late complications.

In this study, a statistically significant relationship was found between benefiting from WCT and choosing it when another MSD developed. Kavadar et al. determined that 66.0% of the individuals who underwent WCT wanted to undergo it again when other MSDs developed.[26] Güngörmüş and Kıyak found that 48.6% of the individuals experiencing lumbar pain used complementary and alternative medicine because their previous experiences with these methods were good.[32] The findings of this study are similar to the literature. The reason for choosing to undergo WCT again that it reduces existing symptoms.

In our study, the patients who exercised regularly due to MSDs felt benefits 12.83 times higher than those who did not exercise regularly. In the literature, it has been reported that complementary therapies applied in combination in MSDs lead to a decrease in pain severity and analgesic use and an increase in general satisfaction level.[24,33-35] In this case, exercise may play a role in factors such as maintaining the range of motion of joints and muscle strength, increasing aerobic capacity, becoming independent in daily living activities, and increasing the effect of WCT on the body.

## CONCLUSION

In conclusion, it was found that those who had MSDs mostly had lumbar and neck pain, and spinal disc hernia or cervical disc hernia, and that these individuals benefited from WCT. In addition, WCT was found to reduce pain, fatigue and sleep problems. It suggests that WCT is prone to become an effective and safe way for patients with MSDs.However, long-term follow-up studies are necessary to confirm these findings and to evaluate the effectiveness of WCT compared to standard treatment methods. Also, individuals with MSDs were found to have partial knowledge about WCT. Therefore it is necessary to raise the awareness of the society about purpose, rules, application days and effects of WCT.

### STUDY LIMITATIONS

The study has some limitations. The sample of this study consisted of the patients who attended the Cupping Therapy Center in the study and did not reflect

the characteristics of all patients with MSDs in Turkey.


### *Source of Finance*

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*


### *Conflict of Interest*

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### *Authorship Contributions*

***Idea/Concept:*** *Sibel Şentürk, Aysun Güzel, Nurten Terkeş;* ***Design:*** *Sibel Şentürk, Aysun Güzel, Nurten Terkeş;* ***Control/Supervision:*** *Sibel Şentürk;* ***Data Collection and/or Processing:*** *Sibel Şentürk, Nurten Terkeş;* ***Analysis and/or Interpretation:*** *Aysun Güzel;* ***Literature Review:*** *Sibel Şentürk, Nurten Terkeş;* ***Writing the Article:*** *Sibel Şentürk, Aysun Güzel, Nurten Terkeş;* ***Critical Review:*** *Sibel Şentürk, Aysun Güzel, Nurten Terkeş.*

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