



Wet Cupping Reduces Pain and Improves Health-related Quality of Life Among Patients with Migraine: A Prospective Observational Study

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ABSTRACT

Objectives: To determine the benefits of wet cupping on pain and health-related quality of life (HRQOL) in adult patients with migraine headaches. **Methods:** We conducted a prospective observational study of wet cupping in 128 patients referred to the cupping clinic at King Abdulaziz University Hospital, Jeddah, Saudi Arabia between January 2013 and December 2015. Bloodletting was performed at the base of the head and between the shoulders monthly four times. We assessed migraine headache pain using the visual analog scale (VAS) and the quality of life of patients before and after each cupping session using the World Health Organization Quality of Life assessment instrument. **Results:** The mean age of the patients was 40.5 ± 11.3 years with a preponderance of females ($n = 114$, 89.1%). VAS was averaged at 7 before the procedure and reduced to 3 after wet cupping, both during rest and activity ($p \leq 0.005$). Ninety-five patients agreed to complete the quality of life questionnaire. There was a significant improvement in the quality of life after wet cupping treatment in most of the displayed items ($p < 0.050$). None of the patients reported post-procedure complications. **Conclusions:** Wet cupping might be considered a complementary treatment for migraine headache pain relief and improvement to a patient's quality of life.

Migraine headache is a prevalent disease globally, and one of the leading neurological reasons sought for medical care.¹ According to the World Health Organization, migraine is ranked nineteenth among all diseases causing disability.² Migraine is generally considered a disabling disease that can significantly reduce patient's quality of life.^{3,4} The majority of patients with migraine report impairments in their ability to engage in work activities, perform household chores, attend social events, and maintain relationships due to their headaches.⁵ Health-related quality of life (HRQOL) refers to the perceptions of wellbeing, well-functioning, life satisfaction, and being healthy. It has been increasingly utilized as a parameter for evaluation of various treatment outcomes.⁶

Comfort and relief of headache pain was usually provided through either pharmaceutical therapies or non-pharmaceutical modalities.⁷ Currently, the use of non-pharmacological interventions is increasing.⁸

Cupping dates back 5000 years in the history of the oriental medicine, as evident in the Hindi traditional book known as Ayurveda.⁹ Cupping is a bloodletting method performed on various body areas to improve the blood supply to skin and muscles, reduce pain and hypertension, and balance immune, nervous and hormonal systems.¹⁰⁻¹³ Cupping has a positive impact on reducing low back pain, cancer pain, and neuralgia of trigeminal origin compared to other analgesic agents and anti-cancer treatment.¹⁴⁻¹⁶

We sought to determine the beneficial effect of wet cupping on migraine headache patients, particularly any improvements in pain and HRQOL.

METHODS

This prospective observational clinical trial was conducted at King Abdulaziz University Hospital, Jeddah, Saudi Arabia, from 2013 to 2015. Following the principles of Helsinki Declaration and after the ethics and research committee approval (Reference no. 851-12), informed written consent was obtained from all adult patients suffering from migraine headache for six months or longer, diagnosed by an expert pain specialist and referred to the cupping clinic for an alternative and complementary therapy trial. Pregnant or lactating women, patients with mental or psychological illnesses, patients using opioids or psychotropic medications, patients with local infection at the site of cupping, cancer patients, and patients complaining of other acute or chronic pain conditions were excluded from the study.

Data were collected by a nursing assistant interviewing the patient on each visit using a well-structured questionnaire. The questionnaire contained two parts. The first part dealt with demographic, anthropometric data, and any medical conditions, while the second part involved the assessment of HRQOL using the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF).¹⁷ Translation was conducted for all non-English speaking patients. Data were collected before cupping, one week after the treatment, and repeated at each session immediately before and after the treatment. Any complications as a result of the cupping procedure were documented.

Migraine is often accompanied by medical, neurologic, or psychiatric disorders that have a negative impact on a patient's HRQOL. We used the WHOQOL-BREF questionnaire to measure HRQOL. The questionnaire was modified to include 17 questions covering four domains: physical health, psychological health, social relationships, and environment. The internal consistency of the four domains was assessed and ranged from 0.66 to 0.80. The content validity, construct validity, and the reliability of the WHOQOL-BREF questionnaire has been assessed previously in many studies and was acceptable.^{18,19} We limited our questionnaire to 17 questions out of a possible 26 to obtain a full idea about the patient's HRQOL in a reasonable time without any delay. We used an 11-point visual analog scale (VAS) to assess pain with 0 meaning no pain and 10 meaning the worst pain imaginable.

Baseline values were obtained before the procedure, both with the patient at rest and during activity, and repeated after each session monthly for four consecutive months. Cupping was performed by an expert therapist using sterile disposable plastic cups, placed at the root of the head bilaterally and between the shoulder blades. Plastic cups were applied to bloodletting points and suction was activated, then sterilization of skin was performed, and slight skin laceration was performed using a sterile 22-gauge surgical lancet. Bleeding from the dermal microcirculation was initiated by reapplying the plastic cups on the skin scarification points to encourage bloodletting. After 5–10 minutes, the blood in the cup became solid, the cup with the blood was removed, the skin was cleaned with alcohol and covered with gauze for 24 hours.

Knowing that research on wet cupping is limited, a pilot study was conducted to estimate the sample size. Considering 80% as an acceptable power to determine differences in VAS pain score with 95% confidence interval (significant *p*-value < 0.050), a sample size of 47 patients was calculated to detect the differences in VAS.

All data analysis was performed using SPSS Statistics (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Participant demographics were analyzed using descriptive statistics. The Wilcoxon signed rank test was used to analyze pain scores as these are ordinal variables and the readings are paired (i.e., each patient has two readings, one before and one after the cupping procedure).

RESULTS

A total of 128 patients suffering from migraine headache were included in the study. The mean age of the patients was 40.5 ± 11.3 years with preponderance of females ($n = 114$, 89.1%) over males ($n = 14$, 10.9%). Most of the enrolled participants had an elementary level of education (44.7%), whereas 27.0% had higher degrees of education. Most patients (70.4%) were housewives, 12.8% were single, 78.7% were married, 8.5% were divorced/widowed, and 12.5% were smokers.

All patients were exposed to wet cupping on the first session. Their VAS was averaged at 7 before the procedure and was significantly reduced to 3 after. Eighty-six patients underwent a second session

Table 1: Mean scores of patients’ responses to items reflecting their quality of life before and after wet cupping treatment.

Items	Before wet cupping	After wet cupping	p-value*
Quality of life in the last two weeks	3.4 ± 0.9	3.9 ± 0.7	< 0.001
Satisfied with health in the last two weeks	3.3 ± 0.9	3.7 ± 0.8	0.011
Feels that pain prevents one from doing what one needs to do	3.2 ± 1.0	2.7 ± 0.9	0.004
Needs any medication to function in daily life	2.9 ± 1.2	2.6 ± 1.0	0.085
Enjoys life	3.0 ± 0.8	3.3 ± 0.8	0.040
Feels that life is meaningful	3.6 ± 1.1	3.7 ± 1.0	0.473
Able to focus on day-to-day activities in the last two weeks	3.1 ± 0.8	3.3 ± 0.9	0.067
Has enough energy for everyday life	2.9 ± 1.0	3.3 ± 0.8	0.004
Has opportunity for leisure activities	3.1 ± 1.0	3.1 ± 1.0	0.700
Able to move around	3.7 ± 0.7	3.8 ± 0.7	0.164
Satisfied with sleep	2.7 ± 1.1	3.4 ± 1.1	< 0.001
Satisfied with performing daily life activities	3.0 ± 1.0	3.5 ± 0.8	0.003
Satisfied with capacity to work	3.0 ± 1.1	3.6 ± 0.8	< 0.001
Satisfied about oneself	3.4 ± 0.8	3.7 ± 0.7	0.014
Satisfied with personal relationship	3.7 ± 0.7	3.9 ± 0.6	0.040
Satisfied with sex life	3.5 ± 0.9	3.7 ± 1.0	0.161
Frequent negative feelings such as blue mood, despair, anxiety, and depression	3.4 ± 0.9	2.9 ± 0.9	0.002

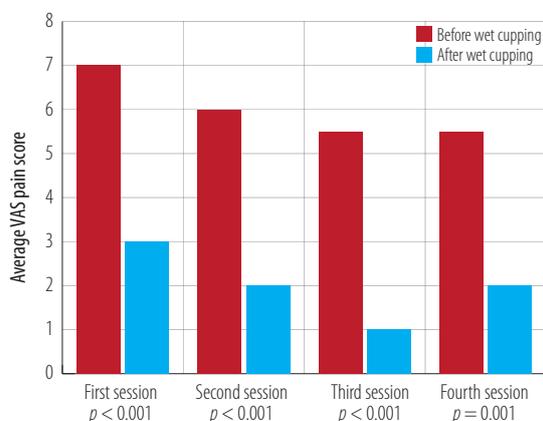
*Based on paired sample t-test.

where their VAS pain score dropped from 6 to 2; 54 had the procedure a third time, and their average VAS pain score decreased from 5.5 to 1. Only 17 patients had a fourth session, and their VAS pain score decreased for 5.5 to 2. All changes in the VAS score at rest were statistically significant [Figure 1]. The same finding was observed in the VAS score during activity [Figure 2].

Bivariate analysis was conducted and revealed no statistically significant difference between males and females regarding their response to wet cupping, as

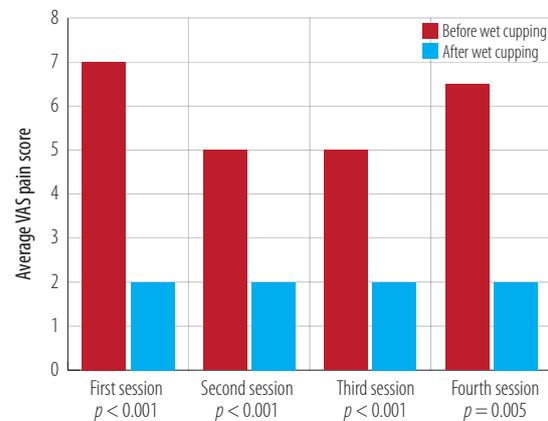
both reported a significant decrease in the VAS pain score after wet cupping. The average reduction in VAS pain score was 3 for both males and females. No statistical significance was found in the correlation between the magnitude of VAS pain score reduction and age, educational level, marital status, or smoking ($p > 0.050$).

Ninety-five patients agreed to complete the questionnaire. Table 1 shows that there was a significant improvement in HRQOL after wet cupping in most of the displayed items. The overall



VAS: visual analog scale; p-value based on Wilcoxon signed rank test.

Figure 1: Changes in pain score at rest after wet cupping between successive sessions.



VAS: visual analog scale; p-value based on Wilcoxon signed rank test.

Figure 2: Changes in pain score with activity after wet cupping between successive sessions.

self-rating of the patients for the quality of their life HRQOL after wet cupping was 3.9 ± 0.7 compared to 3.4 ± 0.9 before. A similar response was found for “being satisfied with life”, “have more energy for everyday life”, “more satisfied with sleep”, “more satisfied with their capacity to work”, “have enough energy for everyday life activity”, and “satisfactory personal relationships”. Meanwhile, patients indicated that they had less pain to prevent them from doing what they needed to do and decreased episodes of negative feelings such as blue mood, despair, anxiety, and depression. Although there was an improvement in the remaining items displayed scores, they were not statistically significant ($p > 0.050$). None of the patients reported post-procedure complications such as local infection, significant bleeding, hematoma, or disfiguring scar.

DISCUSSION

Cupping has been used for thousands of years as a treatment for many health-related conditions. It is now considered a complementary medicine therapy to treat low back pain, headache, and other types of pain.^{20,21}

In this study, we demonstrate that cupping is a promising treatment modality for migraine headache and has a positive effect on quality of life. We found a statistically significant reduction in migraine headache pain following the performance of wet cupping in a series of sessions. This is the same finding as previously published studies, in which pain reduction was the result of cupping treatment.^{22–25}

Repeat cupping sessions are associated with a progressive reduction in pain scores.²² In patients with tension headache, repeated cupping sessions are more effective than one-time cupping.²³ The relation between repeat wet cupping and progressive reduction in pain was established in all studies,^{22,23} but the exact mechanism of pain reduction with repeated cupping is still unclear, and further studies are needed to determine this and to investigate the shorter duration of pain relief.

We could not find any correlation between cupping effect and patients' level of education, marital status or smoking habit. This was also the case in a previous study among nurses in which the authors found no relation between cupping therapy effect on shoulder pain or generalized fatigue and educational level or marital status.²⁶

Migraine is often accompanied by other medical, neurologic, or psychiatric disorders that have a negative impact on a patient's HRQOL.^{27,28} When left untreated or inadequately treated, the resulting reduced HRQOL could result in increased medical costs and decreased productivity.²⁹ Measurement of HRQOL has emerged as an important complementary approach for the evaluation of headache burden.^{30–33} Many studies reported a lower perception of quality of life as a result of migraine headache.^{34,35}

We found that wet cupping improved HRQOL in many aspects especially the physical domain. Two different studies by the same group reported that a series of cupping treatments or even a single session of conventional cupping significantly improved pain and increased physical function and HRQOL scores in patients with chronic non-specific neck pain.^{36,37} A controlled, quasi-experimental study reported that cupping improved the HRQOL domains, especially the physical domain, for almost all types of pain and other medical conditions.³⁸

The observational design of our study is one of its limitations. Others are the short follow-up period and the limited number of cupping sessions with a high drop-out rate. Also, we did not use a well-validated Arabic language migraine-specific assessment tool to assess quality of life. Additionally, the preponderance of females over males may affect the generalizability of this study. Further studies are needed to improve knowledge about cupping and its use as a therapeutic modality.

CONCLUSION

Wet cupping might be considered an alternative treatment therapy for migraine headache as it reduces pain and improves patients' quality of life without exposing the patients to major complications.

Disclosure

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REFERENCES

1. Tepper SJ, Dahlöf CG, Dowson A, Newman L, Mansbach H, Jones M, et al. Prevalence and diagnosis of migraine in patients consulting their physician with a complaint of headache: data from the Landmark Study. *Headache* 2004 Oct;44(9):856-864.

2. Koehler PJ, van de Wiel TW. Aretaeus on migraine and headache. *J Hist Neurosci* 2001 Dec;10(3):253-261.
3. Tulen JH, Stronks DL, Bussmann JB, Peppinkhuizen L, Passchier J. Towards an objective quantitative assessment of daily functioning in migraine: a feasibility study. *Pain* 2000 May;86(1-2):139-149.
4. Bigal ME, Fernandes LC, Moraes FA, Bordini CA, Speciali JG. [Migraine prevalence and impact in employees of the clinical hospital of the medical school of Ribeirão Preto-USP]. *Arq Neuropsiquiatr* 2000 Jun;58(2B):431-436.
5. Bigal ME, Lipton RB. The epidemiology, burden, and comorbidities of migraine. *Neurol Clin* 2009 May;27(2):321-334.
6. Mason VL, Skevington SM, Osborn M. The quality of life of people in chronic pain: developing a pain and discomfort module for use with the WHOQOL. *Psychol Health* 2008;23(2):135-154.
7. McLean A, Coutts K, Becker WJ. Pacing as a treatment modality in migraine and tension-type headache. *Disabil Rehabil* 2012;34(7):611-618.
8. Raggi A, Leonardi M, Bussone G, D'Amico D. A 3-month analysis of disability, quality of life, and disease course in patients with migraine. *Headache* 2013 Feb;53(2):297-309.
9. Gharehbaghian A, Mehran M, Karimi GH. Hijama through the passage of time. *Sci J Iran Blood Transfus Organ* 2009;6(2):147-158.
10. Lee MS, Kim JI, Ernst E. Is cupping an effective treatment? An overview of systematic reviews. *J Acupunct Meridian Stud* 2011 Mar;4(1):1-4.
11. Ullah K, Younis A, Wali M. An investigation into the effect of cupping therapy as a treatment for anterior knee pain and its potential role in health promotion. *Inter J Alter Med* 2007;4(1).
12. Chirali IZ. *Traditional Chinese Medicine Cupping Therapy*. Second Edition. Philadelphia: Churchill Livingstone, 2007. ISBN 13-978-0-443-102-660.
13. Yoo SS, Tausk F. Cupping: East meets West. *Int J Dermatol* 2004 Sep;43(9):664-665.
14. Kim JI, Lee MS, Lee DH, Boddy K, Ernst E. Cupping for treating pain: a systematic review. *Evid Based Complement Alternat Med* 2011;2011:467014.
15. Kwon YD, Cho HJ. Systematic review of cupping including bloodletting therapy for musculoskeletal diseases in Korea. *Korean J Oriental Physiology & Pathology* 2007;21(3):789-793.
16. Cao H, Zhu C, Liu J. Wet cupping therapy for treatment of herpes zoster: a systematic review of randomized controlled trials. *Altern Ther Health Med* 2010 Nov-Dec;16(6):48-54.
17. Barcaccia B, Esposito G, Matarese M, Bertolaso M, Elvira M, De Marinis MG. Defining quality of life: a wild-goose chase? *Eur J Psychol* 2013;9(1):185-203.
18. Trompenaars FJ, Masthoff ED, Van Heck GL, Hodiament PP, De Vries J. Content validity, construct validity, and reliability of the WHOQOL-Bref in a population of Dutch adult psychiatric outpatients. *Qual Life Res* 2005 Feb;14(1):151-160.
19. Skevington SM, Lotfy M, O'Connell KA; WHOQOL Group. The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Qual Life Res* 2004 Mar;13(2):299-310.
20. Gharebagiyani A. Cupping over time. *Blood Journal*. The scientific journal of Iranian blood transfusion organization (Khoon) 2009;6(2):2009.147-158.
21. Huber R, Emerich M, Braeunig M. Cupping - is it reproducible? Experiments about factors determining the vacuum. *Complement Ther Med* 2011 Apr;19(2):78-83.
22. Tabatabaee A, Zarei M, Javadi SA, Mohammadpour A, Bidaki AA. The effects of wet-cupping on intensity of headache in migraine sufferers. *Jundishapur Journal of Chronic Disease Care* 2014;3(2):1-12.
23. Ahmadi A, Schwebel DC, Rezaei M. The efficacy of wet-cupping in the treatment of tension and migraine headache. *Am J Chin Med* 2008;36(1):37-44.
24. Firoozabadi MD, Navabzadeh M, Roudsari MK, Zahmatkash M. Comparative efficacy trial of cupping and serkangabin versus conventional therapy of migraine headaches: A randomized, open-label, comparative efficacy trial. *J Res Med Sci* 2014 Dec;19(12):1134-1139.
25. Tabatabaee A, Zarei M, Mohammadpour A. Comparing the effect of wet-cupping and temperament reform on the severity of migraine headaches. *Quarterly of the Horizon of Medical Sciences* 2014;20(1):43-48.
26. Sohn D, Yoon H, Jung H. The effects of dry cupping therapy on shoulder pain and fatigue in nurses. *Pharmacopuncture* 2011;14(2):25-35.
27. Buse DC, Rupnow MF, Lipton RB. Assessing and managing all aspects of migraine: migraine attacks, migraine-related functional impairment, common comorbidities, and quality of life. *Mayo Clin Proc* 2009 May;84(5):422-435.
28. Buse DC, Silberstein SD, Manack AN, Papapetropoulos S, Lipton RB. Psychiatric comorbidities of episodic and chronic migraine. *J Neurol* 2013 Aug;260(8):1960-1969.
29. Messali A, Sanderson JC, Blumenfeld AM, Goadsby PJ, Buse DC, Varon SF, et al. Direct and indirect costs of chronic and episodic migraine in the United States: a web-based survey. *Headache* 2016 Feb;56(2):306-322.
30. Osterhaus JT, Townsend RJ, Gandek B, Ware JE Jr. Measuring the functional status and well-being of patients with migraine headache. *Headache* 1994 Jun;34(6):337-343.
31. Stewart WF, Lipton RB, Kolodner KB, Sawyer J, Lee C, Liberman JN. Validity of the Migraine Disability Assessment (MIDAS) score in comparison to a diary-based measure in a population sample of migraine sufferers. *Pain* 2000 Oct;88(1):41-52.
32. Solomon GD. Evolution of the measurement of quality of life in migraine. *Neurology* 1997 Mar;48(3)(Suppl 3):S10-S15.
33. Dahlöf CG, Solomon GD. The burden of migraine to the individual sufferer: a review. *Eur J Neurol* 1998 Nov;5(6):525-533.
34. Peters M, Abu-Saad HH, Vydellingum V, Dowson A, Murphy M. Migraine and chronic daily headache management: a qualitative study of patients' perceptions. *Scand J Caring Sci* 2004 Sep;18(3):294-303.
35. Cottrell CK, Drew JB, Waller SE, Holroyd KA, Brose JA, O'Donnell FJ. Perceptions and needs of patients with migraine: a focus group study. *J Fam Pract* 2002 Feb;51(2):142-147.
36. Lauche R, Cramer H, Langhorst J, Dobos G. Cupping for chronic nonspecific neck pain: a 2-year follow-up. *Forsch Komplementmed* 2013;20(5):328-333.
37. Lauche R, Cramer H, Hohmann C, Choi KE, Rampp T, Saha FJ, et al. The effect of traditional cupping on pain and mechanical thresholds in patients with chronic nonspecific neck pain: a randomised controlled pilot study. *Evid Based Complement Alternat Med* 2012;2012:429718.
38. Al Jaouni SK, El-Fiky EA, Mourad SA, Ibrahim NK, Kaki AM, Rohaiem SM, et al. The effect of wet cupping on quality of life of adult patients with chronic medical conditions in King Abdulaziz University Hospital. *Saudi Med J* 2017 Jan;38(1):53-62.