JAR Journal of Acupuncture Research

Original Article

pISSN 2586-288X • eISSN 2586-2898
J Acupunct Res 2023;40(4):351-355
https://doi.org/10.13045/jar.2023.00213

Effects of Wet Cupping (Al-Hijamah) on Cholesterol in a Sudanese Population

Amna Mohammed Alamin Abbshar
Hafsa Ahmed Elrheima Ahmed

Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, University of Medical Sciences and Technology, Khartoum, Sudan

Background: Wet cupping (WC) is an efficient and cost-effective technique for removing metabolic waste from the bloodstream via the skin. The study aimed to examine the effect of WC on cholesterol levels including total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C) in a Sudanese population.
Methods: In this prospective cross-sectional study, 30 participants undergoing regular WC therapy were enrolled. Blood samples collected twice: pre-WC therapy (case group) and 10–14 days afterward (controls).
Results: Of the participants, 56.67% were male and 43.33% were female, aged 24–69. Pre-WC TC and LDL-C levels were significantly higher than the post-WC control group ($p = 0.001$). Conversely, HDL-C levels decreased significantly in the pre-WC cases compared to controls ($p = 0.001$). No significant sex-based difference in mean cholesterol levels ($p > 0.05$).
Conclusions: After WC, males and females experienced significant reductions in TC and LDL-C, and significant increase in HDL-C.

Keywords: High-density lipoprotein cholesterol; Low-density lipoprotein cholesterol; Total cholesterol; Wet cupping

Received: October 5, 2023; Accepted: October 19, 2023

Corresponding author: Hafsa Ahmed Elrheima Ahmed
Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, University of Medical Sciences and Technology, Obaid Khatim St., North Khartoum International Airport, Khartoum 11111, Sudan
E-mail: fefeahmed936@gmail.com

INTRODUCTION

Cupping therapy has a long history of use within various ancient civilizations and still practiced today. This therapy has two main types: dry and wet cuppings (WCs) [1]. WC (Al-Hijamah) involves making small incisions in the skin to allow blood to flow into the cups. These cups are held in place for a short period, then removed, and superficial skin lacerations are made. Then cups are repositioned on the dermis to collect blood from the capillary vessels, a process repeated twice [2,3].

In contrast, dry cupping creates suction on the skin without causing injury. This therapeutic technique targets specific points on the dermis using either heat or suction to establish sub_ atmospheric pressure [2].

Cupping provides several advantages, including promoting blood circulation and modifying the skin's biomechanical properties. It also elevates the patient's pain threshold, enhances local anaerobic metabolism, improves cellular immunity, reduces inflammation, facilitates lymph flow, and increases the levels of immune substances [4].

Lipids (fats) are present in all living cells and serve crucial cell structure and transportation functions. Cholesterol is an unsaturated steroid alcohol, found in cell surface receptors, along with phospholipids [5].

High-density lipoprotein cholesterol (HDL-C), often called "good cholesterol," is the smallest and densest lipoprotein, the. Its ability to remove cholesterol from cells (reverse cholesterol transport) proposed to explains the molecule's anti-atherogenic properties [5]. In contrast, low-density lipoprotein cholesterol (LDL-C), which contains apolipoprotein B100 (Apo B100), acts as a ligand for LDL-C receptors in various cells throughout the body, particularly in the liver. By binding to these receptors, cells take up LDL-C particles, delivering cholesterol rich than others, to where it is needed. Elevated LDL-C and Apo B100. levels in the blood are associated with a higher risk of atherosclerosis and cardiovascular diseases. Apo B100 is readily taken up by cells via the LDL-C receptor and considered a risk factor for atherosclerotic plaque formation [5].

Cupping and acupuncture activate the neuroendocrine-immune system by stimulating the skin and manipulating its microenvironment. This leads to improved immunity, enhanced blood circulation, reduced inflammation, cell changes, and increased pain tolerance. WC focuses on removing metabolic wastes rather than solely enhancing blood circulation [6].

MATERIALS AND METHODS

A prospective cross-sectional study was conducted in Khartoum state to assess total cholesterol (TC), HDL-C, and LDL-C levels in Sudanese individuals who regularly underwent WC therapy. The study was carried out between January 2023 and April 2023.

Ethical approval for the study was obtained from the University of Medical Sciences and Technology ethical committee (IRB UMST/EG18/, approval date 23/12/2022) and it adhered to the ethical principles of the World Medical Association's Declaration of Helsinki. The reporting of this study follows the Strengthening the Reporting of Observational Studies in Epidemiology guidelines [7].

Before participating, individuals received a verbal explanation of the study's objectives and provided verbal consent to participate.

A total of 30 individuals who underwent regular WC therapy were enrolled as cases and controls. Blood samples were collected twice: pre-WC (cases) and 10–14 days post-WC (controls). Participants taking lipid-lowering drugs were excluded from the study.

The collected blood samples were enzymatically measured using a spectrophotometer (BTS-305) for TC, HDL-C, and LDL-C, following the manufacturer's instructions. Quality control materials were concurrently analyzed with the samples to ensure accurate results.

The Statistical Package for Social Science software, version 22.0 (IBM Co.), was employed for analysis. Information from the questionnaire was initially coded into variables. The normality of the data was assessed using the Kolmogorov–Smirnov test. Both descriptive statistics, which summarize the main features of the data, and inferential statistics, which draw conclusions or predictions from the data, were applied. Our analysis incorporated one or more independent variables.

RESULTS

This study aimed to investigate the impact of WC therapy on lipid parameters (TC, HDL-C, and LDL-C) among Sudanese individuals using a prospective cross-sectional design. Thirty participants, with a mean age of 40 ± 10.8 years, were included. Of these, 17 were males (56.67%), and 13 were females (43.33%). Fig. 1 displays the sex distribution. Thirteen participants had undergone WC therapy for less than year, while 17 received it regularly for over a year (Table 1).

The mean TC level was significantly higher in the pre-

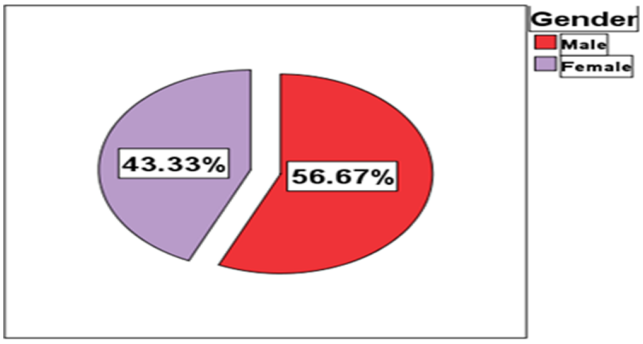

Fig. 1. Sex distribution of study participants.

Table 1. Participants and wet cupping therapy duration

Duration (y)	Frequency
< 1	13
> 1	17

Table 2. Mean difference in TC, HDL-C, and LDL-C levels between (pre-WC group) and (post-WC group) using a paired sample t-test (n = 30)

	Pre-WC (n = 30)	Post-WC (n = 30)	*p*-value
TC (mmol/L)	4.36 ± 0.84	3.66 ± 0.59	< 0.001
HDL-C (mmol/L)	1.19 ± 0.32	1.60 ± 0.56	0.001
LDL-C (mmol/L)	1.10 ± 0.41	0.71 ± 0.22	< 0.001

Values are presented as mean ± standard deviation.
TC, total cholesterol; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; WC, wet cupping.
p-values ≤ 0.05 were considered significant.

WC case group (4.36 ± 0.84 mmol/L) compared to the post-WC control group (3.66 ± 0.59 mmol/L, $p < 0.001$). Similarly, the mean LDL-C level was significantly higher in the pre-WC cases (1.10 ± 0.41 mmol/L) compared to controls (0.71 ± 0.22 mmol/L, $p < 0.001$). On the other hand, there was a significant decrease in. Conversely, HDL-C significantly decreased pre-WC (1.19 ± 0.32 mmol/L) compared to the post-WC (1.60 ± 0.56 mmol/L, $p = 0.001$) (Table 2).

There were no statistically significant differences in TC ($p = 0.392$ and $p = 0.350$, respectively) (Table 3) or HDL-C levels between males and females, ($p = 0.331$ and $p = 0.07$, respectively) (Table 4). Likewise, there were no statistically significant differences in LDL-C between males and females ($p = 0.893$ and $p = 0.629$, respectively) (Table 5).

Table 3. Mean difference in TC levels by sex using an independent t-test (n = 30)

Sex	Pre-WC TC (mmol/L)	*p*-value	Post-WC TC (mmol/L)	*p*-value
Male	4.24 ± 0.77	0.392	3.56 ± 0.57	0.350
Female	4.51 ± 0.92		3.99 ± 0.60	

Values are presented as mean ± standard deviation.
TC, total cholesterol; WC, wet cupping.
p-values ≤ 0.05 were considered significant.

Table 4. Mean difference of HDL-C levels by sex using an independent t-test (n = 30)

Sex	Pre-WC HDL-C (mmol/L)	*p*-value	Post-WC HDL-C (mmol/L)	*p*-value
Male	1.12 ± 0.55	0.331	1.43 ± 0.49	0.07
Female	1.30 ± 0.53		1.81 ± 0.59	

Values are presented as mean ± standard deviation.
HDL-C, high-density lipoprotein; WC, wet cupping.
p-values ≤ 0.05 were considered significant.

Table 5. Mean difference in LDL-C by sex using an independent t-test (n = 30)

Sex	Pre-WC LDL-C (mmol/L)	*p*-value	Post-WC LDL-C (mmol/L)	*p*-value
Male	1.09 ± 0.52	0.893	0.69 ± 0.24	0.629
Female	1.11 ± 0.26		0.73 ± 0.21	

Values are presented as mean ± standard deviation.
LDL-C, low-density lipoprotein; WC, wet cupping.
p-values ≤ 0.05 were considered significant.

DISCUSSION

Traditional medicine, including WC, has gained popularity as an alternative treatment, especially for chronic conditions. The World Health Organization has advocated for traditional medicine since 2002 [2,6].

This study aimed to investigate the impact of WC on TC, HDL-C, and LDL-C among the Sudanese population.

Our results demonstrated a significant decrease in TC and LDL-C levels after 10–14 days of WC. The pre-WC group showed a significant increase in HDL-C compared to the post-WC group. Similar results have been reported by Marcin and Hoshaw [4], Saeed et al. [1], and Sultan [2].

Various cupping techniques may elicit distinct cell, tissue, and organ alterations [4]. The activation of heme oxygenase-1, a crucial gene for preventing vascular inflammation, may explain many of cupping therapy's claimed local and systemic health benefits [8,9].

In contrast, Ahmed et al. [10] found conflicting results

and suggested additional calculations to address this controversy, such as cholesterol/HDL, HDL/LDL, and LDL/HDL- ratios. These ratios are commonly used as atherogenic indices in the literature [11].

Moreover, Ahmed et al. [10] found no significant differences in the levels of TC, LDL-C, and HDL-C levels based on WC therapy durations (< 1 year or > 1 year). This contradicts the findings by Suhaily et al. [11], and Alsafi [12] who reported a significant difference after 3 months of cupping therapy.

Additionally, the study found no significant variation in TC, LDL-C, and HDL-C levels based on sex, aligning with previous findings by Tasneem et al. [13] and Abd EL-Ghaffaar et al. [14].

However, this study had limitations due to inadequate funding and difficulties in specimen collection within the designated time. Consequently, some data points were inadvertently missed, such as the frequency of cupping therapy, body mass index (BMI), and blood pressure.

However, our results should be considered alongside several methodological challenges that warrant attention. We utilized a relatively small sample size of only 30 participants, limiting the potential to generalize its findings to a broader population. Moreover, the absence of a distinct control group and the decision to use participants as their own controls could leave findings susceptible to potential confounders as well as the placebo effect. Participant selection criteria were not clearly defined, introducing the possibility of selection biases. The choice to rely on verbal rather than written informed consent might also pose ethical and reliability issues. The evaluation period of the study was relatively short. Blood samples taken at the beginning and then only 10–14 days after the initiation of WC therapy may not capture longitudinal effects on cholesterol. Our sole reliance on a spectrophotometer to measure cholesterol levels might have reduced the comprehensiveness and accuracy of our results. Further, our decision to exclude individuals taking lipid-lowering drugs reduces the real-world applicability of our results. Additionally, the lack of a defined blinding procedure raises concerns about potential biases due to the researchers' and participants' expectations or beliefs. It is essential to consider these limitations when interpreting the study's findings, and future research should address these methodological challenges to ensure more credible and generalizable outcomes.

Further research is needed, including diverse participants and conduct retrospective studies with long-term follow-up assessments to determine the lasting effects of WC therapy. Additionally, evaluating clinical data like blood pressure, BMI, glucose levels, and inflammatory markers is recommended. Incorporating WC therapy into existing treatment plans could also be valuable.

CONCLUSION

WC treatment was associated with a significant decrease in TC and LDL-C; however, HDL-C significantly increased.

AUTHOR CONTRIBUTIONS

Conceptualization: HAEA, AMAA. Data curation: HAEA. Formal analysis: HAEA. Funding acquisition: AMAA. Investigation: HAEA. Methodology: AMAA. Project administration: HAEA. Resources: AMAA. Software: HAEA. Supervision: HAEA. Validation: HAEA, AMAA. Visualization: HAEA. Writing – original draft: AMAA. Writing – review & editing: HAEA.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

FUNDING

This research did not receive specific grants from public, commercial, or not-for-profit funding agencies. This study was funded by the authors themselves.

ACKNOWLEDGMENTS

We are grateful to the Ya Hafeez and Cupping World Center for their dedication to promoting and advancing cupping therapy, which has been instrumental in making this research possible. We sincerely appreciate their assistance in facilitating data collection and providing a conducive environment for our study.

ETHICAL STATEMENT

Ethical approval for the study was obtained from the University of Medical Sciences and Technology ethical

committee (IRB UMST/EG18/, approval date 23/12/2022) and it adhered to the ethical principles of the World Medical Association's Declaration of Helsinki.

ORCID

Amna Mohammed Alamin Abbshar,
https://orcid.org/0009-0000-9050-2853
Hafsa Ahmed Elrheima Ahmed,
https://orcid.org/0000-0003-3255-4529

REFERENCES

1. Saeed AAM, Badulla WFS, Sheikh GAA. The effect of wet cupping therapy (Al-Hijamah) on some blood components: a comparative study. Electron J Univ Aden Basic Appl Sci 2021;2:124-130. doi: 10.47372/ejua-ba.2021.3.106
2. Sultan MQ. A correlation between wet cupping therapy treatment and serum lipids profile levels in Thi-Qar governorate – Iraq. Ann Rom Soc Cell Biol 2021;25:2238-2242.
3. Sutriyono S, Robbina MR, Ndii MZ. The effects of wet cupping therapy in blood pressure, glucose, uric acid and total cholesterol levels. Biol Med Nat Product Chem 2019;8:33-36. doi: 10.14421/biomedich.2019.82.33-36
4. Marcin A, Hoshaw C. What is cupping therapy? Healthline Media [Internet]. 2021 Dec 23 [cited 2023 Jun 13]. Available from: https://www.healthline.com/health/cupping-therapy
5. Bishop ML, Fody EP, Schoeff LE. Clinical chemistry: principles, techniques and correlations. 8th ed. Jones & Bartlett Learning; 2017.
6. Widada W, Ontoseno T, Purwanto B, Suhartati, Subadi I, Notobroto HB, et al. The effect of the blood cupping therapy on high density lipoprotein (HDL) and low density lipoprotein (LDL) in hypercholesterol patients. Indian J Forensic Med Toxicol 2020;14:3556-3562. doi: 10.37506/ijfmt.v14i4.12179
7. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Ann Intern Med 2007;147:573-577. doi: 10.7326/0003-4819-147-8-200710160-00010 Erratum in: Ann Intern Med 2008;148:168.
8. Tagil SM, Celik HT, Ciftci S, Kazanci FH, Arslan M, Erdamar N, et al. Wet-cupping removes oxidants and decreases oxidative stress. Complement Ther Med 2014;22:1032-1036. doi: 10.1016/j.ctim.2014.10.008
9. Chirali IZ. Traditional Chinese medicine cupping therapy. 3rd ed. Churchill Livingstone. 2014:47-64.
10. Ahmed KAA, AL-Sanabra O, Haidar A, Eskander S, Al-qiari B, Hamzah A, et al. Evaluating the therapeutic effects of wet cupping (Al-Hijamah) on hematological parameters, kidney function tests and lipid profile in adult women. Biomed Pharmacol J 2022;15:187-197. doi: 10.13005/bpj/2354
11. Suhaily MH, Ismail AA, Najib MY. Randomized control trial study on the effect of wet cupping on lipid profile. Int Med J Malays 2017;16:11-17. doi: 10.31436/imjm.v16i2.319
12. Alsafi SAB. Effect of blood cupping (Al-Hijama) on total cholesterol, high density lipoprotein cholesterol and low density lipoprotein cholesterol levels [thesis]. Khartoum: Sudan University of Science and Technology; 2021.
13. Tasneem Q, Hannan A, Zhoor ul Hassan Z. Scientific bases of Al-Hijamah or cupping therapy in Unani medicine with modern techniques for the treatment of diseases related to uric acid, creatininie, liver enzymes and lipid profile. Hamdard Med 2016;59:52-63.
14. Abd EL-Ghaffaar HA, Khaled Mandour J, Abed ElKadir Atia F. Response of cholesterol to cupping therapy in post-menopausal women with hypercholesterolemia. Eurasia J Biosci 2020;14:123-127.