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Original article

Evaluation of the Effect of Wet Cupping on hematological parameters in a sample of Libyan Adults

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Abstract
Wet cupping is an ancient procedure used to treat and prevent various systemic diseases by removing blood from the body. This study aimed to analyze the impact of wet cupping on complete blood count (CBC) parameters in adults aged between 22 and 50 years. This study was conducted from June to August 2023 and involved 50 participants who were interested in undergoing wet cupping. Of these participants, 21 were male and 29 were female. Blood samples were taken before their first cupping session and again two weeks after the session. The collected blood samples were analyzed using a hematology analyzer (Sysmex-XP 300) to perform a complete blood count (CBC) analysis. There were no significant differences in the mean levels of WBC, RBC, MCV, MCH, MCHC, and PLT between the pre-cupping and post-cupping samples. However, the hemoglobin and hematocrit levels significantly decreased in the post-cupping samples compared to the pre-cupping samples (P=0.009 and P=0.004, respectively). In conclusion, based on the study's findings, wet cupping did not cause any significant changes in the RBC, WBC, MCV, MCH, MCHC, and PLT levels, but there were significant decreases in the HGB and HCT levels.
Keywords. *Wet Cupping, Complete Blood Count, Adults.*

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Introduction

Cupping therapy has a long history dating back to ancient times and was widely used in the past [1]. Nowadays, there is renewed interest in cupping as a way to alleviate various symptoms, particularly pain [2]. Pain is the most common reason why people seek out alternative therapies to conventional medicine [3]. There are two types of cupping techniques: Dry and Wet. Dry cupping involves no scratching or bleeding, while wet cupping involves both [4]. Dry cupping is more commonly used in the Far East, while wet cupping is preferred in the Middle East, North Africa, and Eastern Europe [5]. The exact way in which cupping provides therapeutic benefits is still not fully understood [6].

Wet cupping therapy is known for its ability to enhance blood circulation, which helps to eliminate blood stasis and waste from the body. This therapy also causes minor damage to the skin and capillary vessels, which triggers the nervous system to excrete certain substances from the body [7]. It has been shown to stimulate both the peripheral and autonomic nervous systems. Cupping therapy is believed to remove harmful substances from the skin microcirculation and interstitial fluid compartment, as well as drain excess fluid and increase blood flow to the skin and muscles [8,9]. Overall, wet cupping therapy is a promising complementary treatment that can help the body eliminate harmful substances and waste products.[7]

Several studies have been carried out to examine the effects of cupping on blood parameters, such as the 2017 study conducted in Iran. The study included 86 men aged 25-40 years old. The results of the CBC test before and after one week of cupping indicated a reduction in the rate of red blood cells and hemoglobin, but an increase in the Mean cell value (MCV). This improvement in blood parameters led to a better overall health level [10]. In 2020, a study was conducted on the impact of cupping on hematological and biochemical parameters in the Missan governorate of Iraq. The study involved 30 participants, and blood samples were taken before and after cupping at one and two weeks. The samples were examined using CBC tests and tests to measure fat and cholesterol levels in the body. The results showed a significant increase in Red Blood Cells (RBC) and improvements in Hemoglobin (HGB), Hematocrit (HCT), Neutrophils (NE), Lymphocytes (LY), fat, and cholesterol levels [11]. In 2022, a study was conducted in Yemen involving 106 adult women. The study's objective was to assess blood parameters, kidney function, and lipid profile. Following two weeks of cupping, the CBC examination revealed an increase in platelet and lymphocyte count, while the RBC count remained within the normal range [12].

There have not been enough local studies conducted to assess the effects of wet cupping on hematological parameters. To our knowledge, only one study, carried out in Al-Zwayi, Libya, investigated the impact of wet cupping on blood pressure and lipid characteristics in women. This study involved 27 women, with 12 having high blood pressure and 15 being healthy. Blood pressure and total cholesterol levels were measured before and after a 30-minute session. The results showed a decrease in both blood pressure and lipid levels

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in women with high blood pressure, while no effect was observed in healthy women [13]. Therefore, our study aimed to investigate the effect of wet cupping on the blood components of adults aged 22-50 in Tripoli, Libya.

Methods

Study and selection of patients

This is a cross-sectional study was conducted on cupping centers in the Tripoli region that were accredited by the Cupping and Alternative Medicine Syndicate in Libya. These included Dar Al-Afia clinic, Cordoba Medical Center, and Al-Haramain Center for Cupping, and were carried out between June and August 2023. The study targeted participants who were either receiving cupping for the first time or had not received it in the last three months. All participants underwent wet cupping, with the amount of blood lost ranging from 20 to 30 mL. Prior to cupping, a venous blood sample was taken for CBC analysis. Another sample was taken two weeks after the cupping was performed.

Sample collection and laboratory methods

Three milliliters (3ml) of venous blood were collected in Ethylenediaminetetraacetic acid (K3EDTA) tubes. Blood samples were used to perform a complete blood count (CBC) to measure White blood cells (WBC), Red Blood Cells (RBC), Hemoglobin (HGB), Hematocrit (HCT), Mean Red Blood Cell Volume (MCV), Mean Red Blood Cell Hemoglobin (MCH), Mean Cell Hemoglobin Concertation (MCHC) and Platelet (PLTs). Complete Blood Count analysis was performed using (Sysmex-XP 300) analyzer.

Statistical analysis

The database was structured in Microsoft Office Excel 2010 and analyzed using Statistical Package for the Social Sciences (SPSS) software, version 26. The data was presented as mean and standard deviation (SD). A t-test was used to determine statistically significant differences between two groups; p-value <0.05 was considered statistically significant.

Results and discussion

This study involved 50 instances of wet cupping. Of these, 21 cases (42%) were male and 29 cases (58%) were female, as presented in Table 1. Prior to the cupping procedure, all participants had their blood samples taken for CBC analysis (pre-cupping samples). Two weeks after the cupping procedure, blood samples were collected again and analyzed (post-cupping samples).

Table 1. Classification of the studied participants according to gender

Gender	Frequency	Percent %
Female	29	58%
Male	21	42%

The second table presents the mean and standard deviation of CBC parameters (WBC, RBC, HGB, HCT, MCV, MCH, MCHC, and PLT) both before and after cupping. Our findings show that there is no statistically significant difference in the mean and standard deviation value of WBC, MCV, MCH, MCHC, and PLT before and after cupping (P>0.05). However, the T-test indicates a significant difference in the mean and standard deviation of HGB and HCT levels before and after cupping, with p-values of 0.009 and 0.004, respectively (Table 2).

Table 2. The values of the arithmetic mean, standard deviation, T-test, and P-value for the analysis group for the entire sample

Parameters	Mean ± Std		T-test	P-values
	Pre-Cupping	Post-Cupping		
WBC	6.936 ± 2.166	7.199 ± 2.167	-0.777	0.441
RBC	4.759 ± 0.573	4.668 ± 0.579	1.161	0.251
HGB	13.101 ± 1.815	12.878 ± 1.821	2.738	0.009
HCT	39.927 ± 4.430	38.964 ± 4.720	3.047	0.004
MCV	84.188 ± 6.629	84.871 ± 6.848	- 0.738	0.464
MCH	27.515 ± 3.072	27.843 ± 2.626	- 0.871	0.388
MCHC	32.642 ± 2.131	32.619 ± 1.873	0.064	0.950
PLT	258.704 ± 64.438	253.940 ± 71.802	0.486	0.629

Hematological parameters are important indicators of overall health. Changes in these parameters can signal various conditions [14]. Wet cupping and other traditional healing practices have been utilized across various cultures for centuries to treat a variety of health issues [15]. Despite its longstanding use, there is limited scientific evidence in Libya regarding the effects of wet cupping on hematological parameters. Consequently, the objective of this study was to determine whether wet cupping results in noteworthy changes in hematological factors.

The sample population for this study consisted of 21 males (42%) and 29 females (58%), as shown in Table 1. The distribution indicates that there were more females than males participating in the study, possibly due to their greater interest and participation in alternative therapies [16-17].

Our study examined the effects of cupping on hematological parameters and found that the mean and standard deviation level of RBC count increased from 4.76 ± 0.57 million/µL before cupping to 7.19 ± 2.17 million/µL after cupping, while the mean and standard deviation level of WBC count decreased from 6.94 ± 2.17 thousand/µL to 4.67 ± 0.58 thousand/µL. However, it's important to note that these differences did not reach statistical significance ($p > 0.05$) (Table 2). These results suggest that wet cupping therapy may not have a significant short-term impact on RBC and WBC counts. Other studies by Soleimani et.al [10] and Ahmed et al., [12] have reported similar findings. However, Mraisel et al., and Okmi, et al., have reported different outcomes, showing a substantial alteration in RBC and WBC counts, respectively, following cupping therapy [11,18]. This variation may be due to the brief duration of our study follow-up period in comparison to previous studies, which may not have captured any potential long-term effects of wet cupping therapy on hematological parameters.

The present study observed that the mean and standard deviation levels of HGB decreased noticeably from 13.10 ± 1.82 g/dL before cupping to 12.88 ± 1.82 g/dL after cupping, with a p-value of 0.009. Similarly, HCT levels decreased noticeably from 39.93 ± 4.43% before cupping to 38.96 ± 4.72% after cupping, with a p-value of 0.004 (Table 2). This outcome is consistent with the findings of Mraisel et al., who demonstrated that cupping therapy can significantly reduce both HGB and HCT levels [11]. However, our results contradict the studies conducted by Soleimani et al. and Ahmed et al., both of which found insignificant changes in HGB and HCT values following cupping therapy [10,12].

According to Table 2, there were no significant changes in hematological parameters such as MCV, MCH, MCHC, and platelet counts before and after cupping ($p > 0.05$). This matches the findings of previous studies by Mahdavi et al., [19] and Obohat et al [20], which suggest that wet cupping doesn't have a significant immediate impact on these specific blood parameters. However, Ahmed et.al [12] and Alshareef et.al [21] have reported different results. In their studies, platelet count and RBC indices respectively showed significant changes after cupping therapy. This difference could be due to variations in cupping techniques used in different studies, leading to different physiological responses that affect the observed changes in blood parameters [22]. Our study has some limitations that should be acknowledged. Firstly, the relatively small sample size may limit the generalizability of our findings. Additionally, the two-week follow-up period may not capture the potential long-term effects of wet cupping therapy on hematological parameters. Moreover, other factors such as diet, lifestyle, and underlying medical conditions were not controlled in our study, which could influence the results.

Conclusion

To sum up, the study showed that wet cupping therapy has a slight but noticeable effect on HGB and HCT levels, resulting in a minor decrease in red blood cell mass. However, other blood parameters such as RBC, WBC, MCV, MCH, MCHC, and PLT did not show any significant changes after the therapy. This suggests that, in this study, wet cupping therapy did not have a significant impact on most blood parameters. Nevertheless, it is crucial to consider the clinical implications of these findings and explore the long-term effects and variations in a more extensive and diverse population. Moreover, further research should investigate the mechanisms behind these changes and the safety of wet cupping therapy in people with specific medical conditions.

Conflict of interest. Nil

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المستخلص

الحجامة الرطبة هي إجراء قديم يـ ستخدم لعلاج والوقاية من الأمراض الجهازية المختلفة عن طريق إزالة الدم من الجـ سم. هدفت هذه الدرا سة إلى تحليل تأثير الحجامة الرطبة على معايير تعداد الدم الكامل لدى البالغين الذين تتراوح أعمارهم بين 22 و 50 عامًا. أجريت هذه الدرا سة من يونيو إلى أغسطس 2023 وشارك فيها 50 مشاركًا مهتمين بالخضوع للحجامة الرطبة. من بين هؤلاء المشاركين، كان 21 من الذكور و 29 من الإناث. تم أخذ عينات الدم قبل جلسة الحجامة الأولى ومرة أخرى بعد أسبوعين من الجلسة. تم تحليل عينات الدم التي تم جمعها باستخدام جهاز تحليل أمراض الدم لإجراء تحليل تعداد الدم الكامل. لم تكن هناك فروق ذات دلالة إحـ صائية في متو سطـ م ستويات خلايا الدم الحمراء، وخلايا الدم البيـ ضاء، وحجم خلايا الدم الو سطى، وم ستوى تركيز الماكرو في الدم، وم ستوى تركيز الماكرو في الدم، وم ستوى الصفائح الدموية. بين عينات ما قبل الحجامة وما بعدها. مع ذلك، انخفـ ضت مـ ستويات الهيموغلوبين والهيماتوكريت بـ شكل ملحوظ في عينات ما بعد الحجامة مقارنة بعينات ما قبل الحجامة P=0.009 وP=0.004 على التوالي . في الختام، وبناءً على نتائج الدرا سة، لم تحدث الحجامة الرطبة أي تغيرات ملحوظة في م ستويات خلايا الدم الحمراء، وخلايا الدم البيـ ضاء، وحجم خلايا الدم الو سطى، وم ستوى تركيز الماكرو في الدم، وم ستوى تركيز الماكرو في الدم، وم ستوى الـ صفائح الدموية، ولكن كان هناك انخفاض ملحوظ في مستويات الهيموغلوبين ومستوى الهيماتوكريت.