## ORIGINAL ARTICLE

# Wet Cupping Therapy Ameliorates Headache, Chest Pain and Muscle Ache in Patients with Hyperlipidemia, Diabetes and High Blood Pressure: A Controlled Clinical Trial

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#### ABSTRACT

**Aim:** To study the clinical efficacy and safety of wet cupping treatments in relieving headache, chest pain and muscle ache in patients recently have diagnosed with hyperlipidemia, diabetes, and high blood pressure.

**Methods:** This study determines the effects of wet cupping on some blood parameters and pressure in 50 males and 50 female patients aged between 35 to 55 years undergoing wet cupping therapy at the Sheefa Cupping and Acupuncture Private Center after they have been diagnosed clinically to have hyperglycemia, diabetes and high blood pressure by a specialist at Department of Chronic Diseases, Sulaimani Teaching Hospital. Venous blood was obtained, and blood pressure taken from patients immediately before and 72 hours after cupping therapy. The hematological parameters and serum lipid profile, fasting blood sugar, ferritin, urea, and creatinine concentrations were determined.

**Results:** Wet cupping significantly reduced the cholesterol, triglyceride, low-density lipoprotein, fasting blood sugar, ferritin, urea, and creatinine, lowered blood pressure but did not significantly affect the erythrocyte parameters, leukocyte or platelet counts in the patients. The normal hematological parameters in patients after wet cupping therapy show that the treatment is not detrimental to health. The treated patients showed significantly reduced headache, chest pain and muscle ache.

**Conclusion:** Wet cupping therapy is beneficial as a prophylactic and/or complementary treatment for hyperlipidemia, hyperglycemia, and hypertension and in prevention and control of diabetes mellitus and kidney disease, hence reducing the headache, chest pain and muscle ache.

Keywords: Cupping technique, Lipid profile, Blood biochemistry, Physiological parameters, Reducing Pain

#### INTRODUCTION

Cupping is an ancient therapy practiced by several cultures for improvement of health and general well-being<sup>1,2</sup>. The technique involves the use of either a plastic, bamboo, earthen or glass cups placed on the desired acupoints on the skin to create suction<sup>3</sup>. Currently, the mechanism of effect of cupping therapy remains unclear, although proper cupping causes skin hyperemia or hemostasis that facilitates healing<sup>3, 4</sup>.

In Kurdish culture, cupping therapy is known as *Kalla-Shax*. Cupping in Arabic name is *Al-Hejamah*, which means to reduce size in order to return the body to its natural state<sup>2,5,6</sup>. *Al-Hejamah* has been part of the Middle-Eastern culture for thousands of years<sup>7, 8</sup> with records of the practice in an Egyptian medical textbook, *Ebers Papyrus*, dating as early as 1550 BC<sup>9,10</sup>. The earliest records of cupping in China were in an ancient book, *Bo Shu*, which was discovered in an ancient tomb of the Han Dynasty (206 BC–220 AD) in 1973<sup>3</sup>. Cupping therapy is now formally and widely practiced in hospitals throughout China<sup>11</sup>.

Cupping therapy can be either dry or wet. Dry cupping therapy is more popular in the Far-East whereas wet

cupping is favored in the Middle East and Eastern Europe regions<sup>1,11</sup>. Cupping is either used alone or in combination with acupuncture<sup>12,13</sup> to symptomatic treat a wide range of conditions such as pain, hypertension, stroke, diseases, hemophilia, inflammation, cardiovascular varicose veins, rheumatic arthritis, sciatica, back pain, chest pain, muscle ache, severe headache and migraine<sup>6,7,11,14</sup>. The therapy is also recommended as a form of deep tissue massage, and for mental and physical relaxation and infertility<sup>15,17,18,19</sup>. According to Islamic prophetic medicine, cupping therapy is best performed on the 17<sup>th</sup>, 19<sup>th</sup>, and 21<sup>st</sup> of the Islamic calendar and it is recommended that patients fast for the therapy<sup>16</sup>.

Although cupping therapy is a relatively safe form of complementary and alternative medicine, excessive cupping therapies, especially within short intervals, may cause weakness, drowsiness, and lighten head<sup>20,21,22</sup>. Excessive cupping may also cause, ecchymosis, bleeding, anemia, blisters, skin pigmentation, abscesses, and wound infections if performed by an unqualified therapist<sup>2,4,10</sup>.

Although some clinicians remain skeptical about the effectiveness of cupping, recent evidence shows that the therapy has obvious health benefits. Among the benefits of cupping are in the treatment of herpes zoster cough,

asthma, pain reduction, and regulation of blood pressure<sup>3,5,9,18</sup>. Thus, this study investigated the effect of cupping therapy on pathophysiological, hematological, and serum biochemical parameters in human patients with severe headache, chest pain and muscle ache.

## MATERIALS AND METHODS

**Materials:** Disposable premium quality sterilized plastic cupping sets fitted with hand suction pumps were purchased from (Kangzhu 6-Cup Biomagnetic Chinese Cupping Therapy Set, Model B1, Kangzhu, Beijing, China). Other disposables, disinfectants, chemicals, reagents, and diagnostic kits were obtained from SG Global Biotech Sdn Bhd, Klang, Malaysia.

Methods: This study is cross sectional prospective study regulated by questionnaire, it was conducted from April to August 2017 on 50 males and 50 female patients aged between 35 to 55 years who consulted the Sheefa Cupping and Acupuncture Private Center, after they have been enrolled to Department of Chronic Diseases, Sulaimani Teaching Hospital and diagnosed clinically to have hyperglycemia, diabetes and high blood pressure by a specialist clinician. All patients received based on their verbal complaints of a severe headache, breathing difficulties, muscle ache, chest pain, and depression. Venous blood was obtained from patients immediately before and 72 hours after cupping therapy. All patients were asked to sign informed consents forms, thereby agreeing to receive wet cupping therapy and to allow blood collection from them. We followed the Consolidated Standards of Reporting Trials and Standards for Reporting Interventions in Clinical Trials of Wet Cupping guidelines for designing and reporting controlled trials. Our team strictly defended the patients' legitimate rights and interests, and we were responsible for the whole therapeutic process.

**Exclusion criteria:** Pregnant or lactating subjects and patients with severe heart, liver and kidney disorders or diseases, coagulation abnormalities, anemia, cancer, and severe bone fracture were excluded from the study. Additionally, patients who failed to complete the questionnaires and were not able to follow medical orders were also excluded.

**Patient allocation:** Patients who were interested in participating in this trial were interviewed first to confirm the availability of a severe headache, chest pain, and muscle ache. After recruiting the participants, they were invited by the medical laboratory scientist to assign the participants to the treatment and decided to conduct the wet-cupping to them. The patients were included in the study respective of whether or not they were undergoing any form of treatment for the pain. All the indicators were measured through questionnaires. Higher scores indicate higher pain intensity.

**Cupping therapy:** The shoulder and the spine region were examined for abnormalities to ensure the correct application of cupping therapy. Each patient was separately

treated in the therapeutic room and the chosen regions on the back of the patients were thoroughly sterilized with alcohol. Designated skin acupoints on the shoulder and at both sides of the spine, using sterilized surgical blades, were nicked to a predetermined depth and width to cause bleeding. Vacuums were created in the cups with flame, the cups firmly placed at the acupoints, and blood allowed to drain out for 3 to 5 times using multiple cups (Figure 1). Upon removal of the cups, the wounds were aseptically cleaned and covered with gauze and secured. Following the termination of the process, each participant was offered a 200 mL of freshly prepared natural fruit juice.

**Pathophysiological and blood parameters:** The blood pressure of subjects, before and after cupping therapy was determined using a conventional mercury-based sphygmomanometer and a stethoscope (Equmed, Sdn. Bhd. Malaysia). The temperature of the therapeutic room was never below than 25°C. Fasting blood sugar, serum cholesterol, triglyceride, low-density lipoprotein, ferritin, urea, and creatinine concentrations were determined using Cobas c 311 (Roche Diagnostics, Germany). Additionally, total erythrocyte (RBC), leucocyte (WBC), platelet (Plt) count, hemoglobin (Hb), and hematocrit (PCV) were determined using a Coulter Counter (Beckman, USA).

**Statistical analysis:** The results of all experiments expressed as mean  $\pm$  SD and analyzed statistically using SPSS version 20.0 (SPSS Inc., Chicago, USA). Paired t-test were done to compare the pre and post treatment results. Probability values of *P*<0.05 were considered statistically significant.

## RESULTS

There is no significant difference (P>0.05) in the levels of hematological parameters in the patients between before and after cupping therapy. The total blood cholesterol, triglyceride, LDL, blood sugar, urea, and creatinine concentrations and blood pressure were significantly (P<0.05) lower in both male and female patients at 72 post-cupping compared to the pre-cupping period (Table 1).

The questionnaire showed highly significant reduction in headaches, muscles aches, and chest pain in both male and female patients at 72 post-cupping compared to the pre-cupping period (P<0.001) (Table 2), also questionnaire demonstarted that 80% of males and 3% of female volunteer patients were smokers. The patients, particularly males, had diets high in protein and red meat. Most patients do not regularly exercise

Fig. 1: A photograph showing a researcher (Phlebotomist) performing a wet cupping at the shoulder region and both sides of the spine using a sterilized disposable premium quality plastic cupping set along with hand suction pumps. Cups were applied to the treatment region and the blood was carefully drained 3-5 times.

Beremetere	Male ( m	ean ± SD)	Female ( mean ± SD)			
Parameters	Pre-cupping 72 h post-cupping		Pre-cupping	72 h post-cupping		
RBC (×10 <sup>6</sup> /mm <sup>3</sup> )	5.42 ± 1.55	4.9 ± 1.0	4.02 ± 1.85	4.0 ± 1.65		
Hb (g/dL)	16.22 ± 1.61	$14.8 \pm 2.4$	13.07 ± 2.71	13.01 ± 1.75		
PCV (%)	47.45 ± 2.5	44.05 ± 2.1	43.15 ± 1.5	42.15 ± 1.9		
WBC (×10 <sup>3</sup> /mm <sup>3</sup> )	10.31 ± 1.7	10.33 ± 1.9	$9.32 \pm 2.55$	$9.12 \pm 1.45$		
Plt (×10 <sup>3</sup> /mm <sup>3</sup> )	396.11 ± 2.49	377.41 ± 1.6	365.11 ± 1.2	359.17 ± 1.3		
Total Cholesterol (mg/dL)	401.13 ± 1.0	193.14* ± 3.0	300.13 ± 2.0	180.13 *± 2.8		
Triglyceride (g/L)	548.34 ± 1.1	189.35*± 1.2	349.34 ± 1.9	191.15 *± 1.2		
LDL (mg/dL)	$196.84 \pm 4.1$	129.34*± 4.1	175.84 ± 3.1	125.88* ± 3.5		
Blood sugar (Fasting) (mg/dL)	301.86 ± 1.8	155.2.6* ± 1.5	255.86 ± 1.75	150.16* ± 2.5		
Urea (mg/L)	55.76 ±.1.5	37.16* ±.2.3	49.67 ±.2.5	35.66*±.1.45		
Creatinine (mg/dl)	1.35 ± 1.5	1.19* ± 1.47	$1.23 \pm 1.4$	0.9 *± 2.33		
Ferritin (ng/dL)	415.11 ± 1.6	275* ± 2.8	87.45 ± 2.6	82.25 ± 1.56		
Blood pressure (mmHg)	16.5±0.8-10.33± 1.2	12.5 ±1.5-10.33±3.0*	16.4 ± 0.76-10.2±3.7	12.1±2.1-10.2±2.5*		
Values are mean ± Std. dev.	*P<0.05 is sid	phificant	SD = standard deviation			

Table 1 Blood parameter values of the patient before and after cupping.

LDL=low density lipoprotein; WBC=leucocytes; RBC=erythrocytes; Hb=hemoglobin; PCV=hematocrit; Plt= platelet

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Symptoms	Pre Cupping	72 hrs. Post Cupping	Chi	P value	Eta	Odds	95 % Confidence interval	
	N=100 (%)	n=100 (%)	square		value	ratio	Upper	Lower
Headache	90 (45%)	19 (9.5%)	101.6	0.001**	0.7	38.4	16.9	87.3
Muscle ache	95 (47.5%)	3 (1.5%)	169.3	0.001**	0.9	31.67	10.38	96.6
Chest pain	84 (42%)	14 (7%)	98.0	0.001**	0.7	32.25	14.8	70.2

\*\* P<0.001 is highly significant



Fig. 2: A photographs showing a lipidemic blood indicating high lipid profile including either cholesterol or triglyceride or both in a male patient during cupping therapy.



Fig. 3: A photographs showing darken and concentrated blood indicates high ferritin and PCV levels in a male patient during cupping therapy.



#### DISCUSSION

Cupping therapy is an ancient traditional medical practice that has now become a treatment modality in many hospitals and local clinics throughout Asian countries including Iraq. The treatment method is primarily employed for the alleviation of pain and depression. The results of the study show that the high lipid profile (Figure 2) is more pronounced in male than female patients. Based on the history of the patients, this phenomenon is suggested to be due to high intake of fat diet from consumption of mutton cooked in ghee for cooking. This is compounded by the lack of exercise among male patients <sup>23</sup>. High cholesterol diet is one of the leading causes of atherosclerosis that results in hypertension, especially among middle-aged to old patients <sup>9</sup>. Cupping therapy did not cause the significant decrease in RBC count, indicating the blood loss in due the technique is marginal and not a health hazard. Male patients that volunteered for cupping therapy had higher serum ferritin concentrations than female patients. This is associated with males generally having higher total erythrocytes count than females. This is an association between high serum ferritin and smoking<sup>24</sup>. Kurdish men are generally heavy smokers (≥20 or more cigarettes per day). Thus, the higher serum ferritin in male than in female patients in the study is partially attributable to smoking habits.

In Kurdish culture, sugar is heavy consumed in the diet through drinking of tea, coffee, and soft drinks, sweets, and other confections<sup>25, 26</sup>. There is no accurate report on the prevalence of diabetes mellitus in Iraq. However, one study suggested that in the Basrah region, Iraq one in five adults is affected by the disease <sup>27</sup>. Our study on patients in the Kurdish region showed that cupping therapy reduced blood glucose both in males and females.

Iron stores may predict the development of diabetes <sup>28</sup>. Iron overload (Fig. 3) is associated with insulin resistance and increased risk of development of type 2 diabetes mellitus<sup>29</sup>. We showed that cupping decreased the ferritin levels, suggesting the procedure decreases iron stores in male patients. The study indicates that wet cupping treatment is an effective adjuvant therapy for patients with familial history of diabetes to adapt to prevent the development of the disease<sup>30</sup>.

One abnormality in diabetes mellitus is dyslipidemia<sup>31</sup>. In people with diabetes, restoration of the lipid profile to normality may suggest disease remission. In our study, wet cupping therapy decreased total cholesterol, triglyceride, and LDL concentrations both in males and females. Thus, wet cupping may be one of the means to improve the lipid profile in diabetic patients while serving as an effective method to improve lipid metabolism and subsequently prevent the development of atherosclerosis. There is no known cure for type 2 diabetes, but the disease may be prevented with regular wet cupping therapy and adopting the healthy lifestyle.

Dyslipidemia is a common manifestation of the patient with anxiety and depressive disorders<sup>32,33,34</sup>. The lowering of serum lipid parameters in patients in our study suggests that wet cupping may be used to alleviate symptoms of depression.

Serum creatinine and urea are indicators of renal function that is used in the assessment, diagnosis, and monitoring treatment efficacy in kidney diseases. In this study, the levels of both creatinine and urea are relatively higher in patients before treatment, which may be directly related to the high protein and red meat consumption. After treatment, both analysis decreased in level, which is suggest improvement of renal function that could be associated with wet cupping<sup>35,36</sup>.

## CONCLUSION

In conclusion, wet cupping therapy is not detrimental to health, instead, it is beneficial as a prophylactic and/or complementary for the treatment of hyperlipidemia, hyperglycemia, and hypertension and in prevention and control of diabetes mellitus and kidney disease, and consequently effective to alleviate a headache, chest pain, and muscle ache in treated patients.

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