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The Impact of Blood Cupping (Al-Hijama) on Serum Creatinine and Uric Acid Levels in Patients from Hadhramout, Yemen

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Abstract: Cupping is a wonderful healing tool that has been employed for hundreds of years by numerous traditional folklore practitioners. Cupping treats many diseases including eliminating blood pollutants like uric acid and creatinine. The aim of this study to evaluate the impact of cupping on blood pressure, uric acid concentration, and creatinine levels. Sixty (60) random patients between the ages of (20 -70) years were selected, the blood samples were collected before cupping and after cupping for the evaluation. The result showed that the levels of creatinine and uric acid decreased significantly ($p < 0.05$) after cupping for both creatinine and uric acid. Moreover, the study showed that blood pressure decreased significantly ($p < 0.05$) after cupping. The result concluded that cupping has positive impact on health by modulating creatinine, uric acid blood levels and decreasing blood pressure.

Kata kunci: blood cupping, creatinine, uric acid, blood pressure.

***Abstrak*:** *Bekam adalah alat penyembuhan luar biasa yang telah digunakan selama ratusan tahun oleh banyak praktisi tradisional. Bekam mengobati banyak penyakit termasuk menghilangkan polutan darah seperti asam urat dan kreatinin. Tujuan dari penelitian ini adalah untuk mengevaluasi dampak bekam terhadap tekanan darah, konsentrasi asam urat, dan kadar kreatinin. Enam puluh (60) pasien secara acak berusia antara (20-70) tahun dipilih, sampel darah dikumpulkan sebelum bekam dan setelah bekam untuk evaluasi. Hasil penelitian menunjukkan bahwa kadar kreatinin dan asam urat menurun secara signifikan (p <0,05) setelah bekam untuk kreatinin dan asam urat. Selain itu, penelitian ini menunjukkan bahwa tekanan darah menurun secara signifikan (p <0,05) setelah bekam. Hasil penelitian menyimpulkan bahwa bekam memiliki dampak positif terhadap kesehatan dengan memodulasi kreatinin, kadar asam urat dan penurunan tekanan darah.*

Keywords: *asam urat, bekam darah, kreatinin, tekanan darah.*

PENDAHULUAN

Many traditional folklore practitioners have been using cupping as benefit therapeutic therapy for thousands of years (Mehta & Dhapte 2015). Getting rid of blood toxins like uric acid and creatinine is one of the many ailments that cupping cures (Husain *et al*. 2020; Ahmed *et al*. 2022). Cupping, which opens up a novel treatment option for some diseases that have proven resistant to conventional medication, is one such component of prophetic medicine that has been neglected (Al-Bedah *et al.* 2018) This offers a great chance for medical professionals and researchers to include cupping into alternative medicine and so help patients in Islamic communities and elsewhere feel less discomfort (Ahmedi & Siddiqui 2014; Khalil *et al*. 2018).

Cupping (Al-Hijama in Arabic) is one of the oldest medical practices for the treatment of a range of diseases. It is an integral part of complementary and alternative medical treatment (CAM) to assist in managing pain and physical function of patients. Early Egyptian and Chinese physicians used cupping therapy thousands of years ago, yet its precise origins are still unknown (Al-Bedah *et al.* 2016). Cupping is a medical practice where cups are placed on parts of the body to create a suction effect which raises the skin and draws the blood to the surface. It is used throughout Asia, the Middle East and Europe to treat pain, swelling, inflammation, migraine, rheumatism, bronchitis and the common cold. The prophet Mohammad recommended the practice in the Islamic religion 1400 years ago. The earliest known use of this technique in Egypt, 5,000 years old (Ebers

Papyrus). In China, it is mentioned in medical treatises that go back some 3,000 years. Hippocrates, the Greek doctor who composed the Hippocratic Oath, mentioned it in 400 BC, while in Finland, they've been doing it since the 15th century. This confers many therapeutic advantages exerted by Al-Hijama over other conventional therapeutics (El Sayed *et al*. 2014a; El Sayed *et al*. 2014b). Al-Hijama is recognized as the treatment for people who have chronic pain. Over the last decades, the interest in Al-Hijama for chronic pain treatment has increased (El Sayed *et al*. 2013). Although though it is an unreliable indicator, plasma creatinine, which has an inverse relationship with glomerular filtration rate (GFR), is frequently used to evaluate renal filtration function. Creatinine is removed from the circulation by glomerular filtration and excreted in the urine. The renal tubules reabsorb small amounts of creatinine that are secreted by the proximal tubule. Daily creatinine excretion is fairly stable (Ciarimboli *et al.* 2012). Purine nucleic acids are catabolized to produce uric acid. Despite being filtered by the glomerulus and released into the urine by the distal tubules. Because uric acid is largely insoluble in plasma, it can lodge in tissues and joints at high concentrations, resulting in excruciating inflammation. In women, urea concentration rises after menopause. Postmenopausal women may develop hyperuricemia and gout. In severe cases, deposits of crystalline uric acid and urates called tophi form in tissue, causing deformities. Hypouricemia is less common than hyperuricemia and is usually secondary to severe liver disease or defective tubular reabsorption. The removal of blood and toxins or poisons like free radicals and lipid peroxides, boosting the production of nitric oxide, removing excess fluid, reducing blood flow back to the heart, lowering peripheral resistance, and lowering blood pressure are the mechanisms by which cupping therapy lowers high blood pressure. Nitric oxide generation rose after cupping therapy began which increases the vasodilation of blood arteries and reduces blood pressure (Amiruddin *et al.* 2022). The aims of current study to evaluate the impact of blood cupping on uric and creatinine levels in the serum.

MATERIAL AND METHODS

Study design

This is an experimental study which blood pressure, blood uric acid, and blood creatinine were assessed quantitatively in pre and post wet blood cupping.

Study population and study area

This study was conducted from May 2022 to August 2022 in Al-Mukalla City, Hadramout, Yemen.

Study design

This is an experimental study which blood pressure, blood uric acid, and blood creatinine were assessed to the volunteers quantitatively in pre and post wet blood cupping. The selection of the volunteers was randomly which severing muscle pain.

Study population and study area

This study was conducted from May 2022 to August 2022 in Al-Mukalla City, Hadramout, Yemen. The ethical committee in Al- Arab University approved this research in May 2022.

Sample size

Calculation of study using paired t-test for pre and post wet blood cupping was calculated using an equation (Katz *et al.* 2014)

$$N = \frac{(Z\alpha)^2 \times (S)^2}{(\bar{d})^2}$$

Where:
N = sample size
zα = z value for alpha error (99%= 2.58)
s^2 = variance = (3)
d = mean difference to be detected

Inclusion criteria

Study included any individual that come to blood cupping. People used to do blood cupping for multiple reasons that include people that have pain in the back and in the joints and people do cupping to renew their red blood cells or do cupping for prophetic reasons because prophet Mohammad peace be upon him (PBUN) recommended it. The participants' ages ranged from 20 to 70 years old, and the samples were chosen randomly.

Exclusion criteria

Children, expectant mothers, people with disabilities, and patients with missing pre- or post-cupping data were also eliminated.

Data collection

A structural interviewing questionnaire was used to gather data; it was created to capture and preserve all important details about each case studied.

Collection blood sample for uric acid and creatinine measurement

About 3 ml of venous blood was collected from a cupping center each participant in pre and post cupping. The first blood sample was collected in the cupping center pre cupping and the second blood sample was collected after 2-3 days of cupping. The samples were separated between two sterile serum-separator containers after being collected in an aseptic environment and centrifuged for 5 min at 3000 rpm to obtain serum then the obtained samples

were transport on ice until investigations in the same day or day after.

Creatinine measurement

Creatinine was measured using Prietest TOUCH. The serum (100 µl) was mixed with the creatinine working reagent **(**1 ml), mix it well. The first reading (A1) was measured after 30 secs and the second reading (A2) was measured after 60 secs from first reading and the absorbance (A_1) and (A_2) were measured at 520 nm. Finally, absorbance (A) was calculated using the equation

$$A= A_2 - A_1$$

Where as:

A1: absorbance after 30 sec

A2: absorbance after 90 sec

Uric acid measurement

Uric acid was measured using Prietest TOUCH. The serum (25 µl) was mixed with the urea working reagent (1 ml), the tubes were mixed thoroughly and incubated for 10 min at room temperature (25ºC). At 520 nm, the absorbance (A) of the sample and the standard was measured in comparison to the blank.

Blood pressure measurement

The blood pressure for all the patient under study was evaluated before and after blood Cupping (Al-Hijama) using mercury pressure device.

Data analysis

Data was analyzed to obtain mean, standard deviation and correlation of the sampling using statistical package for social science (SPSS) computer programed version 22. For comparison and correlation, the t test and person correlation were employed. Using a paired t-test, the difference between pre- and post-measurements of uric acid and creatinine was compared, and $P < 0.05$ was deemed significant.

RESULT AND DISCUSSION

Table 1 illustrates a comparison of the clinical and biochemical features of the subjects before and after cupping therapy at the baseline. The blood pressure significantly decreases ($p < 0.05$), and the levels of serum uric acid and creatinine also significantly fell compared to after cupping. On the other hand. Table 2 displayed the pre-and post-cupping blood pressure, creatinine, uric acid, age of the patient with creatinine and uric acid, and person association (*p* value) for each. Figure 1 shows the correlation between creatinine concentration and uric acid concentration in pre and post cupping respectively. Figure 2 depicts the relationship between age and blood pressure before and after cupping, respectively. Figure 3 depicts the relationship between age and creatinine concentration prior to and following cupping. Figure 4 depicts the relationship between age and uric acid before and after cupping, respectively. The evaluation in the current study was after 3 days (short term) in order to see how quickly the body response to cupping and because we cannot impose a diet on the participants. We had to limit our study in evaluation of creatinine, uric acid and blood pressure we didn't include more tests like cholesterol or sodium. In this study the serum creatinine level was significantly decreased after blood Cupping (Al-Hijama) (p <0.05). This result was in the agreement with others (Ahmed *et al.* 2022; Rahman *et al.* 2020).

Previous study conducted in Oman revealed that serum creatinine following wet cupping therapy showed a significant reduction after one month and three months with the value 63.1 ± 11.0 and 63.3 ± 11.9 respectively compared to baseline value 70.2 ± 13.2 (Husain *et al.,* 2020). It is reported that creatinine concentrations and blood pressure were significantly lower ($P < 0.05$) in both male and female patients at post cupping compared to the pre-cupping period (Ahmed *et al.* 2022; Al-Bedah *et al.* 2018; Rahman *et al.* 2020; Alizadeh *et al.* 2022). Similar finding was reported that creatinine levels were markedly and significantly reduced in comparison with values before and after cupping, 0.86 ± 0.15 *vs.* 0.75 ± 0.18 (P <0.001). A same study revealed that creatinine and urea levels were markedly and significantly reduced in comparison with values before and after cupping. The creatinine values pre and post cupping were 0.86 ± 0.15 *vs.* 0.75 ± 0.18 ($P < 0.001$) respectively, while urea values pre and post cupping were 33.62 ± 10.56 *vs.* 31.07 ± 10.88 ($P = 0.016$), respectively (Ahmed *et al.* 2022). A study conducted in Sudan revealed that following

Table 1. Creatinine, uric acid and blood pressure in pre and post cupping patient

Variable	Pre cupping	Post cupping	*P* value*
Creatinine (mg/dl)	2.15 ± 0.48	2.06 ± 0.60	$P < 0.05$
Uric acid (mg/dl)	2.06 ± 0.36	2.00 ± 0.36	$P < 0.05$
Blood pressure (mm.Hg)	High	Normal	$P < 0.05$

Result given in mean ± SD, N=60. *P-value* ≤ 0.05 considered significant.
*Paired sample T test was used for comparison.

Table 2. Illustrate the person correlation (*p* value) of creatinine and uric acid in pre and post cupping. Age with creatinine, uric acid and blood pressure in pre and post cupping

Variable	Person correlation (r)	*p* value
Creatinine with uric acid in pre cupping	0.234	0.072
Creatinine with uric acid in post cupping	0.303	0.018
Creatinine with age in pre cupping	0.141	0.284
Creatinine with age in post pre cupping	0.131	0.318
Uric acid with age in pre cupping	0.101	0.444
Uric acid with age in post cupping	0.234	0.071
Age with blood pressure in pre cupping	0.234	0.072
Age with blood pressure in post cupping	0.459	0.000

*Result given as *p* value and person correlation (r)
*$P \leq 0.05$ considered as significant.

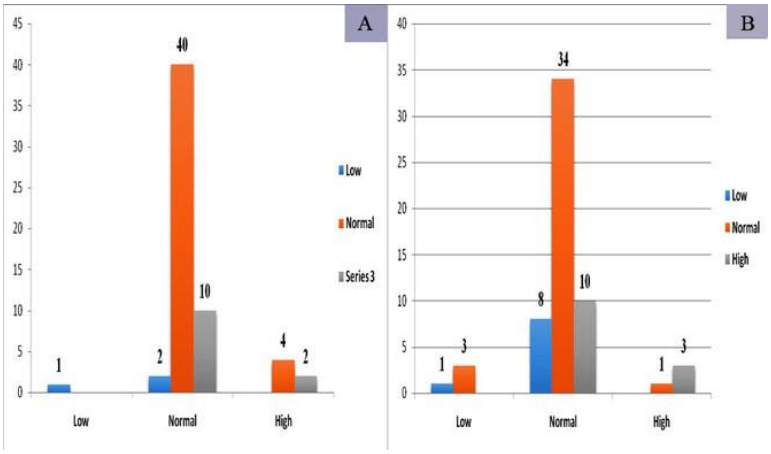

Figure 1. The correlation between creatinine concentration and uric acid concentration, (a) Pre cupping (r=0.234, *P* = 0.072), (b) Post cupping (r =0.303, *P* = 0.018).

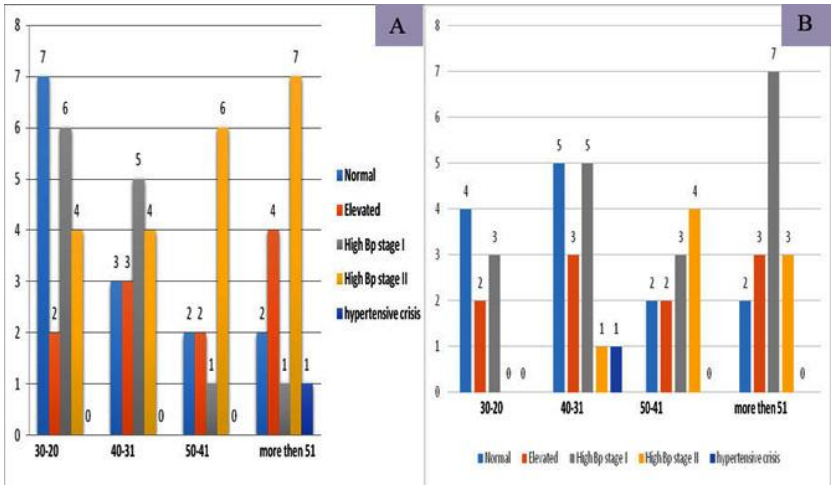

Figure 2. The correlation between blood pressure and age, (a) Pre cupping (r = 0.234, *P* = 0.072), (b) Post cupping (r = 0.459, *P* = 0.000).

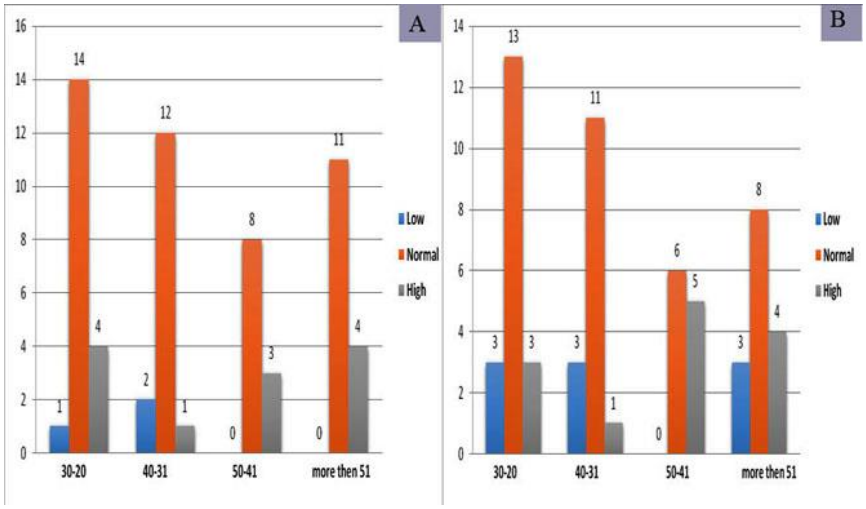

Figure 3. The correlation between creatinine concentration and age, (a) Pre cupping (r = 0.141, P = 0.284), (b) Post cupping (r = 0.131, P = 0.318).

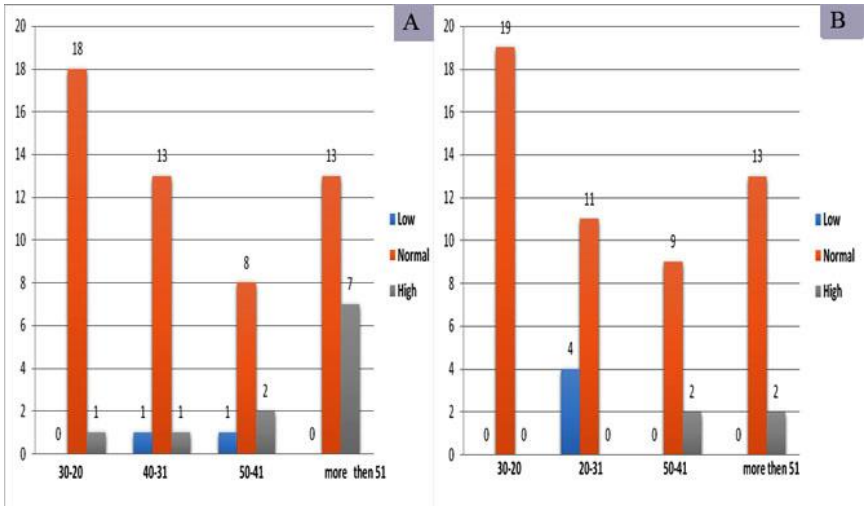

Figure 4. The correlation between uric acid and age, (a) Pre cupping (r = 0.101, P = 0.444), (b) Post cupping (r = 0.234, P = 0.071)

blood cupping, plasma creatinine significantly decreased (p = 0.000) (Hapipah *et al.*, 2022). On the other hand, blood cupping failed to provide a clinically significant result (p > 0.05) for 18 patients, this finding may be attributable to the study's small sample size (Saeed *et al.* 2021). The current study demonstrates that the serum level of uric acid significantly decreased (p = 0.000) which is in the similar line to the results reported by others (Hani & Wadi 2017) Several studies have confirmed this finding, showing that cupping therapy can considerably lower uric acid levels in patients with hyperuricemia disease. This study indicated a significant drop of uric acid level (p < 0.05) post cupping compared to baseline values (Alshowafi 2010). Some studied parameters were high in the cupping blood in comparison with the venous blood cholesterol, triglycerides (TG), as well as low-density lipoproteins (LDL), were statistically significant at (p < 0.001) while high-density lipoproteins (HDL), blood sugar and uric acid were statistically significant (p=0.01) (Saeed *et al*. 2021). Similarly, uric acid and total cholesterol level was significantly decreased (p <0.05) following therapy (Sutriyono *et al*. 2019). On the other hand, treated with cupping for different etiologies including neck, waist, back pain, rheumatoid arthritis, health improvement (protection), headache and some other diseases such as hypertension, varicose and diabetes on female only on the age between 20 – 60 years, the study stated that uric acid levels was not significantly different in the individuals before and after blood cupping (Ahmed *et al.* 2022). The claim that blood cupping (Al-Hijama) therapy may be beneficial to patients with hypertension was based on the removal of both excess interstitial and intravascular fluid and harmful

metabolic substances (Al-Tabakha *et al.* 2018). It was also proposed that blood cupping (Al-Hijama) therapy stimulates endogenous nitric oxide production and excretion, including accumulated vasoactive substances and free radicals which may result in reduced blood pressure measurements (Al-Tabakha *et al.* 2018). In this study there was highly significant decrease on blood pressure before and after the wet cupping therapy ($p < 0.05$). This result was in the agreement with others testified that blood pressure was significantly ($P < 0.05$) difference after cupping therapy (Rahman *et al.* 2020; Sutriyono *et al.* 2019). Similarly, Alshowafi (2010) noted that there was significant difference ($p < 0.05$) in the reduction of blood pressure 10 days after blood cupping compared with the baseline in both systolic and diastolic.

In this study there was a positive correlation between blood pressure and age in post cupping (r= 0.459, P = 0.000), this result was in the same line with others (Mukhlis *et al.* 2020; Fadli *et al.* 2021; Fadli & Fatmawati 2021). Other researchers mentioned that there was a significant difference between blood pressure measurements (systole; diastole) before and 2 weeks of the follow-up period (p = 0.000; p = 0.001); between 2 weeks and 4 weeks (p = 0,000; p = 0,000); between 4 weeks and 6 weeks (Fadli *et al.*, 2020). Wet cupping can be alternative prevention for the elderly who suffer from hypertension and still need further research on the number of blood clots per cupping.

CONCLUSION

Blood cupping (Al-Hijama) therapy showed significant reductions in renal function test in healthy subjects. Therefore, it could contribute in reducing risks and preventing the chronic renal. Blood cupping (Al-Hijama) therapy could reduce creatinine, uric acid and blood pressure on patients. According to the study's findings, blood cupping (Al-Hijama) is a suitable and secure procedure that may, on the one hand, reduce the risk of cardiovascular disease and, on the other, enhance and improve renal functions.

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SIGNIFICANCE STATEMENTS

This study discovers the effect of blood cupping (Al-Hijama) thereby for the treatment of patient who suffering high concentration of creatinine, uric acid and high level of blood pressure. In addition, this is first study describe the positive effect of blood Cupping (Al-Hijama) in the patient from Hadhramout, Yemen.

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