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The Effect of Wet Cupping on Blood Haemoglobin Level

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Abstract

Although wet cupping is quite a popular procedure that is practised worldwide, there is not enough evidence that it may cause anaemia as a side effect. In this observational retrospective pre–post study, we looked through the previously recorded data of patients who received wet cupping at King Abdulaziz University Hospital. We included in the study all those who had their complete blood count done before and immediately after the procedure (n=364). Then, we recorded their blood haemoglobin, red blood cell count, mean corpuscular volume, mean corpuscular haemoglobin and haematocrit before wet cupping, immediately after it, within 3 months after it, then, finally, from 3 months to 6 months after it. Three comparisons took place for each blood test by comparing the pre-reading with each one of the three post-readings. There was no statistically significant difference in any of the pre–post comparisons of those blood tests. However, after excluding those who were not anaemic and keeping only the anaemic patients, the comparison showed statistically significant improvement, but not clinically significant, when comparing the red blood cell count and the haematocrit before and immediately after wet cupping — p value was 0.000 for both. The mean difference for red blood cell count was –0.80 million cells/μL (–0.12 to –0.39) while the haematocrit mean difference was –0.64% (–0.96 to –0.33). In conclusion, anaemia was not found as a side effect of wet cupping.

Keywords: Wet cupping, Safety, Haemoglobin, Anemia, Prophetic medicine, Saudi Arabia

Introduction

Cupping is a well-known traditional healing remedy in many parts of the world. Wet cupping is defined as "the process of using a vacuum at different points on the body but with incisions in order to remove 'harmful' blood which lies just beneath the surface of the skin" [1]. It is known in Arabic language as hijama. For Muslims, it has special importance because it was recommended by the Prophet Mohammed (peace be upon him) on many occasions. For example, he said, "Indeed the best of remedies you have is hijama (cupping)" [1].

Although wet cupping has been a well-known treatment procedure for many years, there is no clear evidence regarding its safety on patients' haemoglobin levels. This study should help to build a solid, safe base for future wet-cupping studies and clinical practice on anaemic patients. The objectives of this study are to determine the effect of wet cupping on blood haemoglobin level, and measure the risk of anaemia caused by this procedure. Furthermore, the study will assess the effect of wet cupping on haemoglobin level within the subgroup of anaemic patients by comparing it before and after the procedure.

Literature Review

Few studies have investigated the effect of wet cupping on blood haemoglobin level. The most relevant one is a study conducted in Iran in 2009 by Mahdavi et al. [1], who performed wet cupping on 56 healthy men between 20 and 40 years old, on one point between the two scapulae on the back, opposite T2-T5. They did many blood tests before the procedure and 2 weeks after it, including complete blood count. The mean haemoglobin level before wet cupping was 15.67 ± 1.2, and after cupping it was 15.12 ± 1.25. The p value was 0.045, which was a statistically significant difference, but, apparently, a clinically nonsignificant difference. But we cannot generalise those results because it was a small sample size and they included only healthy, young men.

A number of case reports testify that patients performed excessive wet cupping for a long period and then developed anaemia. We have found six such case reports in the literature with similar stories of a patient who developed anaemia and even some had anaemia with complications following an excessive course of wet cupping—and, in one case, dry cupping. Five of those case reports or case series were for Korean patients [2-5] and one was from Turkey [6]. All those cases had a common history of performing what was described as repeated, excessive, or long-duration cupping. The sessions were performed very frequently; for example, two to three times per week as described in one study [3]. The duration of treatment was long in all of those studies ranging from 2 months [2] to more than 10 years [4]. Logically, the very frequent cupping and the long duration might have caused the severe anaemia in those cases, but this cannot be conclusively determined by only those case reports. On the other hand, this still cannot answer the question if the performance of less frequent wet-cupping sessions for a shorter duration can have the same effect on haemoglobin or not.

Methods

The design of this study is an observational retrospective pre–post study to investigate the effect of wet cupping on different blood parameters and answer the question if wet cupping or hijama causes

anaemia. The study was performed at King Abdulaziz University Hospital in Jeddah in the Prophetic Medicine Clinic, which is funded and supervised by the Y.A. Jameel, Scientific Chair of Prophetic Medical Applications. This clinic mainly provides wet-cupping therapy for patients referred from other clinics in the hospital who ask for hijama for different reasons. The data were taken from the records of the patients who attended that clinic during January 2013 to December 2013. We included all the patients who attended the clinic during that period and excluded those who did not have a complete blood count (CBC) before receiving hijama. We also excluded those who had no CBC done immediately after hijama. After excluding those patients, the sample size was 364 participants.

All participants who received wet cupping at the Prophetic Medicine Clinic signed a consent form indicating that their data would be used in multiple studies funded by the scientific chair. Confidentiality of data was ensured throughout the study.

The usual hijama procedure in the Prophetic Medicine Clinic involves cleaning the target area with an alcohol swab, placing the cup over the area and starting suction. The cup is then gently removed and five very superficial incisions, about 0.3 cm to 0.7 cm in length and 0.2 mm in depth, are made parallel to each other. After creating the incisions, the cup is placed over the same area and the suctioning is repeated. This procedure is performed on all or most target hijama sites at the same time. The amount of blood extracted per session is about 50 mL to 100 mL from all sites in the body. After that, the areas are cleaned and dressed. Usually, there is at least a month gap before the next hijama session at the clinic.

The investigations used for comparison are haemoglobin (HB), haematocrit (HCT), red blood cell (RBC) count, mean corpuscular volume (MCV) and mean corpuscular haemoglobin (MCH). Those investigations' readings were taken at different time points: before hijama, immediately after hijama, within 3 months after hijama and between 3 months and 6 months after hijama. Some patients had no measurements taken within 6 months, other than that done immediately after hijama, so those were included only in the first comparison and excluded from the following ones.

Statistical analysis was done using SPSS program version 16.0. Baseline categorical variables are presented in frequencies and ratios, while baseline continuous variables are presented in means and standard deviations. Student's t-test analyses will be used to compare mean HB, HCT, RBC count, MCV and MCH before wet cupping and immediately after it, before wet cupping and within 3 months after it, and before wet cupping and from 3 months to 6 months after it. The diversity of the patients included in the study is the reason for not using ANCOVA (discussed in the "Results" section). Moreover, we repeated the same set of comparisons within the subgroup of anaemic patients to assess if hijama is safe to be performed among them.

Results

The patients who were chosen for this study had a wide age range, from 14 to 86 years, but most of them were within the adults' range of 18 and 65 years old. Most of the participants were female, with a ratio of about 1 male to 3 females. The mean values of the participants' HB, RBC, MCV, MCH and HCT were all within the normal ranges. The majority of the participants had more than one hijama session on different days, and the average number of hijama sites in each session was about nine sites of wet cupping. Unfortunately, there were no data available for the average amount of blood extracted from the patients in each hijama session. Table 1 shows more details about the baseline characteristics of the participants.

Baseline characteristic	n	Result	Range (if applicable)
Mean age, years (± SD)	363	44.4 (± 13.9)	14 to 86 years
Male: female ratio	364	92:272	–
Smoker: non-smoker ratio	364	38:320	–
Mean HB level (± SD)	364	12.9 (± 1.8)	4.5 to 17.9
Mean RBC (± SD)	364	4.7 (± 0.6)	3.0 to 6.7
Mean MCV (± SD)	322	82.2 (± 6.8)	55.9 to 113.5
Mean MCH (± SD)	322	27.8 (± 5.0)	15.2 to 86.8
Mean HCT (± SD)	364	50.3 (± 203.6)	16.9 to 3907.0
Mean number of hijama sessions	328	2.8 (± 1.7)	1 to 14
Mean number of hijama sites per session	323	9.3 (± 4.3)	2 to 37

Table 1: Baseline characteristics of participants before hijama.

The majority of the patients who were referred to the Prophetic Medicine Clinic had pain as their main complaint. Nevertheless, many of them reported to the clinic with more than one complaint; 120 of the 364 included in the study had multiple complaints. Table 2 gives the full description of all the complaints that the patients had, with the frequency of each complaint.

The complaint of the participant	The frequency of the complaint*
Back pain	136
Shoulder pain	48
Knee pain	40
Other pain	87
Headache and migraine	66
Hypertension	28
Infertility	25

Diabetes Mellitus	10
Hormonal disturbance	8
Allergy	8
Chronic fatigue	8
Rheumatoid arthritis	7
Psychological problem	5
Other complaints	37
No complaint**	81
* Note that many participants had more than one complaint.	
** Some people receive hijama for general well-being, without having a specific complaint or disease.	

Table 2: Participant complaints.

Many comparisons were drawn from the participants' results to show the difference between their blood results before and immediately after hijama, then before and within 3 months after hijama and finally before and from 3 to 6 months after hijama. The after-hijama readings were taken after the final hijama session, because most of the participants had more than one hijama session. Each comparison was displayed in mean difference with p values and confidence intervals. In general, there were no statistical differences between any of the readings before and after hijama. Table 3 shows those comparisons in depth.

Comparison	Comparison between baseline and results immediately after hijama	Comparison between baseline and results within 3 months after hijama	Comparison between baseline and results within 6 months after hijama
Haemoglobin (HB)			
Number of cases	364	193	78
Mean HB before hijama (± SD)	12.9 (± 1.8)	12.6 (± 1.8)	12.3 (± 1.8)
Mean HB after hijama (± SD)	12.9 (± 1.8)	12.5 (± 1.8)	12.2 (± 1.8)
Mean difference (95% CI)	0.02 (–0.06 to 0.08)	0.10 (0 to 0.19)	0.03 (–0.18 to 0.24)
p value	0.689	0.055	0.764
Red blood cell (RBC) count			
Number of cases	364	194	78
Mean RBC before hijama (± SD)	4.7 (± 0.6)	4.7 (± 0.5)	4.6 (± 0.6)
Mean RBC after hijama (± SD)	4.7 (± 0.5)	4.6 (± 0.6)	4.6 (± 0.6)
Mean difference (95% CI)	–0.01 (–0.03 to 0.02)	0.02 (–0.01 to 0.05)	–0.01 (–0.07 to 0.05)
p value	0.639	0.152	0.79
Haematocrit (HCT)			
Number of cases	364	193	78
Mean HCT before hijama (± SD)	50.3 (± 203.6)	12.6 (± 25.8)	37.8 (± 7.1)
Mean HCT after hijama (± SD)	38.8 (± 4.4)	12.5 (± 4.8)	36.8 (± 5.2)
Mean difference (95% CI)	11.54 (–9.43 to 32.50)	0.10 (0.00 to 0.19)	0.98 (–0.47 to 2.42)

p value	0.28	0.196	0.183
Mean corpuscular volume (MCV)			
Number of cases	321	190	78
Mean MCV before hijama (± SD)	82.2 (± 6.8)	81.7 (± 7.0)	80.5 (± 7.3)
Mean MCV after hijama (± SD)	82.2 (± 7.3)	81.7 (± 7.2)	79.8 (± 1.0)
Mean difference (95% CI)	0.02 (−0.28 to 0.33)	−0.02 (−0.26 to 0.22)	0.69 (−0.47 to 1.84)
p value	0.884	0.872	0.241
Mean corpuscular haemoglobin (MCH)			
Number of cases	321	190	78
Mean MCH before hijama (± SD)	27.8 (± 5.0)	27.7 (± 6.1)	27.1 (± 0.7)
Mean MCH after hijama (± SD)	27.9 (± 5.8)	27.7 (± 6.6)	27.1 (± 6.8)
Mean difference (95% CI)	−0.15 (−0.49 to 0.18)	0.04 (−0.72 to 0.80)	0.04 (−1.85 to 1.94)
p value	0.361	0.923	0.966

Table 3: Comparison between the HB, RBC, HCT, MCV and MCH levels before and within 3 and 6 months after hijama.

The same method of comparison was repeated for only the participants who initially had anaemia before the first session of hijama. The definition of anaemia by the World Health Organization is less than 13 g/dL for males and less than 12 g/dL for females [7]. This definition was followed in the selection of the anaemic patients. Although the results showed a statistically significant increase in the RBC and HCT when comparing their mean values before and immediately after hijama, it was not a clinically significant difference. For the RBC, the mean value before hijama was 4.4 million cells/μL (± 0.5) and after hijama was 4.5 million cells/μL (± 0.6). For the HCT, the mean value before hijama was 33.6% (± 3.2) and after hijama was 34.3% (± 3.8). In the following comparisons, this difference disappeared during the 3-month and the 6-month follow-up investigations. However, we need to point out here that there were fewer participants this subgroup than the total number of participants that we started with, which decreases the power of the results. In Table 4, more details are shown regarding this subgroup.

Comparison	Comparison between baseline and results immediately after hijama	Comparison between baseline and results within 3 months after hijama	Comparison between baseline and results within 6 months after hijama
Haemoglobin (HB)			
Number of cases	99	58	31
Mean HB before hijama (± SD)	10.8 (± 1.3)	10.7 (± 1.4)	10.6 (± 1.6)
Mean HB after hijama (± SD)	10.9 (± 1.5)	10.7 (± 1.7)	10.8 (± 1.5)
Mean difference (95% CI)	−0.12 (−0.33 to 0.07)	−0.06 (−0.25 to 0.13)	−0.17 (−0.55 to 0.20)
p value	0.198	0.553	0.355
Red blood cell (RBC) count			
Number of cases	99	58	31
Mean RBC before hijama (± SD)	4.4 (± 0.5)	4.4 (± 0.6)	4.4 (± 0.6)
Mean RBC after hijama (± SD)	4.5 (± 0.6)	4.4 (± 0.6)	4.5 (± 0.6)
Mean difference (95% CI)	−0.80 (−0.12 to −0.39)	−0.04 (−0.10 to 0.02)	−0.04 (−0.17 to 0.08)
p value	0.000	0.214	0.495

Haematocrit (HCT)			
Number of cases	99	58	31
Mean HCT before hijama (± SD)	33.6 (± 3.2)	33.4 (± 3.7)	33.3 (± 4.1)
Mean HCT after hijama (± SD)	34.3 (± 3.8)	33.7 (± 4.4)	33.7 (± 4.1)
Mean difference (95% CI)	−0.64 (−0.96 to −0.33)	−0.30 (−0.79 to 0.19)	−0.45 (−1.44 to 0.54)
p value	0.000	0.226	0.359
Mean corpuscular volume (MCV)			
Number of cases	88	56	30
Mean MCV before hijama (± SD)	77.3 (± 7.5)	76.6 (± 7.5)	75.6 (± 7.4)
Mean MCV after hijama (± SD)	77.5 (± 7.6)	76.6 (± 7.8)	75.9 (± 7.1)
Mean difference (95% CI)	−0.19 (−0.45 to 0.07)	−0.002 (−0.569 to 0.566)	−0.29 (−1.34 to −0.57)
p value	0.148	0.995	0.570
Mean corpuscular haemoglobin (MCH)			
Number of cases	88	56	30
Mean MCH before hijama (± SD)	25.4 (± 5.8)	25.3 (± 6.9)	25.6 (± 9.1)
Mean MCH after hijama (± SD)	25.5 (± 5.8)	24.4 (± 3.4)	24.2 (± 3.1)
Mean difference (95% CI)	−0.06 (−0.18 to 0.05)	0.93 (−0.83 to 2.70)	1.46 (−1.91 to 4.83)
p value	0.287	0.294	0.384

Table 4: Comparison between the HB, RBC, HCT, MCV and MCH levels before and within 3 and 6 months after hijama, among anaemic participants only.

Discussion

All the results prove that anaemia is not a side effect of wet cupping, or hijama. The diversity of the patients included in the study gives it more strength and easier generalisability, because it contains a wide spectrum of age and a wide variety of different complaints. On the other hand, it would be better if we had a consistent number of patients in all of the follow-up results comparisons to have similar powers in all of them, but that was not possible because of the fact that it was a retrospective observational study and we had no control or choice on the investigations done—a drawback of using a retrospective design. We recommend that future studies use a prospective design. It will also be beneficial to accurately measure the amount of blood extracted in each session, as this might affect the outcome.

If we compared the results of this study with the previously mentioned studies, we can say that the results are consistent with the study by Mahdavi et al. [1]. Clearly those results are different from the case reports that were listed previously. They all reported very frequent wet or dry cupping for a long duration followed by the patients suffering from anaemia [2-6]. Therefore, the anaemia might be due to the unusual excessive cupping sessions that were done in those reports. This is unlikely to happen with the usual wet-cupping procedure as we described here. Although some hijama practitioners claim that hijama might be a treatment for anaemia, it was clear in this study that such a treatment did not improve the HB levels in those who were anaemic at the beginning of the study.

Conclusion

Wet cupping does not cause anaemia, and it is safe for anaemic patients; however, it is yet to be proven as a valid treatment for anaemia.

Acknowledgements

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