



## The Patterns and Determinants of wet cupping use among patients complaining of pain who attended Hijama clinic at King Abdulaziz University Hospital in Jeddah city

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### General Note

 Article is recommended to print as color digital version in recycled paper.

### ABSTRACT

*Background:* Wet cupping is considered one of the most common traditional practices after spiritual healings and herbal medicine in Saudi Arabia. While there are many studies that have been previously conducted on the patterns and determinants of

Complementary and alternative approaches as general, no enough data exists on the patterns and determinants of WCT among patients with pain in Saudi Arabia. Therefore, the purpose of this study was to evaluate the patterns and determinants of wet cupping use for patients complaining of pain. *Method:* A retrospective records review study was conducted using medical records of patients who attended Hijama clinic in King Abdulaziz University in Jeddah city from January 2017 to December 2017. In total, 347 patients attended the clinic during the year 2017. Out of those patients, 231 were complaining of pain and were included in the study. The Chi-square test and Multivariate logistic regression were used to measure the association between the various socio-determinants and the wet cupping use. *Results:* The most common reason for attending Hijama clinic among patients complaining of pain during the year 2017 was the back pain (43.3%), followed by neck, shoulder and joint pain (34.6%), and headaches and migraine (22.1%). The using of other types of treatments in addition to WCT is 3.95 times more in patients with co-morbidly ( $P < .001$ ). Female is 2.35 times more likely than male to use WCT along with other treatments ( $P = 0.034$ ). The patients who are older than 55 years are 3.35 times more likely to use cupping with other treatments than younger patients ( $P = 0.034$ ). *Conclusion:* This present study found that the most common reason for using wet cupping among patients attended hijama clinic complaining of pain was musculoskeletal pain related conditions. Moreover, older female pain patients with chronic diseases tend to use wet cupping therapy alongside other treatments.

**Keywords:** Patterns, Determinants, wet cupping, pain, Hijama

## 1. INTRODUCTION

Pain is taken into account a significant clinical drawback with social and economic burden. Pain is classified as either acute or chronic according to with International Classification of diseases or can be classified physiologically as skeletal, neuropathy, or inflammatory (World Health Organization, 2012; Shaykh and Anvari, 2018). The prevalence of chronic pain is varied among countries. It was estimated to be 24 % in developing countries whereas this prevalence is higher in developed countries with 28 % according to a recent review study (Elzahaf et al., 2012). Pain is the most common reason for seeking therapeutic alternatives of conventional medicine (Kim J-I et al., 2011).

Traditional and Complementary Medicine (T&CM) comprises a wide range of different therapies that are used outside conventional healthcare of conventional therapy. However, T&CM and modern medicine are now offered together in an integrative healthcare approach. In many modern medical centers, the offering of T&CM and modern medicine delivered in an integrative healthcare approach. Traditional medicine refers to practices based on the native culture whereas the terms "complementary medicine and alternative therapies (CAM)" refers to broad set of health care practices that are not part of the country's own traditions (Al-Bedah and Qureshi, 2017). Previous studies reported that the prevalence of using CAM is ranging from 5% to 74.8% worldwide (Frass et al., 2012). It was estimated that nearly one third of American adults had used at least one type of complementary and alternative medicine in their lives (Eisenberg et al., 1998). Recently, CAM is becoming more popular in European countries and other developed countries. The percentage of the adults who have used CAM at least once is 38% in Belgium, 75% in France, 48% in Australia and 70% in Canada (World Health Organization, 2002-2005). Cupping is well-known complementary remedy and an ancient treatment, which was broadly utilized in several communities, and it was recommended by the Islamic society (Almaiman et al., 2018). Cupping is divided into 2 major categories: Dry Cupping and Wet Cupping Therapy (WCT). Dry cupping is the process of using a vacuum on different regions of the body in order to gather the blood in that area without performing incisions to the skin. This study is focusing on wet cupping which is defined as "the method of utilizing a vacuum at numerous points on the body however with incisions so as to get rid of blood which lies simply beneath the surface of the skin (Cao H et al., 2014). In the Middle East and most of the Arab countries, cupping is known as Hijama which is an Arabic word that means sucking (Al Bedah AMN et al., 2016). In Kingdom of Saudi Arabia, Wet cupping is considered one of the most common traditional practices after spiritual healings and herbal medicine (Al-Rowais et al., 2009).

Several general healthcare utilization models suggest that individual's healthcare utilization tend to be determined by factors such as type of utilization, site of medical care, purpose, time interval for visits, health beliefs, socio-economic factors and so on (Pu CY et al., 2008). In Saudi Arabia, Ministry of Health provides free health care services to all or any Saudi national. However, Wet cupping and CAM are not included in this service. In the other hand, MOH has established the National Center for Complementary and Alternative Medicine (NCCAM) to control the CAM practice which is principally provided by Private Healthcare sectors (Alrowais et al., 2017).

In 2002, World Health Organization developed the first WHO Global Traditional Medicine Strategy in order to review the status of TM/CAM globally and outlines WHO's own role and activities in TM/CAM. In addition, this strategy will provide a framework for action for WHO and its partners, aimed at enabling TM/CAM to play a far greater role in reducing excess mortality and morbidity, especially among impoverished populations. The last updated strategy was WHO Traditional medicine strategy 2014-2023 and one of the important objectives of this strategy is to integrate CAM into national health services in all member states of WHO. This can be achieved by a knowledge-based policy which depends mainly on studying the patterns, determinants and outcome of CAM use (World Health Organisation, 2016). Al-Faris stated that identifying of the extent and patterns of complementary and alternative medicine usage in Saudi Arabia which is considered an economically developing country is essential for establishing strategies to improve health services (Al-Faris EA, et al., 2008).

### Literature Review

Wet cupping (Hijama) is an old medical technique, which has been broadly applied for treatment of numerous conditions, such as acute/chronic inflammation, communicable diseases, and the immune system diseases (Mohamed El Sayed et al., 2014). Cupping has been employed in the treatment and cure of a broad vary of pain conditions. It had been reported that Cupping might relieve the pain of herpes (zoster Hui et al., 2012) rheumatoid arthritis (Ahmed et al., 2005), (Carpel Tunnel Syndrome et al., 2009), (Zhang et al., 2010), fibromyalgia (Cao et al., 2011), persistent nonspecific low back pain (Farhadi et al., 2009), acute trigeminal neuralgia (Zhang et al., 1997) migraine (Firoozabadi and Navabzadeh , 2014) and tension headache (Ahmadi et al., 2008).

Many studies have investigated the patterns and determinants of complementary and practice of medicine utilization for various diseases. However, analysis on pattern and determinants relating to individual CAM treatments like WCT has not been established (Al-Faris et al., 2008) (Mohammad Y et al., 2015) ( Al-Zahim et al., 2013) (Choi JH et al., 2015) (Ceylan et al., 2002) (Choi et al ., 2017) (Saydah et al., 2006) (Wazaify et al., 2013) (Artus et al., 2007) (Goldstein et al., (2005) (Ghaedi et al., 2017). In a study conducted in Riyadh by Muhammad et al., concerning patterns of Traditional Medicine use for patients with medical neurological disorders. The results showed that among all rumored styles of Traditional Medicine types in this study, wet cupping was the commonest method (45.4%), followed by herbs, skin cauterization operation, and reciting of the Holy Quran. They additionally found that the use of wet cupping and other forms of Traditional Medicine (TM) wasn't statistically differed across age group, gender, level of education, perception toward TM in patients with neurological diseases. The authors declared that the chronic disabling nature of the diseases might be the most reason for seeking TM regardless of socio-demographic factors (Mohammad et al., 2015). Another study performed in Saudi Arabia by Alzahim et al. regarding use of CAM by Saudi patients with liver diseases attending a Tertiary care center. They found 14% of the patients used WCT and about 60% of them approving it as valid treatment for his or her conditions. Moreover, not all the patients within the study performed WCT in specific clinic and also the authors conclude that there are solely 3 factors are liable for the patients' option to utilize CAM that is: female gender, rent residence and having relatives with history of CAM use. They recommend further studies to include other diseases (Al-Zahim et al., 2013).

### Objectives

To determine the patterns of wet cupping for patients who were referred to Hijama clinic with pain as their main complaint in King Abdulaziz University Hospital (KAUH) in Jeddah during the period from January to December of the year 2017.

To identify the determinants of wet cupping for patients who were referred to Hijama clinic with pain as their main complaint in KAUH in Jeddah during the period from January to December of the year 2017.

## 2. MATERIALS AND METHODS

### Place of Study

The study was carried out in Jeddah city, which is the second largest city in Saudi Arabia after the capital city, Riyadh. The study was performed at King Abdulaziz University Hospital in Jeddah in Hijama Clinic, which is a part of the Prophetic Medicine department and is funded and supervised by the Y.A. Jameel, Scientific Chair of Prophetic Medical Applications. Patients referred to Hijama clinic from other clinics to receive wet cupping therapy for different medical conditions.

### Study Design

This study was analytic retrospective record review using medical records of Patients who attended Hijama clinic.

### Sample size and Study Population

A total of 347 patients visited the clinic during the period between January 2017 to December 2017. A total of 231 patients were complaining of pain as their main complaint out of 347 patients visited the clinic during the year 2017.

This current analytic retrospective record review included medical records of patients who were referred to Hijama clinic with pain as their main complaint. Therefore, a total of 116 records were excluded because the pain was not their main complaint or because the reason for referral to the clinic was not due to pain related conditions (Figure 1).

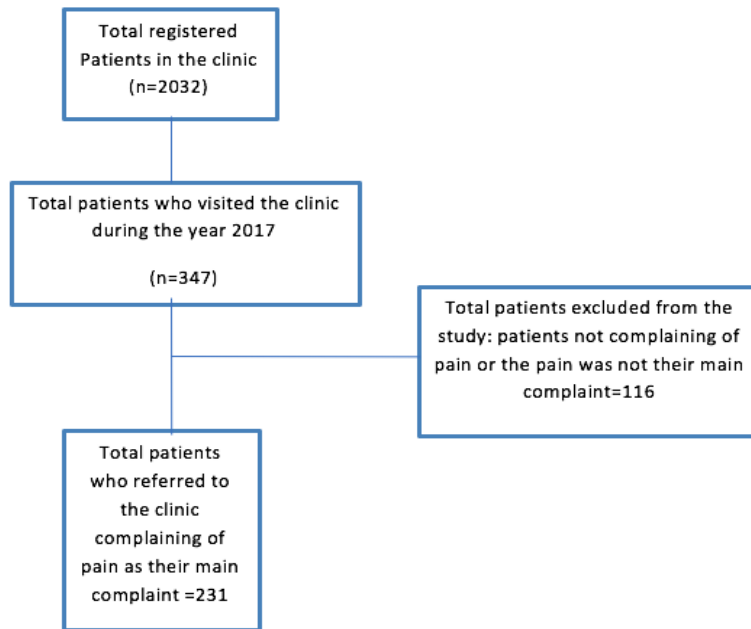


Figure 1: sample size and study population

### Data collection

#### Data collection tool (instrument)

Data collection sheet constructed by the main investigator was used to review data of the medical records. The data collection sheet included three sections:

- 1) Socio-demographic information section (such as: gender, age, nationality, marital status, occupation, level of education, monthly income and residence).
- 2) Medical history section: (such as: reason for referral and the main diagnosis, history of other diseases, medication in use, family history of chronic diseases)
- 3) Wet cupping therapy section: (such as: number of sessions, date of each session, region number of anatomical points for cupping, history of other complementary or alternative therapy using and expectation of improvement with Hijama).

#### Data Collection technique

The data was taken from the medical records of the patients who attended Hijama clinic in the period from January 2017 to December 2017. The medical records in this clinic are paper records and every medical record in the clinic has four sections: The first part is self-reported assessment form filled by the patients which contains questions about socio-demographic data, past medical history, family medical history, medication in use, history of previous use of cupping or other CAM, and expectation of improvement with Hijama. The second part included essential laboratory investigations and medical progress notes including reasons for referral and medical history. The third part is the consent form and cupping session notes including date of each session and site of Hijama anatomical points. The fourth part is pain evaluation form.

Usually, every patient is followed up for two to three sessions and there is at least a period for a month before the next cupping session at the clinic. Every cupping session last for about one hour. The wet cupping procedure in Hijama clinic involves cleaning the target area with an alcohol swab, the cup is then placed on the selected site, and the air inside the cup is sucked by electrical or manual suction. When the cup clings to the skin, it is left for a period of 3 to 5 minutes. The cup then is removed, and five superficial

incisions are made on the skin using surgical blades about 0.4 cm to 0.8 cm in length and 0.2 mm to 0.3 mm in depth and are performed parallel to each other. The cup is placed back over the same area and the suctioning is repeated. The cupping procedure is repeated approximately two to three times using the same manner without making the skin incisions. Finally, the skin is cleaned and dressed with gauze and a plaster.

### Study Outcomes

*The study has two primary outcomes*

The first outcome was the patterns of WCT use for patients with pain who attended hijama clinic. Patterns of WCT use were identified in term of different pain conditions and frequency of cupping use. The association between main complaint and frequency of use of cupping during clinic visits was evaluated.

The second outcome was to identify the determinants of wet cupping use among patients with pain. The association between Socio-demographic factors and whether the patient being user of wet cupping only or being user of WCT in combination with other types of treatments (Conventional treatment or other CAM types) was assessed.

### Ethical considerations

Approval from the Saudi Board of Community and Preventive Medicine Research Committee and the Institutional Review Board (IRB) of King Abdulaziz University Hospital was obtained before the beginning of study fieldwork. 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.

Medical records in Hijama Clinic records storage were reviewed by the main investigator and co-authors, and the data were obtained by data collection sheet. No copy of the records was obtained and no records were taken outside the clinic. For Confidentiality, the collected data were kept secured and were used for purpose of study only.

### Statistical analysis

The data was statistically analyzed by using SPSS software version 24. Descriptive analysis was presented in means and standard deviations for continuous variables whereas categorical variables were presented in frequency and proportion. P-value will be considered significant if  $p < 0.05$  at a confidence interval of 95%. The Chi-square test and Multivariate logistic regression were used to measure the association between the various socio-determinants and the wet cupping use.

## 3. RESULTS

Table 1 shows the Socio demographic and baseline characteristic of the patients

**Table 1** Socio-demographic Characteristics of the patients attending Hijama Clinic complaining of pain (n=231)

Variables	<sup>‡</sup> Frequency	Valid Percentage
<i>Age(years)(n=231)</i>		
≤35	49	21.2
36-45	46	19.9
46-55	77	33.3
>55	59	25.5
Mean±SD	46.84±12.08	
<i>Gender(n=231)</i>		
Male	52	22.5
Female	179	77.5
<i>Nationality(n=231)</i>		
Saudi	139	60.2
Non-Saudi	92	39.8
<i>Marital Status(n=223)</i>		
Single	33	14.8
Married	157	70.4

Divorced/Widow/ Separated	33	14.8
<i>Level of Education (n=228)</i>		
Illiterate	17	7.5
Primary School	24	10.5
Intermediate School	18	7.9
Secondary School	37	16.2
University School	94	41.2
Postgraduate	38	16.7
<i>Occupation(n=220)</i>		
Student	5	2.3
Housewife	80	36.4
Governmental Employee	89	40.5
Private Sector Employee	13	5.9
Retired	13	5.9
Not working	18	8.2
Others	2	.9
<i>Income(n=220)</i>		
Poor	30	13.6
Average	106	48.2
Good	84	38.2
<i>Smoking Status(n=217)</i>		
Yes	27	12.4
No	190	87.6
<i>Residency (n=225)</i>		
Owner	81	36.0
Rent	144	64.0
<i>History of other Chronic diseases(n=221)</i>		
Yes	151	68.3
No	70	31.7

‡The variables that have less than the total 231 frequencies are because of missing values.

In total, 347 patients attended the clinic during the year 2017. Of those, 231 patients were complaining of pain. Of (231) patients included in the study, the majority (77.5%) were women. The largest age group was the 46-55 years group (33.3%) and the smallest group was the 36-45 years group (19.9%). The most common education level was University school graduate (41.2%) and the least common was illiterate (7.5%). Of these patients 70.4% were married and 60.2 % were Saudi. More than forty-eight percent of the patients have average monthly income. The vast majority of the patients were not smoker (87.6%). Most of the patients are governmental employees (40.5%). More than 68.3 % have chronic diseases.

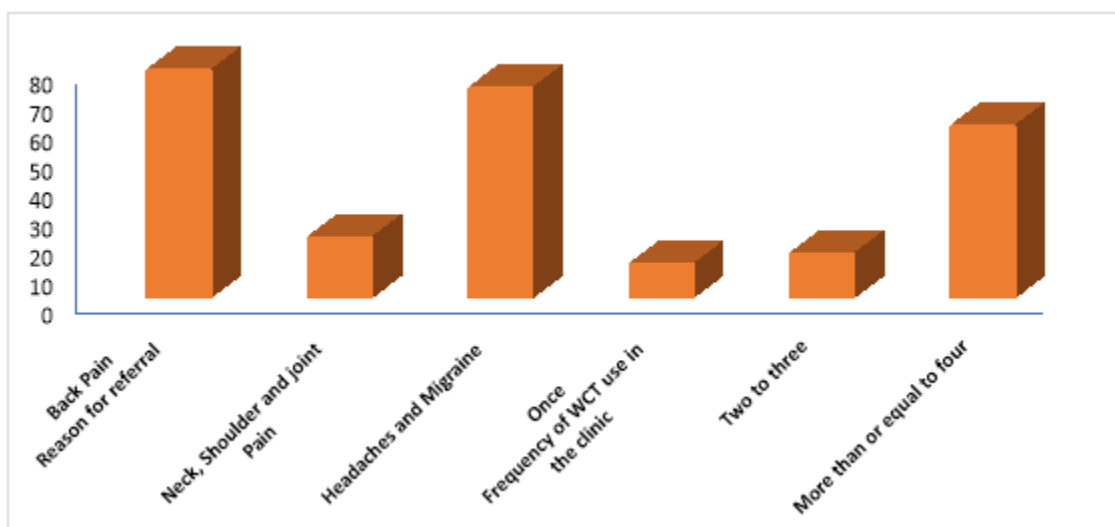
**Table 2** Other types of treatment used along with wet cupping by patients with pain

<i>Variables</i>	<i>‡Frequency</i>	<i>Valid Percentage</i>
<i>Use of conventional Treatment(CT) or Other CAM types (n=224)</i>		
Yes	177	79

No	47	21
<i>User of Conventional Treatments(n=162)</i>		
NSAIDs	118	72.8
Opioids	19	11.7
<i>User of other CAM (n=62)</i>		
Herbal	37	59.7
Acupuncture	4	6.5
Food Supplements	16	25.8
Others	5	8.1

‡The variables that have less than the total 231 frequencies are because of missing values.

Table 2 shows the types of treatment used along with wet cupping by patients. Seventy-nine percent of patients reported using other kinds of treatments (79%). Of those who used conventional treatments for pain, the majority of them were using non-steroidal anti-inflammatory drugs (NSAIDs) (72.8%). Regarding those who used other CAM, 59.7 % used herbal medication, 25.8% used food supplements, 6.5 % used acupuncture, and 8.1 % used others (Table 2).



**Figure 2** Patterns of Wet cupping use among patients complaining of pain attending Hijama Clinic

Table 3 and Figure 2 shows the patterns of Wet cupping use among patients complaining of pain attending Hijama clinic.

**Table 3** Patterns of WCT use among patients complaining of pain attending Hijama clinic, n=231

Variables	Frequency	Valid Percentage
<i>Reason for referral (n=231)</i>		
Back Pain	100	43.3
Neck, Shoulder and joint Pain	80	34.6
Headaches and Migraine	51	22.1
<i>Frequency of WCT use in the clinic (n=231)</i>		
Once	78	33.8
Two to three	66	28.6

More than or equal to four	87	37.7
<i>WCT performed in Sunnah days(n=231)</i>		
Yes	52	22.5
No	179	77.5

The variable has less than the total 231 frequencies because of missing values.

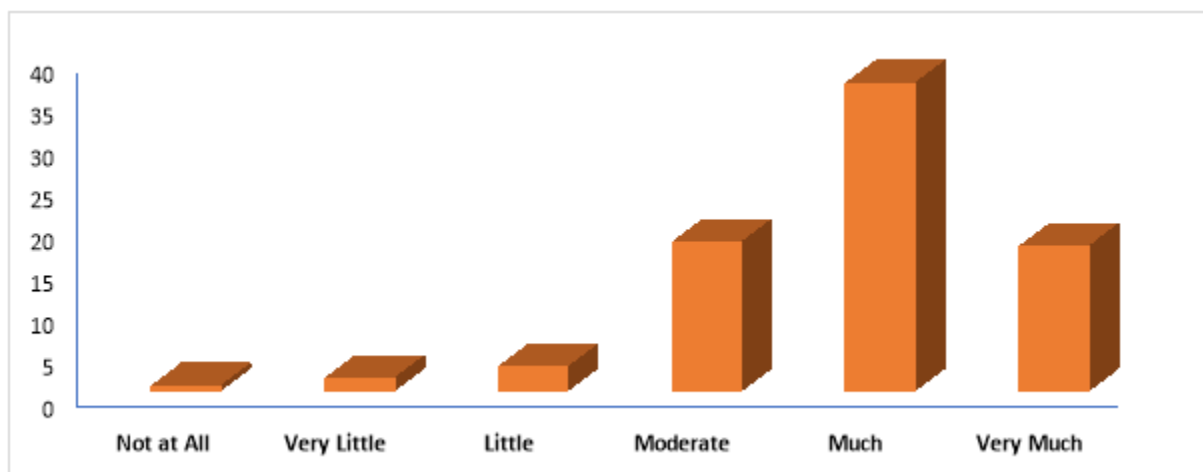
The most common reason for attending Hijama clinic among patients complaining of pain during the year 2017 was the back pain (43.3%) as presented in Table 2, followed by Neck, shoulder and joint pain (34.6%), and headaches and migraine (22.1%). Regarding the frequency of WCT use in the clinic, the majority of patients performed cupping for four or more than four times (37.7%) while 33.8 % of the Patients used WCT only once and 28.6 % used cupping for 2 to 3 times. Of these patients, only 22.5% of the patients tend to use wet cupping during Sunnah Days of lunar months (Table 3).

Table 4 and Figure 3 show the Expectation of improvement with Wet Cupping.

**Table 4** The Expectation of improvement with Wet Cupping, n=215

<i>Expectation</i>	<sup>†</sup> Frequency	Percentage
Not at All	1	0.5
Very Little	3	1.4
Little	6	2.8
Moderate	38	17.7
Much	79	36.7
Very Much	37	17.2
Complete Cure	51	23.7

The expectation of the patients for improvement with wet cupping was presented in (table 4), the majority (36.7%) expected much improvement of the pain with the wet cupping and (23.7%) expected complete cure while only (2.8 %) expected little improvement (Table 4).



**Figure 3** Expectation of improvement with Wet Cupping.

Table 5 shows the association between the frequency of WCT use and the main complaint.

A chi-square test of independence was performed to determine the association between the frequency of WCT use and the main complaint. All expected cell frequencies were greater than five. There was a statistically significant association between them,  $\chi^2(4) = 14.648$ ,  $p = .005$ . The association was small (Cohen, 1988), Cramer's V = .178 (Table 5).



**Table 5**  $\chi^2$  test was performed to determine the association between the frequency of WCT use and the main complaint.

<i>Main complaint</i>	<i>Frequency of WCT use</i>		
	Once	Two to three	More than or equal four
Back Pain	32 (41%)	20 (30.3%)	48 (55.2%)
Neck, Shoulder and Joint Pain	30 (38.5%)	32 (48.5%)	18 (20.7%)
Headaches and Migraine	16 (20.5%)	14 (21.2%)	21 (24.1%)

$\chi^2 = 14.648, df = 4, P = .005.$

**Table 6** Determinants of wet cupping use. n=224

Variables	Types of treatment		P-Value
	Use WCT only	Use WCT simultaneously along with CT or other CAM types	
<i>Age in years</i>			
16-35	16(34%)	29(16.4%)	
36-45	11(23.4%)	34(19.2%)	
46-55	14(29.8%)	61(34.5%)	0.015*
>55	6(12.8%)	53 (29.9%)	
<i>Gender</i>			
Male	16(34%)	31(17.5%)	
Female	31(66 %)	146(82.5%)	0.013*
<i>Nationality</i>			
Saudi	29(61.7%)	106(59.9 %)	0.82
Non-Saudi	18(38.3%)	71(40.1%)	
<i>Marital status</i>			
Single	4(8.9%)	27(15.8%)	
Married	36(80 %)	116(67.8%)	0.28
Divorced/Widow/Separated	5(11.1 %)	28(16.4%)	
<i>Level of education</i>			
Illiterate	3(6.5%)	14(8%)	
Primary school	4(8.7%)	20(11.4%)	
Intermediate school	3(6.5%)	14(8%)	
Secondary school	2(4.3%)	34 (19.4%)	0.14
University school	24(52.2%)	67(38.3%)	
Postgraduate	10(21.7%)	26(14.9%)	
<i>Occupation</i>			

Yes	39(88.6%)	138(81.7%)	0.27
No	5(11.4%)	31(18.3%)	
<i>Income</i>			
Poor	5(11.1%)	24(14.3%)	0.40
Average	26(57.8%)	78(46.4%)	
Good	14(31.1%)	66(39.3 %)	
<i>Residency</i>			
Titling	21(45.7%)	59(34.3 %)	0.16
Rent	25(54.3%)	113(65.7%)	
<i>Other Chronic diseases(Co-morbidity)</i>			
Yes	18(39.1%)	128(75.7%)	<0.001*
No	28(60.9%)	41(24.3%)	

\*P Value is significant (<.05). Numbers in parentheses indicate column percentages.

To check the association between socio-demographic determinants among patients complaining of pain and being user of WCT only or being user of WCT simultaneously along with other kinds of treatment, first the univariate analysis was conducted by using Chi-square test (Table 6). Among all socio demographic characteristics, there was a statistically significant association between age ( $\chi^2 = 10.493$ ,  $df = 3$ ,  $P=.015$ ), gender ( $\chi^2 = 6.119$ ,  $df = 1$ ,  $P=.013$ ) and having other chronic diseases ( $\chi^2 = 22.236$ ,  $df = 1$ ,  $P=<.001$ ) and being or being not user of WCT only (Table 6).

**Table 7** Multifactor Logistic Regression Model of whether pain patients use simultaneously wet cupping and other types of treatment.

Variables	Multifactor Logistic Regression Model		
	OR	CI	P value
<i>Age(years)</i>			
16-35	1		.17
36-45	1.69	0.63-4.54	.30
46-55	2.16	0.85-5.47	.11
>55	3.35	1.09-10.24	.034*
<i>Gender</i>			
Male	1		
Female	2.35	1.07-5.18	.034*
<i>Other Chronic diseases(Co-morbidity)</i>			
No	1		
Yes	3.95	1.90-8.18	<.001*

Abbreviations: OR, odds ratio; CI, confidence interval. \*P Value is significant (<.05).

We further adjusted the model using multivariate logistic regression. Based on the results, adjusted odd ratio confirms these significant associations between WCT use and age, gender and having other chronic diseases (table 7). The using of other types of treatments in combination with WCT is 3.95 times more in pain patients having other chronic diseases than those who don't have history of co-morbidity( $P<.001$ ). Female is 2.35 times more likely than male to use WCT along with other treatments ( $P=0.034$ ). The patients who are older than >55 years are 3.35 times more likely to use cupping along with other types of treatments than younger patients ( $P=0.034$ ).

#### 4. DISCUSSION

This study investigates the patterns and determinants of wet cupping therapy use. Most of the previous studies tend to evaluate the determinants of complementary and alternative medicine use as whole instead of evaluating single type. On the other hand, our

study focusing mainly on WCT use and whether patients prefer to use cupping alone or in combination with other treatments such as conventional treatments and other CAM types.

There is a growing demand for complementary & traditional medicine (C&TM) in Saudi Arabia. A recent study in Saudi Arabia showed that a person spends out of his pocket on the average 560\$ per year on C&TM visits and products (AlBedah AMN, Khalil MKM, Al Eidi S, Al-Yahia OA, 2013). Our results demonstrate that the most common reason for using wet cupping among patients complaining of pain who attended hijama clinic is back pain, followed by knee and joint pain. These results are consistent with data from the Korean health panel study that reported musculoskeletal disorders were the main reason for visiting the clinic of complementary and alternative medicine. Furthermore, there was a significant association in our study between the type of pain conditions and frequency of using wet cupping implying that patients with back pain use cupping more frequently than others (Choi JH, Kang S, You CH, Kwon YD, 2015). The majority of the patients in this current study expected complete cure with wet cupping use, while only few patients expected less or no cure. This finding is similar to that stated in a previous study conducted on cancer patients (Ceylan S, Hamzaolu O, Beyan C, Yalçın A, 2002).

This present study found that patients with chronic diseases such as diabetes, hypertension, cardiovascular diseases and cancer have higher odds for using wet cupping simultaneously with other types of treatments instead of using cupping alone. This is quite possible because those patients with chronic diseases in addition to being referred from other clinics due to their pain conditions, they usually visit other clinics more than other patients seeking for treatment of co-morbidity which increase their chance to use conventional therapy. Moreover, it was reported that the use of CAM is common among patients with chronic diseases (Choi B, Han D, Na S, Lim B, 2017; Saydah SH, Eberhardt MS, 2006; Wazaify M, Alawwa I, Yasein N, Al-Saleh A, Afifi FU, 2013). The results of women having more odds ratio than men in using cupping along with other treatments could be explained by the principle that women utilize more health services than men (Bertakis KD, Azari R, Helms LJ, Callahan EJ, Robbins JA, 2000). However, in a survey conducted on the patients attending primary health care, 69% of patients with chronic musculoskeletal pain were using a combination of CAM and CT and women were found to be significantly more likely to combine both treatments (Artus M, Croft P, Lewis M, 2007).

Older patients more than 55 years in this study are 3.35 times higher in using wet cupping in combination with other treatments. Unlike what has been reported that younger patients seem to use more CAM than elderly (Goldstein MS, Morgenstern H, Bastani R, Lee J, 2005). However, this is similar in some aspect to that found in surveys conducted in Saudi Arabia and South Korea that elderly are more likely to use CAM than younger participants (Al-Faris EA, Al-Rowais N, Balla Al-Noor MA, 2008; Choi B, Han D, Na S, Lim B, 2017).

There was no association in our study between WCT use and other factors such as nationality, marital status, health education, occupation and type of residency. This is similar to that reported by Mohammad et al., who found no association between socio-demographic factors and CAM use (Mohammad Y, Al-Ahmari A, Al-Masnour F, Masoud A, 2015). However, our findings are inconsistent with previous studies that reported significant association of either education, type of residency, or occupation. (Al-Zahim A, Al-Malki N, Abdo AA, 2013; Ghaedi F, Dehghan M, Salari M, Sheikhrabari A, 2017; Al-Faris EA, Al-Rowais N, Balla Al-Noor MA, 2008). This disagreement in the results with the previous studies could be explained by the variations in the included population, study design and types of CAM used in such studies.

Understanding the determinants and patterns of wet cupping therapy use which is common approach of CAM is important in prioritizing the health services and knowing the characteristics of patients who are frequently using wet cupping. Moreover, this will help in establishing policies to suit patients' needs and will help in integrating WCT in governmental health services to be provided together with conventional treatments mainly for patients having other chronic diseases in addition to pain related conditions.

### Limitations

Strength of this study is the inclusion of diversified pain patients. However, our study has certain limitations that must be considered. Because this study was retrospective in nature, we have no control over data in the records. The socio demographic variables, medical history such as chronic diseases and using of conventional treatments, and using of other CAM were self-reported by the patients so these variables may be underestimated and this may explain the presence of missed data in this study. The data in this study may be not the actual representation of patterns and determinants for wet cupping user in Saudi Arabia because our patients were limited to those who visited hijama clinic in KAUH in Jeddah. Therefore, generalization of the results beyond the sample of this study should be done with caution.

## 5. CONCLUSION

This present study found that the most common reason for using wet cupping among patients attended hijama clinic complaining of pain was musculoskeletal pain related conditions. Moreover, older female pain patients with chronic diseases tend to use wet cupping therapy alongside other treatments. Therefore, this present study is useful for the government to determine the characteristic of WCT users and to make policies to suit these patients' needs.

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