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RESEARCH ARTICLE

USING OF CUPPING TECHNIQUE AS A THERAPEUTIC MODEL IN TREATMENT OF NON-DISCOGENIC LOW BACK PAIN

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Abstract

Background: Cupping therapy is one of the traditional medical technologies practiced for thousands of years. it might have some additional benefits on early rehabilitation for post-stroke complications.
Aim of the work: to examine if the use of cupping technique as a therapeutic model in treatment of discogenic low back pain has a significant impact or not.
Methodology: 60 Patients divided into two equal groups were participated in this study: Group 1 treated by conventional post-stroke therapy; and Group 2 treated by wet cupping in addition to conventional post-stroke therapy. The national institute of health stroke scale (NIHSS) index was sed as patients' assessment tool for neurologic deficit evaluation; motor functions is assessed by the Fugl-Meyer assessment (FMA) scale, the healing process depended on the bedside swallowing assessment (BSA). For cognitive function, the mini-mental state examination (MMSE) and Montreal cognitive assessment (MoCA) have been used, and any undesirable effect of wet cupping were noted for safety evaluation.
Results: Better results have been documented with wet cupping therapy. Statistically significant improvement in pain reduction for both techniques of cupping (dry & wet) when compared to conventional medical therapy without augmentation with cupping therapy.
Conclusion: Significant Effect of Hijama (Wet cupping) in post-stroke rehabilitation.

Introduction:-

Idiopathic low back pain is a classic example of a disorder large burden of illness, it accounts for a large shear of our society health problems. **(Huang et al., 2013)** Low back pain ranks second only to upper respiratory infection as the ailment prompting the most visit to physician. (**Huang et al., 2013**). Risk factor for low back pain have been studied by **Yuan et al.,2015**, he noted that heavy lifting, use of jack hummers, driving motor vehicles, jogging, cross country skiing, weaker trunk strength, and smoking were associated with an increased risk of low back pain.

Cupping is a physical treatment that done by a plastic, bamboo, or glass cups to create a negative suction on the skin over an acupuncture point or painful area. It has been said to be effective in reduction of pain as well as other symptoms **(Kim et al., 2009; Michalsen et al., 2009; Yoo and Tausk, 2004).** It consisted of wet or dry cupping. In

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dry cupping, the skin is pulled into the cup without drawing blood, negative pressure acts on the skin and irritates subcutaneous muscles; while in wet cupping the skin is scratched by sterilized scalpel so that stagnant blood is drawn into the cup **(Lee et al., 2010).** Cupping as a whole is defined by WHO as a therapeutic method (Code 5.3.2) involving the application of suction by creating a vacuum. This is typically done using fire in a cup or jar (Code 5.3.7) on the dermis of the affected part of the body **(World Health Organization, 2007).**

Different mechanisms were proposed to explain effect of cupping. it has been claimed that cupping – either dry or wet- drains excess fluids, loosens adhesions and lifts connective tissue, brings blood flow to stagnant skin and muscles, and stimulates the peripheral nervous system. In addition, cupping is said to reduce pain and high blood pressure and modulate neuro-hormone and immune systems **(Yoo and Tausk, 2004).** In addition, cupping is used to improve subcutaneous blood flow circulation and to stimulate the autonomic nervous system **(Chirali, 2007).**

Cupping played multiple therapeutic functions which include: warming the channels to remove cold, promoting qi and systemic circulation, relieving swelling, accelerating healing, adjusting body temperature, control fibromyalgia **(Cao et al., 2011),** used in stroke rehabilitation, decreased hypertension, musculoskeletal pain, and cure herpes zoster **(Lee et al., 2011; Cao et al., 2010),** treat facial paralysis, acne, and cervical spondylosis **(Cao et al., 2012),** and alleviating different types of pain **(Huang and Cao, 2006),** including chronic neck pain **(Kim et al., 2012; Lauche et al., 2012; Yuan et al., 2015)**, shoulder pain (**Broadhurst et al., 2006)**, and low back pain **(Yuan et al., 2015; Huang et al., 2013).**

Cupping therapy is one of the traditional medical technologies practiced for thousands of years. It is an important class of complementary and alternative medicine in the world. It is practiced very often in many countries, especially China, Korea, Japan and Saudi Arabia **(Chen et al., 2015).** Cupping is a physical treatment that done by a plastic, bamboo, or glass cups to create a negative suction on the skin over an acupuncture point or painful area. It has been said to be effective in reduction of pain as well as other symptoms **(Kim et al., 2009; Michalsen et al., 2009; Yoo and Tausk, 2004).** It consisted of wet or dry cupping. In dry cupping, the skin is pulled into the cup without drawing blood, negative pressure acts on the skin and irritates subcutaneous muscles; while in wet cupping the skin is scratched by sterilized scalpel so that stagnant blood is drawn into the cup **(Lee et al., 2010).** Cupping as a whole is defined by WHO as a therapeutic method (Code 5.3.2) involving the application of suction by creating a vacuum. This is typically done using fire in a cup or jar (Code 5.3.7) on the dermis of the affected part of the body **(World Health Orgnization, 2007).**

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The aim of this work was to study the effect of dry and wet cupping therapy on patient complaining of non-discogenic low back pain (lumber spondylosis)

Patients and Methods:-

Sixty patients with low back pain were included in this study. They were selected from Al-Azhar University Hospital (New Damietta). Their age from 28 to 60 years. They were 29 male and 31 female.

They were divided into two groups

A- **Acute non discogenic low back pain**, to be treated with
- Wet cupping therapy (cupping and bloodletting) 1A
- Dry cupping therapy (cupping without bloodletting) 1B

- Placebo (cupping without suction)1C

B- **Chronic non discogenic low back pain**, to be treated with

- Wet cupping therapy. 2A
- Dry cupping therapy. 2B
- Placebo.2C

Inclusion criteria:

Patients who fulfilled the following criteria were included in the study:

1. Diagnosis of non-discogenic low back pain according to criteria of attack and remission at least six months of duration.
2. At least moderate pain in lower back for most days in last month
3. Taking analgesic or non-steroidal anti-inflammatory drugs for control of pain at least one month.
4. Documented radiographic changes of lumber spondylosis.
5. Signed informed consent.

Exclusion criteria:

Patient who had any of the following were excluded from the study:

1. Previous cupping and blood letting therapy or any other alternative manipulations
2. Severe chronic or uncontrolled concomitant illness (for example: coronary artery disease)
3. History **0**of clinical indication of bleeding diathesis including current use of anti-coagulants.
4. Local skin or articular infection
5. Previous laminectomy
6. Discogenic low back pain
7. Pregnant or breast-fed mothers

Methods:-

All included cases were submitted to

1. Full history taking with special emphasize on history of present illness and past medical history, occupational history, post-menopausal obese female and previous history of trauma.
2. Thorough clinical examination including gait, inspection of spine, palpation of the lumber para spinal muscles, lumber range of motion, Neurological examination and radiographic examination.
3. Laboratory investigations:

Sample collection and storage:

5ml blood sample were withdrawn from cases and controls before and after cupping, then divided into three portions: part for ESR, part for CBC and the third portion was separated by centrifuging and stored at (-20 C) at freezer till time of remaining tests.

Separated sera were used for assessment of the following:

- **CRB:** CRB was measured from the separated sera using latex slid agglutination test and serial dilution in positive cases.
- **CBC:** using automated cell counting, complete blood counting was performed from freshly EDITATED blood sample with special emphasizing on total leucocytic count, HB, and leucocytic differentiated cell.
- **Serum Uric Acid:** was measured from freshly serum using spectrophotometer.
- **ESR:** was detected from freshly citrated blood sample using Westergren method for two hours.
- **Serum Beta Endorphin by ELIZA:** Stored sera were used for assessment of levels of Beta endorphin. TECAN system was used for ELIZA testing (figure 1, 2, 3 and 4)

Figure (1):-Washer.

Figure (2):- TECAN reader.

Figure (3):- Tecan shaker incubator.

Figure (4):- Commercial kit for Beta endorphin.

Treatment methods

1. Treatment of patient was continued once weekly for three months for all patients.
2. Patient were evaluated before and after treatment by comparing ESR. CBC, CRB, Serum uric acid and level of beta endorphin in blood serum using self-administrated questionnaire and Pain scale.
3. Each wet cupping procedure lasted about 20 minutes and was conducted in five steps:

- Step 1: Primary sucking (about 5 minutes): the cup is placed on selected site and the air inside cup is rarified via electrical suction. The cup clings to the skin and is left for a period of 3-5 minutes
- Step 2: Scarification (about 3 minutes): Superficial incision was made on the skin using "multiple superficial incisions technique" with sterile surgical blade size 15-21 for incision.
- Step 3: Bloodletting (about 5 minutes): the cup is placed back on the skin, using the same manner described above, until it is filled with blood from the capillary vessels. The volume of blood varied across patients (e.g. it tended to be lower in obese patients)
- Step 4: Removal (about 3 minutes): the cup is removed,and the process repated three times.
- Step 5: Dressing: (about 4 minutes)

Ethical considerations

Ethical approval was taken under no. (IRB VCR-10- 2022), as the protocol of the study was explained for each patient, and an informed consent was obtained. Confidentiality and right for withdrawal at any time of the study was guaranteed.

Statistical analysis of data:

The collected data were documented and statistically analyzed with appropriate software statistical package (SPSS) Version 22.

Results:-

The aim of this work was to record the effect of dry and wet cupping therapy on patients suffering from non-discogenic low back pain (lumbar spondylosis.)

Sixty patients with low back pain were enrolled in the present study. There were 30 females and 29 males. They were divided into two groups.

C- **Acute non discogenic low back pain**, to be treated with
- Wet cupping therapy (cupping and bloodletting)
- Dry cupping therapy (cupping without bloodletting
- Placebo (cupping without suction)

D- **Chronic non discogenic low back pain**, to be treated with

- Wet cupping therapy
- Dry cupping therapy
- Placebo

In group 1 (30 cases), there were 18 males (60.0%) and 12 females (40.0%) and there was no statistically significant difference between subgroups in group 1 as regard sex distribution.

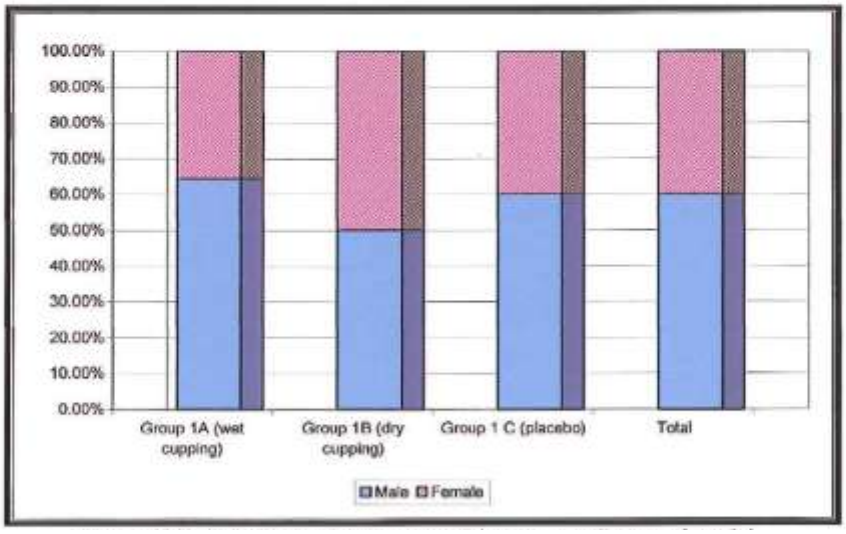


Figure (5):- Bar chart of Sex distribution in group 1 (Acute non-discogenic pain).

As regard sex distribution in group 2, there were 11 males (36.7%) and 19 females (63.3%) and there was no statistically difference between subgroups as regard sex distribution.

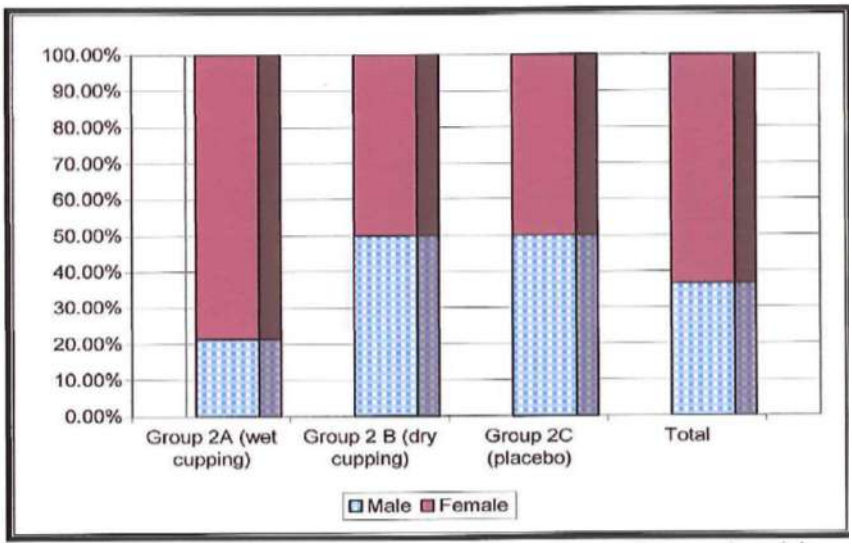


Figure (6):- Bar chart of Sex distribution in group 2 (Chronic non-discogenic pain).

As regard age distribution, the age in group 1 ranged from 28 to 60 years with mean age of 39.9 years old, while in group 2, age ranged between 28 to 58 years with mean range of 45.6 years. There was no statistically significant difference between subgroups of group 1 and 2 regarding the age distribution.

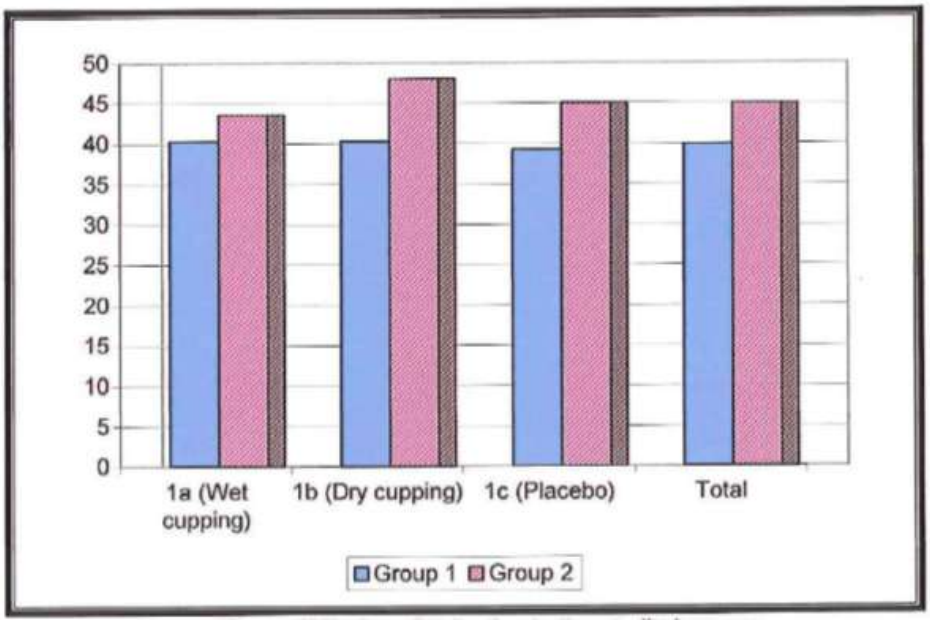


Fig (7):- Bar chart of Age distributed at the studied groups.

ESR measurements and serum uric acid

As regard ESR Measurements, tables 1 and 2 revealed the comparison between studied subgroups in group 1 and 2 as regard ESR at the first and second hours

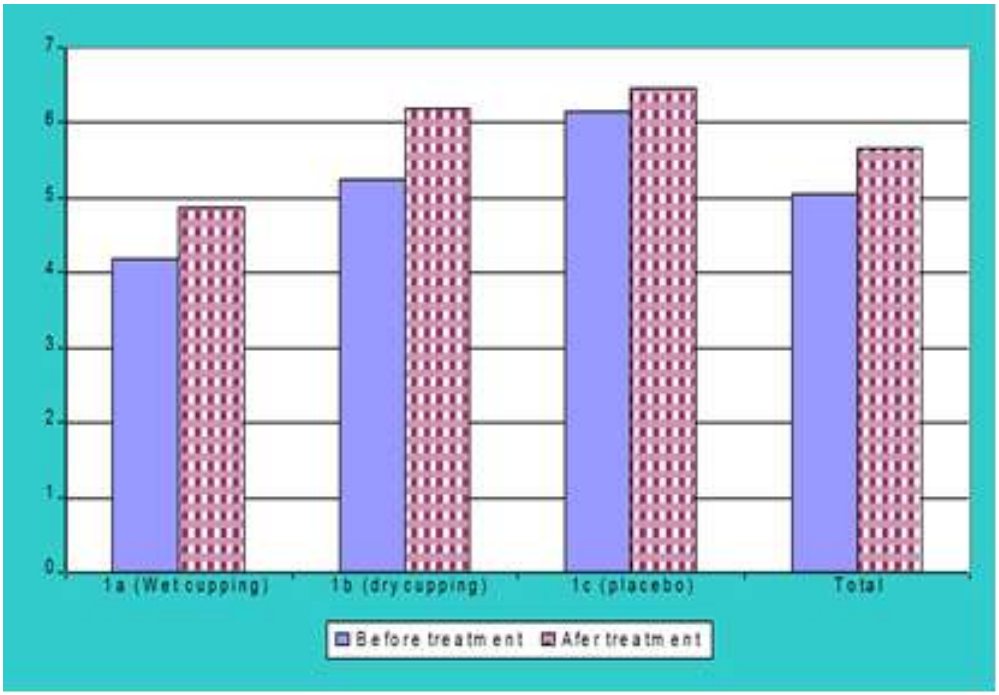
As regard to serum uric acid, there was statistically significant variance between studied subgroups before and after treatment in groups 1, and there was statistically significant increase in serum uric acid after treatment in subgroup 1a and 1b in comparison to their values before treatment.

		Mean	SD	Minimum	Maximum	P value
ESR at 1st hour before treatment	1a (Wet cupping)	18.14	11.23	5.00	39.00	0.86 (NS)
	1b (dry cupping)	16.00	4.73	10.00	23.00	
	1c (placebo)	19.60	17.76	5.00	45.00	
	Total	18.20	12.65	5.00	45.00	
ESR at 2nd hour before treatment	1a (Wet cupping)	36.78	19.88	10.00	77.00	0.81(NS)
	1b (dry cupping)	31.16	9.90	20.00	44.00	
	1c (placebo)	39.00	32.22	12.00	85.00	
	Total	36.40	22.90	10.00	85.00	
ESR at 1st hour after treatment	1a (Wet cupping)	20.85	15.24	3.00	50.00	0.59 (NS)
	1b (dry cupping)	15.33	4.92	12.00	25.00	
	1c (placebo)	17.20	9.63	5.00	30.00	
	Total	18.53	11.93	3.00	50.00	
ESR at 2nd hour after treatment	1a (Wet cupping)	40.21	26.32	9.00	80.00	0.46 (NS)
	1b (dry cupping)	29.33	6.68	24.00	40.00	
	1c (placebo)	32.40	14.10	12.00	50.00	
	Total	35.43	20.04	9.00	80.00	

Table (1):- Comparison between studied subgroups in group 1 as regard ESR at the first and second hours.

		Mean	SD	Minimum	Maximum	P value
ESR at 1st hour before treatment	2a (Wet cupping)	16.64	8.88	8.00	40.00	0.55(NS)
	2b (dry cupping)	11.83	10.75	2.00	26.00	
	2c (placebo)	13.40	10.90	5.00	29.00	
	Total	14.60	9.81	2.00	40.00	
ESR at 2nd hour before treatment	2a (Wet cupping)	35.71	17.28	18.00	72.00	0.52(NS)
	2b (dry cupping)	26.50	21.76	11.00	55.00	
	2c (placebo)	28.10	21.68	11.00	59.00	
	Total	31.33	19.47	11.00	72.00	
ESR at 1st hour after treatment	2a (Wet cupping)	16.07	16.12	3.00	60.00	0.97(NS)
	2b (dry cupping)	15.16	9.84	4.00	30.00	
	2c (placebo)	14.80	10.57	7.00	30.00	
	Total	15.46	12.97	3.00	60.00	
ESR at 2nd hour after treatment	2a (Wet cupping)	30.64	25.44	6.00	90.00	0.93(NS)
	2b (dry cupping)	34.66	20.88	14.00	60.00	
	2c (placebo)	31.10	20.51	14.00	60.00	
	Total	31.60	22.32	6.00	90.00	

Table (2):- Comparison between studied subgroups in group 2 as regard ESR at the first and second hours.



Comparison between subgroups in group 1 as regard serum uric acid before and after treatment

In group 2, there were statistically significant differences between subgroups before and after treatment. In addition, there was statistically significant increase in serum uric acid in group 2 b and in placebo after treatment in comparison to their values before treatment.

C-reactive protein

- As regard C-reactive protein, there was statistically significant decrease in positive cases in subgroup 1a (wet cupping) after treatment (0 cases) in comparison to before treatment (5 cases; 35.7%). Unfortunately, in subgroup 1b (dry cupping), no cases were positive before or after treatment.

	1a (Wet cupping)		1b (dry cupping)		1c (placebo)		Total		P value
	No	%	No	%	No	%	No	%	
Before treatment	5	35.7%	0	.0%	0	.0%	5	16.7%	0.032(S)
After treatment	0	0.0%*	0	0.0%	0	0.0%	0	0.0%	a

Table (3):- Comparison between subgroups in group 1 before and after treatment as regard to CRP.

- In group 2, there was no statistically significant difference between cases after treatment in comparison to their values before treatment in any subgroup as regard CRP. In subgroup 2a, only 2 positive cases (14.3%) were found before treatment, and after treatment, there were no positive cases.

	2a (Wet cupping)		2b (dry cupping)		2c (placebo)		Total		P value
	No	%	No	%	No	%	No	%	
Before treatment	2	14.3%	0.0	0.0%	0.0	0.0%	2	6.7%	0.29(NS)
After treatment	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	a

Table (4):- Comparison between subgroups in group 1 before and after treatment as regard to CRP

Hemoglobin concentration

1. In group 1, as regard hemoglobin concentration, there was no statistically significant difference in subgroups after treatment in comparison to their values after treatment.
2. In group 2, as regard hemoglobin concentration, there was no statistically significant difference in subgroups after treatment in comparison to their values after treatment.

β-endorphins

1. In group 1, before treatment, there was no statistically significant difference between subgroups as regard levels of β-endorphins, while after treatment there was statistically significant variance between studied subgroups as regard β-endorphin.
2. In addition, there was statistically significant increase in β-endorphins in both group 1a, group 1b after treatment in comparison to their values before treatment. The increases levels of β—endorphins were marked in group 1a than group 1b.

Discussion:-

Low back pain is among the most debilitating, most expensive and most common complaint patients raise during routine physical examination worldwide **(Mozaffarian D et al. 2016).**

Western medicine typically treats low back pain with combination of physical therapy, activity modifications and rest, pain relief and anti-inflammatory medications, and in extreme cases: surgery. These treatment options demonstrate mixed efficacy and success. In many cases, an acceptable amount of pain is relieved enough typical western medical treatment techniques. However, in other cases some pain remains; in some cases, typical western treatments are completely in-effective. **(Huang C-Y et al. 2013).**

Despite use in many cultures both historical and today, the effectiveness of wet cupping to treat non-specific low back pain is still to some extent unknown. Thus, the aim of this work was to record the effect of dry and wet cupping therapy on patient suffering from non-discogenic low back pain (lumbar spondylosis). It included sixty patients with low back pain that divided into two groups as mentioned in methodology section.

Results of this study revealed that there was no statistically significant difference between studded groups as regard gender and age. Similar results were reported by **(Lauche R 2012)** who reported that base line descriptive data for the intervention and control groups were quite similar in age, sex, duration of pain and previous surgeries.

After treatment, results of this study revealed that there were no significant changes in studied groups as regard ESR in the first and second hours, hemoglobin concentration, platelet count and total leucocytic count. On the other hand, there was statistically significant decrease in group A1 (wet cupping) of acute pain as regard CRP. In addition, serum uric acid showed statistically significant variance before and after treatment.

In groups 1a, 2a and 2b, there was statistically significant decrease in pain intensity after treatment in comparison to their values before treatment. While no statistically significant difference was obtained from groups 1b, 1c and 2c. The decrease in pain intensity was more marked in group 2a than 2a. Thus, wet cupping with either acute or chronic low back pain is associated with better outcome than dry cupping although the dry cupping is also effective. This result is in agreement with **(Cao H et al. 2012**) but is disagree of findings of (Lauche R et al. 2012).

The physiological mechanism through which wet cupping might function remain unknown. I t has been suggested that the effect of wet cupping may be divided into several component, including neural, hematologic, immune and physiological effects. **(Kim T-H et al. 2012)**

Conclusion:-

The aim of this work was to record the effect of dry and wet cupping therapy on patients suffering from non-discogenic low back pain (lumbar spondylosis.)

In conclusion, results from the present study suggest that both wet-and dry cupping are associated with greater short term clinical benefit (reducing pain intensity) for either acute or chronic non- discogenic low back pain, but wet cupping is associated with better results.

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