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Single IASTM and cupping therapy session improves pain and disability in patients with non-specific low back pain

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Abstract

The objective of this study was to evaluate if a single session of actual or placebo cupping and instrument-assisted soft tissue mobilization (IASTM) therapy in patients with Nonspecific low back pain would be enough to temporarily reduce pain intensity and functional disability. The outcome measures were Numerical pain rating scale and Oswestry Disability Index questionnaire. This is an experimental clinical trial; after examination Evaluation (EV), patients were submitted to real or placebo cupping IASTM therapy (15 minutes, bilaterally at the Lower back Pain and were reevaluated immediately after the session (EV1) and after one week (EV2). The patients showed a significant improvement in all pain severity in the numerical pain rating scale ($p < 0.05$) and a decrease in disability in Oswestry Disability Index questionnaire ($p < 0.001$). No significant changes are present found in any outcome of the placebo cupping and IASTM therapy group. Thus, the IASTM and cupping therapy is effective in reducing low back pain and decreasing disability after one single session.

Keywords: IASTM; Cupping; NPRS; ODI; Non-Specific Low Back Pain

1. Introduction

Non-Specific Low back pain (LBP) is the very most common condition also its lead to medical, social, economic, and public health problem that disturbs the population thru the world, disturbing up to two-thirds of adults at some point in their lifetime [1]. The lifetime prevalence of non-specific (common) low back pain is estimated at 60% to 70% in industrialized countries (one-year prevalence 15% to 45%, adult incidence 5% per year).

As a multifactorial warning sign, nonspecific LBP is associated with reduced quality of life in the affected populace, and reasons limitation of activity, work absence, functional impairment, fear of movement, stress, anxiety, unhappiness, adverse social relation, somatization, catastrophizing, among other warning sign [2,3]. Research on the usefulness of conservative, surgical, and pharmacological treatment of the Nonspecific low back pain has been constant for days to several years. Regardless of this, many of these approaches can be expensive and sometimes useless [4].

1.1. IASTM (instrument-assisted soft tissue mobilization)

Is developed by GRASTON. IASTM is instrument-assisted soft tissue mobilization. It is another type of manual therapy that combines different ergonomic tools that are used to softly massage and scrape portions of the skin. These stainless-steel tools are used to treat heal injuries or condition of soft tissues, such as sprains, strains, subluxations, and repetitive use injuries. At the start of an IASTM Technique treatment, the areas of the soft tissue fibrosis will be moved to make the scar tissue more receptive. The edge of the stainless-steel tool will be used to slowly glide through the affected soft

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tissue until it comes in interaction with an adhesion. Therapist will then rub terminated to the adhesion to prompt movement. This rubbing will help promote the healing process of your soft tissue injury. The quantity of pressure used through the instrument, and the speed in which it is done resolve vary depending on the nature of condition, and it will be adjusted during the treatment. After treatment, the affected area will be stretched and therapist will provide subject to ice packs if he experiences any soreness. Most patients who receive the IASTM technique will experience two treatments a week. Patients should expect to notice relief by the third or fourth treatment session.

1.2. Cupping therapy

Is an antique alternate medicine, which dates to the ancient Egyptian, Chinese, and Middle Eastern empires. Cupping is a traditional Chinese medicine method used for thousand years and is often useful for an extensive range of conditions such as pain, hypertension and stroke [5-7]. On the other hand, its clinical usefulness remains unclear and the mechanism of action is not yet fully clarified, and the methodological quality of the research is underprivileged presenting many research preferences [5,8]. While cupping was effectively used to treat pain and an inclusive variety of other complaints for thousands of years, the practice of cupping is becoming more and more diffuse only during the last decade since preliminary systematic clinical trials have suggested that cupping is in effect in managing aching conditions [9,10]. In addition, IASTM and cupping therapy have a wide indication, therapeutic properties, and easiness of application, low cost, low adverse effects, and fast result in the treatment of some diseases [7, 11]. In scientific practice, cupping is frequently observed to bring about pain relief and to raise a patient's general feeling of well-being [12].

We have an excessive variability in the application of the cupping therapy. At least five sessions are essential for any major effects of cupping therapy, and the cups need to be positioned in the skin for around 8-10 minutes in a break of three to four days between the sessions [13]. In the present study, we tested the hypothesis that a single session of IASTM and cupping Therapy in patients with Non-specific LBP would be enough to temporarily reduce pain intensity and functional disability. Therefore, the purpose of the present study was to analyze and perform the intragroup and intergroup comparisons of the immediate effect of the IASTM and cupping therapy or placebo cupping in patients with chronic LBP.

2. Material and methods

2.1. Study

Study was a placebo-controlled trial study approved by the research ethics committee. All Subjects were correctly informed about the aims and procedures and taken informed consent before testing. Patients Inclusion criteria: Patients were eligible for inclusion if they were 18 to 50 years old, with nonspecific chronic LBP for more than three months of duration and a minimum pain intensity score of 4 in the NPRS. Exclusion criteria: subjects were disqualified if they take physiotherapy treatment for non-specific low back pain, had no preserved sensitivity, skin infection, neurological Condition, cancer or using anticoagulants, nonsteroidal antidepressants and/or tricyclic antidepressants. Patients if they had previously surgery in the spinal column, known or doubted serious spinal pathology as fractures, tumors, inflammatory or rheumatologic illnesses of the spine, severe cardiopulmonary illness, rheumatic illness, were pregnancy supposing, had a pacemaker or metal implants.

2.2. Procedures

The study duration from March 1, 2021, to January 31, 2022. To examine the time course of the cupping and IASTM intervention effects, measurements were taken before treatment (EV0), immediately after the cupping and IASTM treatment (EV1) and the follow-up 1 week after the intervention (EV2). We examine 50 patients 30 subjects withdraw from study or not completing their final evaluation. Study carried out at the out-patients Physiotherapy Clinic in DELHI. After removal of inclusion and exclusion criteria, we assessed 20 Subjects.

IASTM Technique treatment, the regions of the soft tissue fibrosis will be stimulated to make the scar tissue added receptive. The edge of the stainless-steel tool will be used to slowly glide through the affected soft tissue until it comes in interaction with an adhesion. Therapist will then rub terminated to the adhesion to prompt movement. This rubbing will help promote the healing process of your soft tissue injury. The quantity of pressure used through the instrument, and the speed in which it is done resolve vary depending on the nature of condition, and it will be adjusted during the treatment. After treatment, the affected area will be stretched and therapist will provide subject to ice packs if he experiences any soreness.

Points selected were particular based on the characteristics of subjects and the significant literature [14]. The asepsis on the use sites cleans with alcohol swab, the cupping was made with the patient lying in the prone position and 4-6 and 50 mm diameter acrylic glass cups were placed on the skin bilaterally at the paraspinal region, and the air was partially evacuated from the cups by means of a mechanical device. The negative pressure was adjusted to a comfortable level, after 15 minutes the cups were removed [15]. The cups were used and a high-level sterilization procedure was required in advance reuse. Sham cupping was conducted using cupping glasses with a small hole in the cupping glass, causing withdrawal of negative pressure. Patients were blinded to the fact that one of the clusters received placebo and toward whether they received real or sham cupping.

2.3. Outcome Parameters

2.3.1. Numeric Pain Rating Scale (NPRS)

The NPRS is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0–10 figures) that best reflects the intensity of his/her pain. The shared format is a horizontal bar or line here 0 means no pain and 10 means unbearable pain.

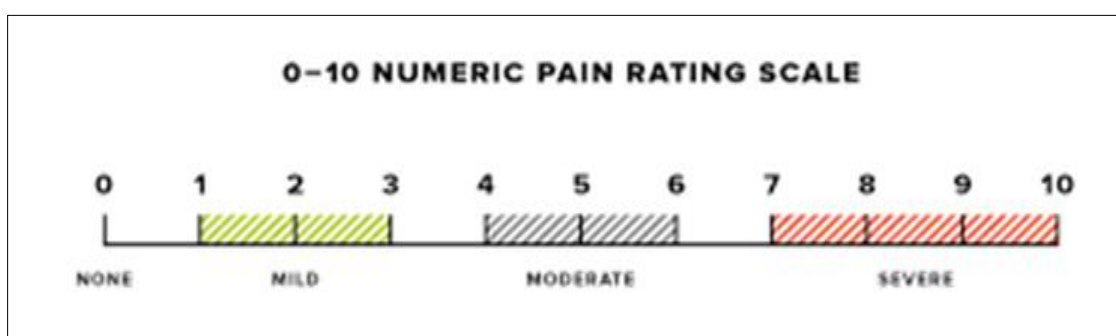


Figure 1 Numeric Pain Rating Scale

2.3.2. Oswestry Disability Index (ODI)

ODI index derived from the Oswestry Low Back Pain Questionnaire used by clinicians and research purpose to quantify disability for low back pain. The self-completed questionnaire 10 headings about intensity of pain, lifting, ability to care for oneself, ability to walk, ability to sit, sexual function, ability to stand, social life, sleep quality, and ability to travel. Each point's is followed by objective of 6 statements describing different potential situations in the patient's life relating to the headings. The patient then checks the statement which most closely is similar to their situation. Each question is scored on a scale of 0–5 with the first statement being zero and representing the least amount of disability and the last declaration is scored 5 indicating most severe disability. The marks for all answers are summed, and then multiplied by two to get the index (range 0 to 100). Zero is associated with no disability and 100 is the extreme disability possible.^[16-17]

2.3.3. ODI Scoring

- 0% –20%: Minimal disability
- 21%–40%: Moderate Disability
- 41%–60%: Severe Disability
- 61%–80%: Crippling back pain
- 81%–100%: These patients are bed-bound or have an exaggeration of their symptoms.

3. Statistical Analysis and results

Statistical analysis after arranging the results, a Shapiro Wilk normality test was applied to all variables. For variables with normal allocations, the student's t-test or an investigation of alteration for repeated measures. The data were processed using SPSS 20.0 software (IBM, Armonk, New York, USA) and significance was set at a level of 5% ($p < 0.05$).

50 subjects were contacted and came to the evaluation. 30 subjects did not meet the inclusion criteria and two were lost in follow-up. Thus, twenty participants were submitted to one session of IASTM and cupping Evaluation and reported

less than 3 points on NPRS and ODI and 18 subjects were re-evaluated after one week. Patients were 27.16 ± 8.43 years on average; and 12 men and 8 women were included, details in Table 1. A significant reduction in EV2 ODI is significantly reduce <0.005 and NPRS also Improve EV2 < 0.001 was observed one week after IASTM and cupping therapy treatment EV0, EV1, EV2 details in Table 2 improve NPRS and ODI For the numerical pain rating scale, patients also exhibited a significant reduction in the “Pain now” item after one session of cupping and IASTM, and this effect was maintained after one week. In addition, a significant reduction in others pain severity domains of the numerical pain rating scale was observed one week after IASTM and cupping treatment.

Table 1 Characteristics of participants

Characteristics	(n ¼ 18)
Age	Years ± SD 27.16 ± 8.43
Gender	
Male	12
Female	8
Physical Practice	
Yes	56 %
No	44 %

18 subjects were 27.16 ± 8.43 years on average; and 12 men and 8 women were included and 56% is Physically Active and 44% is less physically active.

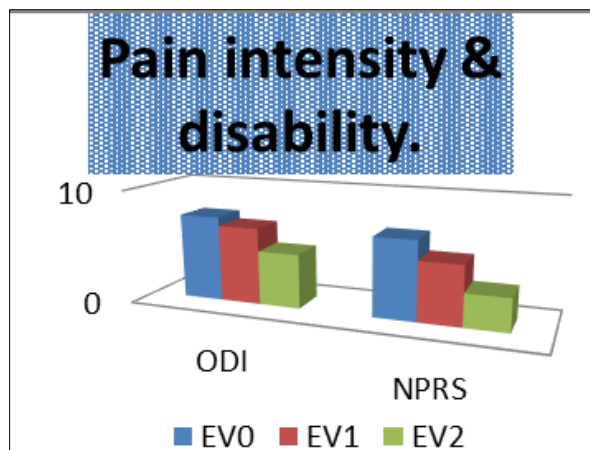


Figure 2 Graph are presented as ODI disability questionnaire and NPRS, EV0, First evaluation; EV1, Evaluation immediately after IASTM and cupping, EV2, Evaluation 1 week after IASTM and cupping

Table 2 Pain intensity and disability

Outcome Measurement	EV0	EV1	EV2	P-value
ODI	7.5	6.75	4.77	$< 0.001^*$
NPRS	6.9	5.2	2.9	$<0.005^*$

Data are presented as mean ± SD; ODI disability questionnaire; NPRS; EV0, First evaluation; EV1, Evaluation immediately after IASTM and cupping; EV2, Evaluation one week after IASTM and cupping. Student *t*- test $*p < 0.05$.

4. Discussion

We experienced the hypothesis that a single session of IASTM and cupping would be adequate to decrease pain and improve disability in individuals with LBP temporarily. The results show partially confirmed the hypothesis. While a single session of IASTM and cupping was in effect to reduce pain intensity for a moment and improve disability. No significant differences were found in the sham IASTM and cupping therapy group.

The first question to be elucidated is the initial improvement of pain severity domains of the NPRS after a single session of cupping. As a result, the patients presented a reduced NPRS and ODIQ after one session of IASTM and cupping therapy. The reason why this could occur may be advised because IASTM and cupping blocks pain sensory afferents [18].

The data of evidence of IASTM and cupping in the treatment of pain appears positive [19]. The data advocate usefulness of cupping decreasing pain perception and enhancing function, and the benefits unexpectedly extend for one week. The potential effects of cupping were recommended by Musial et al. [20] who generally proposed three potential mechanisms of action for reflex therapies such as cupping: (1) pain reduction could be initiated by deforming the skin which may stimulate Ab fibers in painful skin regions, (2) manipulations may stimulate inhibitory receptive fields of the multireceptive dorsal horn neurons, and (3) the setting provides a feeling of relief from physical and emotional tensions and socially comforting effect. Cupping need effect on disturbed neuro vegetative tasks and contaminated viscera and may affect the immune system in 2 ways: by irritating the immune system, which reasons local inflammation, and subsequently activates the accompaniment system, and improving the level of interferon and tumor necrotizing factor; or by growing the lymph flow, in which protein biosynthesis plays an important role [21].

In the current study, we have small sample size and the treatment of patients with non-specific LBP may have been a restrictive factor. Given these limits, a larger sample size and a study in different healthy volunteers or with other condition must be evaluated in future researches.

5. Conclusion

In conclusion, according to the data collected from the candidate in this study the findings showed that with the help of IASTM & cupping therapy, that is effective in the meantime reducing pain intensity and improve disability or maintain the effects for a long time.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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