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An Effect of Osteopathy Manipulative technique of Sacral Base Correction in Non Specific Low Back Pain as Compare with Conventional Physiotherapy Treatment

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Abstract: Subjects: - 28 subjects having clinical diagnosis of Non Specific Low Back Pain were randomly allocated to experimental and control group consisting of 14 patients each with mean age (S.D) = 44(6.87) and 46(6.86) respectively.
Methodology: - A randomized prospective study design was used. Group a received Osteopathy Manipulative technique of Sacral Base Correction. Group B received S.W.D, Traction and Therapeutic exercises (CONVENTIONAL PHYSIOTHERAPY (CP) for two weeks. All subjects were measured for pain by Visual analog scale on 1st day and at the end of 2nd week.
Result:-The data collected was statistically analyzed using unpaired test. The result shows that there is significant reduction in terms of pain in group A.
Conclusion:-The result of present study suggest that Osteopathy Manipulative technique of Sacral Base Correction is effective in reducing pain and thus it is rational enough to consider Osteopathy Manipulative technique of Sacral Base Correction as a part of treatment protocol in Non Specific Low Back Pain .

Keywords: Osteopathy Manipulative Technique, Sacral Base, Conventional Physiotherapy, VAS Scale, Postural Reeducation & Home Regime

I. INTRODUCTION

Non Specific Low back pain was the most common reason for office visits to osteopathic physicians or Physiotherapist, contemporary national surveys have shown that a majority of patients who visit osteopathic physicians continue to report receiving treatment for musculoskeletal disorders including osteopathic manipulative technique (OMT) Osteopathic physicians play a unique role in treating patients with Non Specific low back pain in the India because they may provide OMT in addition to or instead of conventional medical treatment.

Osteopathic treatment of Non Specific low back pain is based on four key principles
(1) The body is a unit;
(2) The body possesses self-regulatory mechanisms;
(3) Structure and function are reciprocally interrelated;
(4) Rational therapy is based on an understanding of body unity, self-regulatory mechanisms, and the interrelationship of structure and function.

A meta-analysis of relevant data from these trials found that subjects who received OMT experienced significantly greater pain reduction than subjects who received control treatments. Nevertheless, commentators continue to call for sufficiently powered trials to assess the efficacy of OMT for Non Specific low back pain 5
Conventional physiotherapy (CPT), include Short Wave Diathermy, traction and therapeutic exercise is a commonly used modality for treatment of Non Specific low back pain, with physical therapists reporting use in 60% to 80% of cases. The short Wave diathermy produces dry heat at deeper tissue level with the penetration at lower back area.

II. METHODOLOGY AND MATERIAL

Aim and Objectives

Aim:

A comparative study on the efficacy of Osteopathy Manipulative technique of Sacral Base Correction in management of Non Specific Low Back Pain.

Objectives:

To compare the reduction of pain attained by Osteopathy Manipulative technique of Sacral Base Correction & conventional therapy in the treatment of Non Specific Low Back Pain.

STUDY DESIGN

TYPE:

Experimental study design was used consisting of a sample size of 28 Non Specific Low Back Pain patients.

STUDY SET UP AND DURATION:

The study was conducted in SUKHMANI PHYSITHERAPY HOSPITAL at Kota Rajasthan. Total duration of study was of 3 months from February 2015 to May 2015 . Treatment given 6 sessions per week.

VARIABLES:

Dependent variables: - Pain

Independent variables:

- Osteopathy Manipulative technique of Sacral Base Correction
- Conventional therapy

HYPOTHSIS

NULL HYPOTHESIS (H0):

- **H_0 :-** Osteopathy Manipulative technique of Sacral Base Correction as an adjunct to conventional therapy is not more effective than Conventional therapy alone for relief of pain due to Non Specific Low Back Pain.

ALTERNATE HYPOTHESIS (H1):

- **H_1 (a) :-**Osteopathy Manipulative technique of Sacral Base Correction more effective than Conventional therapy alone for relief of pain due to Non Specific Low Back Pain.

SAMPLING:

Patients after being selected for inclusion into study was ascribed to either Experimental Group A (Osteopathy Manipulative technique of Sacral Base Correction) or experimental Group B (Conventional therapy group) using lottery random sampling method.

28 subjects were selected as per the following criteria from the patients being referred to the Physiotherapy department with a diagnosis of Non Specific Low Back Pain.

INCLUSION CRITERIA:

1) Patients radiological diagnosed to be suffering from Non Specific Low Back Pain.
2) Patient age was between 35-55 years.
3) Both sexes (male/female) are included.

EXCLUSION CRITERIA:

1) History of fracture, Tumor, Infection, Inflammatory pathologies around neck.
2) History of stroke
3) Any low back surgeries.
4) Other spinal problems-cervical, Thoracic and Sacroiliac involvement.
5) Systemic disease.
6) Shoulder disease.
7) Patient with complain of dizziness and vertigo.
8) Structural deformity such as scoliosis, kyphosis.
9) Patient taking any drug.
10) Hypermobility.

OUTCOME MEASURES:

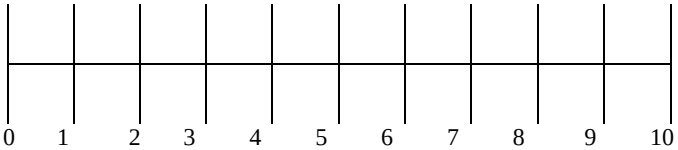
- PAIN USING VISUAL ANALOGUE SCALE (VAS)

OUTCOME MEASUREMENTS

Patients were assessed prior to commencing physiotherapy regime on day 1 and 2 weeks later.

Pain:-

A VAS was used to measure pain/discomfort at the cervical region during movements. Most commonly used method given by Bond & Pilowsky (1996). A 10 cm. line is used where 0 is considered as no pain or no difficulty in doing any cervical movements during ADL and 10 cm is considered as worst pain imaginable or ADL extremely difficult. It is found to be extremely reliable & it is recommended that it can be used in research to produce continuous scores that are more suited to parametric analysis.



No pain Worst pain

At each assessment patient was asked to grade his/her perception of pain severity and functional disability over the previous day.

MATERIAL USED:

- **Patient assessment chart:** An assessment chart was used in order to asses & record data of the patient comprising history and physical examination.
- **Visual Analog Scale (VAS):** VAS was used to measure pain around the Lower Back it has a line of 10 cm. long where 0 is considered as no pain & 10 as worst pain felt ever, pt was asked to mark the point where he rated his pain while doing neck movement. Measurements was taken before and after each week treatment
- **Short Wave Diathermy (S.W.D):** S.W.D of Electrocare Company having 250 watts power output & 220- 240 volts power supply with the wave length of 11.05 meters.
- **Traction:** Traction of Electrocare Company having 220 volts power supply.
- **Recording materials:** Sheet, consent form, Pen, Paper.

PROCEDURE

1) Patient referral.
2) Selection as per criteria.
3) Randomization in Group A and B.
4) Detailed evaluation along with outcome measures.
5) Management.
6) Re-evaluation of outcome measures.

Management in group A treated by Osteopathy Manipulative technique of Sacral Base Correction.

The OMT techniques it was delivered after a standard diagnostic evaluation at each treatment session. It can apply at sacral region. The method is sacral rotation pull.

Sacral rotational pull

UTILIZED FOR

PI-L,PI-R,PL AND PR SACRUM

POSITION OF PATIENT

The patient lies on their side with the problem side up.

OSTEOPATH POSITION

Anterior to the patient

POINT OF CONTACT

Tips of index and ring finger of the inferior hand

SEGMENTAL POINT OF CONTACT

Between the 2nd sacral tubercle and the left P.S.I.S

REENFORCEMENT

The osteopath's superior hand is placed the patients shoulder superior and slightly posterior in order to uppermost shoulder. The patients shoulder is stretched superiorly and slightly posteriorly to developed tension in the spine.

The knee of the osteopaths inferior beg is placed on the postero-lateral portion of the patient's thigh to stabilize the patient onto the table at the time of thrust. No thrust is ever applied to the patient shoulder.

LINE OF DRIVE

P-A, through the sacroiliac articulation

TORQUE

Up the articulation (left clock wise right counter clock wise) Clock wise for PI-L, counter clock wise for PI-R

METHOD

- Take tissue pull from medial to lateral.
- Place contact point between the 2nd sacral tubercle and the P.S.I.S on the posteriorly rotated side of the sacrum.
- Stabilize the pelvis and exerts superior pressure upon the patients shoulder.
- Thrust in accordance with the L.O.D
- Torque is added at the end of thrust

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Management in group B treated by conventional therapy alone.

1) **Short wave diathermy (SWD):** SWD was applied for 15 min. to the lower back region with co-planar method placing both SWD pads parallel to spine.

2) **Traction:** Intermittent lumbar traction is given for 10 minute with 30 seconds on 30 seconds off having weight $1/7^{th}$ of body weight and (progressed as required.)

3) **Therapeutic Exercises:** Stretching exercises: Passive stretching was given to following lumbar muscles.

All stretching's were performed with 30 second hold with 2 repetition. Each for 6 Session per week. Isometric neck exercises: For 6 sec. hold with 5 repetition. Each for 6 sessions per week. Active range of motion till end range within the limit of pain. 10 repetitions per session.

4) POSTURAL RE-EDUCATION:

1) Teach safe movement pattern and proper body mechanics.
2) Teach pt. preventive exercises and mechanics for relief of mechanical stress in daily activity.
3) Teach relaxation exercises to cope with muscle tension.
4) Instruct patient on how to modify environment: Bed, chair, car seats, and work areas.

5) HOME REGIME:

1) Self stretching exercises: Self stretching exercise. To tight muscle was taught to the patient.
2) General mobility exercise in pain free range.
3) Postural re-education.

Treatment session were given to the patient regularly in Physiotherapy dept. for 2 weeks and after that he was told to continue the exercises at home, with weekly consulting the therapist for follow up.

STATISTICAL ANALYSIS AND RESULTS

TECHNIQUES OF STATISTICS:

The data collected for the study was statistically analyzed for assessing the Efficacy of Osteopathy Manipulative technique of Sacral Base Correction.

The statistical test used for this purpose was unpaired't' test.
For each table of Pre & Post treatment value comparison VAS is done

$$\text{Arithmetic Mean } (X) = \frac{\Sigma \text{ Scores}}{N} = \frac{\text{Total Score}}{\text{No. of patients}}$$

This mean ($\bar{X}$) was subtracted from each score to calculate $(X - \bar{X})$

The $(X - \bar{X})^2$ was calculated for each score and added to get $\Sigma(X - \bar{X})^2$

The variance was calculated by $\frac{\Sigma(X - \bar{X})^2}{}$

N-1

Standard deviation for each table was calculated by using the formula:-

$$S.D. = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N-1}}$$

Unpaired‘t’ value was calculated by using formula:-

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S} \times \sqrt{\frac{N_1 \times N_2}{N_1 + N_2}}$$

Where

$$S = \sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}} \quad OR \quad S = \sqrt{\frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_1 + N_2 - 2}}$$

Where

X1 = Mean of Experimental group.
X2 = Mean of Control group.
N1 = Number of patients in Experimental group.
N2 = Number of patients in Control group.
S1 = Standard deviation of Experimental group.
S2 =Standard deviation of Control group.

Degree of freedom was calculated:

d.f = N1+ N2 - 2

The ‘p’ value was seen from the reference table to check level of significance.

A ‘P’ value of <0.05, 0.01and 0.001 was considered significant.

DEMOGRAPHIC DATA

Table: 1 Statistical analysis of age difference in experimental and control group.

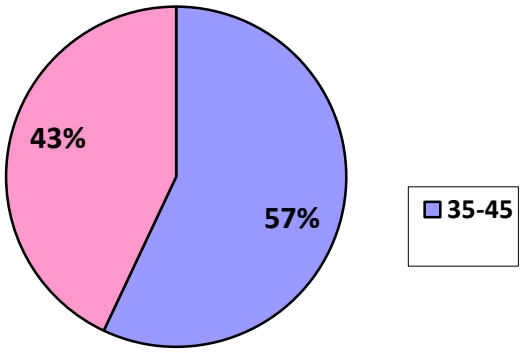
Group	No. of pts.	Mean X	Standard deviation(S.D)	‘t’value	‘p’ value
Exp.	14	44	6.87	0.77	>.05
Control	14	46	6.86		

On statistical analysis of age difference in experimental and control group mean was found to be 44 & 46 respectively and standard deviation was 6.87& 6.86. t-value was 0.77 i.e. insignificant & p was greater than .05

Table: 2 Age wise distribution of patients.

Age	No. of pts.	Percentage
35-45	16	57%
>45-55	12	43%

FIGURE.1



Age wise distribution of Patients

Table: 3 Sex wise distribution of patients in Experimental group.

Gender	Number of subject	Percentage
Male	8	57%
Female	6	43%

FIGURE.2

Male & Female Distribution in Experimental Group

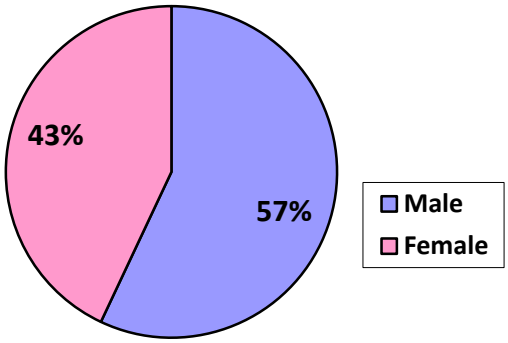


Table: 4 Sex wise distribution of patients in control group.

Gender	Number of subject	Percentage
Male	7	50%
Female	7	50%

FIGURE.3

Male & Female Distribution and Control Group

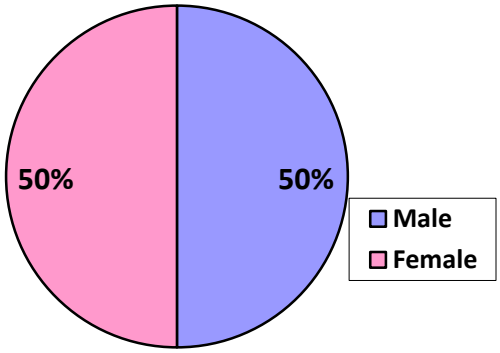


FIGURE: 5

Table 7: Statistical comparison of VAS scores between the Experimental and Control group before the treatment.

PARAMETER	Group A		Group B				
	X	S.D	X	S.D	N	t-value	p-value
VAS Score	8	1.73	7	2.07	14	0.72	>.05

On comparing pre & Post treatment value of VAS Score of exp. & control groups mean was found to be 8, 25 and standard deviation was 1.73, 5.58 . t-value was 0.72, i.e insignificant & p-value was greater than .05.

FIGURE: 6

Statistical comparison of Mean value of VAS scores between the experimental & control group before the treatment.

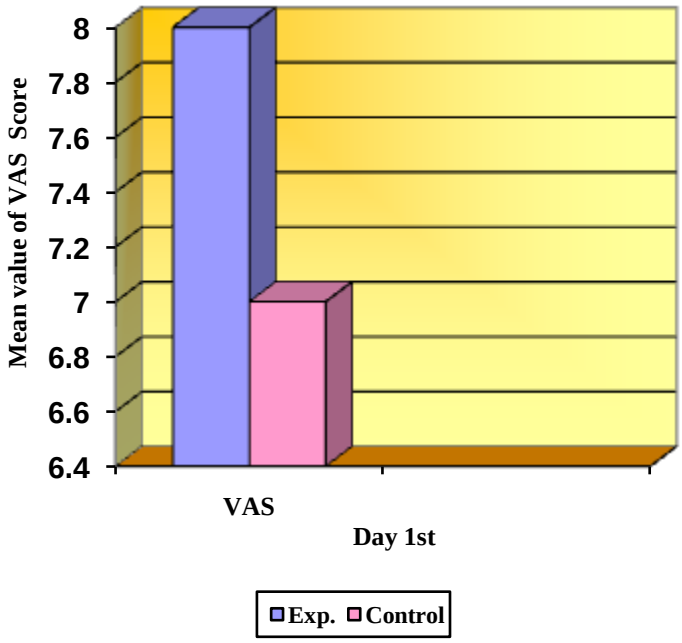


Table 20: Statistical comparison of Pain scores within the experimental group before and after the treatment.

PARAMETER	N	X	S.D	t-value	p-value	Inference
Pre	14	7.35	1.59	9.23	<.001	Significant
Post	14	2.64	1.07			

On comparing pre & post value of experimental group mean was found to be 7.35 & 2.64 respectively and standard deviation was 1.59 & 1.07. t-value was 9.23 i.e. highly significant & p was less than .001.

Table 21: Statistical comparison of Pain Scores within the control group before and after the treatment.

PARAMETER	N	X	S.D	t-value	p-value	Inference
Pre	14	7.14	2.06	2.67	<.05	Significant
Post	14	5	0.16			

On comparing pre & post value of control group mean was found to be 7.14 & 5 respectively and standard deviation was 2.06 & 0.16. T-value was 2.67 i.e significant & p was less than .05.

FIGURE.13

Statistical comparison of Mean value of Pain scores between the experimental & control group before and after the treatment.

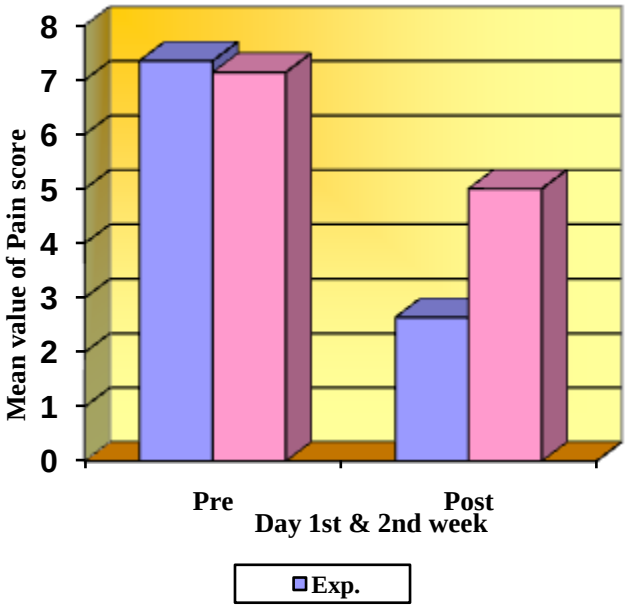
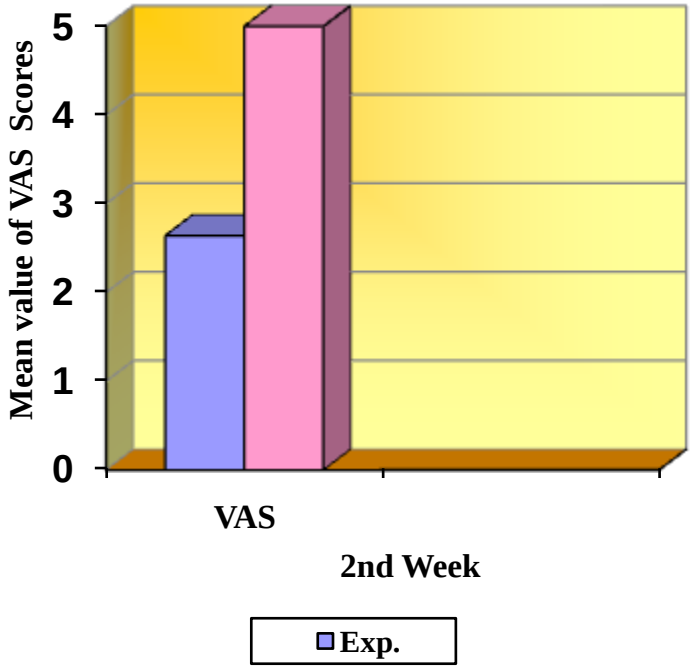


FIGURE: 17

Statistical comparison of Mean value of VAS between the experimental & control group after the treatment.



DISCUSSION

On statistical analysis the study shows the efficacy of **Osteopathy Manipulative technique of Sacral Base Correction** as an adjunct to conventional therapy in management of Non Specific Low Back Pain achieved significant improvement in

- Reduction of pain.

The outcomes were considerably better than when conventional therapy alone was administered.

This study indicates that effective management of Non Specific Low Back Pain treated with **Osteopathy Manipulative technique of Sacral Base Correction** as an adjunct to conventional therapy allows better improvement in patient's performance and may be more comfortable for patients than when conventional therapy alone is given.

Thus the results of study supported rejection of null hypothesis and acceptance of experimental hypothesis.

CONCLUSION

From the present study it can be concluded that **Osteopathy**

Manipulative technique of Sacral Base Correction as an adjunct to conventional therapy is more effective than conventional therapy alone for reducing pain, lower back disability and increase range of motion.

Hence we can conclude that **Osteopathy Manipulative technique of Sacral Base Correction** should be given priority in the treatment of Non Specific Low Back Pain.

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Dr Jasvinder Singh is eager Learner of new Technique and Philosophy to interact and implement the available various methods in world to relieve Pain. Dr Singh is sports person played Cricket, Basketball and Badminton at various School, College, University, District & State level. Dr Singh was a part of Rajasthan Cricket Association as a Team Physiotherapist for 2 yrs.