

Clinical Evaluation of Selected Naturopathic Therapeutic Procedures in Individuals with Low Back-pain

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Abstract Background: The understanding of back-pain as one of the commonest clinical presentations, made the path to the present study. More than three-quarters of the world's population experience back-pain at some time in their lives **Purpose:** The present study has evaluated the selected Naturopathic therapeutic procedures on individuals with low back-pain. **Methods:** Thirteen patients were selected for the study and randomly divided into two groups, viz., Group A, Naturopathic group and Group B, Control group. One patient discontinued. Naturopathic group was treated with mud pack, aromatherapy massage with Eucalyptus oil, acupressure, steam, wet trunk pack, exercises, relaxation and breathing exercises. Advice for life style and diet was given for patients of both the groups. The effect of the therapy was assessed subjectively and objectively. Particular scores drawn for Naturopathic group and control group were individually analyzed before and after treatment and the values were compared using standard statistical protocols. **Results:** Naturopathic intervention revealed 100% relief in both subjective and objective parameters (i.e., 6 out of 14 parameters showed statistically highly significant $P < 0.01$ results, while 8 showed significant results $P < 0.05$). **Conclusion:** Statistically highly significant results of this study point out the successful management of the multi factorial low back-pain with a multi focused Naturopathic treatment approach. Such encouraging results may pave the way for a future study on a large sample in a longer duration incorporating clinical investigations.

Key words Naturopathy, Low back-pain, Aromatherapy massage, Eucalyptus oil, Steam therapy

Introduction

Low back-pain is defined as pain and discomfort in an area with boundaries between the costal margin and inferior gluteal folds, with or without referred leg pain. It may be experienced as aching, burning, stabbing, sharp or dull, well-defined, or vague with intensity ranging from mild to severe. The pain may begin suddenly or develop gradually. Non-specific low back-pain is pain not attributed to recognizable, known specific pathology. (e.g. infection, tumour, osteoporosis, ankylosing spondylitis, fracture, inflammatory process, radicular syndrome or cauda equina syndrome) (Duthey, 2013). Chronic low back-pain patients are at risk of a range of other adverse outcomes, including depression, anxiety, strained interpersonal relationships, financial difficulties and a reduced overall quality of life (Linton, 2000). The average of lifetime prevalence of low back pain is 39% in adults (Nascimento, 2015). Muscles relaxants including non-benzodiazepine antispasmodics and antispastics are frequently used for management of low back pain, but they

don't show significant improvement but with risk of adverse events (Cashin *et al.*, 2021). Because of ineffectiveness of current conventional treatment options for chronic low back-pain, use of opioids for management of above condition has been increased (Anonymous, 2020). Use of opioids creates many side effects including substance use disorder. Conventional treatments for chronic low back pain have been found to be expensive and ineffective. Consequently, a significant number of patients have turned to complementary and alternative medicine (CAM) (Herman, 2008). Study of Naturopathy reveals that people have used natural things with less adverse effects to restore their health since time immemorial. Naturopathic care shows more cost-effective than a standardized physiotherapy education regimen in the treatment of chronic low back pain (Herman, 2008). Qi-therapy is regarded as one of the useful natural healing therapies on evidence based on recovery of arthritis, frozen shoulder, and lumbago patients to their original shape (Kim, 2019). Steady performance of the Qihyul-therapy, the spine correction Qihyul-exercise and the pelvic correction

Qiyul-exercise restore the deformed body shape and it is useful to prevent and cure related diseases as back-pain by alleviating the pains (Kim,2019). Massage therapy is a promising treatment for chronic low-back pain for patients who may have multiple pathologies, any one of which could be responsible for the condition (Allen, 2016). This study is conducted to evaluate the effectiveness of selected naturopathic therapeutic procedures on chronic low back-pain.

Aims and Objectives are as follows: 1. To formulate a new feasible therapeutic approach in the management of low back-pain using certain Naturopathic practices. 2. To evaluate the efficacy of the above formulated treatment plan in the management of low back-pain patients and conduct a comparative study between Naturopathic management group and control group.

Materials and Methods

Criteria for Selecting Patients

Patients attending the OPD of M.P.I.Y.N.E.R. and I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar, were selected for this study. Patients were questioned and examined on the basis of proforma and clinical tests such as straight leg raising test, femoral stretch test, etc.

Inclusion Criteria

Patients having low back-pain for more than 3 weeks were selected, irrespective of their religion, sex, occupation, caste and socioeconomic status. Age limit is between 30-60 years.

Exclusion Criteria

Patients suffering from any major concurrent illness which affects one or more systems of the body were excluded, e.g., ischemic heart disease, diabetes mellitus, tuberculosis, bone malignant tumors, etc. Patients having back-pain due to non-spinal illnesses were excluded, e.g., Urinary tract infection (UTI), gastrointestinal GI diseases, uterine diseases. Patients having positive neurological signs were excluded. Patients of age below 30 years and above 60 years were excluded.

Study Design

Selected patients were randomly categorized into two groups: Group A patients were treated as per the Naturopathic treatment plan and Group B patients were advised on proper diet and lifestyle

Management of patients

Following treatment modalities were used in this study.

Mud pack

Black mud was collected from the lake, dried, pulverized and purified. Length of the pack was about 8"~10" and

width was about 4"-6" and the thickness was about half an inch. While patient was lie down, lower abdomen was wiped off with a towel soaked in hot water, then the cold mudpack was applied to the lower abdomen, covered with a towel and left for 20 minutes. Abdomen was wiped with a towel soaked with warm water after mud pack was removed (Nahar and Jindal, 2002).

Oil massage and Aromatherapy massage

Complete back massage (from shoulders to buttocks) was given to the patients (Hernandez-reif *et al.*, 2001). During the first week oil made of garlic and camphor was used for the massage. Aromatherapy massage with Eucalyptus oil was given during the second and third weeks. One drop of Eucalyptus oil is mixed with 10ml of cotton seed oil to use for the massage (Laroix, Rinaldi, Seager and Tanner, 2004).

Acupressure

After massage while patient was lying down, point BL 25 (level of L4 on erector spinea muscle) and BL 23 were stimulated with the finger tip. The most painful areas, BL54 (center of back of the knee), BL57 (center of the calf), BL 60 and KI 3 (inside and outside of the heel of the foot) were probed and these points were stimulated. Each point was stimulated for about 3 minutes, applying pressure for 20 seconds and reapplying after 15 seconds (Yamamoto, 1997).

Reflexology

The spinal reflexes are found on the medial longitudinal arches of the feet (the bony ridges on the inside). Pressure was given to this area and particularly on sore or tender parts (Attanayake, 2008).

Therapeutic Steam

After the massage a cold glass of water was given to drink before steam. The whole back area was given local steam, produced by warm water (Lindlahr, 2004).

Wet trunk pack

Wet trunk pack with luck warm water was applied and left for 10 minutes. While having this treatment patient was advised to concentrate on breathing (Lindlahr, 2004).

Spinal bath

Warm water was filled about 3" deep in to the spinal bathtub. The patients were advised to lay 10minutes in the tub after drinking a cup of cold water, where only spinal column and some parts of the back kept under water (Nahar and Jindal, 2002).

Exercises

Rotation of joints and stretching exercises, exercises for stabilization of Lumbar area, and exercises to strengthen low back, and abdominal muscles were taught to patients. The exercises which helps to perform activities with less

Table 1. Group A-Naturopathic treatment plan

1 st Week	Min	2 nd Week	Min	3 rd Week	Min
Mud pack on lower abdomen	15	Mud pack on lower abdomen	15	Mud pack on lower abdomen	15
Oil massage on back	15	Aromatherapy massage on back	15	Aromatherapy massage on back	15
Acupressure	10	Acupressure	10	Acupressure	10
Steam	10	Steam	10	Steam	10
Wet trunk pack	15	Wet trunk pack	15	Spinal bath	15
Exercises	10	Exercises	10	Exercises	10
Relaxation	10	Relaxation	10	Relaxation	10
Breathing exercises and prayer (Lindlahr, 2004)	05	Breathing exercises and prayer	05	Breathing exercises and prayer	05

motion, and minimum irritability, in lumbar region were practiced (Lindlahr, 2004).

Relaxation

Patients were asked lie down, relax whole body and follow the aural guiding to make awareness and relax the whole body (Lindlahr, 2004).

Breathing exercises

Breathing exercises to bring the whole respiratory system into an active play, and the alternate nostril breathing was advice for the patients. These exercises were repeated for five to ten times (Lindlahr, 2004).

Lifestyle and diet plan

Patients of both the groups were advised to stick to the following lifestyle and diet plan.

1) *Morning*: Wake-up, drinking a glass of lukewarm water. Attend natural calls. Exercises and prayer. - *Breakfast* - Dalia (semolina)-boil and add milk, Pauva (flattened rice), sprouts (mung sprouts), Upma (dried roasted semolina), oats, fresh fruits (seasonal fruits as grapes, mangoes, melon, papaya, bananas), Herbal tea/ fruit juice/ butter milk.

2) *Afternoon - Lunch* - Roti, boiled vegetables, salad with raw vegetables, vegetable curry, small quantity of rice and dhal with fresh fruits/butter milk - After lunch, sit in *Vajrasana* for a few minutes.

3) *Evening* - Fruits/ fruit juice/ milk/ Tisane (herbal tea).

4) *Night - Dinner* - Khichadi/ Daliya, vegetable soup/ mung soup, green leafy vegetables - After dinner walking for few minutes. - Prayer in *Vajrasana*. - Retire to bed.

Advice to the patients

Following advices were given regarding maintaining the correct posture, while bending, lifting objects, walking, standing, sitting and sleeping.

1) Don't lift by bending over. Instead, bend your hips and knees and then squat to pick up the object. Keep your back straight, and hold the object close to your body.

2) Don't twist your body while lifting.

3) Push, rather than pull, when you must move heavy objects.

4) If you must sit for long periods, take frequent breaks and stretch.

5) Wear flat shoes or shoes with low heels.

6) Exercise regularly. An inactive lifestyle contributes to lower back-pain.

Clinical assessment and grade of total effect

The improvement in the patients was assessed mainly on the basis of relief in the cardinal symptoms of the disease. To assess the effect of therapy objectively, all the signs and symptoms were given scoring pattern depending upon their severity as below:

Subjective criteria

Subjective criteria for assessment of pain are as follows (Magee, 2006).

1) Pain Intensity:

No pain: 0, Mild pain: 1, Moderate pain: 2, Severe pain: 3, Worst possible pain: 4.

2) Sleeping:

Perfect sleep: 0, Mildly disturbed sleep: 1, Moderately disturbed sleep: 2, Highly disturbed sleep: 3, Totally disturbed sleep: 4.

3) Personal care (washing, dressing, etc.): No pain; no restrictions: 0, Mild pain; no restrictions: 1, Moderate pain; needs to go slowly: 2, Moderate pain; needs some assistance: 3, Severe pain; needs 100% assistance: 4.

4) Travel (driving, etc.): No pain on long trips: 0, Mild pain on long trips: 1, Moderate pain on long trips: 2, Moderate pain on short trips: 3, Severe pain on short trips: 4.

5) Work: Can do usual work plus unlimited extra work: 0, Can do usual work; no extra work: 1, Can do 50% of usual work: 2, Can do 25% of usual work: 3, Cannot work: 4.

6) Recreation: Can do all activities: 0, Can do most activities: 1, Can do some activities: 2, Can do a few activities: 3 cannot do any activity: 4.

7) Frequency of pain: No pain: 0, Occasional pain; 25% of the day: 1, Intermittent pain; 50% of the day: 2, Frequent pain; 75% of the day: 3, Constant pain: 4.

8) Lifting: No pain with heavy weight: 0, Increased pain with heavy weight: 1, Increased pain with moderate weight: 2, Increased pain with light weight: 3, Increased pain with any weight: 4.

9) Walking: No pain till any distance: 0, Increased pain after 1 mile: 1, Increased pain after 1/2 mile: 2, Increased

pain after 1/4 mile: 3, Increased pain with all walking: 4.
 10) Standing: No pain after several hours: 0, Increased pain after several hours: 1, Increased pain after 1 hour: 2, Increased pain after 1/2 hour: 3, Increased pain with any standing: 4.

Total score of 10 Items:
 To calculate score = $X / 40 \times 100\%$

Objective Criteria

The objective criteria for assessment of pain are as follows (Magee, 2006).

- 1) Forward flexion:cm
- 2) Left lateral flexion:cm
- 3) Right lateral flexion:cm

Criteria for Assessing the Total Effect

Considering the overall improvement shown by the patient in sign and symptoms, the total effect of the therapy has been assessed as below.

Statistical Analysis

Evaluation of relief through statistical estimations within the group and comparison of improvement between the groups after treatment (AT) were assessed by using paired and unpaired Student's t-test respectively using Microsoft Excel. Being number of observations (n) below 30, Student's t test was employed for the purpose. The statistical estimations particularly sample mean, standard deviation (SD), standard error (SE), calculated t value and probability (p) value were obtained by applying the standard formulas. Probability (p) values of t are tabulated for various degrees of freedom (df) according to the number of observations. Apart from the above mentioned statistical estimations, percentage of relief

is also computed according to the before (BT) and after (AT) treatment scores.

Results

The distribution of patients according to various factors is given in Table 3.

Thirteen patients were registered for this study and one has discontinued (Table 3). Among the registered patients most were between 30 to 39 years of age, married females (Table 3). Most of them were from rich socio economic status (Table 3). Most of them reported acute onset and positive family history (Table 3). Occupational wise most of the patients registered for this study were students (Table 3).

Effects of the treatments

Subjective and objective parameters were used to assess the severity of the disease and its impact on the quality of life of the patients. Subjective parameters were evaluated by using a system of 10 individual scores and their total score (Magee, 2006). while objective parameters were assessed with a system of three individual scores (Magee, 2006). These subjective and objective categories were analyzed and compared using statistics. Particular scores drawn for Naturopathic management group (Group A) and Control group (Group B) were individually analyzed before and after treatment and values of both the groups were compared using standard statistical protocols, such as paired and unpaired Student's t-test. The following details were drawn based on the results of statistical analysis and comparison (Table 4).

Being successful in both subjective and objective parameters, naturopathy proves its potentiality as an effective therapeutic modality in the treatment of lower back-pain (Table 4).

Comparison between Naturopathic management group

Table 2. Criteria for assessing the total effect

Category	Contents
Complete remission	≥ 75% of improvement in signs and symptoms
Improved	≥ 50% and <75% of improvement in signs and symptoms.
Moderately improved	≥ 25% and <50% of improvement in signs and symptoms.
Unchanged	<25% of improvement in signs and symptoms.

Table 4. Results of Naturopathic treatment group

Results	No. of Subjective parameters (out of 11)	No. of Objective parameters (out of 3)
Highly significant	06	-
Significant	05	03
Insignificant	-	-

Table 3. Characteristics of subjects

Group	Distribution of registered individuals			Age (in years)			Sex		Marital status		Occupation				Family history		Onset		Socio economic status			
	Registered	Completed	Discontinued	30-39	40-49	50-59	Male	Female	Married	Unmarried	Student	Farmer	Housewife	Shopkeeper	Positive	Negative	Acute	Insidious	Poor	Lower middle	middle	Rich
Grp. A	7	6	1	3	3	1	4	3	6	1	2	2	2	1	4	2	3	4	0	1	3	3
Grp. B	6	6	0	6	0	0	3	5	1	5	6	0	0	0	4	3	3	3	0	1	2	3
Total	13	12	1	9	3	1	7	8	7	6	8	2	2	1	8	5	6	7	0	2	5	6

Table 5. Results of Control group

Results	No. of Subjective parameters (out of 11)	No. of Objective parameters (out of 3)
Highly significant	-	-
Significant	-	-
Insignificant	11	3

Table 6. Comparison between Naturopathic management group and Control group

Results	No. of subjective parameters (out of 11)	Objective parameters	No. of objective parameters (out of 03)
Highly significant	08	Highly significant	02
Significant	03	Significant	--
Insignificant	---	Insignificant	01

and control group yielded the following results (Table 6).

Management by Naturopathic therapeutic procedures provided 93% relief in both subjective and objective parameters (i.e. ten out of 14 parameters show statistically highly significant $p < .01$ results, while three show significant results $p < .05$) (Table 4).

Discussion

Disease (low back-pain) occurrence was observed maximally at the age of 30~39 years (Table 3). It may be due to more physical activity during this age and maintaining wrong body postures while working, sitting, standing, or sleeping. Furthermore, there may be fast food (wrong food combination) intake in this busy period of life, and lack of judiciously selected curative exercises can also be considered as causes of this disease. Highest incidence of low back-pain was observed among female gender (Table 3). This may be due to excessive household work, lack of rest and relaxation and also maintaining wrong body postures, especially while working. Students were mostly affected by this disease. When considering the students, they may be studying for long hours in one position due to extreme competition; moreover, they are not willing to spend time for physical exercises. Their sitting positions also may be incorrect. One of these facts or all factors together contribute in causing low back-pain among students. Majority of patients were found from rich background (Table 3). Two things can be taken into consideration here. Firstly, sedentary lifestyle and work-related stress of these people and, secondly, the institute being a self-financed one, the treatment was limited to patients who could afford. Obviously due to this reason it has restricted the people of low socioeconomic status, registering in this study. Naturopathic management provided 100% relief in both subjective and objective parameters (i.e. six out of 14 parameters show statistically highly significant $p < 0.01$ results, while eight show significant results $p < .05$) (Table 4). Similar positive results were also observed in the findings of Qi-therapy and thermo therapy on shoulder joint pain (Bok, 2014). Furthermore, the Sanggi

energy therapy proven to be effective in pain treatment of shoulder joint muscles (Lee, 2013) corroborating this finding. Naturopathy management plan worked wonders at subjective level, while it failed to address one objective parameter - forward flexion (Table 4). Management by Naturopathic therapeutic procedures provided 93% relief in both subjective and objective parameters (i.e. ten out of 14 parameters show statistically highly significant $p < 0.01$ results, while three show significant results $p < .05$) (Table 4)

Conclusion

Back pain is one of the commonest clinical presentations. Chronic low back pain patients are at risk of a range of other adverse outcomes, and reduced overall quality of life (Linton, 2000). The average of lifetime prevalence of low back pain is 39% in adults (Nascimento, 2015) Conventional treatments for chronic low back pain have been found to be expensive and ineffective (Anonymous, 2020). Naturopathic care shows more cost-effective than a standardized physiotherapy regimen for chronic low back pain (Herman, 2008). Patients between 30 to 60 years, who suffered low back pain for more than 3 weeks, were selected for this study. They were randomly categorized into naturopathy treatment and control groups, and the relevant treatment modules with diet and life style advices given for 3 weeks. In compliance with objectives of this study, all the therapeutic procedures were administered entirety in accordance to the holistic principle of the naturopathy, to evaluate the efficacy of this treatment regimen. The Results were analyzed using subjective and objective parameters. The following points can be concluded on the basis of the observations drawn and the results achieved.

- Low back-pain can be prevented in a majority of cases, provided are maintained of correct posture, regular and proper exercises, intake of proper selections of food and preserving proper mental health, when all of them are all followed.

- Causes of back-pain are understood as multi factorial. Highly successful management of multi factorial disease depends on multi-focused treatment approach. Since Naturopathy is a holistic method, it is equipped with multi-target approaches. Hence, testified successful results have been obtained.

- Results of this study are encouraging but a trial should be conducted on a large sample in a long duration of time with clinical investigations for a final conclusion.

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Nil.

Conflicts of Interest

None.

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