

Effect Of Naturopathy And Yogic Intervention In Patients With Chronic Back Pain

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Abstract:

Background: Chronic back pain is the common cause of long term disability. Peoples are untreated because of the high cost for these treatments or side effects of the drugs. To overcome this, non-pharmacological alternate therapies can be efficiently employed. Hence the present study is to evaluate the effect of naturopathy and yogic intervention in patients with chronic back pain.

Objective: To compare the influence of naturopathy and yogic intervention in alleviating chronic back pain symptoms and improving the quality of life (QoL).

Materials and Methods: 90 Subjects were randomly assigned to 3 groups and received treatments for 10 days. Assessments were made to all 3 groups before and after 10 days of intervention.

Results: The results showed a significant difference in 3 groups with respect to VAS, ODI, RMDQ and WHOQOL ($p < 0.001$). The comparison between the groups was done by using ANCOVA, showed significant difference in severity of pain, disability index, daily functioning and QoL in patients.

Interpretation & Conclusion: The findings suggest that, each of three interventions is found to be effective in the management of chronic back pain. However, Naturopathy and Yoga when employed together, there was a significant reduction in disability, pain perception and QoL.

Keywords: Chronic back pain, Naturopathy, Yoga, Pain intensity, Disability, Quality of life.

I. INTRODUCTION

Chronic back pain is the most common cause of long – term disability in the middle-aged population in most countries. About 20 % of the german population suffers from back pain, and 10 % have pain of high intensity causing functional impairment. Back pain that persists for longer than 3 months in deemed to be chronic. Since various factors like

biological, psychological, social and cultural components contributes for the cause of back pain, it significantly affects all aspects of life and it is relatively resistant to unimodal therapy regimens.

In U.S.A, BP is the fifth most common reason for all physician visits and the second most common symptomatic reason. the prevalence of back pain in the adult population

varies with age. BP has a lifetime prevalence of 60 – 85 % and a point prevalence of 15 % (12-30%) in adults.

In India, occurrence of back pain is also alarming; nearly 60 % of the people in India have significant back pain at some time or the other in their lives. One of the recent study on prevalence of work related low back pain among the information technology professionals in India concludes that the low back pain is the major work related musculoskeletal disorder among the IT Professionals. 50% of the population involved in the study were suffering from back pain and they were suggested to change their lifestyle along with the therapeutic intervention to improve their health and productivity of work.

Low back pain is one of the frequent medical causes affects the quality of life, like difficulty in managing the routine work or office work. Many environmental and personal factors influence the onset and course of low back pain. Other commonly reported risk factors include stress, anxiety, depression, job dissatisfaction, low levels of social support in the workplace. There is a wide range of treatment possibilities for patients with low back pain, which includes education, behavioral therapy, medication, physical modalities, manual therapy, exercise and others. The duration of low back pain is the one factor that may be considered while choosing the best treatment.

Non-steroidal anti-inflammatory drugs are used as one of the conventional management in persons with chronic back pain. Long term use of NSAID's or opioids may be associated with well recognized adverse effects.

Naturopathy is a system of man building in harmony with constructive principles of nature on physical, mental, moral and spiritual planes of living and consists of non-invasive treatment modalities like diet therapy, fasting therapy, mud therapy, hydro therapy, massage therapy, acupressure, acupuncture, chromo therapy, and magnet therapy. Naturopathic treatments like gentle back massage, infrared rays to the back, neutral spinal bath, neutral immersion and half bath with Epsom salt, hot hip bath, neutral underwater massage, steam bath, regular back bending exercises coupled with maintenance of proper back posture, regular practice of yoga based physical postures and breathing exercises are generally used for back pain.

Chronic back pain is better managed with lifestyle modification and medication. But large segments of the population are either untreated or inadequately treated because of the high cost for these treatments and also due to the side effects of the drugs on the body. To overcome this, non-pharmacological alternate therapies like hydrotherapy can be efficiently employed. Many environmental and personal factors influence of onset and course of back pain. Risk factors are stress, anxiety, depression, job dissatisfaction; low levels of social support in the workplace. Existing treatment options are pharmacologic in nature and are the relief expected is more symptomatic. Hence there is a need for the present study to evaluate effect of naturopathy and yogic intervention in patients with chronic back pain.

II. MATERIALS AND METHODS

A. METHODOLOGY

SUBJECTS: Ninety subjects both female and male with ages ranging between 18-65 years were recruited.

STUDY GROUP: Patients from Inpatient facility of Naturopathy Department of SDM College of Medical Sciences and Hospital, Sattur, Dharwad were recruited for the study.

INCLUSION CRITERIA

- ✓ Age group 18 to 65 years.
- ✓ Both the genders
- ✓ Suffering from back pain for more than 3 months.
- ✓ Willingness to participate in trial by signing an informed consent.

EXCLUSION CRITERIA

- Participants will be excluded if they have
- ✓ Serious spinal disorder, included malignancy, osteoporosis, ankylosing spondylitis, cauda equine compression and infection.
 - ✓ Previous spinal surgery.
 - ✓ Additional over-riding musculoskeletal disorder.
 - ✓ Attendance at or referral to a specialized pain management clinic.
 - ✓ Other co-morbid medical conditions.
 - ✓ Subjects who are under anticoagulant treatment.
 - ✓ Unable to get up from or down to the floor unaided.
 - ✓ Physical therapy (including acupuncture) in the previous 3 months.
 - ✓ Obesity associated with back pain will be excluded.
 - ✓ Pregnancy and lactation.

TECHNICAL INFORMATION

- ✓ Subjects were randomly allocated into three different groups by using lottery method. There were equal numbers of subjects (30 each) in Group 1 (Naturopathy and Yoga), Group 2 (Naturopathy) and Group 3 (Yoga). They were assessed at the baseline and after 10 days.

Consent Form

- ✓ The subjects were instructed about the study and all subjects who are willing to take part in the study were considered. A signed informed consent (a sample copy is enclosed in the Appendix) was obtained from each individual. Institutional Ethical Committee approved the study.

INTERVENTION

The participants selected for the study were randomly assigned into Group 1, Group 2 and Group 3.

Naturopathy:

Naturopathy is a system of man building in harmony with constructive principles of nature on physical, mental, moral

and spiritual planes of living and consists of non-invasive treatment modalities like diet therapy, fasting therapy, mud therapy, hydro therapy, massage therapy, acupressure, acupuncture, chromo therapy and magneto therapy.²⁷ Naturopathic treatments like gentle back massage, infrared rays to the back, neutral spinal bath, neutral immersion and half bath with Epsom salt, hot hip bath, neutral underwater massage, steam bath, regular back bending exercises coupled with maintenance of proper back posture, regular practice of yoga based physical postures and breathing exercises are generally used for back pain.

NATUROPATHY PROTOCOL

DAY	MORNING Rx	EVENING Rx
1	Enema, Steam bath	Mustard Pack To Back
2	Enema, Spinal bath	Mustard Pack To Back
3	Enema, Full body massage + IR to back	Mustard Pack To Back
4	Neutral Under Water Massage	Hot Mud To Back
5	Spinal Spray	Hot Mud To Back
6	Neutral Half Bath With Epsom Salt	Hot Mud To Back
7	Neutral Douche To Back And Legs	Hot Fomentation To Back
8	Partial Massage To Back And Legs + IR	Hot Fomentation To Back
9	Steam Bath	Hot Fomentation To Back
10	Neutral Immersion Bath	Full Mud Bath

DIET PROTOCOL

DAY	7:30 AM	9 AM	11 AM	2 PM	4 PM	6:30 PM
1	Lemon Honey Juice	Ragi Ganji	Boiled Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Boiled Diet, Apple, Soup
2	Lemon Honey Juice	Ragi Ganji	Boiled Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Boiled Diet, Apple, Soup
3	Lemon Honey Juice	Ragi Ganji	Raw Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Raw Diet, Apple, Soup
4	Lemon Honey Juice	Ragi Ganji	Raw Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Raw Diet, Apple, Soup
5	Lemon Honey Juice	Ragi Ganji	Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Apple, Soup
6	Lemon Honey Juice	Ragi Ganji	Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Apple, Soup
7	Lemon Honey Juice	Ragi Ganji	Raw Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Raw Diet, Apple, Soup
8	Lemon Honey Juice	Ragi Ganji	Raw Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Raw Diet, Apple, Soup
9	Lemon Honey Juice	Ragi Ganji	Boiled Diet, Papaya, Buttermilk	Carrot Juice	Cucumbe, Sprouts	Boiled Diet, Apple, Soup

10	Lemon Honey Juice	Ragi Ganji	Boiled Diet, Papaya, Buttermilk	Carrot Juice	Cucumber, Sprouts	Boiled Diet, Apple, Soup
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DATA ANALYSIS

Datas were analysed using SPSS (VERSION 21.0). Results were compared within three groups, Group 1 (Naturopathy and Yoga), Group 2 (Naturopathy) and Group 3 (Yoga), wherein data was extracted at both baseline and post intervention. The data were analysed using ANCOVA, having the duration of pain as the covariate.

III. RESULTS

The present study was conducted to evaluate the efficacy of Yoga, naturopathy and Yoga with naturopathy in the management of chronic back pain. The efficacy of these three interventions were assessed based on the outcome measures as determined through the severity of pain, disability index, daily functioning and Quality of Life in patients. The results showed a significant improvement in all the 3 groups with respect to pain severity, disability index, daily functioning and quality of life ($p < 0.001$) following the respective interventions.

Between group estimations made comparing the outcome measures of the variables following the interventions revealed significant improvement in pain as observed through VAS and disability scores as observed through ODI and RMDQ. Also, a significant increase in the physical and psychological components of Qol was observed in Naturopathy group and Naturopathy and Yoga group respectively.

Variable	Group 1: Naturopathy and Yoga (n=30)		Group 2: Naturopathy (n=30)		Group 3: Yoga (n=30)	
	PRE	POST	PRE	POST	PRE	POST
VAS	8.11±1.31	4.25±1.20*	7.59±1.69	4.84±1.47*	7.75±1.53	5.63±1.48*
ODS	80.73±12.10	42.07±11.99*	75.47±16.95	47.93±14.75*	77.07±15.24	56.00±14.94*
RMDQ	17.90±3.04	7.50±2.98*	16.47±4.16	9.87±3.64*	16.87±4.21	11.73±3.60*

*= $p < 0.001$

Table 1: Represents mean score of Group 1, Group 2 and Group 3. Values are mean± Standard Deviation

Variable		Group 1: Naturopathy and Yoga (n=30)		Group 2: Naturopathy (n=30)		Group 3: Yoga (n=30)	
		PRE	POST	PRE	POST	PRE	POST
QOL	Physical	63.20±8.41	72.90±7.20*	68.00±7.36	74.60±3.13*	69.07±6.88	74.57±5.09*
	Psychological	37.33±11.45	73.23±12.62*	42.57±13.27	69.57±12.10*	45.77±7.94	68.27±6.43*
	Social	69.00±0.00	80.00±2.27*	69.00±1.58	80.00±2.27*	69.00±0.00	81.00±0.00*
	Environmental	71.60±3.41	76.40±3.41*	73.80±2.91	76.00±2.27*	74.40±2.88	76.00±3.18*

*= $p < 0.001$

Table 2: Represents mean score of Group 1, Group 2 and Group 3 on Quality Of Life (WHOQOL). Values are mean± Standard Deviation

IV. DISCUSSION

The main aim of the study was to compare the influence of naturopathy and yogic intervention in alleviating chronic back pain symptoms and improving the quality of life in patients with chronic back pain.

The present study was conducted to assess the effect of naturopathy and yogic intervention to reduce pain intensity and severity of disability, improve the quality of life and health status in patient with chronic back pain. We used self-reported visual analogue scale (VAS), Oswestry disability index (ODI), Roland-Morris Disability Questionnaire (RMDQ) and WHO Quality Of Life-BREF (WHOQOL-BREF) with sample of 90 subjects. The samples were with age mean of 36.2 ± 11.43 , 39.27 ± 13.30 and 43.47 ± 11.33 with a mean duration of chronic back pain of 5.3 ± 1.21 , 5.47 ± 1.50 and 5.63 ± 1.71 in Group 1 (Naturopathy and Yoga); Group 2 (Naturopathy) and Yoga groups respectively. All the 90 subjects attended each session without any absence and no dropouts were reported. The subjects reported no adverse effect during or after the intervention.

A randomized single-blind controlled follow-up study on effectiveness of balneotherapy in chronic low back pain concluded that balneotherapy has analgesic efficacy in alleviating the pain and improvement of mobility in patients with chronic back pain. Since we used Epsom salt along with hydrotherapy, it may be one of the contributing factor for reducing the pain in our present study.

The results of our study are comparable with a previous study which investigated the effect of acupuncture and dry-needling for LBP and concluded that acupuncture is more effective for pain relief and functional improvement than no treatment or sham treatment immediately after treatment and in the short-term for cLBP. This study shows evidence that acupuncture when added to other conventional therapies, relieves pain and improves function better than the conventional therapies alone.

Quoting the previous study Yoga helps in strengthening and relaxing of muscles and ligaments, alleviation of pain through activation of weakened muscles, adequate relaxation of muscles allows for effective muscle contraction and sustained right alignment of the body can be sustained. Thus, yoga can be suggested as a strengthening exercise for weakened muscles.

A study by Edward Ernst, Veronika Fialka, on "Ice freezes pain? A review of clinical effectiveness of analgesic cold therapy" explained the mechanisms by which cryotherapy might elevate pain threshold include an antinociceptive effect on the gate control system, a decrease in nerve conduction, reduction in muscle spasms, and prevention of edema after injury.

A study done by Wilcock, John, Wayne on "Physiological Response to Water Immersion" explains that water immersion may cause physiological changes within the body that could improve recovery from exercise. These physiological changes include intracellular-intravascular fluid shifts, reduction of muscle edema and increased cardiac output, which increases blood flow and possible nutrient and waste transportation through the body. Also, there may be a

psychological benefit to athletes with a reduced cessation of fatigue during immersion.

The application of cold ice or water immersion decreases skin, subcutaneous and muscle temperature. The decrease in tissue temperature is thought to stimulate the cutaneous receptors causing the sympathetic fibers to vasoconstriction which decreases the swelling and inflammation by slowing the metabolism and production of metabolites thereby limiting the degree of the injury.

Superficial tissues can remain cool up to four hours from ice packs or cold water immersion. Enwemeka *et al.* found that cold pack treatment up to 20 min significantly decreased superficial tissue temperature by dulling and reducing the sensation of pain. They concluded that cold pack treatment limits the amount of swelling in acute injuries by slowing the metabolic rate by shunting less blood to the cold superficial area. Earlier research has shown that metabolites are cleared by the blood exchange from superficial to deep tissue. Incoming warm blood is diverted to the deeper tissues thereby slowing down the cooling effect of the deep tissues. A cooling effect also decreases nerve conduction velocity in superficial tissues by slowing the rate of firing of muscle spindle afferents and reflex responses thus decreasing muscle spasm and pain.

Thermotherapy has shown to increase tissue temperature, increase local blood flow, increase muscle elasticity, cause local vasodilation, increase metabolite production and reduce muscle spasm. Superficial heating decreases sympathetic nerve drive which causes vasodilation of local blood vessels and increases circulation. The increased blood flow allows an increased supply of oxygen, antibodies and the ability to clear metabolites.

Myrer *et al.* proposed that contrast therapy is reported to produce physiologic effects such as vasodilation and constriction of local blood vessels, changes in blood flow, reduction in swelling, inflammation and muscle spasm and significant fluctuations of muscle temperature must be produced by the alternating hot-cold contrast treatments.

Mud has a unique property to absorb heat and toxins from the body. It also dissolves and transforms the toxins within the body into such a state whereby they could be easily driven out from the body. It reduces the rigidity of muscles, softens the hard tissues and dissolves hard fatty glands within or over the body. It starts its function right from the moment of its application over the affected site and consequently the patient observes relief from the symptoms. During the excess amount of toxins in the body, mud gets hot sooner after application in accordance of the body temperature.

Massage therapy increases parasympathetic activity, arterial and venous blood flow and improves lymphatic drainage. It induces a variety of positive physiological effects that may contribute to tissue repair, pain modulation, relaxation, and improved mood. Massage may activate segmental inhibitory mechanisms to suppress pain and that some techniques may activate descending pain inhibitory systems, as suggested by gate theory. The main theories regarding the analgesic effects of massage include gate theory, the serotonin hypothesis, and the restorative sleep hypothesis. According to gate theory, pressure receptors are longer and more myelinated than pain fibers, and thus pressure signals from massage are transmitted faster, closing the gate to pain

signals. The serotonin hypothesis maintains that massage increases levels of serotonin, a neurotransmitter that modulates the pain control system. The restorative sleep hypothesis holds that because substance P, a neurotransmitter associated with pain is released in the absence of deep sleep, the ability of massage to increase restorative sleep reduces substance P and consequent pain.

The underlying mechanism for the reported benefits of physiotherapy may be due to the release of beta-endorphin (βE) into the blood stream. In general, various modalities of physical therapy might influence endorphin levels in the serum or in the cerebrospinal fluid; this is usually manifested by elevation with potential mitigation of pain. However, a causal relationship between the elevation of blood, cerebrospinal fluid or brain βE levels and the onset of the analgesic action cannot be demonstrated with certainty.

The previous studies gives the evidences for hydrotherapy, acupuncture, yoga, mud therapy, thermotherapy, balneotherapy, manipulative therapy and physiotherapy in alleviating the pain intensity, severity of disability, improvement in the quality of life and health status in patient with chronic back pain .In the present study the combination of these therapies showed significant result in terms of pain intensity, severity of disability, improvement in the quality of life and health status in patient with chronic back pain without any adverse effects.

The findings of our study indicate that all the three interventions were equally effective in improving pain, disability and quality of life. However, Naturopathy and Yoga when employed together, there was a significant reduction in disability, pain perception and psychological component of QoL. Also, a significant improvement in the physical component of QoL was reported by the subjects in the naturopathy group.

A. STRENGTHS OF THE STUDY

- ✓ Effective randomization,
- ✓ No dropouts
- ✓ No Missing data rates
- ✓ No documented adverse effects.

B. LIMITATIONS AND DRAWBACKS OF THE STUDY

- ✓ Smaller sample size.
- ✓ A long term follow up is required.
- ✓ Subjective variables were used which tend to have bias.
- ✓ The interventions needs to be administered to populations with varying intensity of back pain, to assess for the efficacy of the above interventions.

C. FUTURE PROSPECTS EMERGING THROUGH THIS STUDY

Future studies must have better objective variables to augment the reported benefits of this study. Study can be done with larger sample and longer follow-up.

D. CONCLUSIONS

The findings suggest that, each of the three interventions: Naturopathy and Yoga, Naturopathy and Yoga are found to be effective in the management of chronic back pain. However, Naturopathy and Yoga when employed together, there was a significant reduction in disability, pain perception and quality of life.

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