



Effectiveness of strain counter strain on neck pain and disability in dentists: An experimental study

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Abstract

The purpose of this study was to find out the effect of Strain Counterstrain on the neck pain and disability in dentists by the end of 2 weeks. The 50 participants (including both males and females) ranging from 24-43 years were conveniently selected. Strain counterstrain sessions were conducted once a week for 2 weeks. Each session comprised 20 minutes of hot packs followed by 3 repetitions of Strain Counterstrain technique. The subjects were evaluated before and after 2 weeks program using VAS Numeric Pain Distress Scale and Neck Disability Index. Statistical analysis of the data was done and significant and extremely significant improvement in the VAS Numeric Pain Distress Scale and Neck Disability Index scores (both $p < 0.05$) was noted respectively. Hence this study suggested that 2 week Strain Counterstrain program was effective in reducing neck pain and disability in dentists.

Keywords: strain counterstrain, VAS numeric pain distress scale, neck disability index, dentists, neck pain

Introduction

Neck pain is a common condition — so common, in fact, that the expression “a pain in the neck” is an oft-used figure of speech in English. It can be mild enough so that it is a mere annoyance, or severe enough that it can adversely affect the quality of one’s life. Because of its position and range of motion, and because it plays a vital role in the support of the head, the neck is more subject to injury than any other portion of the spine [14].

Neck pain can have a variety of causes. Keeping your head in an awkward position can cause your neck muscles to fatigue and the joints in your neck to “lock” in place, causing discomfort, stiffness and limited range of motion [14].

Neck pain is a common problem in the community affecting 70% of people at some point in their life. A series of micro traumatic events that accumulate in the body as a result of work place characteristics. Tissue healing never really occur due to repeated exposure to occupational risk factors [1].

In dentistry, awkward working posture, strenuous arm position, sustained forward bend postures fatigues extensor musculature by eccentrically overloading them [2].

The occurrence of neck pain in dentist is caused by frequent assumption of static posture. Study identified a high prevalence of musculoskeletal symptoms in dentists where neck pain in men was (56%) and among women (73%) [2].

In the same study of prevalence of neck pain disability in dentists it was found that (36%) had mild disability (NDI score 5-14) and (6%) had moderate disability (NDI score 15-24) of the neck [2].

Strain counter strain

This innovative system for the treatment of somatic dysfunction was developed by Lawrence Jones, DO, FAAO. He defines strain counterstrain (SCS) as a “passive positional

procedure that places the body in a position of greatest comfort, thereby relieving pain by reduction and arrest of inappropriate proprioceptor activity that maintains somatic dysfunction. From the definition it is clear that SCS concept is not directed towards tissue injury or tissue damage but aberrant neuromuscular reflexes within the tissue [3].

The patient’s dysfunction is passively positioned towards comfort or ease and away from pain, bind and restricted barriers. The position results in maximal shortening of the involved muscles and its proprioceptors and eventual reduction in neuromuscular firing to tonic levels. Myofascial tender points are the diagnostic tool of SCS technique which are found by moderate palpatory pressure. Jones describes tender points as “small zones of tense, tender, edematous muscle and fascial tissue about a centimeter in diameter [3].

Methodology

a) Purpose

The intention of the study was to see the effectiveness of strain counter strain on neck pain and disability in dentists at the end of the two weeks.

b) Selection of the subjects

To achieve this purpose of study 50 dentists between 23 43 yrs of age with neck pain and disability were selected.

c) Procedure

Pre evaluation which includes tender point, neck pain questionnaire was taken. Assessment of the participants was done and which all muscles are affected were treated.

Conventional Treatment: Hot packs for 20 minutes [13].

Strain Counterstrain: This technique involves finding a

tender point in the patient body by palpation method which includes assessment of tender area over the affected area and then moving the patient body or body part away from the restricted motion barrier and towards the position of greatest comfort. Then patient is taken in a comfortable position and this precise position is held for minimum of 90 sec. During this time period, the patient can feel heat or reproduce of the symptoms. Once the release is complete, the heat and pain will be diminished. There will be a sense of lengthening and relaxation of the tissues. Once the release is felt, the patient is slowly taken out of the position of comfort and the tissues will be relaxed (3 repetition each session ^[10], 2 sessions over 2 week period)⁽⁶⁾. Post assessment was done using the outcome measures i.e. –Neck disability scale and visual analogue scale. Pre and post data was collected and statistically analyzed.

d) Findings

Table 1: shows the gender distribution among 50 subjects.

Gender	No of subjects
Male	23
Female	27

Table 2: shows the age wise distribution among 50 subjects.

Age (in years)	No of subjects
24-30	19
31-36	18
37-43	13

Table 3: Shows the interpretation for VAS Numeric Distress scale. Pre-treatment and post-treatment scores analysed by Paired t test.

Scale	Pre-treatment Mean	Post-treatment Mean	t-value	p-value	Significance
VAS	5.84±1.69	3.58±1.24	7.56	<0.05	Extremely significant

Table 4: Shows the interpretation for Neck Disability Index. Pre-treatment and post-treatment scores analysed by Paired t test.

Scale	Pre-treatment Mean	Post-treatment Mean	t-value	p-value	Significance
NDI	23.50±8.4	13.47±4.9	7.27	<0.05	Extremely significant

Results

The post data analysis of VAS Numeric Distress Scale shows that the p value is less than 0.05 which is extremely significant and hence strain counter strain is effective in reducing neck pain in dentists (Table 3) and post data analysis of Neck Disability Index shows that the p value is less than 0.05 which is extremely significant and hence strain counter strain is effective in reducing neck disability in dentists (Table 4).

Discussion

The aim of this study was to study the effectiveness of Strain Counter strain on neck pain and disability in dentists. For the study 50 dentists were selected having tender points present as myo-fascial points are the diagnostic tools for the use of strain counter strain technique. Other types of systemic conditions, cervical pathologies, tumors, etc. was excluded.

Study was done in dental clinics and hospitals in nearby areas for 2 weeks. Data was collected pre and post treatment. Pain was measured using Numeric pain distress scale (ICC=0.96) and disability using Neck disability index (ICC=0.93).

Later the data was statistically analysed using Paired t test. The difference between the pre and post values was statistically analysed which showed significance. P value of all the outcome measures is <0.05. The t value for NPDS is 7.59, for NDI is 7.27.

Neck pain may come from many of the following structures in the neck including: musculature /skeletal, vascular, nerve. The most common condition that contributes to neck pain is forward head posture. Dentists have to sit or stand for prolonged periods and maintain neck and shoulders in fixed positions for long intervals ^[2].

Strain Counterstrain has helped to reduce pain. In this technique the muscles are placed in the greatest comfort position. The resulting tissue relaxation improves vascular circulation and removes chemical mediators of inflammation and thus reduces pain.

The effectiveness of positional release technique can be explained by the proprioceptive theory which states that positional release technique corrects the aberrant neuromuscular activity mediated by muscle spindles & local circulation or the inflammatory reactions mediated by the sympathetic nervous system. According to the proprioceptive theory, the neuromuscular imbalance, which is created by continuous stimulation of the muscle spindles, can be reduced by passively shortening the dysfunctional agonist muscle. Positional release technique also allows the normal muscle spindle activity to return. Once agonist muscle spindle activity is reset, antagonist muscle spindle activity can also return to the resting state relieving aberrant neuromuscular activity & restoring normal function ^[7].

The application of the SCS promotes a decrease in pain and muscle tension in the upper trapezius, confirming the assumptions that the SCS seems to relieve the muscle spasm and restore the appropriate painless movement and the tissue flexibility; b) the relaxation of tensioned muscle fiber promotes the normalization of local vascularization and decreased pain, caused by ischemia; c) the action of the SCS on the nociceptive system can be exercised through the relaxation of the surrounding tissues and consequent improvement in the vascular and interstitial movement this can have an indirect effect on the removal of chemical mediators ^[11].

One theory holds that while in the position of comfort, there is a reduction and arrest of inappropriate proprioceptive activity. As a result of treatment using SCS, there is a decrease in muscle tension, fascial tension, and joint hypomobility. These changes in turn result in a significant decrease in pain ^[7].

Strain Counterstrain achieved its benefits by means of an Automatic resetting of muscle spindles which would help to dictate the length and tone into the affected tissues ^[4].

The result of current study is supported by Albert Atienza Meseguer et al. which concluded that results suggest that strain/counterstrain was effective in reducing tenderness of tender points in the upper trapezius muscle in subjects presenting with mechanical neck pain ^[4].

The conventional treatment given emphasis on increasing the

pressure pain threshold over approximately 50% of trigger points immediately after treatment in patients with myofascial pain who had at least one trigger point^[13].

Increasing skin temperature or deep tissue temperature would cause vasodilation of the tissue, increased metabolism, and increased blood flow, all of which assist with healing and repair. Improving healing and repair would result in increased removal of inflammatory compounds, known to activate and sensitize primary afferent fibers. This would result in less input being transmitted to the spinal cord and higher brain centers, and thus decreased perception of pain^[13].

Conclusion

In this study strain counterstrain shows extremely significant effect on neck pain and disability in dentists.

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