



Comparative Effect between Interferential Therapy and Isometric Exercises on Postural Neck Pain among Dentists

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DOI: 10.31080/ASOR.2022.05.0464

Received: March 04, 2022

Published: April 19, 2022

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Abstract

Background and Objective: Mild to severe pain in the neck, is the common problem in the dental professionals, this affect their daily professional activities in their clinic. This study is indented to find the effect of neck isometric exercise over conversional exercise on functional abilities among the dental professionals.

Method: Male and female dentist aged 27 to 40 were selected for this study based on selection criteria. Total 30 participants were included in this study. The conventional group A was treatment with Interferential therapy and experimental group B was treated with isometric strengthening exercise. Comparison was done between group A and b to find out the outcome of the study. The participants were treated five days in a week for four weeks. Neck pain and functional ability were measured using Visual Analogue Scale (VAS) and Neck Disability Index (NDI) scale to find the outcome before and after the treatment.

Result: The study has observed significant difference between experimental and control group on VAS in Post treatment with $P < 0.001$. There was significant difference between experimental and control group on NDI with $P < 0.001$.

Conclusion: The study concluded that there is better reduction in pain among subjects who underwent isometric strengthening exercises.

Keywords: Visual Analogue Scale; Neck Disability Index; Functional Abilities; Interferential Therapy

Introduction

Cervical Spondylo-arthritis is the chronic condition of the cervical vertebrae and inter-vertebral disk of the neck, which usually causes intermittent pain in the middle aged and elderly people. The disk between the vertebrae, in the neck, act as a spongy cushion. Inside this disc is the soft jelly like substance called the nucleus pulposus, this shrinks with the age and becomes tougher

with the thickening of the bones above and below the rim of the disc [1-3].

A spinal vertebra has very complex anatomical and biomechanical arrangement. Cervical spine is the most mobile part of the spine. This mobility of the spine is dependent on the anatomical integration. The pathological changes in cervical area give rise to pain and discomfort in the neck affect the mobility due

to poor anatomical support and hence it may lead to clinical terms is called Cervical Spondylo-arthritis [4,5].

Infrequent torments from sporadic positions and stances are not out of the ordinary while they are performing static work. In any case, when the aggravation becomes standard event, total harm to the spine (cervical area), shoulder, could emerge prompting crippling wounds or additionally inability. A few investigations have demonstrated that neck, shoulder and back torment are serious issues among dental specialists. Ultimately, when dentistry changed from standing position to plunk down task, musculoskeletal agony in neck and shoulder district turned out to be more common. This might clarify the possible spotlight on these areas [6,7].

These degenerative changes can likewise influence the aspect joints that lie behind the either side of the vertebral trench. There might be additional bone development on the vertebrae called as the osteophytes, which might press the nerve roots causing agony and bothering of the nerves [8,9].

The muscle that associates the furthest point to the vertebral segment and is of pertinence to this review is the trapezius. The trapezius is a level, three-sided muscle, covering the upper and back piece of the neck and shoulders. It emerges from the outside occipital bulge and the average third of the unrivaled nuchal line of the occipital bone, from the ligamentum nuchae, the spinous course of seventh cervical, and the spinous course of the multitude of thoracic vertebrae, and from the comparing piece of the supraspinal tendon [10,11].

Aims and objectives

To find out the effectiveness of isometric neck strengthening exercise AND conventional physiotherapy (IFT) on reducing pain and improve functional abilities among dentists. And to compare the results obtained from the data collected from both the groups under the study.

Methodology

Male and female dentists were included in the study with age group of 27-40 years from the Oxford Dental College, Bangalore. The selected sample size of 30 dentists were divided in to two groups by simple random sampling method in to control group, given interferential therapy and the experimental group, given isometric neck strengthening exercises to find the outcome of the study.

The selection criteria include dentists with neck pain with duration of 3 months or more, NDI score mild to severe disability,

15 subjects were in each groups, in group A, clients were given IFT with frequency of 80 Hz to 120 Hz was applied for 10 min and in group B clients were given isometric neck exercises for 1 session per day with each sessions of 10-15 min. Pre and post treatment assessment of both the groups were taken on VAS for pain and NDI for disability level. Treatment was given as 1 session per day for 5 days per week for 4 weeks.

An assessment chart with all the subjects' information was used in the study. The main use of this chart is collecting and categorizing the data obtained in the correct format, which will help the researcher to get the information for making the master chart.

Measurement tools for the study were Visual analogue scale, Neck disability index and Orthopaedic assessment chart. All the subjects both experimental and the control group were used the same orthopaedic assessment chart in order to maintain the validity and reliability of the research work.

Results

The main aim here is interpretation of data collected from 30 patients who participated in the study. The data collected is tabulated carefully and master chart is made and the results are analyzed and interpreted using statistical tools.

The results of this study are analyzed in inter and intra group by different statistical tools. The comparative analysis of the data of level of pain and the lower extremity functional scale of the experimental and control group are compared between the pre and post treatment phases.

Parameter	Group	Mean	Std dev	P-Value
VAS - Pre	Control	6.53	0.73	1.000
	Experimental	6.53	0.63	
VAS - Post	Control	5.00	0.92	< 0.001*
	Experimental	2.67	0.71	
NDI - Pre	Control	35.01	1.8	0.233
	Experimental	35.6	1.35	
NDI - Post	Control	38.75	1.46	< 0.001*
	Experimental	43.75	1.62	

Table 1: Comparison of various parameters between control and experimental groups.

The study has observed significant difference between experimental and control group on VAS in Post treatment with $P < 0.001$.

There was significant difference between experimental and control group on NDI with $P < 0.001$.

Group	Parameter	Time interval	Mean	Std dev	P-Value
Control	VAS	Pre	6.53	0.74	$< 0.001^*$
		Post	5.00	0.93	
	NDI	Pre	35	1.88	$< 0.001^*$
		Post	38.75	1.46	
Experimental	VAS	Pre	6.53	0.64	$< 0.001^*$
		Post	2.67	0.72	
	NDI	Pre	35.6	1.35	$< 0.001^*$
		Post	43.75	1.62	

Table 2: Comparison of various parameters within each group between pre and post treatment phase.

In control and experimental group, there was changes in VAS within Pre and Post treatment, but in experimental group there was significant difference within the group with $P < 0.001$.

In control and experimental group, there was changes in NDI within Pre and Post treatment, but in experimental group there was significant difference within the group with $P < 0.001$.

The study observed a huge distinction in mean VAS among Pre and Post treatment stage ($P < 0.001$). We notice that there is a lessening in mean VAS from pretreatment stage to post treatment stage and the mean abatement is observed to be genuinely critical. Mean NDI in exploratory gathering is found to have expanded from pretreatment stage to post treatment stage and the expansion is observed to be genuinely critical ($P < 0.001$).

In control bunch, we notice that there is a huge contrast in mean VAS among Pre and Post treatment stage ($P < 0.001$). We notice that there is a lessening in mean VAS from pretreatment stage to post treatment stage and the mean abatement is observed to be genuinely critical. Mean NDI in control bunch is found to have expanded from pretreatment stage to post treatment stage and the increment is observed to be genuinely huge ($P < 0.001$).

In exploratory gathering, we notice that there is a huge distinction in mean VAS among Pre and Post treatment stage ($P < 0.001$). We notice that there is a lessening in mean VAS from pretreatment stage to post treatment stage and the mean abatement is observed to be genuinely critical. Mean NDI in test bunch is found to have expanded from pretreatment stage to post treatment stage and the increment is observed to be measurably critical with $P < 0.001$.

Discussion

Mechanical neck torment is one of the major crippling pathologies among the dental experts. This review was done to assess the adequacy of early isometrics in mechanical neck torment by taking a benchmark group that went through a traditional treatment convention.

A study on 30 subjects has effectively partaken in the review among whom they were partitioned into control and test bunches arbitrarily. Control bunch got IFT for a time of about a month. Trial bunch went through early isometric reinforcing intercession [12].

The pre and post treatment assessment depended on broad actual assessment, precise history taking. Assessment through Standardized scales, for example, VAS and NDI was additionally done and these scales assumed a critical part during the time spent evaluating the subject on the ground that, the measurable information used to think about the outcome depends on these scales [13].

The factual information contains the Mean worth, the Standard deviation; the T esteem and the P esteem inferred by use of standard details for the two significant boundaries that is the VAS and the NDI. Every one of these boundaries is partitioned into pre and post treatment stages. These two stages are material to both the control and the test gatherings [14].

In this review it is seen and obviously demonstrated by factual results that in the pretreatment stage, there is no huge distinction between the exploratory gathering and the benchmark group for example the degree of agony and the degree of utilitarian inability are practically same in both the gatherings [15,16].

Notwithstanding, it is seen and again obviously demonstrated by both measurable result and direct scale esteems that in post treatment stage, there is critical improvement in the scores of test bunch for example in the gathering where the point of the review is inserted. Accordingly, we at long last show up at the review's elective speculation and reject the invalid theory on the grounds that, measurably speaking P value is under 0.05 and medicinally

talking, the early reinforcing mediation was compelling in lessening torment and expanding practical capacity [17].

Ethical Clearance

There was no risk of conducting this study. Ethical clearance was obtained from the ethical committee of Florence College of Physiotherapy, under RGUHS, Bangalore with approval letter dated 15th April 2009.

Conflicts of Interest

There is no conflict of interest to conduct and publish this study.

Fund for the Study

This was a self-funded study.

Conclusion

Subjects with mechanical neck pain mainly suffer from pain and difficulty in their activities during course of the disease.

This study was aimed at determining or finding out the effectiveness of the early isometric neck strengthening in dental personals with mechanical neck pain.

In this study, 30 subjects with mechanical neck pain actively participated, 15 of whom underwent early isometric strengthening intervention in the experimental group. By using statically tools, the results of the changes in the pre and post treatment scores in pain and functional ability were analyzed.

Based on the information acquired it obviously showed that there was clear decrease in the aggravation and inability level in the trial gathering and control bunch, however when both the gatherings were thought about test bunch showed preferable improvement over control bunch.

Therefore, going by the overall result of the study it can be concluded that, early isometric strengthening is indeed effective in reducing pain and improving functional ability in dental professionals with mechanical neck pain.

Authors Contribution Statement

Prof. Dr. Syeda Khanam.P contributed towards the methodology, Asst.Prof. Avinash.N has been involved in the conceptualization of the study and data collection, and Dr. Addanki Prem Chand

contributed on discussion part, Prof. Dr. Jibi Paul contributed towards analysis and writing of the manuscript. All the authors collectively contributed their valuable work for the final manuscript.

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