A Study on Effectiveness of Corrective Exercise Over Conventional Exercises in Individuals Suffering from Trapezitis

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Abstract

Background: Neck pain prevalence varies widely on different studies. Poor ergonomic work habit such as prolonged constrained work position with persistent neck or spine flexion may imply a risk factor. Maintaining poor posture for long periods of time can result in chronic muscular fatigue, discomfort or pain, leading to pathological effects like Trapezitis and permanent disability. Exercises has proved to be very important for neck pain. Neck muscle exercises if given thus will prove to be beneficial in improving stability of the neck muscle.

Objectives: To compare the effectiveness of corrective exercise over conventional exercises in individuals suffering from Trapezitis.

Methods: - It is a comparative experimental study.This study includes (N=40) subjects with neck pain within age group of 25-45 years. They were randomly assigned into 2 groups (Group A and B). Group A had 20 (N=20) subjects who are treated with Corrective exercises, Group B had 20 (N=20) who are treated with Conventional exercises. The subjects were given intervention 5 days a week for 2 weeks.

Result: Paired sample t-test was used for within group analysis. Independent sample t-test was done to analyse between group variables. No significant difference was found in NDI ($p<0.001$), VAS ($p <0.001$) between Corrective and Conventional groups while within the groups all outcome measures shows significant difference in bothbetween Corrective and Conventional groups($p=0.01$).

Conclusion: -This study concluded that both the treatment techniques,between Corrective and Conventional were effective in alleviating the pain in individuals suffering from Trapezitis.

Keywords*: Trapezitis, Corrective Exercises, Conventional exercises, Static strengthening, Visual Analog Scale, Neck Disability Index*

Introduction

Trapezius is a large, diamond-shaped muscle that extends from the back of the skull down to the lower part of the spine in the chest and across the width of the shoulders. The trapezius is attached to the top and back of the scapula as well as to the outer part of the clavicle. Its function is to help support the neck and spine, it is also involve in moving arms[1].

Origin : The trapezius arises from the medial third of the superior nuchal line of the occipital bone, the external occipital protuberance, and the posterior border of the ligamentumnuchae; from the spinous processes of C7 – T12 vertebrae. The muscle is divided into three parts : descending (Upper fiber), ascending (Lower

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fiber) and Middle fiber.

Insertion : The upper fiber are directed downward and laterally into the lateral third of the clavicle; the middle fibers are directed horizontally into the acromion and the upper border of the spine of the scapula, the lowest fibers are directed upward and laterally and are inserted on the .medial and the spine of the scapula.

Nerve Supply : Motor functions are supplies by fibers from the spinal part of the accessory nerve, sensory functions are supplies by fibers from the third and fourth cervical nerves[2]

Trapezitis is defined as inflammation of trapezius muscle. The upper trapezius muscle is designated as postural muscle and it is highly susceptible to overuse[3]. The pain is present even during rest and is aggravated by activity; it may be referred to other area from the site of primary inflammation. Passive range of motion may be painful and restricted due to pain and protective spasm in antagonist Groups of muscles[4]. Trapezitis is an inflammatory pain arising from the trapezius muscle causing a severe neck spasm. This muscle lies at the back of the neck and help in shrugging movement of the shoulders along with upward movement of the head[5]. Trapezitis is an inflammation of trapezius muscle which involve myofascial pain syndrome, that can be commonly encountered in clinical practise[6].Trapezitis pain occurs for when person does neck extension, it is occurred due to faulty posture during walking, watching time, prolonged use of phone[5]. Neck pain is very common in the region of the upper trapezius muscle. About two thirds of people experience neck pain at some points in their lives. In middle age prevalence is highest and women are more affected than men.

Neck pain prevalence varies widely on different studies with a mean point prevalence of 13% (range 5.9%-38.7%) and mean lifetime prevalence of 50% (range 14.2% - 71.0%)[7]. Poor ergonomic work habit such as prolonged constrained work position with persistent neck or spine flexion may imply a risk factor[8]. Maintaining poor posture for long periods of time can result in chronic muscular fatigue, discomfort or pain, even if the soft tissues are not structurally altered[9], more significantly prolonged exposure to high static muscle and joint may lead to pathological effects and permanent disability. Exercises has proved to be very important for neck pain. These exercises strengthen the muscle, help in increasing the range of motion, and improve mobility thus reducing the chance of recurrence of Trapezitis[10]. Neck muscle exercises if given thus will prove to be beneficial in improving stability of the neck muscle[11-12]

Posture correction using taping techniques, stretching exercises, verbal cueing, endurance exercises, relaxation exercises, mobilization, and soft tissue manipulation has been advocated in the past[13-14]. It has been concluded that in order to have long term benefits, posture retraining should involve re-education of awareness of correct posture and encouragement to actively maintain it. If this proposition is valid, there should be immediate alteration in the trapezius activity after such an intervention.

Methodology

An experimental design conducted for a duration of 12 months and a number of 40 subjects, both genders with a primary diagnosis of Trapezitis, were randomly assigned to Group A (Experimental) and group B (Coventional)after meeting the inclusion criteria. Both males and Females of Age 20 to 40 years withneck pain of less than 3 months duration. Willingness to perform and complete the treatment regimen as explained and patients who have provided written and verbal informed consent were included. Patient with History of recent surgery to neck or upper back, cervical spine, shoulder or open wounds in the neck region, History of trauma or factures in the neck, upper back or shoulder, Skin diseases and lesions in the area of Trapezius, Any other systemic disease and Subjects who are not willing to participate in the study were excluded from the study. The study proposal has been accepted by the ethical committee and the samples were collected from Assam Down Town University OPD and Physiotherapy Department, Down Town Hospital.

Outcome Measures

Visual Analogue Scale (VAS) and Neck Disability Index(NDI)

Procedure

The samples were randomly divided into Group A and Group B each group containing 20 subjects. A pre test and post test were conducted by assessing Visual Analogue Scale. Neck Disability Index Questionaire. The interventions in Group A includedcorrective exercises like elevation, depression, shrugging the shoulder while in Group B patients were given passive stretching of Trapezius and Static Neck Exercises.

Group A :Corrective Exercises (Figure 1 , 2 and 3)

In Group A the participants were instructed as persistent to make them aware of the correct posture . To apprise the participants of elevation and depression instructions included Shrug your shoulders by trying to touch the shoulders to the ears and bring them down as much as you can

For upward and downward rotation instructions were gently lift the tip of the shoulder and drop it as much as you can.

For Protraction and Retraction gently spread the front of your shoulders apart to draw your shoulder blades across your chest wall and then bring the tip of your shoulder forward as in trying to reach forward

The Scapular Orientation of the individual subject with reference to the ideal posture was also explained

The participants practiced the posture reorientation exercise for five minutes or until satisfactory by the Physiotherapist whichever is achieved fast

Ergonomics advice will be given to an individual depends on the task of daily activities. The Exercises are given for 1 session per day and continued for 5 days.

Fig no 1 :Corrective Exercise(Protraction of the shoulder)

Fig no 2 : Corrective Exercise (Elevation of the shoulder)

Fig no 3 : Corrective Exercise (Gently lifting the tip of the shoulder for shoulder rotation)

GROUP- B (Controlled Group)

PASSIVE STRETCHING TECHNIQUE FOR TRAPEZIUS (FIG. 4)

It is essential to practice proper stretching techniques. Doing so will allow to avoid any unnecessary injury.

Patient's position- supine lying. Therapist's position- standing at the head end with one hand underneath patient's occiput

To stretch the upper trapezius muscle fibers, the patient's head and neck will be slowly and carefully brought into pain free forward flexion, contralateral side flexion, and ipsilateral rotation.

With other hand, an inferior pressure to the shoulder will be applied, drawing the scapula inferiorly. Then holding the stretch for approx 30 sec and then gradually releasing the stretch, patient's head, neck, and shoulder will be returned back into the neutral position.

The stretch will be repeated three times.Focus will be on a pain-free stretch and it will be gentle and in sustained manner. The patient will be asked to relax and breathe freely. the patient will be advised not to hold breath while stretching

Static neck exercise (Fig. 5)

Position of patient : Sitting or standing which ever is comfortable for patients

- Place the right hand on the right cheek. Try to move the neck towards right side and resist the neck from moving by using the palm. Both the pressure will be equal and the neck should not move. Hold the position for 10 sec. Do the same procedure in the opposite side

- Place both palm below the chin and try to look down and the palm will resist the movement and both the pressure will be equal and prohibit any movement, hold for 10 sec.

- Put your right hand above the ear and resist the head from touching the shoulder. Both the pressure will be equal and prohibit any movement , hold the position for 10 sec and aplly the same to oppoisite side

- Interlock both the hands on the fore head and press with the palm so that the forward movement of the head is restricted, hold for 10 sec

- Interlock both the hands at the back of the head and prevent the backward movement of the head with the palm and hold for 10 sec

Fig no 4: Conventional Exercise (Passive stretching)

Fig no 5 : Conventional Exercise (Static neck exercise)

Data Analysis

All analysis were obtained using SPSS version 22. Demographic data of patient including sex, age, NDI score, VAS score were descriptively summarized. Paired t-test was performed to find effectiveness of Corrective exercises and Conventional exercises in reducing pain and improving disability function in individuals suffering in trapezitis. Independent sample t-test was carried out to compare Corrective exercises and Conventional exercises.

Results

Table 1: Distribution of study groups according to age and gender

Variable	Correctional Exercise group n (%)	Conventional therapy group n (%)	Total n (%)
Age (years)			
20-22	8 (40)	8 (40)	16 (40)
23-25	7 (35)	9 (45)	16 (40)
>26	5 (25)	3 (15)	8 (20)
Sex			
Male	12 (60)	11 (55)	23 (57.5)
Female	8 (40)	9 (45)	17 (42.5)
Total	20 (50)	20 (50)	40 (100)

Table 2: Comparative assessment of mean Visual Analogue Scale Score before and after correctional exercise

	Visual Analogue Scale Score (Mean + SD)	t-value	p-value
Before Correctional Exercise	6.35+ 0.875	21.326	0.001*
After Correctional Exercise	2.65 + 0.587		

Table 3: Comparative assessment of mean Neck Disability Index Score before and after correctional exercise

	Neck Disability Index Score (Mean ± SD)	t-value	p-value
Before Correctional Exercise	19.94 ± 2.35	17.763	0.001*
After Correctional Exercise	12.22 ± 1.38		

Test applied: Paired t test, SD= Standard Deviation, *indicates statistically significant difference

Table 4: Comparative assessment of mean Visual Analogue Scale Score before and after conventional exercise

	Visual Analogue Scale Score (Mean + SD)	t-value	p-value
Before conventional exercise	6.35 + 0.875	22.584	0.001*
After conventional exercise	2.65 + 0.587		

Test applied: Paired t test, SD= Standard Deviation, *indicates statistically significant difference

Table 5: Comparative assessment of mean Neck Disability Index Score before and after conventional exercise

	Neck Disability Index Score (Mean + SD)	t-value	p-value
Before conventional exercise	19.83 + 2.28	18.725	0.001*
After conventional exercise	12.34 + 1.48		

Table 6: Comparative assessment of before and after mean difference of Visual Analogue scale score and Neck Disability Index score among correctional exercise and conventional exercise groups

	Mean difference (Post-Pre) (Mean + SD)	
	Visual Analogue scale score	**Neck Disability Index score**
Correctional exercise group	-3.75 + 0.786	-7.71 + 1.94
Conventional exercise group	-3.7 + 0.732	-7.49 + 1.78
t value	-0.208	-0.385
p-value	0.836	0.702

This was a 12 months structured study performed to determine the effects of corrective exercise over conventional exercises in individuals suffering from trapezitis. A pre test and post test were conducted by assessing Visual Analogue Scale and Neck Disability Index Questionaire. The interventions in Group A included corrective exercises like elevation, depression, shrugging the shoulder while in Group B patients were given passive stretching of Trapezius and Static Neck Exercises

The mean age of sample for both Group A and Group B are 23.5 and 23.3 respectively. There was no significant difference in mean age between the groups and showed homogeneity of the subjects in the two treatment groups.

After the intervention considerable change was observed in the mean values of group A and group B from that of the baseline value (VAS Scale and NDI). Statistical analysis revealed a significant reduction of pain and improvement of function in both groups.

Paired 't' test was performed for within group analysis. The VAS showed significant difference in both group A, mean value =2.65 ± 0.587 and group B, mean value =2.65 ± 0.587 with a 'p' value of (0.001). The NDI similarly showed significant difference in both group A, mean value = 12.22 ± 1.38 and group B mean value = 12.34 ± 1.48 with a 'p' value of (0.001).

Independent 't' test was performed for between group analysis. The VASdid not show significant difference in post analysis of group A,mean value = 2.65 ± 0.587 and group B, mean value = 2.65 ± 0.587with a 'p' value of 0.836. Similarly in NDI group A, mean value = 12.22 ± 1.38 and group B, mean value = 12.34 ± 1.48 did not show any significant difference with 'p' value of0.702.

Discussion

The comparative study was conducted to study the effectiveness of Correctional and Conventional exercises in the treatment of individual suffering from trapezitisin terms of reduction of pain using VAS and improvement in function using NDI. It was also intended to compare the effectiveness of Correctional versus Conventional exercises.

The age distribution of the groups showed the homogenecity of subjects. The results from the statistical analysis of the study supported null hypothesis which stated that there was no significant difference between the effectiveness ofCorrectional versus Conventional exercises to reduce pain and improve function onindividual suffering from trapezitis.

The mean values of data from the study indicate that both Correctional and Conventional exercises could be beneficial in the treatment neck pain on college student carrying heavy bags, desk worker and

prolonged incorrect posture in daily activities. There was statistically significant difference in the VAS pain score and NDI in both group A and group B from 'pre' to 'post'treatment. The between group comparison showed statistically no significant reduction of pain on VAS pain score and improvement of function in group A as compare to group B .

Results of the present study revealed that there was minimum considerable effects of group A in reduction of pain and improve function as compared to group B in terms of VAS pain score and NDI score .

Conclusion

In this study, the Neck Disability Index and Short form VAS score showed significant difference in within group analysis in both the treatment groups. But, in between group analysis all the above mentioned scores exhibited insignificant difference .

Limitation

The results only show the short term effects of the intervention. The study didn't include long term follow up. Thus result can't tell us about the effectiveness of both the intervention in long term.

Conflict of Interest: None

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