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Effect of positional release therapy versus muscle energy technique on neck pain in female hairdressers: A comparative study

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Abstract
The purpose of this study was to compare the effectiveness of positional release technique and muscle energy technique among female hairdressers with neck pain. 50 female hairdressers who had minimum experience of 2 years were randomly selected and were divided in to two groups. Group A received Positional release therapy and Group B received Muscle energy technique. The level of Pain was measured using Northwick Park Neck Pain Questionnaire (NPQ) and Numeric Pain Distress Scale (NRS) respectively pre and post intervention i.e. after 2 weeks intervention. Conventional treatment was given to both the groups. There was significant improvement in both PRT and MET groups. Statistical comparison of the results showed that Group A had greater improvement in pain as compared to Group B. PRT along with conventional treatment appeared to be more effective than MET to reduce neck pain in female hairdressers.

Keywords: positional release therapy, muscle energy technique, pain and female hairdressers

1. Introduction
Neck pain is a common problem. 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. This position is often accompanied by forward shoulders and a rounded upper back, which not only feeds into the neck problem but can also cause shoulder pain.
Hairdressers are exposed to a variety of hazards in the work place. Like ergonomics hazards (inappropriate posture during work) [1]. Hairdresser faces the risk of musculoskeletal disorders. Study identified a high prevalence of work related musculoskeletal problems in hairdressers. Prevalence of musculo-skeletal symptoms in hairdressers were neck (59.9%), shoulder (76.6%), upper back (41.2%), arm and elbow (31.3%), wrist (44.2%), finger (35.0%) [3].
The repetitive stereotyped work is typically performed on nonadjustable workstations and chairs. The task demands and lack of adjustability of the work stations may lead to awkward postures such as cervical and thoracic spine flexion, shoulder elevation and abduction which may result in elevated rates of shoulder and neck pain [1].
A positive correlation was found between neck pain disability and work experience. The greater the average time per work cycle spent in neck flexion, the greater the association with symptoms in the neck area [3].

Positional Release Therapy (PRT)
This innovative system for the treatment of somatic dysfunction was developed by Lawrence Jones, DO, FAAO. He defines strain counter strain (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.
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 [7].

Muscle Energy Technique (MET)
Muscle energy techniques are a class of soft tissue osteopathic (originally) manipulation methods that incorporate precisely directed and controlled, patient initiated, isometric and/or isotonic contractions, designed to improve musculoskeletal function and reduce pain.
Two methods:

Post Isometric Contraction (PIR)
It refers to the assumed effect of reduced tone experienced by a muscle or a group of muscles, after brief periods following isometric contractions.
It involves contractions of the muscle that requires release or lengthening**.**

Reciprocal inhibition (RI)
It involves physiological response of antagonist of a muscle which has been isometrically contracted.
Where pain makes controlled contractions of the involved muscle difficult, therapeutic use of the antagonist can be of value [11].

2. Methodology

(a) Purpose
The intention of the study was to compare the effectiveness of Positional release therapy and Muscle energy technique among female hairdressers with neck pain.

(b) Selection of the subjects
To achieve this purpose of the study 50 female hairdressers between 25 -35 years of age with minimum 2 years of experience were selected.

(c) Procedure
Subjects were randomly divided into two groups; Group A received Positional release therapy and Group B received Muscle energy technique. Conventional treatment was given to both the groups (hot pack).
GROUP A (Positional release therapy) for upper trapezius muscle: Tender points are located along the middle portion of the upper fibers of the trapezius. Pressure is applied by pinching the muscle between the thumb and fingers. The patient is supine with the therapist standing on the side of the tender point. The patient's head is laterally flexed toward the tender point side. The therapist grasps the patient's forearm and abducts the shoulder to approximately 90° and adds slight flexion or extension to fine-tune and this precise position is held for minimum of 90 sec. 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) (4 sessions for 2 weeks)
GROUP B(Muscle energy technique) post isometric relaxation for upper trapezius muscle: The patient lies supine, arm on the side to be treated lying alongside the trunk, head/neck side-bent away from the side being treated to just short of the restriction barrier, while the practitioner stabilises the shoulder with one hand and cups the ipsilateral ear/mastoid area. The patient introduces a light resisted effort (20% of available strength) to take the stabilised shoulder towards the ear (a shrug movement) and the ear towards the shoulder. The contraction is sustained for 7-10 seconds. Once the muscle is in a stretched position, the patient relaxes and the stretch is held for up to 30 seconds. (3 repetition each session) (4 sessions for 2 weeks)

(d) Findings
Pre and post analysis was done within group using paired t test which showed significant results.

Table 1: shows the effectiveness of Positional release therapy (group A) on all the outcome measures.

	Mean±sd	T value	P value	Significance
Npqp Pre	22.7±4.551	23.64	<0.05	SIGNIFICANT
Npqp Post	21.2±4.226			
Vas Pre	6.2±1.708	14.21	<0.05	Significant
Vas Post	3.2±1.249			

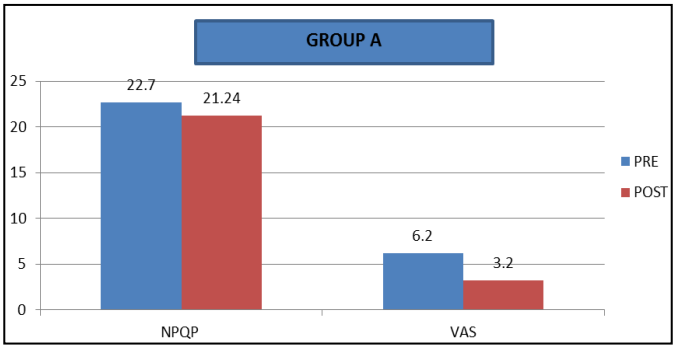

Fig 1

Table 2: shows effectiveness of Muscle energy technique (group B) on all outcome measures.

	Mean±sd	T value	P value	Significant
Npqp pre	26.4±4.770	10.95	<0.05	Significant
Npqp post	24.8±4.675			
Vas pre	6.0±1.607	7.68	<0.05	Significant
Vas post	4.5±1.584			

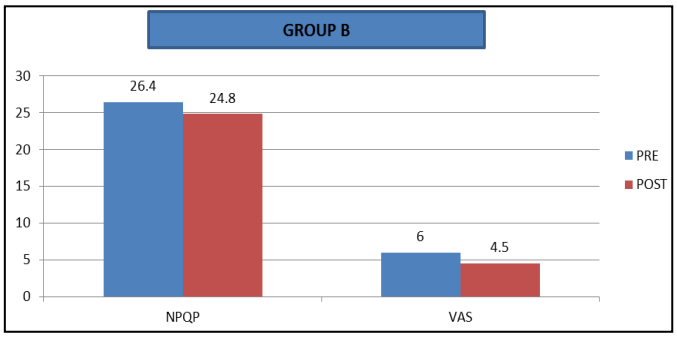

Fig 2

Post analysis of comparison was done using unpaired t-test and the results showed that Group A was more effective than Group B in reducing neck pain.

Table 3: showing comparison between positional release therapy and muscle energy technique across all outcome measures.

	Mean±sd	T value	P value	Significant
Npqp a	21.2±4.226	2.88	<0.05	Significant
Npqp b	24.8±4.675			
Vas a	3.3±1.249	2.97	<0.05	Significant
Vas b	4.5±1.584			

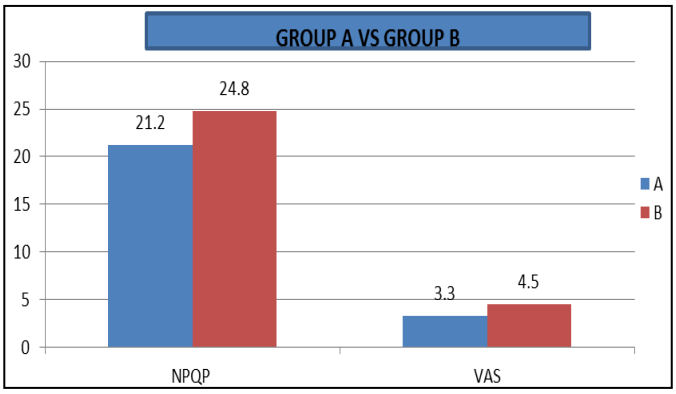

Fig 3

3. Results

Post data analysis shows that, along with conventional therapy; GROUP A (Positional release therapy) has shown significant improvement in reducing neck pain in female hairdressers on Northwick park neck pain questionnaire and Numeric pain distress scale as compared with GROUP B (Muscle Energy Technique)

4. Discussion

The present study was done to see the effectiveness of Positional release therapy and Muscle energy technique on Neck pain in female hairdressers. In this study 50 participants were included with 25 in each group of the age 25-35yrs.

The difference between the pre and post values of both the groups was statistically analyzed which showed significance. P value of all the outcome measures is <0.05. t value for NPQ is 2.88 for NPDS is 2.97.

When both the groups were compared, we found out that positional release therapy has proven to be more effective as compared to muscle energy technique. 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.

Within Group A when pre and post analysis was done we found that positional release therapy has shown very significant statistical improvement in reducing pain. Using electromyography (EMG), Kelencz CA. showed that PRT promotes a decrease in pain and muscle tension in the upper trapezius, confirming the assumptions that the PRT 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 PRT 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 [22].

Saavedra FJ showed that a reduction in the electrical signal was observed after PRT application, which became equivalent to the electrical signal recorded at baseline in the nTrP trapezius muscle, thus suggesting a possible impact of PRT(Positional Release Therapy) on the reduction in the basal tone of the muscle [23].

5. Conclusion

Positional Release Therapy along with conventional treatment appeared to be more effective than Muscle Energy Technique to reduce neck pain in female hairdressers.

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