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Correcting upper crossed syndrome in smart phone users-online education during covid-19 Pandemic

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Abstract
Background and Objectives: The smart phone has become a necessity for most people. Now a day's smart phones are used mostly by students for learning purpose such as online classes, webinars, e-learning programmes etc. When using smart phone`s, people usually flex their neck downwards to stare at the lowered object and maintain the head in forward position for long periods of time, which may cause musculoskeletal disorders, such as "UPPER CROSSED SYNDROME" The approach used in the treatment of patients with upper crossed syndrome is correcting posture and reliving pain. Myofascial release techniques focus on relaxing the deep tissue of the body providing lasting and effective relief to the patient.
Aim: The present study aimed to find the effectiveness of manual therapy in correcting upper crossed syndrome in Smart Phone Users.
Materials and Methods: The present study was an experimental study design that included 10 individuals, with upper crossed syndrome in the age group of 16–25 years of both sex.
Data Collection Tools
Parameters (i) Numerical Pain Rating Scale Numerical Pain Rating Scale [NPRS]
(Ii) Vertical tangent rocabado (1983) evaluated the orthostatic position of the head on neck this distance was reported to average 6 cm in normal head posture.
(iii)Neck Pain Disability Index Questionnaire this questionnaire is designed to enable us to understand how much your neck Pain has affected your ability to manage your everyday activities
Intervention: Included Myofascial Release and Posture correction & Stabilization Exercise program for 30 min, five sessions per week over a period of 4 weeks. Patients were assessed at the baseline using NPRS, Vertical Tangent, and NPDI and reassessed after 4 weeks.
Results: There was statistical significance in all the outcome measures with $P < 0.0001$.
Conclusion: The study concluded that manual therapy (Myofascial therapy) is effective in correcting upper crossed syndrome in smart phone users.

Keywords: upper crossed syndrome, NPRS, vertical tangent, NPDI, myofascial release

Introduction

The smart phone has become a necessity for most people. Smart phones are used for both communication and entertainment purposes, such as message, music, media, internet access, photos, and games. Now a day's smart phones are used mostly by students for learning purpose such as online classes, webinars, e-learning programmes etc. When using smart phone`s, people usually flex their neck downwards to stare at the lowered object and maintain the head in forward position for long periods of time, which may cause musculoskeletal disorders, such as "UPPER CROSSED SYNDROME". Upper crossed syndrome is described as a muscles imbalance pattern located at the head and shoulder region. Statistic of people using smart phone`s in India is increasing day-by –day and their effects are also increasing like forward head posture. The approach used in the treatment of patients with upper crossed syndrome is correcting posture and reliving pain. The primary aim of correcting posture and relieving pain, such as manual therapy, is to treat the underlying pathology causing signs and symptoms (forward head posture and pain).

MYOFASCIAL THERAPY Myofascial therapy (also known as myofascial release therapy (or) myofascial trigger point therapy) is an effective hands on therapy which can directly change and improve health of the fascia. The purpose of myofascial release is to break down scar tissue, relax the muscles and myofascia and restore good posture. Myofascial release techniques focus on relaxing the deep tissue of the body providing lasting and effective relief to the patient. As mentioned, myofascial release technique is applied directly on the body and uses slow or sometimes deep pressure to restore the proper health of the fascia.

Myofascial Release Therapy Has Been Used Effectively For:

- Low back pain
- Headache
- Neck stiffness
- Shoulder injuries
- Arthritic conditions
- Sports injuries
- Reduction in muscle spasms

The Benefits of using Myofascial Release Therapy Includes:

- Decreased muscle and fascial tension
- Improved joint movement
- Improved breathing
- Reduction in chronic recurring injuries
- In general myofascial release is used to improve the

health of the muscles and fascia, improve circulation and restore good posture.

Aim and Objectives

Aim: The aim of the study is to find out, the effectiveness of the manual therapy on upper crossed syndrome in smart phone users.

Objectives

- To evaluate the effectiveness of manual therapy for relieving pain in subjects with upper crossed syndrome by using NPRS.
- To evaluate the effectiveness of manual therapy for correcting posture in subjects with upper crossed syndrome by using vertical tangent.
- To evaluate the effectiveness of manual therapy for improving functional activities in subjects with upper crossed syndrome by using NDI questionnaire.

Need for the Study

The smart phone has become a necessity for most people. Smart phones are used for communication and entertainment purposes, such as message, music, media, internet access, photos, and games. But now a day's smart phones are used mostly by students for learning purpose such as online classes, e- learning, webinars, etc Statistic of people using smart phone`s in India is increasing day-by – day and their effects are also increasing like forward head posture

Materials and Methodology

Materials

- Numerical Pain Rating Scale
- Couch
- Inch tape
- Scoring material
- Pen

Methodology

Study design: Pre and Post experimental study design.

Study setting. The study was conducted at outpatient department of JAS Clinic, Sangeethapuram, Trichy, Tamilnadu,

Sampling Method: Purposive sampling method

Sample size: A total number of 10 patient who are diagnosed as having upper crossed syndrome in smart phone users.

Study duration: 1 month

Inclusion Criteria

Vertical tangent: Above 7cm

Age: 16-25 yrs

Sex: Both sexes People with upper crossed syndrome in smart phone user

Exclusion Criteria

Vertical tangent: Below 7 cm

Age: Above 25 yrs

Cervical spondylosis

Cervical pathology

Data Collection Tools

Parameters

1. **Numerical Pain Rating Scale Numerical Pain Rating Scale [NPRS]** is designed to present the respondent a rating scale with minimum constraints. This was proposed by THOMEE et, al …, 1995. The patient was asked to mark on a scale where '0'represents 'no pain' and '10'represents most severe pain. Interpretations 0: No pain [0%] 1-3: Mild pain [25%] 4-7 : Moderate pain [50%] 7-10 : Severe pain [75%] 10 : Maximum pain [100%] 22 Numerical pain rating scale is becoming widely used. The essential points. The line should be 100mm line other length are less reliable about a NPRS. There should be a small vertical mark at each end, with number 0 and 10, and a verbal description. The line itself should be clear of any marking and should be horizontal. Not vertical for more reliable measurements. It is generally advised that previous scores should be shown to the patients.
2. **Vertical Tangent** Rocabado (1983) evaluated the orthostatic position of the head on neck by measuring from a tangent line that runs through the apex of the thoracic spine to the surface of the mid cervical spine. This distance was reported to average 6 cm in normal head posture. Vertical tangent does not give just head on neck position. But a measure how deep the thoracic kyphosis is which in some cases may be fixed. The relationship to head and neck posture is in part implied. 23
3. **Neck Pain Disability Index Questionnaire**

   Name: _____ Date: _____

   Age: _____

   This questionnaire is designed to enable us to understand how much your neck pain has affected your ability to manage your everyday activities. Please answer each section by circling the ONE CHOICE that most applies to you. We realize that you may feel that more than one statement may relate to you, but please Just Circle the One Choice Which most closely Describes your problem right now. A=0 B=1 C=2 D=3 E=4 F=5 Total Score: _____ Patient 'Score # Of Sections Completed × 5 × 100 _____ % Disability

Method

After checking the exclusion criteria, the total number of 10 patients was taken through purposive sampling method i.e. only patient with upper crossed syndrome are taken for the study. Selected participants are clearly explained about the study and after their willingness study was conducted. All the outcome measures were recorded by a therapist prior to the intervention (baseline measures) and post intervention by using NPRS, Vertical Tangent, and NPDI questionnaire.

Manual Therapy Technique

Myofascial Release

Table 1

Muscles	Procedure	Holding Time	Resting Time	Repitation
Levator Scapulae Upper Trapezius Pectoralis Major Pectoralis Minor	Firm Circular Pressure over the Middle of the Muscles	30 Sec	15 Sec	5 Repetition

Posture Correction & Stabilization Exercise

Table 2

Posture Correction Stretching Ex	Stabilization Exercise
Chest Stretch Pectoralis Major Pectoralis Minor Trapezius Stretch. Levator Stretch	Theraband Row Foam Roller Subscapular Activation Prone Scapular Stabilization Foam Roller Thoracic Extension Deep Neck Flexor (Chin Tucks)

Data Presentation

Table 3: Represents the Pre and Post Values of Nprs, Vertical Tangent, and Npdi Questionnaire

Case No	NPRS Score		Vertical Tangent		NPDI Questionnaire	
	Pre	Post	Pre	Post	Pre	Post
1	8	2	8.5	7	47.5	20
2	5	0	7	6	40	10
3	7	1	8	6.5	47.5	15
4	6	0	7.5	6	37.5	12.5
5	8	3	8.5	7	57.5	15
6	7	1	8	6	37.5	12.5
7	6	1	7	6	35	10
8	9	4	8.5	7	67.5	30
9	5	1	7.5	6	37.5	7.5
10	8	3	9	7.5	57.5	22.5
Mean	6.9	1.6	7.9	6.5	46.5	15.5
Mean Difference	5.3		1.4		31	

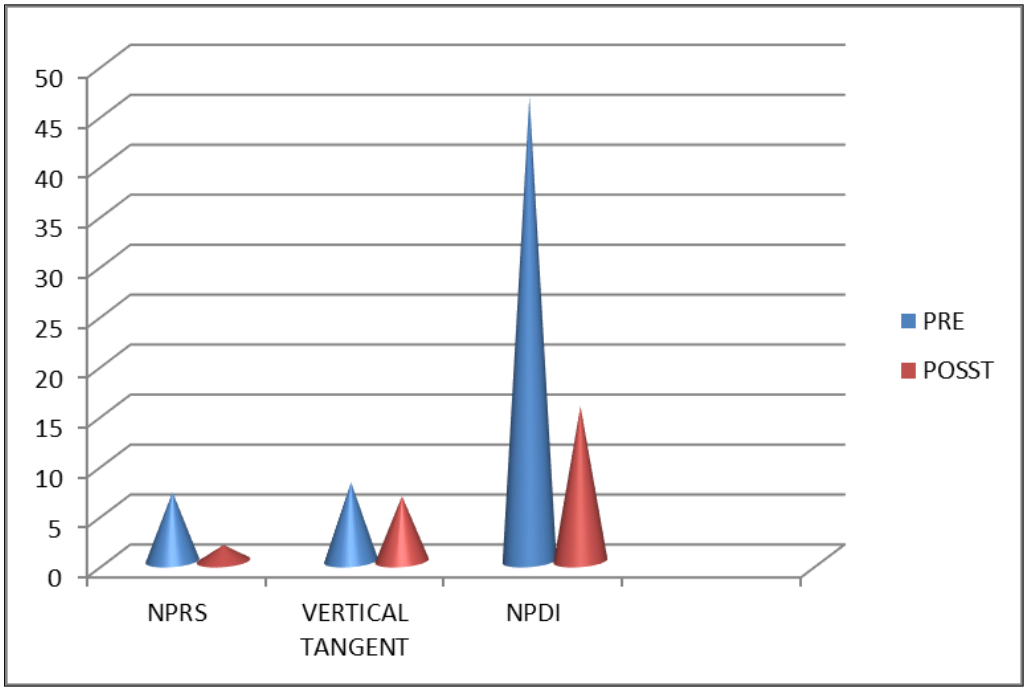

Fig 1: Represents the Pre And Post Values Of Nprs, Vertical Tangent, And Npdi Questionnaire

Result

Within group comparison of the pre–post intervention scores of outcome measures such as NPRS, VERTICAL TANGENT AND NPDI was performed. There was a significant improvement in the, NPRS, VERTICAL TANGENT AND NPDI scores, when compared for pre- and post intervention, NPRS and Vertical tangent and neck pain disability index questionnaire shows significant difference in the pretest and post values, before and after application of manual therapy. Result shows that the manual therapy was

effective in reducing pain and correcting posture for patient with upper crossed syndrome in smart phone users.

Discussion

The present study reports that significant improvement was observed in reducing pain and in correcting posture in terms of NPRS, VERTICAL TANGENT AND NPDI, scores with Myofascial Release in patients with upper crossed syndrome in smart phone users. The possible reason for this significant improvement in reducing pain and posture correction may be due to the probable manual mechanism that entities with upper crossed syndrome in smart phone users. Thus, a significant improvement was seen in the quality of life of these individuals. In upper crossed syndrome patients posture correction improves physical performance, mood, sleep quality, and personal judgments and also reduces the degree of pain, which could have had a positive effect on the quality of life. These findings support the results of the present study, where demonstrated a significant change in the scores of NPRS, VERTICAL TANGENT AND NPDI, scales.

Conclusion

The present study concluded that Manual Therapy is effective in relieving pain and in Correcting Posture in Upper Crossed Syndrome in Smart Phone Users.

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