NECK PAIN AND DISABILITY, AN UNWANTED GUEST AFTER THE COVID-19 PANDEMIC OUTBREAK! HOW TO DEAL WITH IT?

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ABSTRACT

Background: The Covid-19 health emergency has profoundly changed the working life for all the individuals. In December 2019, a new infectious respiratory disease emerged in Wuhan, Hubei province, China and was named by the World Health Organization as COVID-19 (coronavirus disease 2019). A new class of corona virus, known as SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) has been found to be responsible for occurrence of this disease. Almost all the nations are struggling to slow down the transmission of the disease by testing & treating patients, quarantining suspected persons through contact tracing, restricting large gatherings, maintaining complete or partial lock down etc. It is been reported that 81% of the worldwide workforce has been affected by workplace changes due to improper working style. Neck pain is among the most common pain problems, with a reported prevalence which is ranging from 22% to 30%. Neck pain is usually associated with headache, upper back and shoulder/arm pain. Neck and LBP are prevalent, are major causes of work disability. Because of this typically recurrent character, it has been suggested that adherence to self-management strategies learned while actively participating in physical therapy and/or pain clinics may avoid many recurrent cases and have a profound influence on long-term care.

Aim and Objective: To study the effects of Mulligan fist traction and MFR on Trapezius muscle on neck pain and disability.

Methodology: 40 participants were selected according to the inclusion and exclusion criteria and consent was taken. Participants of the study were given Mulligan fist traction and MFR of trapezius muscle along with some neck and upper back exercises. Participants were assessed for neck pain and disability using neck pain and disability scale and readings were noted. Assessment was done on pre and post intervention on Day 1, 7, and 14. Result: The P value was recorded as < 0.0001 Conclusion: In this study we concluded that, Mulligan fist traction, MFR of trapezius muscle and neck exercises help in improving the overall neck health in terms of pain and disability.

Keywords: Mulligan Fist Traction, MFR, Neck Pain, Neck Pain and Disability Scale, Pandemic Outbreak

I. INTRODUCTION:

The COVID-19 pandemic is considered as the most crucial global health calamity of the century and the greatest challenge that the humankind faced since the 2nd World War.

In December 2019, a new infectious respiratory disease emerged in Wuhan, Hubei province, China and was named by the World Health Organization as COVID-19 (coronavirus disease 2019). A new class of corona virus, known as SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) has been found to be responsible for occurrence of this disease. As far as the history of human civilization is concerned there are instances of severe outbreaks of diseases caused by a number of viruses. According to the report of the World Health Organization (WHO as of April 18 2020), the current outbreak of COVID-19, has affected over 2164111 people and killed more than 146,198 people in more than 200 countries throughout the world.

It has rapidly spread around the world, posing enormous health, economic, environmental and social challenges to the entire human population. Almost all the nations are struggling to slow down the transmission of the disease by testing & treating patients, quarantining suspected persons through contact tracing, restricting large gatherings, maintaining complete or partial lock down etc.
One of the most observable changes which occurred as a result of the Covid-19 pandemic has been the shift of many employees to work from home arrangements across occupations. Individuals from some occupational groups that had very little experience with working from home were shifted to such arrangements (e.g., teachers in primary education) pandemic on occupational status.2

To minimize physical contact among individuals and prevent new infections, many companies implemented “mobile working” or “home working” or “remote working”, a form of carrying out a job without specific place of work restrictions, with the possible use of technological tools. It has been estimated that about 81% of the worldwide workforce has been affected by workplace changes.3

Neck pain is among the most common pain problems, with a reported prevalence which is ranging from 22% to 30%. It is usually accompanied by a substantial effect on the daily life of the population.4

Normally, the neck moves 600 times every hour whether we are awake or sleep. The motions of flexion, extension, lateral flexion, and rotation are permitted in the cervical region. These motions are accompanied by translations that increase in magnitude from C2 to C7. However, the predominant translation occurs in the sagittal plane during flexion and extension.4

The overall mean prevalence of neck pain is of higher incidence in office and computer workers. The office worker with neck pain usually show limited range of motion of cervical spine and enhanced activity of the cervical flexors and extensor muscles which may be one of the reasons to prolong neck pain.3

Similarly, while an association between the increased use of computers and work-related neck pain has been observed, it is unclear whether this is a causal relationship, considering the complex etiology of neck pain that comprises physical, psychological, and environmental factor.3

The importance of self-management of chronic illness is increasingly recognized in light of the large and mounting burden of chronic illness in our society. Some governments are promoting self-management for common conditions through health service policy and special programs, including for patients with back pain. Neck and LBP are prevalent, are major causes of work disability. Because of this typically recurrent character, it has been suggested that adherence to self-management strategies learned while actively participating in physical therapy and/or pain clinics may avoid many recurrent cases and have a profound influence on long-term care.5

The Mulligan techniques have been developed to overcome joint ‘tracking’ problems or ‘positional faults’, i.e. joints with subtle biomechanical changes. Normal joints have been designed in such a way that the shape of the articular surfaces, the thickness of the cartilage, the direction of pull of muscles and tendons, facilitate free but controlled movement while simultaneously minimizing the compressive forces generated by the movement. Alteration in any of this or all the above factors would alter the joint position or tracking during movement and would provoke symptoms of pain, stiffness or weakness in the patient.4

Self-myofascial release (SMFR) a technique of soft tissue mobilizations that become popular in the last decade, is performed under the same principles, but instead of a therapist providing soft-tissue manual therapy, an individual treat him/herself. SMFR is increasingly becoming a common practice in treating soft-tissue restrictions. The simplicity and availability of SMFR allow it to be easily implemented in many types of training or rehabilitation program. The SMFR technique involves small undulations back and forth over a special tool such as a dense foam roller or massage balls, starting at the proximal portion of the muscle and working downwards to the distal portion of the muscle or vice versa. Sometimes the undulations are concentrated over the painful area of the muscle or a patient can be positioned over the SMFR tool for 60-30 sec in order to provide sustained compression on the MTrP.6

II. METHOD:

Participants

40 patients were recruited for the study from various orthopaedic OPDs from in and around Pune. Patients were included in the study if they had significant neck pain for at least 3 months and did not have any other serious medical or psychological conditions. Reasons for exclusion were as follows: 13% were not interested to get included in the study, 9% dropped out of the study and in completing the study; 14% suffered from other serious medical conditions. The sample consisted of 21 men and 9 women with an average age of 41.6 years (SD±3.6)
Outcome Measures

The NPAD consists of 20 items that measure problems with the neck, intensity of pain, its interference with functional aspects of living, and the presence and extent of associated emotional factors. Patients respond to each item by marking along a 10-cm scale. Item scores range from 0 to 5, in quarter-point increments.

If a patient placed a mark on the vertical grid, then the solid lines indicated whole points and the dotted lines indicated half-point increments. When a patient marked the space between the vertical grids, one quarter of a point was added to the score. The NPAD score is the sum of the item scores. Factor scores were also calculated by totalling the items that were found in previous work to load heavily on each of the factors. Completion of the NPAD took less than 5 minutes.

The Neck Pain and Disability Scale: Test–Retest Reliability and Construct Validity

Procedure

The participants were assessed in a Physiotherapy OPD setup. The patients were given informed consent, an intake for that included questions about medical history and demographic characteristics such as age, gender, occupation, education level etc. and lastly, they were handed over the NPAD scale.

At their first visit, after the form filling, patients were taught self-Mulligan fist traction in which patient sits in neutral upright posture, makes a fist and places under the chin, thumb side up. The patient will then flex their neck forward until their chin makes a contact with the fist. The patient then uses their other hand on the back of their head to over-press into flexion. He then holds the position for 10 seconds with overpressure sustained.

For self MFR using a tennis ball, the subject was in supine lying with knees flexed, the participants moved ball proximally to distally in small undulating movements (approximately one per second) for 30 seconds, followed by 10-seconds rest between compressions to allow blood reperfusion. This manoeuvre was repeated for 3 sessions, 30 seconds each, for a total of 90 seconds for each Myofascial trigger points performed in the muscles considered and for each side (left and right divided by the spine). Therefore, the SMFR treatment lasted 9 minutes for subject.

Also, participants were given some conventional static neck stretching and strengthening exercises which they performed in seated position. For stretching they had to perform 10 repetitions and hold for 10 sec for each repetition and for strengthening exercises the subjects performed the exercises giving resistance on the forehead for cervical flexion, extension, side-flexion and rotation also for 10 repetitions for 10 sec hold each repetition.

Patients were given these interventions thrice a week for two weeks. Pre- and Post- intervention scores were recorded on Day 1 (week 0), Day 7 (Week 1); and Day 14 (Week 2)

III. RESULT:

Graph 1: Gender distribution

Interpretation: 31 males and 9 females participated in the study
Table No.2: Pre- and Post- NPAD scale Scores

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>PRE</th>
<th>POST</th>
<th>V A L U E</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPAD PRE</td>
<td>66.77 ±</td>
<td>25.92 ±</td>
<td>0.6796</td>
</tr>
<tr>
<td>P VALUE</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
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</tbody>
</table>

Graph 2: Pre- and Post- intervention comparison of NPAD scores

Interpretation: Pre- and Post- intervention NPAD scores comparison with pre intervention mean value 66.77 and post intervention mean value 25.92 with p value <0.0001

IV. DISCUSSION:

The purpose of this study was to study the effects of Mulligan Fist Traction, self MFR of trapezius on neck pain and disability in work from home individuals.

In this study, 53 participants were selected 13% were not interested to get included in the study, 9% dropped out of the study and in completing the study; 14% suffered from other serious medical conditions.

The pre and post intervention results of Neck disability index were extremely significant with P value <0.0001 for both Mulligan Fist traction and SMFR.

A cross-sectional analysis was conducted during COVID-19 emergency on characterization on home-working population in the year 2020, by Antimo Moretti et al in which they found out that the physical health issues related to remote working lead to increased sedentariness and poor posture due to use of non-ergonomic equipment such as conventional four-leg kitchen chair not adjustable in height, not height-adjustable monitor, the absence of a footstool which eventually promoted the onset of MSK disorders particularly neck pain.3

Pilar Escolar-Reina et al, conducted an observational study on Self-Management of Chronic Neck and Low Back Pain suggested that patients get more motivation and they adhere to the interventions when they are taught self-management strategies as it gives results in a short duration of time.5

The study also helped us to make patients understand the importance of self-management as nonpharmacologic pain management is curative in nature, and neck/back care in ADLs is preventative in nature.5

Mulligan states that the symptoms are due to the mal-tracking of the joint, and the treatment consists of gently correcting the tracking. The disturbed proprioceptive output from the mal-aligned joint itself contributes abnormal stimuli to a central nervous system already operating at an enhanced level of excitability. Correct alignment of the joint would remove the abnormal barrage, and gentle handling plus pain-free initiation of movement may well rapidly re-assert a normal response from the central nervous system. Thus, we have the process of ‘mobilization induced analgesia’.9

A study on self MFR done by Alessandra Amato et al suggested that the SMFR treatment technique decreased muscle stiffness caused by the irritation of head and neck sensory nerves. This treatment has a positive impact on cervical mobility and involves an improvement on physical fitness in people who suffer neck pain and disability.8
Pain arising due to MSK origin involves muscular retractions located in the algic site and not an antalgic strategy. A retracted muscle appears to be in a basal muscle shortening situation with a consequent decrease in its flexibility leading to a limitation in joint excursion and in the mobility of course the final consequence is an imbalance between the agonist and antagonist muscles. This imbalance involves an almost continuous stiff state of muscles inducing high muscle tension.\(^8\)

We can also see that because of this pandemic outbreak people are spending most of the time at home especially children and teenagers because of the change in mode of teaching going from offline to online. This is resulting in more time they are spending on technology devices such as laptops, mobile phones, smart phones, and tablets etc.\(^11\), hence this population are at higher risk of developing the aforementioned musculoskeletal disorders which may hamper the later stages of their lives.

Lastly, we can see that the current pandemic outbreak is not just affecting the cardiovascular health of people which is the target focus of coronavirus, but is also affecting the musculoskeletal health indirectly due to the consequences of the changes and adjustments made for working from home. Our study hence, focused on these secondary problems which gives life-long health issues related to spine amongst which the critical one is spondylosis.

V. CONCLUSION:

In this study the conclusion is that Mulligan Fist Traction and MFR for trapezius muscle self-performed by the patients suffering from neck pain of postural origin provided significant effects on reducing the pain and disability.

VI. FUTURE SCOPE:

- The study can be performed on specific occupations.

- The study can be done to find out the associated factors for neck pain and disability in work from home environment.

- Another study can be done specifically for lumbar spine problems.

REFERENCES: