Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effects of proprioceptive neuromuscular facilitation in addition to routine physical therapy on pain, range of motion and postural alignment in patients with temporomandibular joint disorders: A Randomized Controlled Trial

Protocol summary

Study aim
To explore effects of proprioceptive neuromuscular facilitation in addition to routine physical therapy on pain, range of motion and postural alignment in patients with temporomandibular joint disorders.

Design
Parallel, 58 Sample size, Randomized Controlled Trial, single blinded

Settings and conduct
Trial will be conducted in Physiotherapy department of Punjab Social Security Health Management Company Hospital. Assessor will be completely blind about outcomes.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Age 20-50 year individuals, Having temporomandibular joint disorders with abnormal neck alignment, Pre-diagnosed patients referred by dentist and orthotics. Exclusion criteria: Systemic or local pathology like infectious or vascular disease of orofacial region Patient using another form of treatment for temporomandibular disorders Patient using functional appliances H/o frequent open dislocation Cervical radiculopathies Rheumatoid arthritis Osteoarthritis of temporomandibular joint peripheral nerve injury

Intervention groups
Group A (control) will follow routine physiotherapy (icing\ ultrasound\TENS and stretching\strengthening) and group B (intervention) will follow proprioceptive neuromuscular facilitation(PNF) program with routine physiotherapy. Both groups will follow 3 sessions per week for 4 weeks and home exercises for 2 weeks. Pain, Range of motion and Postural assessment will be conducted on 1st, 6th and 12th week.The PNF program will compose of a total of 8 therapeutic exercises. Contract relax, Combination of isotonic, Stabilizing reversals, and Rhythmic stabilization techniques will be used for elongation of upper cervical extensors, strengthening of infra-hyoid muscles, Increase stability and mobility of mandible in corrected posture of neck.

Main outcome variables
Pain , Range of motion, Impairment of body structure and body function test.

General information

Reason for update
routine physiotherapy also includes a range of motion and stretching exercises of the jaw.

Acronym
RCT

IRCT registration information
IRCT registration number: **IRCT20210704051785N1**
Registration date: **2021-09-28, 1400/07/06**
Registration timing: **registered_while_recruiting**

Last update: **2022-06-16, 1401/03/26**
Update count: **1**

Registration date
2021-09-28, 1400/07/06

Registrant information

Name
Sarwat Anees

Name of organization / entity
Sharif medical and dental college

Country
Pakistan

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2021-09-01, 1400/06/10
Expected recruitment end date
2021-09-30, 1400/07/08
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Effects of proprioceptive neuromuscular facilitation in addition to routine physical therapy on pain, range of motion and postural alignment in patients with temporomandibular joint disorders: A Randomized Controlled Trial

Public title
Proprioceptive neuromuscular facilitation exercises with routine physical therapy for temporomandibular joint disorders
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Having temporomandibular joint disorders with postural neck alignment Pre-diagnosed patients referred by dentist and orthotics
Exclusion criteria:
Systemic or local pathology like infectious or vascular disease of orofacial region Patient using another form of treatment for temporomandibular disorders Patient using functional appliances History of frequent open dislocation Rheumatoid arthritis Cervical radiculopathies Osteoarthritis of temporomandibular joint Peripheral nerve injury
Age
From **20 years** old to **50 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Outcome assessor

Sample size
Target sample size: **58**
Randomization (investigator's opinion)
Randomized
Randomization description
Sealed envelope method will be used for random allocation. 58 sealed envelopes (29 for Group A and 29 for Group B) will be prepared. 29 envelopes will contain letter A, 29 envelopes will contain letter B on a card. Patient will be asked to choose one envelope. Treatment will be given according to treatment group (Group A: control, Group B: experiment).
Blinding (investigator's opinion)
Single blinded
Blinding description
Senior physiotherapist will assess patient before and after treatment. Senior physiotherapist/assessor will be completely blinded about patient allocation group (control/intervention).
Placebo
Not used
Assignment
Parallel
Other design features
no

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of The University of Lahore
Street address
Sharif Polyclinic, near Doce Bakers, Railway Road Raiwind
City
Lahore
Postal code
55150
Approval date
2021-06-17, 1400/03/27
Ethics committee reference number
IRB-UOL-FAHS/890/2021

Health conditions studied

1

Description of health condition studied
Temporomandibular Joint Disorder due to Postural Alignment (Forward Head Posture)
ICD-10 code
M26.6
ICD-10 code description
Temporomandibular joint disorders

2

Description of health condition studied
Temporomandibular Joint Disorders due to Forward Head Posture
ICD-10 code
M26.60
ICD-10 code description
Temporomandibular joint disorder, unspecified

Primary outcomes

1

Description

Range of motion of temporomandibular joint(activity limitation test)

Timepoint

Range of motion will be measure before and after 6, 12 week of treatment

Method of measurement

Range of motion measure through vernier caliper

2

Description

Pain

Timepoint

Pain will be measure before and after 6, 12 week of treatment

Method of measurement

VAS scale will be used to measure pain

Secondary outcomes

1

Description

Impairment of body structure and body function test (forward head posture)

Timepoint

Different postural angles will be measure before and after 6, 12 week of treatment

Method of measurement

photogrammatory method will be used. A picture will be taken from camera from 2 meter. lines will be drawn by posturescren app to measure sagittal head, cervical line and shoulder angles for postural assessment by the help of posture screen app.

Intervention groups

1

Description

Control group will follow routine physical therapy which include ultrasound\TENS \infrared and stretching\strengthening exercises for 4 weeks(3 session per week) and home exercises for 2 weeks. infrared\TENS\icing apply for 20 mins over temporomandibular joint and ultrasound for 4 min on 3 MHZ frequency. Modalities will b decided according to acute and chronic condition, in acute icing will be used, in chronic condition infrared will be used. TENS/ ultrasound will be used in all patients. Routine strengthening/stretching exercises will be used to strengthen jaw muscles. Exercise no:1 Place your fist below the jaw. Resist downward movement of your chin. Hold it for 10 seconds and relax for 5 seconds. Repeat 10 times; do it 3 times per day. Exercise no:2 Place your two fingers on the left side of the jaw. Resist its movement to the same side.Hold it for 10 seconds and relax for 5 seconds.Repeat 10 times; do it 3 times per day. Repeat on the opposite side.Exercise no:3 Bend your index finger and place the knuckle between your front teeth, hold it for 6 seconds.If your symptoms are not aggravated, increase your opening width to 2 fingers, hold it for 10 seconds. You can continue increasing your opening range and your time by 3 fingers, 20 seconds and 5 repetitions, do it 3 times per day.Exercise no:4 Sit or stand by a mirror.Place the tip of your tongue behind your top teeth. Gently lower your jaw to open your mouth while keeping your tongue in contact with the roof of your mouth. Use the mirror to make sure that you are opening your mouth evenly, and not moving your jaw from side to side. Close your mouth. Repeat 10 times; do it 3 times per day. Exercise will be progressed according to patient condition. range of motion of TMJ and mild stretch at the end of range in 10 rep 3 times a day.

Category

Rehabilitation

2

Description

Group B follow routine physiotherapy (except strengthening\stretching exercises) with proprioceptive neuromuscular facilitation (PNF) program, which is compose of 12 sessions over 4 weeks, each session will continue 30 min and follow home exercise plan for 02 week. PNF program will be terminated after 4th week. The PNF program will compose of a total of 08 therapeutic exercises, including the home exercise. In consideration of the alignment of the cervical spine and the pain in the temperomandibular joint, the posture with a wider base of support will be modified to have a narrower one. All exercise programs will be designed based on the PNF basic principles, basic procedures, and philosophy of PNF. The patterns and techniques of PNF will be adapted to the hypothesis of activity limitation. The PNF program, which extends over 4 weeks, took the programs of each week will be adjusted by combining three to four exercise programs. As a result, three sessions will be conducted in each week, and each of these sessions last for 30 min.Contract relax, Combination of isotonic, Stabilizing reversals, and Rhythmic stabilization techniques will be used for elongation of upper cervical extensors, strengthening of infra-hyoid muscles, Increase stability and mobility of mandible in corrected posture of neck. Before the starting of the exercise program, the patient was given with an overall explanation and detailed instructions on deep-breathing. The exercise will be interrupted when the patient reported pain or fatigue to have a 2 to 3 min break. The break will not include in the total duration of exercises.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Punjab Social Security Health Management Company Hospital, Raiwind, Lahore

Full name of responsible person

Sarwat Anees

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8 km from Manga Road, Raiwind, Lahore
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Lahore
Full name of responsible person
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1- KM Defence Road Campus, Lahore
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Phone
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Email
info@uol.edu.pk
Web page address
https://uol.edu.pk/
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The University of Lahore
Proportion provided by this source
1
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Punjab Social Security Health Management Company Hospital
Full name of responsible person
Sarwat Anees
Position
Physiotherapist
Latest degree
Bachelor
Other areas of specialty/work
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan
Not applicable

Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
No - There is not a plan to make this available

Analytic Code
Not applicable

Data Dictionary
Not applicable