A COMPARATIVE STUDY OF MOBILIZATION VERSUS STRETCHINGS FOR DECREASED MOBILITY OF TEMPARO MANDIBULAR JOINT DISLOCATIONS

Project report submitted in partial fulfilment of the requirements

for the award of the degree of

Bachelor of physiotherapy (BPT)

By

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REG.NO: 20P101001048

Final Year - B.P.T.

UNDER THE GUIDANCE OF

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Affiliated to NTR University of Health Sciences Vijayawada,

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ISO 9001:2000 certified institutions

Recognized by IAP (Indian Association of Physiotherapists) Vijayawada Road,

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It is my pleasure to express my warm gratitude to our honorable principal **Dr. CHRISTIE KIRAN GOTRU M.P.T (CARDIO)**, of SIMS College of physiotherapy who gave me this opportunity to do the project.

I am really indebted and thankful to **Dr. K. BHANU PRIYA M.P.T (CARDIO)** my project in charge, for her guidance, suggestions and support with patience in completion of this endeavor successfully. I would like to thank to **Dr. K. ESWAR REDDY M.P.T(ORTHO), Dr. SATYA HAVEELA B.P.T, Dr. DIVYA M.P.T (SPORTS), Dr.SD. ROSHINI SHANAVAS M.P.T.(ORTHO), Dr. SK. IRFHAN SHARIEF MPT(ORTHO), DR.K.R. VISHNU PRIYA M.P. T (NEURO), Dr. M. HARSHA SRI VIDYA M.P.T (CARDIO), Dr.N.POOJA M.P.T (NEURO),Dr.SURBHI BADHURIA M.P.T (CARDIO).**and for their encouragement and Cooperation extended to me during the course of this study.

I would like to thank to ALL MY CLASSMATES, for their cooperation while doing my project. I am very grateful to the students and parents for their cooperation. My acknowledge would never find meaning if I do not quote about the inspiration, motivation and support by my parents and friends provided to me although the period of this project work.

I am very thankful to the ALMIGHTY with which completing this project would have been impossible.

- SHAIK SAYEED BASHA

DECLARATION

I, hereby declare that the dissertation entitled **A COMPARATIVE STUDY OF MOBILIZATIONS VERSUS STRETCHINGS FOR DECREASED MOBILITY OF TEMPARO MANDIBULAR JOINT DISLOCATIONS** has been performed by me under the guidance of **Dr. K. BHANU PRIYA M.P.T(CARDIO)** lecturer of SIMS college of physiotherapy as a part of my study for the award of Bachelor of Physiotherapy Degree from DR. N.T.R. University of Health Sciences, Vijayawada. I have notsubmitted this previously for the award of any degree or diploma to any other university.

Place:

Date:

-SHAIK SAYEED BASHA

I WOULD LIKE TO DEDICATE THIS PROJECT TO MY PARENTS FRIENDS AND MY GUDIE.

A COMPARATIVE STUDY OF MOBILIZATION VERSUS STRETCHINGS FOR DECREASED MOBILITY OF TEMPARO MANDIBULAR JOINT DISLOCATIONS

CONTENTS

CONTENTS

ABSTRACT

ABSTRACT:

BACKGROUND AND PURPOSE: dislocations and dysfunctions of the TMJ can cause excessive pain and lifestyle limitations, TMJ disorders are common and sufferers will often seek physiotherapy advice and treatment to attain recovery and enhanced results, a comparative study need to be done between both mobilizations and stretching's and effective to be followed.

AIM: The aim of the study is to know the effectiveness of mobilizations versus stretching's and increasing the range of motion, functional ability and reduce pain in temporomandibular joint dislocation in patients.

METHODLOGY: A total of 40 subjects who met inclusion criteria have undergone baselineassessment and included subjects were randomized into two groups consisting of 20 in each group respectively. In this study 20 subjects completed treatment in Group-A and 20 subjects completed treatment in Group-B without any dropouts in respective group.

RESULTS: The results in the study revealed that mobilizations and stretching's shown significant improvement in temporomandibular joint dysfunction. Whereas Group-A i.e., mobilizations showed difference with p value <0.0001 in numerical pain rating scale and p value <0.0001 in jaw functional limitation scale which is considered as extremely significant.

CONCLUSION: The present study concludes that 3 weeks of mobilizations (Group-A) and stretching's (Group-B) both showed significant effect in improving the function and reducing pain in subjects with temporomandibular joint dysfunction. The results suggest that the decrease in pain and improve in function in mobilizations group has better outcome when compared to stretching's group in temporomandibular joint dysfunction.

KEY WORDS: Temporomandibular joint dislocation, mobilizations, stretching's, jaw functional limitation scale-8, numerical pain rating scale.

INTRODUCTION

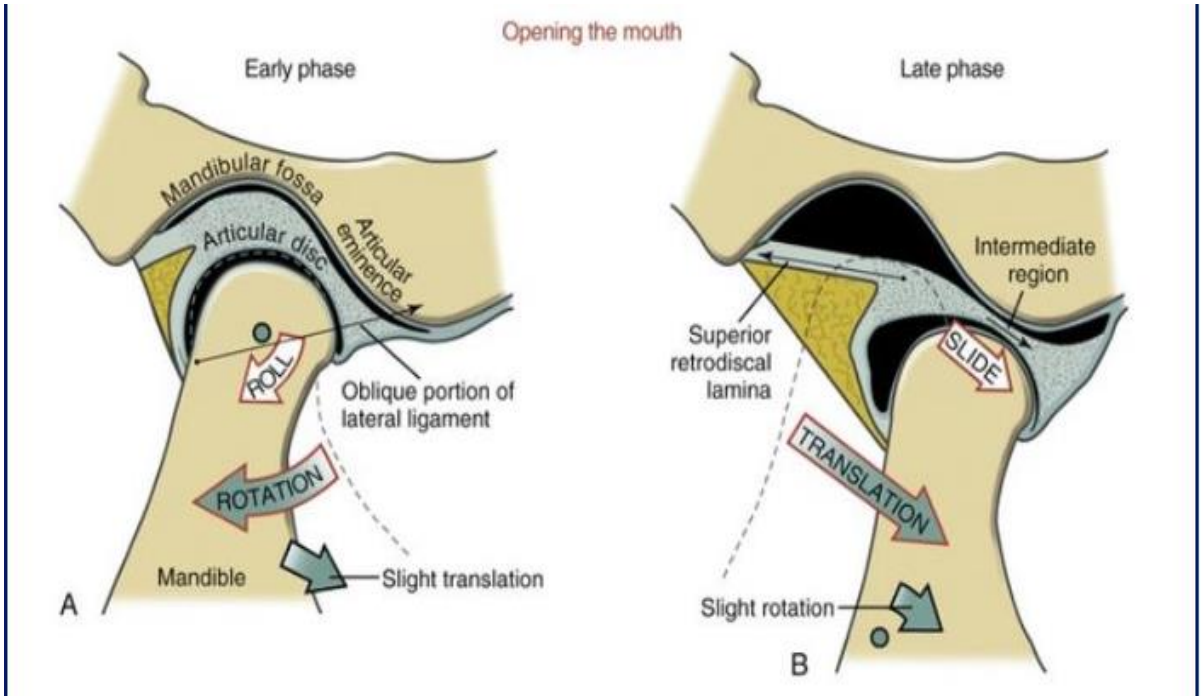
INTRODUCTION:

Temporomandibular joint and muscle disorders, commonly called "TMJ" are a group of conditions that cause pain and dysfunction in jaw joint and the muscles that control jaw moment. The American Academy of Orofacial pain has defined Temporomandibular disorders (TMDs)as" a collective term that embraces a number of clinical problems that involve the masticatory muscles the TMJ, and the associated structures". The causes are mainly stress, acute trauma, an improper bite, arthritis in TMJ The main symptoms of TMJ dysfunction patients TMJ bruxism [teeth clenching], mandibular pain dysfunction syndrome, myofascial pain syndrome. (1)

The prevalence of TMJ dysfunction in the general population is estimated to range from 5% to 12%, with some studies suggesting rates as high as 20% when including individuals with mild or subclinical symptom. The etiology of temporomandibular disorders is not fully understood, that there are a variety of factors that may contribute to the occurrence of temporomandibular disorders: neuromuscular incongruity, articular problems, a displaced disc, excessive movement of the masticatory muscles, parafunctional activity or habitual movements such as tooth clenching, emotional stress, previous trauma to the joint, malocclusion, hormonal and metabolic disorders (2)

Due to the TMJ dysfunction the jaw movements get difficult and the mobility of the TMJ muscles gets decreased, the oral intake of the patients gets affected and they also have problems in swallowing eating of the food it gets affected to the nutritional activity of the patient leads about 10 % of the patient in malnutrition state and which leads disturbance on hormonal and health factors leading to death.

- TEMPOROMANDIBULAR JOINT DYSFUNCTION (TMD) encompasses a group of disorders of the masticatory system, broadly divided into muscular conditions and those affecting the temporomandibular joint (TMJ). TMD is a common condition, signs of which appear in up to 60–70% of the population. TMD commonly refers to pain involving the TMJ and surrounding structures as well as dysfunction of the joint itself. The temporomandibular morpho-functional complex registers a frequent pathology, which generates discomfort, disability and a negative effect compare to unaffected person. In TMJ dysfunction, the mandible is the central morphological element of the facial movements. (3)



ANATOMICAL STRUCTURE WHICH INVOLVES IN TMJ DYSFUNCTION

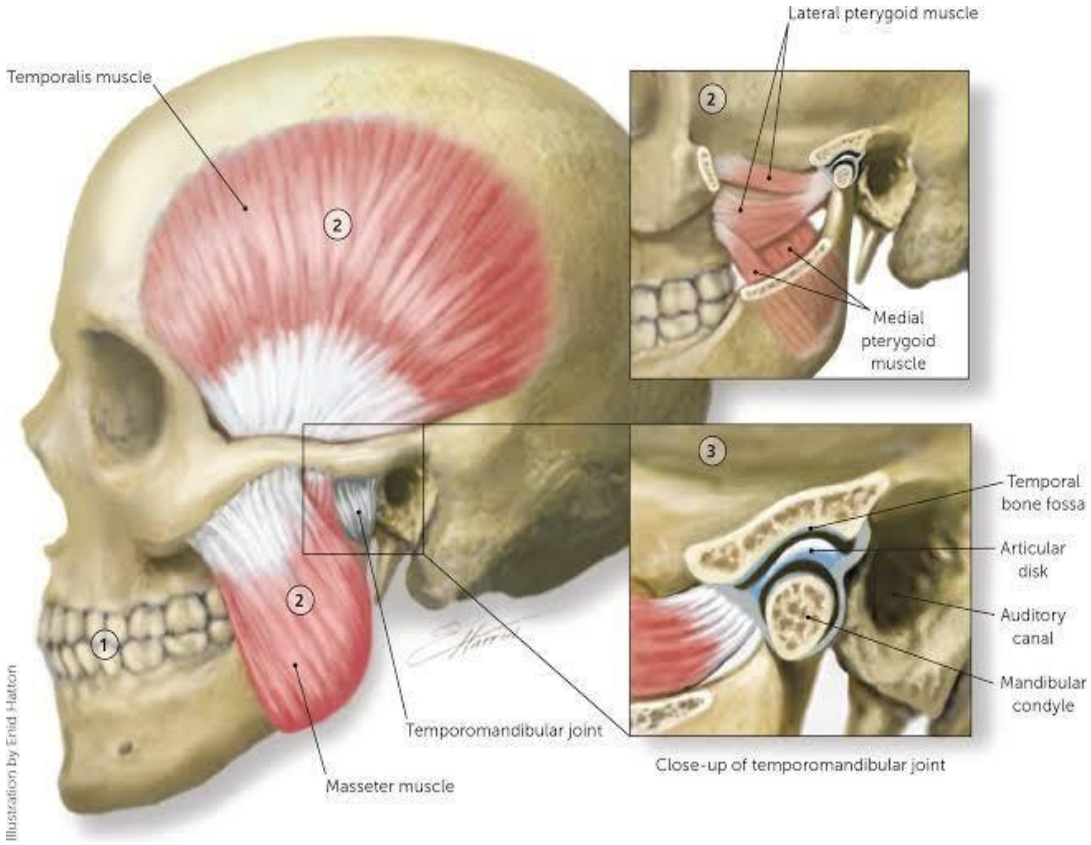
The articular disc is fixed posteriorly by an elastic tissue (richly vascularized and innervated), which is called the retro discal ligament or the bilaminar area, an area that allows the mobilization of the disc during the movements of the mandible.

The retro discal ligament has a bundle of elastic fibers in the upper part, through which the disc is connected to the tympanic bone, and in the lower part it has collagen fibers, through which the disc is connected to the mandible condyle. The articular ligaments, articular meniscus, and bone surfaces surround and stabilize the entire joint, forming the joint capsule. (4)

The strongest, in relation to the size and strength overall 20 muscles were developed and inserted on mandible they are: temporalis, masseter and medial pterygoid. These three muscles are called elevator muscles of the mandible. The lateral pterygoid muscle and the digastric muscle have a direct and immediate action on the mandible.

It should be noted that the muscles involved in the mobilization of the mandible have functional associations with other muscles of the head and neck. The suprahyoid, infrahyoid and mimic muscles intervene in the movements of the mandible, in its stabilization, as well as in the mobilization and control over the alimentary bolus. The cervical muscles are essential for the action of stabilizing and maintaining the balance of the head, thus helping the masticatory muscles to perform the controlled, coordinated movements of the mandible. (5)

The masticatory muscles (temporalis, masseter, lateral and medial pterygoids) enable mouth opening and closing, lateral movements and forward and backward movements. An excessive tension and/or imbalance of muscles can limit the joint movements, with limited range of motion (ROM), a major sign of temporomandibular disorders. When the mouth is open, the range of motion should be normally 40-60 mm.



The database survey was performed and publications between 1994 to 2014 selected to treat using occlusion splint ,TMJ surgeries , analgesic and supportive medical management ,TMD physiotherapy. The prevalence of this disorders and therapeutic disorders and pathogenesis and others, Therapeutic difficult of TMJ dysfunction, describing therapeutic concepts associated with TMJ dysfunction pain. In these therapeutic concepts may involves conventional physiotherapy (cryotherapy, fascial muscle TENS, paraffin wax therapy, hydrocollator pads), stretching's and mobilizations and mirror therapy exercises may take place. (6)
In this study stretching's and mobilizations are also preferred, but when compared to stretching's, mobilizations may get most effective based up on recommended studies.

MOBILIZATION: Joint mobilization is a very important component of physical therapy, and can have positive effects in relief of TMD: the inhibition of pain, improvement of range-of-motion (ROM) and inhibition of muscle spasm.

THE TECHNIQUES INCLUDE

1. mobilization of temporo mandibular joint on both sides longitudinally and caudally.
2. Mobilization of TMJ unilaterally, longitudinally, caudally with repetitive depression and elevation of mandible.
3. mobilizations of TMJ laterally and medially

STRETCHINGS Stretching exercises are commonly used as a conservative treatment option for managing temporomandibular joint (TMJ) dysfunction. These exercises aim to improve jaw mobility, reduce muscle tension, and alleviate pain associated with TMJ disorders.

AND THE TECHNIQUES INCLUDE

1.Stretching of masticatory muscles followed by manual therapy
2.Stretching the neck muscles combined with manual therapy.

NEED OF STUDY

NEED OF STUDY:

- In this study the effects of mobilizations and stretching show a significant impact on decreasing pain and improve range of motion in temporo mandibular joint dysfunction within a short Span of 3 weeks period.

- Both these mobilizations and stretching exercises aim to improve functions or outcomes such as jaw movements pain reduction etc.

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES:

AIM:

The aim of the study is to present effectiveness of the mobilizations versus stretching's to assess the effectiveness of the decreased mobility in the temparo mandibular joint in the patients

OBJECTIVE:

The objectives were to compare the effectiveness of mobilizations versus stretching's in TMD by the numerical pain rating scale and jaw functional limitation scale -8.

HYPOTHESIS

HYPOTHESIS:

NULL HYPOTHESIS:

There may not be significant difference between the effectiveness of the mobilization versus stretching's on the decreased mobility of temporo mandibular joint in the patients

ALTERNATE HYPOTHESIS:

There may be a significant difference between the effectiveness of the mobilization versus stretching's on the decreased mobility of temporo mandibular joint in the patients

OUTCOME MEASURES:

- NUMERICAL PAIN RATING SCALE.
- JAW FUNCTIONAL LIMITATION SCALE-8.

SELECTION CRITERIA:

- **INCLUSION CRITERIA:**
- Acute trauma (who are managed with medical management)
- Decreased mobility in temporo mandibular joint (caused by sports injuries)
- Myofascial pain
- Males and females with age of 30 to 45 years.

EXCLUSION CRITERIA:

- Surgical procedure
- Hyper mobility in TMJ
- Rheumatic or inflammatory disorders
- Taking medications that effect the musculoskeletal system
- Any ENT disorders.
- Patient with trigeminal neuralgia or any other neurological disorders.
- Patient with mental illness.

REVIEW OF LITERATURE

REVIEW OF LITERATURE:

[1] Salvador Israel Macias-Hemandez, Irene Tapia [2022] At all conducted study with sample size of 15 patients with TMJ. They are given manual therapy, therapeutic exercises 3weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. Based up above theories they conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[2] MARIA DANIEL, AANA GEMAN [2022] At all conducted study on effectiveness of physiotherapy in the treatment of temparo mandibular joint dysfunction 33 subjects were randomly selected and pre assessed with NPRS and JFLS scale during 3 weeks period. Based up on above theories they conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[3] JOANNA PIECM, MALGOKZATA PIREST [2020] At all conducted a study effectiveness of physiotherapy in the treatment of temparo mandibular joint dysfunction 30 subjects were randomly selected and pre assessed with NPRS and JFLS scale during 3 weeks period. They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[4] K. SARASWATHI, KOUSHIK KUMAR [2022] At all conducted a study with sample size includes 30 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ span of 3weeks of time after duration of study all the members concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[5] LING ZHANG, LILI XIU [2021] At all conducted A study with sample size includes 491 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire. They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[6] BURCU BAS, DILARA KAZAM [2018] At all conducted a study sample size includes 27 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire. They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[7] RICCA CHAIRUNNISA, HUBBAN NASUTION [2024] At all conducted a study sample size includes 30 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire. Based up on above theories they conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[8] K. KIRUPA, S.M DIVYA MARY [2019] At all conducted a comparative study sample size includes 30 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND

JFLS Questionnaire. They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[9] Yoshihiro Yamaguchi, Shigemitsu Sakuma [2022] At all conducted a study sample size includes 17 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire.They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[10] Ana Maria Jataru, Carol Davila [2022] At all Conducted a prospective study sample size includes 22 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire. Based up on above theories they concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[11] Meghan k. Murphy, Regina F. Macbarb [2022] At all conducted a study sample size includes 40 subjects divided into two groups of each selected by simple random sampling method each day of mobilization for group A and group B Stretching's. The outcome measures include NPRS AND JFLS Questionnaire.They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[12] Shuang, Pin Zhou, Ming Yu [2021] At all conducted a study with sample size of 161 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[13] Muhammad shanavas, laxmikanth chatra [2019] At all conducted a study with sample size of 50 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. Based up on above theories conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[14] Niha Siraj Mulla, Vinod Babu [2017] At all conducted a study with sample size of 66 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[15] In-Su Lee, Suhn-Yeop Kim [2019] At all conducted a study with sample size of 80 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. Based up on above theories They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[16] Lydia Aziato, Florence Dedey [2016] At all conducted a study with sample size of 17 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[17] Allan kalamir, Petra L Graham, Andrew [2015] At all conducted a study with sample size of 46 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. Based up on above theories they concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[18] Arash rahimi, sephideh rabiei [2015] At all conducted a study with sample size of 100 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. They concluded that the manual therapy with stretching's is effective in case of improvement of TMJ range of motion and reduction of pain.

[19] Allan Kalamir, Henry Pollard [2015] At all conducted a study with sample size of 30 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. They conclude that mobilizations show effectiveness of reducing pain, improving ROM.

[20] Daxa Mishra, R Harihara Prakash [2015] At all conducted a study sample size of 60 patients with TMJ. They are given manual therapy, therapeutic exercises. weeks. The outcome measures include NPRS AND JFLS Questionnaire. This study demonstrated significant improvements in pain, functional improvement treatment of patients with TMJ. Based up above theories they conclude that mobilizations show effectiveness of reducing pain, improving ROM.

MATERIALS AND METHOLOGY

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MATERIALS USED:

- Couch
- Pillows
- Gloves
- Assessment form
- Numerical pain rating scale
- Jaw functional limitation scale-8 questionnaire.
- Pen
- paper

METHODOLOGY:

SAMPLE SIZE: 40 subjects.

STUDY SETTINGS: Outpatient department of Sims College of physiotherapy**.**

STUDY DESIGN: comparative study**.**

SAMPLE TECHNIQUE: A focusing sampling technique**.**

STUDY DURATION: 3 weeks

PROCEDURE:

- Initially 40 patients were selected, assessed by numerical pain rating scale, jaw functional limitation scale -8, 40 patients are divided as 2 groups, where group A received mobilization exercises and group B received stretching exercises and the study duration was about 3 weeks, each day 15-20 minutes treatment was done.
- Mobilization of TMJ on both the sides longitudinally and caudally and Mobilization of TMJ unilaterally and longitudinally and caudally, longitudinal caudal movements with repetitive depression and elevation of the mandible,
- mobilization of TMJ laterally and medially.

- Group-A:

- 1.MOBILIZATION OF TEMPERO MANDIBULAR JOINT ON BOTH SIDES LONGITUDINALLY AND CAUDALLY:
- LONGITUDINAL

The patient is seated comfortably ,with the head supported then the therapist stands behind

the patient , the therapist applies gentle traction to the mandible using the hands place under the chin allowed for subtle anterior and posterior movement of the mandible and then the therapist applies pressure anteriorly on the mandible encourage posterior movement of the condyle ,and then pressure is applied posteriorly on the mandible to facilitate anterior movement of the condyle followed these techniques ensures performed by patient to reinforce the effect of longitudinal mobilization .

CAUDALLY: The patient is seated in comfortable position allowing to relaxation of neck and jaw muscles now the therapist places the index finger intraorally along with the inferior border of mandible near the angle using the controlled pressure the therapist gently pull the mandible downwards (caudally)to encourage the vertical movement of the condyle with the fossa

2.Mobilization of TMJ unilaterally, longitudinally, caudally with repetitive depression and elevation of mandible

This unilateral mobilization technique mainly focus on addressing the asymmetric movements pattern and dysfunctions that may occur unilaterally and then the longitudinally same as before here the sequential movements involving the anterior and posterior glides are repetitive in a controllable movements to improve the range of motion of joint and then the caudally is also as same as before ,here the therapist guides the patient in performing the repetitive depression (opening) and elevation (closing) movements of the mandible

3.Mobilization of TMJ laterally and medially

- LATERAL MOBILIZATION: patient is seated comfortably, now the therapist use their index finger intraorally along the lateral aspect of mandibular ramus gentle pressure is applied laterally to encourage the movement of condyle towards ipsilateral side and the therapist uses the other hand to provide opposing pressure on the contralateral side of the mandible contralateral movement of condyle.
- MEDIAL MOBILIZATION: the patient is seated comfortably the therapist use the thumb intraorally along the medial aspect of the mandibular ramus gentle pressure is applied medially to encourage the movement of the condyle towards the midline, now the therapist uses the other hand to provide opposing force to contralateral side of mandible for medial movement of condyle

Group-B:

- For second group, i.e., group with stretching's (20) were taken following stretching's:
- 1) masticatory Muscle stretching followed by manual therapy
- 2) stretching the neck muscles combined with manual therapy.
- The stretching's are also done for 3 weeks for 15-20min per section

1.Stretching of masticatory muscles followed by manual therapy

- In this the patient is seated in a comfortable position, now the therapist manually stretches the muscle using the techniques like creating pressure focusing on a specific muscle group affected by TMJ dysfunction along with the manual therapy technique like myofascial release where the gentle sustained pressure is used to release tension in connective tissue surrounding the muscle promotes relaxation.

- These stretching exercises helps to elongate masticatory muscles includes masseter, temporalis, lateral pterygoid which becomes tense and tight in TMJ disorders.

2.Stretching the neck muscles combined with manual therapy

- The neck muscles include
- Upper trapezius stretches: in sitting position the therapist gently tilts the head to one side, bring ear towards the shoulder, by the hand apply light pressure on the head at same side to enhance the stretch.
- Sternocleidomastoid: the therapist tilts the head back to side turning the chin upward and then he places the hand on forehead to apply gentle pressure.
- Levator scapulae: the therapist tilts the head forwards, then rotate it slightly to opposite side, by using the hand gently pull the head downwards toward the armpit.
- Scalene: the therapist tilts the head to onside and slightly backwards using the hand further to stretch.
- The myofascial release is same.

Figure-1: application of mobilizations at temporomandibular region.

Figure-2: stretching’s followed by manual therapy

STATISTICAL ANALYSIS AND RESULTS

STATISTICAL ANALYSIS:

Statistical analysis was performed using MS excel. The demographic data like standard deviation and main percentage were calculated and presented.

BETWEEN THE GROUP: Independent t-test was performed which assess the statistical difference in mean values between the group.

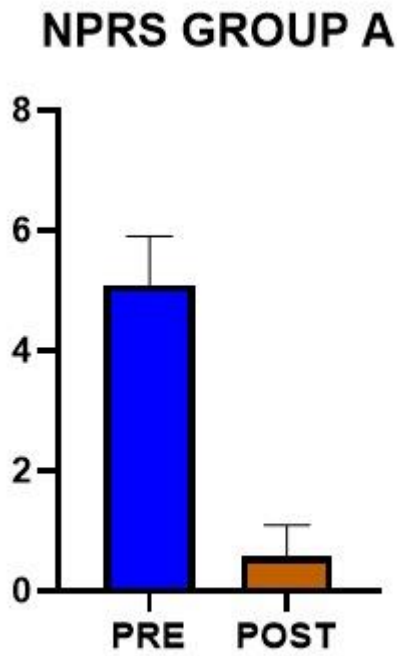
WITH IN THE GROUP: Paired t-test was performed which assess the statistical difference with in the group.

To observe the impact of treatment before and after in the group, the analysis was carried out using statistical tests, for the outcome measures numerical pain rating scale and jaw functional limitation scale are used. The statistical significance was set at $p < 0.0001$

Table-1: Comparison of pre and post value of numerical pain rating scale on mobilization technique Group-A.

GROUP-A	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
PRE-TEST	5.100	0.8046	< 0.0001	21.12
POST-TEST	0.5750	0.5200		

Graph-1: Comparison of mean scores of pre-test and post-test values on pain with numerical pain rating scale Group-A.

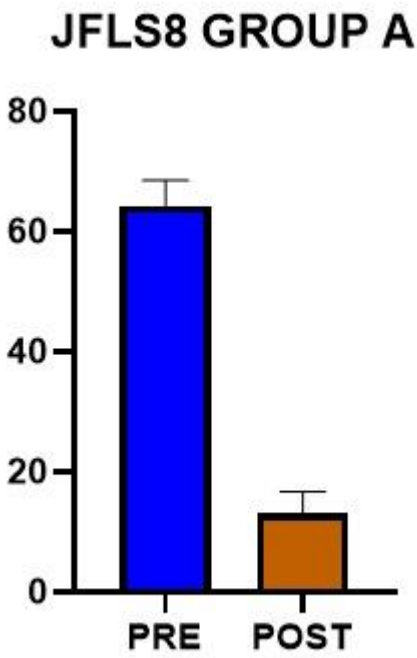


RESULT: The above table and graph shows mean values changes within the Group-A from pre-test and post-test were found to be statistically significant. ($p<0.0001$).

Table-2: Comparison of pre and post value of jaw functional limitation scale on mobilization technique mean and standard deviation Group-A.

GROUP-A	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
PRE-TEST	64.30	4.181	< 0.0001	41.23
POST-TEST	13.05	3.663		

Graph-2: Comparison of mean scores of pre-test and post-test values on pain with jaw functional limitation scale Group-A.

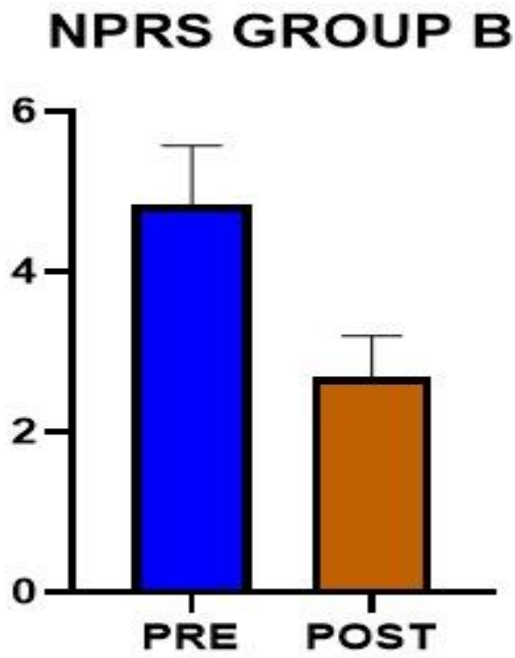


RESULT: The above table and graph shows mean values changes within the Group-A from pre-test and post-test were found to be statistically significant. ($p<0.0001$).

Table-3: Comparison of pre and post value of numerical pain rating scale on stretching's technique Group-B.

GROUP-A	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
PRE-TEST	4.825	0.7482	< 0.0001	10.55
POST-TEST	2.675	0.5200		

Graph-3: Comparison of mean scores of pre-test and post-test values on pain with numerical pain rating scale Group-B.

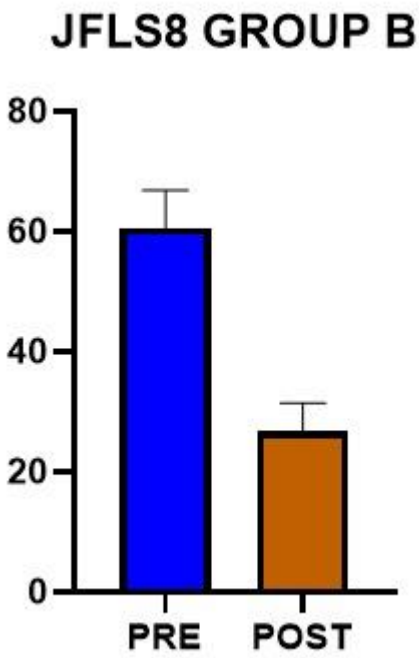


RESULT: The above table and graph shows mean values changes within the Group-B from pre-test and post-test were found to be statistically significant. ($p<0.0001$).

Table-4: Comparison of pre and post value of jaw functional limitation scale on stretching's technique Group-B.

GROUP-B	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
PRE-TEST	60.55	6.295	< 0.0001	19.29
POST-TEST	26.75	4.667		

Graph-4: Comparison of mean scores of pre-test and post-test values on function with jaw functional limitation scale Group-B.

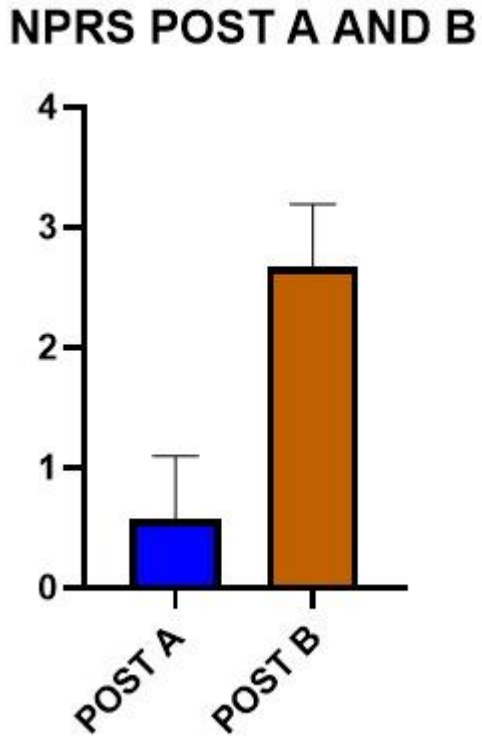


RESULT: The above table and graph shows mean values changes within the Group-A from pre-test and post-test were found to be statistically significant. ($p<0.0001$).

Table-5: post-post values on pain with numerical pain rating scale both groups A and B.

TEST	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
POST-TEST Group A	0.5750	0.5200	<0.0001	12.77
POST-TEST Group B	2.675	0.5200		

Graph-5: Comparison of mean scores of post-post values on pain with numerical pain rating scale both groups A and B.

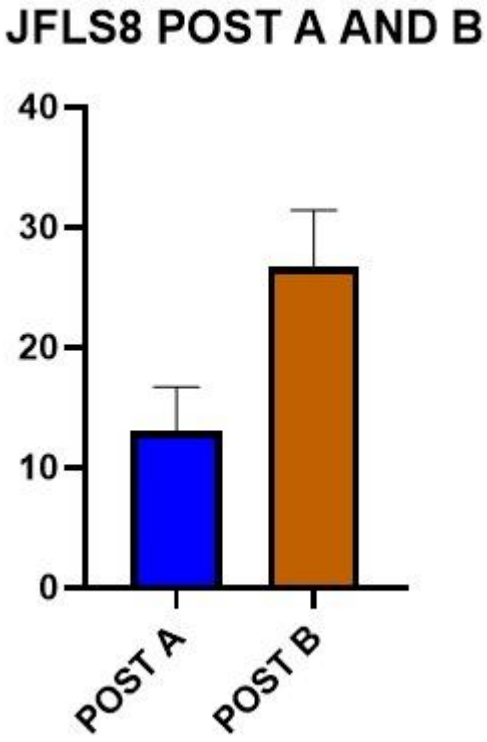


RESULT: The above table and graph shows mean values changes within post-test values were found to be statistically significant. (p is <0.0001).

Table-6: post-post values on pain with jaw functional limitation scale boths group A and B

TEST	MEAN	STANDARD DEVIATION	P-VALUE	T-VALUE
POST-TEST Group A	13.05	3.663	<0.0001	10.33
POST-TEST Group B	26.75	4.667		

Graph-6: Comparison of mean scores of post-post values on pain with jaw functional limitation scale both groups A and B.



RESULT: The above table and graph shows mean values changes within post-test values were found to be statistically significant. (p is <0.0001).

RESULTS

RESULTS

The results in the study revealed that mobilizations and stretching's shown significant improvement in temporomandibular joint dysfunction. Whereas Group-A i.e., mobilizations showed difference with p value <0.0001 in numerical pain rating scale and p value <0.0001 in jaw functional limitation scale which is consideredas extremely significant.

DISCUSSION

DISCUSSION:

As we observed that the effectiveness of mobilizations and stretching's and its possible effect in reducing pain, increasing range of motion and functional ability of TMJ with in the temporomandibular joint dysfunction patients.

In this study 40 patients were taken. In Group-A (n=20), mobilizations were performed on the subjects. In Group-B (n=20), stretching's was performed on the subjects. Both groups shown significant improvement in reducing pain which was assessed by numerical pain rating scale and functional ability and increasing range of motion which is assessed by jaw functional limitation scale. Better improvement in reducing pain, increasing range of motion and improving functional ability was seen in Group-A which received mobilizations.

The prevalence of TMJ dysfunction in the general population is estimated to range from 5% to 12%, with some studies suggesting rates as high as 20% when including individuals with mild or subclinical symptom. Due to the TMJ dysfunction the jaw movements get difficult and the mobility of the TMJ muscles gets decreased, the oral intake of the patients gets affected and they also have problems in swallowing eating of the food it gets affected to the nutritional activity of the patient leads about 10 % of the patient in malnutrition state and which leads disturbance on hormonal and health factors leading to death. The pre and post-test groups were assessed with numerical pain rating scale [NPRS]and jaw functional limitation sale-8Questionnaire.

The physiotherapeutic intervention is manual therapy, mobilization techniques prove that the use of manual therapy combined with exercises increases the painless range of mouth opening and reduces myofascial pain better than the exercises itself.
Many authors emphasize the comprehensive approach to mobilizations increase the painless Mouth opening and reduce the pain in patients with TMD. It has been observed that manual therapy of the TMJ affects the increase in the mouth opening, strengthening of muscles. Mobilization can increase the range of TMJ's movement, reduce pain, improve proprioception, stimulate blood circulation. It can be used in any type of temporomandibular dysfunction, both of joint and muscular origin as well as in mixed forms. The Mobilization techniques Focuses on TMJ muscles improving ROM, Functional mobility and patient education give the best results

CONCLUSION

CONCLUSION:

The present study concludes that 3 weeks of mobilizations (Group-A) and stretching's (Group-B) both showed significant effect in improving the function and reducing pain in subjects with temporomandibular joint dysfunction. The results suggest that the decrease in pain and improve in function in mobilization group has better outcome when compared to stretching's group in with temporomandibular joint dysfunction.

LIMITATIONS AND RECOMMENDATIONS

LIMITATIONS:

1. A small sample size was taken.
2. It was run over a short time frame (3 weeks).
3. Only two outcome measures were used in this study.
4. Participants were not followed up for longer period.
5. It was also run from a single Centre, using a single practitioner. This makes generalization difficult.

RECOMMENDATIONS:

1. A large sample size can be selected.
2. Study duration should be more with more sessions.
3. The positive short-term results should encourage further, more comprehensive research into patient education and self-care for TMD.
4. Long term outcome should be known by further studies.

SUMMARY

SUMMARY:

Purpose of the study is to find out the effectiveness of mobilizations versus stretching's on patients with temporomandibular joint dysfunction.

A total number of 40 subjects of temporomandibular joint dysfunction. Subjects were then randomly assigned to one of two group. 20 subjects were selected in each Group-A and Group-B. Group-A is treated with mobilizations and Group-B is treated with stretching's. The treatment duration time was about 15 min in mobilizations and in stretching's was about taken up to 15min per each session. The total duration taken is 3 weeks.

Both Group-A and Group-B have shown significant effect in improving function of the temporomandibular joint which was assessed by jaw functional limitation scale-8 and in reducing pain which was assessed by numerical pain rating scale in subjects with temporomandibular joint dysfunction. However, mobilizations group have shown statistically significant improvement than stretching's group in reducing pain and improving function.

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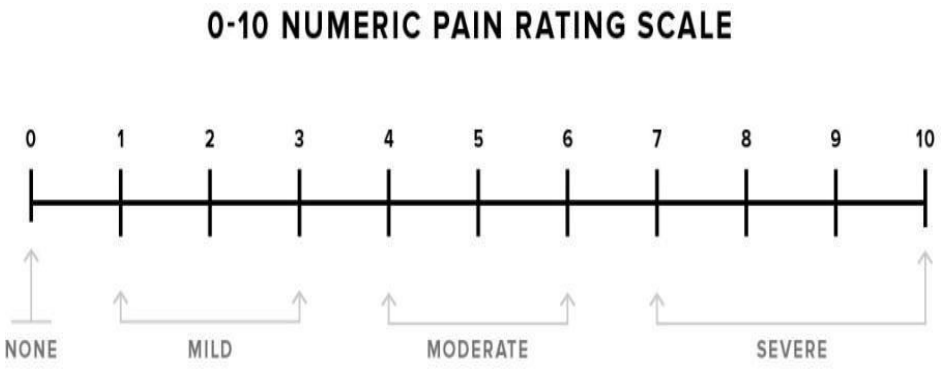
ANNEXURES

ANNEXURE-1

PRE-TEST AND POST-TEST VALUES OF NUMERICAL PAIN RATING SCALE INGROUP-A AND GROUP-B.



MASTER CHART-1: GROUP-A AND GROUP-B

S.NO	GROUP-A		GROUP-B	
	PRE	POST	PRE	POST
1.	4	0	4	2
2.	5	1	5	3
3.	6	1	4	2
4.	4	0	5	3
5.	5	0	6	3.5
6.	6	1	4	2
7.	6	1	4	2
8.	6	1	5	2.5
9.	6	1	6	3.5
10.	5	0	6	3
11.	4	0	5	3
12.	5	0	5	3
13.	5	0	4	2.5
14.	4	1	4	2
15.	4.5	0	4	2
16.	5.5	0.5	5	2.5
17.	4	1	6	3
18.	5	0.5	5	3
19.	6	1.5	4.5	3
20.	6	1	5	3

ANNEXURE-2

PRE-TEST AND POST-TEST VALUES OF JAW FUNCTIONAL LIMITATIONSCALE-8 IN GROUP-A AND GROUP-B.

Jaw Functional Limitation Scale – 8

For each of the items below, please indicate the level of limitation **during the last month**. If the activity has been completely avoided because it is too difficult, then circle '10'. If you avoid an activity for reasons other than pain or difficulty, leave the item blank.

		No limitation										Severe Limitation
1.	Chew tough food	0	1	2	3	4	5	6	7	8	9	10
2.	Chew chicken (e.g., prepared in oven)	0	1	2	3	4	5	6	7	8	9	10
3.	Eat soft food requiring no chewing (e.g., mashed potatoes, apple sauce, pudding, pureed food)	0	1	2	3	4	5	6	7	8	9	10
4.	Open wide enough to drink from a cup	0	1	2	3	4	5	6	7	8	9	10
5.	Swallow	0	1	2	3	4	5	6	7	8	9	10
6.	Yawn	0	1	2	3	4	5	6	7	8	9	10
7.	Talk	0	1	2	3	4	5	6	7	8	9	10
8.	Smile	0	1	2	3	4	5	6	7	8	9	10

MASTER CHART-1: GROUP-A AND GROUP-B

S.NO	GROUP-A		GROUP-B	
	PRE	POST	PRE	POST
1.	55	5	60	30
2.	70	20	70	35
3.	65	15	62	30
4.	60	10	52	25
5.	65	16	55	25
6.	69	16	65	30
7.	59	10	54	25
8.	58	10	58	20
9.	65	16	54	25
10.	66	16	62	30
11.	67	16	65	30
12.	68	10	66	30
13.	69	16	69	35
14.	65	10	52	20
15.	66	15	53	20
16.	65	15	66	25
17.	68	10	70	30
18.	66	15	65	25
19.	60	10	56	20
20.	60	10	52	25

ANNEXURE-3

CONSENT

FORM

A COMPARATIVE STUDY OF MOBILIZATION VERSUS STRETCHINGS FOR DECREASED MOBILITY OF TEMPARO MANDIBULAR JOINT DISLOCATIONS

(A comparative study)

I (the undersigned) consent to participate in this study. I was explained and made understood about the consequences and risks associated with the participation in the study. The principal investigator has answered my questions regarding all the aspects of the study. I give my permission for any results from the study to be used in any resort or research paper, on understanding that anonymity will be preserved. I understand that I may withdraw from study at any time and without any prejudice.

ADDRESS: SIGNATURE:

WITNESS SIGNATURE: DATE:

I have explained the nature of the procedures involved in the study to which the subject has given consent form and answer all the questions,

INVESTIGATOR: DATE:

DATE:

a

అంగీకార పత్రము

---------- అను నేను ఈ పరిశోధనలో పాల్గొనుటకు పూర్తి అంగీకారమును తెలుపుచున్నాను.ఈ పరిశోధనలో పాల్గొనుచుండగా వచ్చు పరిణామములన్నీ నాకు వివరముగా పరిశోధనావిద్యార్థి/విద్యార్థిని వివరించారు. నేను ఈ పరిశోధన గురించిఅర్థము చేసుకున్నాను. మరియు పరిశోధనకు సంబంధించిన నా సందేహాలకు పరిశోధనవిద్యార్థి /విద్యార్థిని జవాబులిచ్చారు. ఈ పరిశోధన నుండి వచ్చు ఫలితాలను ప్రచురించుటకు నేను అంగీకరించుచున్నాను. ఏ కారణము వలనైనా నా ఇష్టానుసారము ఈ పరిశోధన నుంచి నేను బైటకలగవచ్చని తెలియపరుస్తున్నాను.

చిరునామా: **సంతకము:**

తేది:

నేను ఈ పరిశోధన వలన వచ్చు పరిణామములను వీరికి పూర్తిగ వివరించి, ఈ పరిశోధనలో పాల్గొనుటకు వీరి అనుమతి పొందితిని.

సంతకము:

తేది:

ASSESSMENT FORM

SUBJECTIVE

Name:

Age:

Gender:

Occupation:

Chief complaints

PRESENT MEDICAL HISTORY

a) Mode of onset
b) Duration
c) Associated problems

PAST MEDICAL HISTORY

a) Birth history
b) Any surgeries
c) Medication
d) Any PT treatment taken

FAMILY HISTORY

a) Hereditary problems
b) Family related marriages

ECONOMICAL HISTORY

a) Source of income
b) Expenditure of income

SOCIAL HISTORY

Social status

PERSONAL HISTORY

a) Habits
b) Marital status
c) Smoking
d) Alcoholism

ENVIRONMENTAL HISTORY

House environment

PAIN ASSESSMENT HISTORY

1. Size

a) Internal
b) External

2. Side

3. Duration

4. Nature of pain

a) Aching
b) Lighting
c) Sharp
d) Throbbing
e) Burning
f) Dull aching

5. Radiating or not (referred)

6. Pattern of pain

7. Relieving and aggravating factors

8. Quantity of pain measured by NPRS

9. Head ache, ear pain, sounds, dizziness, fullness of ear and ringing of ear

VITAL SIGNS

a) BP
b) Heart rate
c) Respiratory rate
d) Temperature

ON EXAMINATION

INSPECTION:

- Swelling/ulceration/sinus openings in pre-auricular area
- Scars
- Maximum mouth opening
- Lateral movement
- Deviation wide opening
- Protrusive movement

PALPATION:

- Extra auricular methods
- Intra auricular methods

AUSCULTATION:

- Clicks-single explosive noise of short duration.
- Crepitus-continuous 'grating' noise.

FUNCTINAL ASSESSMENT AND ADL ACTIVITIES

ON PALPATION

1. Clinical evaluation of muscles of mastication:
    - Temporalis
    - Masseter
    - Lateral pterygoid
    - Medial pterygoid
2. Clinical evaluation of cervical muscles:
    - Sternocleidomastoid

- Digastric

INVESTIGATIONS:

1. Osseous structures:
    - Panoramic projection
    - Plain film imaging modalities
    - Conventional tomography
    - Computed tomography (CT)
2. Soft tissue structures:
    - Arthrography
    - Magnetic resonance imagining (MRI)

DIAGNOSIS

1. Myofascial pain
2. Myositis
3. Myo spasm
4. Inflammatory conditions
5. Internal derangement
    - TMJ dislocation

TREATMENTS

1. Short term goals
2. Long term goals
3. Home exercises