Comparative Analysis For The Presence And Intensity Of TMD Symptoms In Skeletal Class I Malocclusion, Skeletal Class II Horizontal Malocclusion & Skeletal Class II Vertical Malocclusion Using Helkimo And Craniomandibular Index. A Study Protocol

DR. SWAPNAJA GOSAVI

PG dept. of Orthodontics, Sharad Pawar Dental College, Datta Meghe Institute of Medical Sciences, Sawangi (M), Wardha

Email id: jadhav.swapnaja@gmail.com; Ph. no:9405054969

DR.SUNITA SHRIVASTAV

Dean Examination & Professor, Dept. of Orthodontics, Sharad Pawar Dental College, Datta Meghe Institute of Medical Sciences, Sawangi (M), Wardha

Email id: sunitashrivastav92@gmail.com; Ph. no: 7743900590

Abstract: Background: Healthy dentition is a pre requisite for good esthetic, phonetics and self-esteemed of an individual. In India 40-80% of population have one or the other class of malocclusion with varying severity. There are various methods used of evaluation of TMJ dysfunction like tomogram, MRI, but Helkimo is a pioneer in developing indices by which severity can be clinical evaluated Temporomandibular disorder is a multifactorial disease. Awareness regarding this is an important aspect in today’s scenario. In Orthodontic practice awareness regarding TMD is utmost important. A parallel group trial study is to analyze & compare presence and intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) using Helkimo and Craniomandibular index. This study will help us in day to day Orthodontic practice.

Objective: Evaluation of presence & intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) cases using Helkimo index & Craniomandibular index.

Evaluation of presence & intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) cases using Craniomandibular index

Material and methods: Total 90 patients (Class I, Class II (vertical & horizontal)), in age range of 14-25 years, will be selected.

For every patient, Helkimo and craniomandibular index will be taken. Scores will be recorded and will be compared. The results compared will give us which skeletal pattern is prone for TMD.
Results: All the results that will be obtained in each group will be compared and give an expected result which skeletal pattern is more prone to temporomandibular disorders.

Conclusion: This study will help us to know which skeletal pattern is more prone to TMD as well as help in early screening of TMD disorders.

Keywords: TMD Symptoms, Malocclusion, Helkimo And Craniomandibular Index

Introduction:
Healthy dentition is a prerequisite for good esthetic, phonetics and self-esteemed of an individual [1]. In India 40-80% of population have one or the other class of malocclusion with varying severity. Also an estimated 50-60% of population suffer from mild to moderate TMJ disorders especially in the range of 20-30 years. Most often the mild to moderate severity of TMJ disorder due to deep impact in the Otorhinology of the case may go ‘unnoticed’ as they are often mistaken for earaches or ear related problems[2].

There are various methods used of evaluation of TMJ dysfunction like tomogram, MRI, but Helkimo is a pioneer in developing indices by which severity can be clinical evaluated [3]

It is a need to assess TMJ dysfunction before beginning of orthodontic treatment so that necessary precautions can be taken while ongoing orthodontic treatment. Also between the stages of orthodontic treatment. TMJ evaluation will also be helpful in monitoring any signs of TMJ dysfunction and TMD disorders so it can be identified and therapeutic measures can be taken. Hence the parallel group study is planned in department of orthodontics and dentofacial orthopedics. To analyze & compare presence and intensity of TMD symptoms in skeletal class I, Class II (vertical & horizontal) using Helkimo and Craniomandibular index.

Objectives –

1. Evaluation of presence & intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) cases using Helkimo index.
2. Evaluation of presence & intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) cases using Craniomandibular index.
3. To compare the presence & intensity of TMD symptoms in skeletal class II horizontal & class I cases.
4. To compare the presence & intensity of TMD symptoms in skeletal class II vertical & class I cases.
5. To compare the presence & intensity of TMD in skeletal class II horizontal & class II vertical cases.
6. To compare the presence & intensity of TMD symptoms in male and female.

Aim of the (parallel group) trial study is to assess & compare presence and intensity of TMD symptoms in skeletal class I, class II (vertical & horizontal) using Helkimo and Craniomandibular index.

Study design:
An observational study will be conducted in the Department Of Orthodontics and Dentofacial Orthopaedics, Sharad Pawar Dental College, Sawangi (Meghe), (W).

Total 90 patients class I, Class II (vertical and horizontal), in age group of 14-25 years, will be selected.

Equal no of cases will be selected.

a) Group I- 30 skeletal class I Malocclusion.
b) Group II-30 skeletal class II Vertical Malocclusion.
c) Group III-30 skeletal class II Horizontal Malocclusion.

Informed and written consent will be obtained from the selected patients.

For every patient, Helkimo and craniomandibular index will be taken.

Firstly anamnesis index, according to different symptoms (subjective symptom):

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you have a sound (clicking or crepitation) in the area of TMJ?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Do you have jaw rigidity during awakening or slow movement of mandible?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Do you feel fatigue in the jaw area?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Do you have difficulty while opening mouth?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Do you have locked mandible during opening the mouth?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Do you have pain in the TMJ in the area of masticatory muscles?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Do you have pain during movement of mandible?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>Do you have lusation of mandible?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

TMJ: Temporomandibular joint

Clinical dysfunction index

- Mandibular opening
  - >40 mm
  - 30-39 mm
  - >30 mm

- Mandibular deviation during lowering
  - <2 mm
  - 2-5 mm
  - >5 mm

- TMJ dysfunction
  - No impairment
  - Palpable clicking
  - Evident clicking

- TMJ pain
  - No pain
  - Palpable pain
  - Palpebral reflex

- Muscle pain
  - No pain
  - Palpable pain
  - Palpebral reflex

TMJ: Temporomandibular joint

To obtain the CMI, each positive item will be scored as 1 point, whereas each negative item will be scored 0 points. Seven main aspects shall be evaluated as follows.
### Inclusion Criteria:

1. Patients with all permanent dentition
2. No history of orthodontics treatment previously. (skeletal class I, class II vertical & class II horizontal).

### Exclusion Criteria:

1. Patients clinically diagnosed with TMD or any TMJ disorder.
2. Patients with gross pathology of ear.
3. Patient with any systemic disease or any muscular dystrophies.
4. Class III Malocclusion cases.
5. Patients that have undergone previous orthodontic treatment.

Statistical Analysis

Statistics can be done - “Descriptive & inferential statistics” “chi square test” student “unpaired t-test, students t test & two way ANOVA” will be used.

Software using analysis will be SPSS22:0 version & graph pad “prism 6.0 version” & p <0.05 will be considered as level of significance.

Expected Outcome:

Outcome that will be obtained in each group will be compared and give an expected result which skeletal pattern is more prone to temporomandibular disorders.

Discussion:

The association between “orthodontic treatment and temporomandibular joint (TMJ) disorders” is among the important topic in orthodontics and there is conflicting viewpoints regarding the topic whether “orthodontic treatment can either resolve, initiate, or have little or no effect on TMJ pain and dysfunction”[4]. This study will help in diagnosing TMD before, after & ongoing Orthodontic treatment. Temporomandibular disorders are increasing day by day and its diagnosis is utmost important in today’s scenario. This study will help in diagnosis of TMD before starting of any Orthodontic treatment and help us to treat the disorder efficiently. Gupta et al reported about stress distribution in the temporomandibular joint after mandibular protraction[5]. Naqvi and Fating reported about a non-invasive approach towards the management of a long-standing TMJ disorders[6]. Few related studies were reported by Zigo et al, Shah et al[8] and Shrivastava et al[9].

Conclusion:

This study will help us to know which skeletal pattern is more prone to TMD as well as help in early screening of TMD disorders.

References:

[3] Lima DR, Brunetti RF, Oliveira W. Study of the prevalence of craniomandibular dysfunction using Helkimo's index and having as variables sex, age and whether the subjects had or had not been treated orthodonticaly. Pós Grad Rev Fac Odontol São José Dos Campos. 1999;2:127–33.


