

Original Research

Assessment of dentition status and temporomandibular joint disorders in patients with chronic neck and back pain

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ABSTRACT:

Background: Pain-related TMD can impact the individual's daily activities, psychosocial functioning, and quality of life. The present study was conducted to assess dentition status and temporomandibular joint disorders in patients with chronic neck and/or back pain. **Materials & Methods:** 102 patients with TMDs and chronic neck and back pain of both genders were enrolled. Parameters such as class I molar relation, class I canine relation, anterior deep bite, bruxism, facial asymmetry, positive fremitus test, steep curve of Spee, flat Wilson's, TMJ deviation, TMJ clicking and TMJ deflection were recorded. **Results:** Out of 102 patients, males were 50 and females were 52. Neck pain was mild in 32, moderate in 4 and severe in 16 patients. Back pain was no pain in 5, mild in 42, moderate in 46 and severe pain in 9 patients. Class I molar relation was seen in 82%, class I canine relation in 75%, anterior deep bite in 14%, bruxism in 10%, facial asymmetry in 22%, positive fremitus test in 81%, steep curve of Spee in 60%, flat Wilson's in 94%, TMJ deviation in 80%, TMJ clicking in 72% and TMJ deflection in 54%. Class I molar relation was seen in 80%, class I canine relation in 73%, anterior deep bite in 16%, bruxism in 12%, facial asymmetry in 20%, positive fremitus test in 78%, steep curve of Spee in 62%, flat Wilson's in 90%, TMJ deviation in 84%, TMJ clicking in 76% and TMJ deflection in 52%. The difference was non-significant ($P > 0.05$). **Conclusion:** TMDs are quite common in all age groups. There was high prevalence of disturbed dental status in patients with TMDs.

Key words: Back pain, Curve of Spee, TMDs,

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INTRODUCTION

Temporomandibular disorders (TMD) are a significant public health problem affecting approximately 5% to 12% of the population. TMD is the second most common musculoskeletal condition (after chronic low back pain) resulting in pain and disability.¹ Pain-related TMD can impact the individual's daily activities, psychosocial functioning, and quality of life. Overall, the annual TMD management cost in the USA, not including imaging, has doubled in the last decade to \$4 billion.² Patients often seek consultation with dentists for their TMD, especially for pain-related TMD. Diagnostic criteria for TMD with simple, clear, reliable, and valid operational definitions for the history, examination, and imaging procedures are needed to render physical diagnoses in both clinical and research settings.³

Patients with cervical spine disorders (generally by dysfunction of muscular origin like cervical lordosis and cervical spondylosis) show higher frequencies of malocclusion than control patients; these include Angle Class II malocclusions, lateral cross-bites, lower midline deviations, and facial asymmetries.⁴ When the occlusal relationship is lost either unilaterally or bilaterally, the body posture may take on an unusual position, causing neck or shoulder pain. In particular, the TMJ makes muscular and ligamentary connections to the cervical region, forming a functional complex called the "craniocervico-mandibular system".⁵ The extensive afferent and efferent innervations of the stomatognathic system are reflected in the extensive representation of the oro-facial district in the motor and sensory areas of the cerebral cortex.⁶ The present study was conducted to assess dentition status and

temporomandibular joint disorders in patients with chronic neck and/or back pain.

MATERIALS & METHODS

The present study comprised of 102 patients with TMDs and chronic neck and/or back pain of both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. A thorough oral examination was carried out and parameters such as class I molar relation, class I canine relation, anterior deep bite, bruxism, facial asymmetry, positive fremitus test, steep curve of Spee, flat Wilson's, TMJ deviation, TMJ clicking and TMJ deflection were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

| Total- 102 | | |
|------------|-------|---------|
| Gender | Males | Females |
| Number | 50 | 52 |

Table I shows that out of 102 patients, males were 50 and females were 52.

Table II Assessment of parameters

| Parameters | Variables | Number | P value |
|------------|-----------|--------|---------|
| Neck pain | Mild | 32 | 0.05 |
| | Moderate | 54 | |
| | Severe | 16 | |
| Back pain | No pain | 5 | 0.12 |
| | Mild | 42 | |
| | Moderate | 46 | |
| | Severe | 9 | |

Table II shows that neck pain was mild in 32, moderate in 4 and severe in 16 patients. Back pain was no pain in 5, mild in 42, moderate in 46 and severe pain in 9 patients. The difference was significant ($P < 0.05$).

Table III Dentition status in neck pain

| Dental findings | Percentage | P value |
|-------------------------|------------|---------|
| Class I molar relation | 82% | 0.16 |
| Class I canine relation | 75% | |
| Anterior deep bite | 14% | |
| Bruxism | 10% | |
| Facial asymmetry | 22% | |
| Positive fremitus test | 81% | |
| Steep curve of Spee | 60% | |
| Flat Wilson's | 94% | |
| TMJ deviation | 80% | |
| TMJ clicking | 72% | |
| TMJ deflection | 54% | |

Table III shows that class I molar relation was seen in 82%, class I canine relation in 75%, anterior deep bite in 14%, bruxism in 10%, facial asymmetry in 22%, positive fremitus test in 81%, steep curve of Spee in 60%, flat Wilson's in 94%, TMJ deviation in 80%, TMJ clicking in 72% and TMJ deflection in 54%. The difference was non-significant ($P > 0.05$).

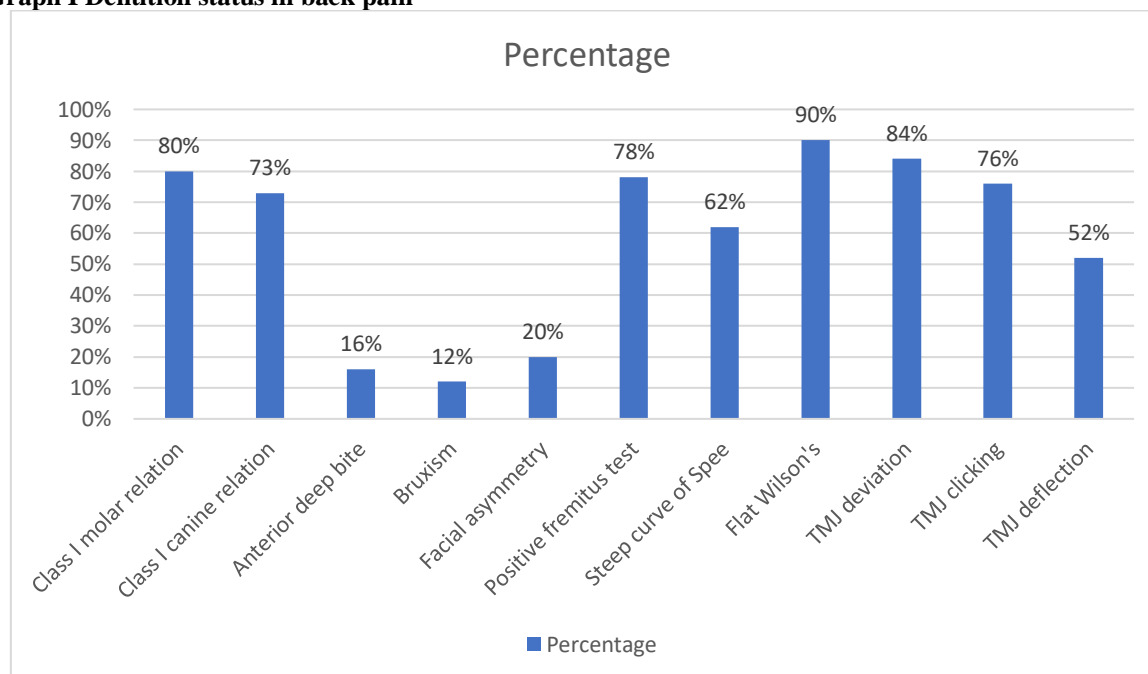
Table IV Dentition status in back pain

| Dental findings | Percentage | P value |
|-------------------------|------------|---------|
| Class I molar relation | 80% | 0.17 |
| Class I canine relation | 73% | |
| Anterior deep bite | 16% | |
| Bruxism | 12% | |
| Facial asymmetry | 20% | |
| Positive fremitus test | 78% | |
| Steep curve of Spee | 62% | |
| Flat Wilson's | 90% | |
| TMJ deviation | 84% | |
| TMJ clicking | 76% | |

| | |
|----------------|-----|
| TMJ deflection | 52% |
|----------------|-----|

Table IV, graph I shows that class I molar relation was seen in 80%, class I canine relation in 73%, anterior deep bite in 16%, bruxism in 12%, facial asymmetry in 20%, positive fremitus test in 78%, steep curve of Spee in 62%, flat Wilson's in 90%, TMJ deviation in 84%, TMJ clicking in 76% and TMJ deflection in 52%. The difference was non-significant ($P > 0.05$).

Graph I Dentition status in back pain



DISCUSSION

Biobehavioral assessment of pain-related behavior and psychosocial functioning—an essential part of the diagnostic process—is required and provides the minimal information whereby one can determine whether the patient's pain disorder, especially when chronic, warrants further multidisciplinary assessment.^{7,8} Taken together, a new dual-axis Diagnostic Criteria for TMD (DC/TMD) will provide evidence-based criteria for the clinician to use when assessing patients, and will facilitate communication regarding consultations, referrals, and prognosis.⁹ The present study was conducted to assess dentition status and temporomandibular joint disorders in patients with chronic neck and/or back pain.

We found that out of 102 patients, males were 50 and females were 52. Chandanshive et al¹⁰ evaluated the dentition status and TMDs in patients with chronic neck and/or back pain and to correlate dentition status and TMDs in both neck and back pain patients. Out of 300 patients, 116 (38.67%) were males and 184 (61.33%) were females. The mean age of patients referred for the study was 38.09 years. The most common dental finding in both chronic neck and/or back pain patients was flat curve of Wilson's (90%) whereas the least finding found was Grade III tooth mobility (0.04 ± 0.31 teeth). In TMDs most common finding was deviation of jaw (79.3% in neck and 100% in back pain) whereas the least finding found was deflection of jaw (50% in neck and 48.2% in back

pain). The result was found highly significant (p -value < 0.05).

We found that neck pain was mild in 32, moderate in 4 and severe in 16 patients. Back pain was no pain in 5, mild in 42, moderate in 46 and severe pain in 9 patients. Wang et al¹¹ investigated whether the number of missing posterior teeth, their distribution, age, and gender are associated with TMD. Seven hundred and forty-one individuals, aged 21-60 years, with missing posterior teeth, 386 with and 355 without TMD, were included. Four variables—gender, age, the number of missing posterior teeth, and the number of dental quadrants with missing posterior teeth—were analyzed with a logistic regression model. All four variables—gender (OR = 1.59, men = 1, women = 2), age (OR = 0.98), the number of missing posterior teeth (OR = 0.51), and the number of dental quadrants with missing posterior teeth (OR = 7.71)—were entered into the logistic model ($P < 0.01$). The results indicate that individuals who lose posterior teeth, with fewer missing posterior teeth but in more quadrants, have a higher prevalence of TMD, especially young women. We found that class I molar relation was seen in 82%, class I canine relation in 75%, anterior deep bite in 14%, bruxism in 10%, facial asymmetry in 22%, positive fremitus test in 81%, steep curve of Spee in 60%, flat Wilson's in 94%, TMJ deviation in 80%, TMJ clicking in 72% and TMJ deflection in 54%. Mickeviciute Eet al¹² 189 primary patients of dental department were examined. According to the tooth

wear degree 2 groups have been formed: control group (grade 0-1) without TMJ dysfunction; and experimental group (grade 2-4) with presumable TMJD. In experimental group tooth wear of anterior and posterior region increases with age respectively ($p < 0.05$). It was also found that centric occlusion (CO) and relative rest heights difference increases with age in the control group ($p < 0.05$) as well as the experimental group ($p = 0.001$). In patients with diagnosed TMJD the difference between heights in CO and relative rest was bigger than in patients without TMJD ($p = 0.039$). In the experimental group TMJD was diagnosed the most of patients grade-4 in 90%. The most common symptom is joint sounds was observed in 72.2%. 35-50 and over 50 age groups of patients had a higher first molars degree of wear than the younger ones. In patients with diagnosed TMJD the difference between heights in CO and relative rest was bigger than in patients without TMJD. TMJD symptoms and of posterior teeth pathological wear interface hypothesis confirmed. In the experimental group TMJD was diagnosed the most common in 90% of patients grade-4. The most common symptom is "Nutcracker" of experimental group patients 77.2%. We found that class I molar relation was seen in 80%, class I canine relation in 73%, anterior deep bite in 16%, bruxism in 12%, facial asymmetry in 20%, positive fremitus test in 78%, steep curve of Spee in 62%, flat Wilson's in 90%, TMJ deviation in 84%, TMJ clicking in 76% and TMJ deflection in 52%. Jasim et al¹³ in their study on 189 patients with bilateral maxillary and mandibular impacted third molars aged between 18 and 25 years showed that there was no significant relationship between the presence of impacted third molars and development of TMJ clicking. Impacted third molars were not considered to be an effective factor in the occurrence or development of TMJ clicking or sound. The limitation the study is small sample size.

CONCLUSION

Authors found that TMDs are quite common in all age groups. There was high prevalence of disturbed dental status in patients with TMDs.

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