

DIAGNOSIS OF TEMPOROMANDIBULAR DISORDERS BASED ON RESEARCH DIAGNOSTIC CRITERIA

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ABSTRACT

The Research diagnostic criteria for Temporomandibular Disorders (RDC/TMD) is a tool used by International RDC/TMD Consortium (A Designated Network of the International Association for Dental Research), to diagnose and categorize TMD patients. The aim of the present study was to investigate the frequency of TMD in undergraduate dental and medical students based on RDC/TMD; and its relation with depression and somatization.

37 male and 48 female dental and medical students from FMH College of Medicine & Dentistry, Lahore, Pakistan were evaluated. A clinical physical diagnosis (Axis I) and pain related disability and psychological status (Axis II) were assessed using a questionnaire and clinical examination on RDC/TMD protocol.

Seventeen students diagnosed with TMD showed significantly higher incidence in females ($p=0.003$). Maximum number of TMD was in internal derangement group, followed by pathosis and muscle disorder groups. Significantly higher TMD incidence was noted in participants ($p = 0.00$, Likelihood ratio = 10.80) with Axis II than those without Axis II. Significant TMD participants showed somatization than those without TMD ($p = 0.000$, Likelihood ratio = 12.04).

A comparatively lower incidence of TMD in young adults, with much higher prevalence in females was found. Disc displacement was the commonest Axis I diagnosis. TMD patients showed greater RDC/TMD Axis II.

Key words: Temporomandibular disorder, Rerearch Diagnostic Criteria / Somatization.

INTRODUCTION

Temporomandibular disorders (TMD), as defined by the American Academy of orofacial pain, is a collective term embracing a number of clinical problems that involve the masticatory musculature, the temporomandibular joint (TMJ) and associated structures, or both.¹ TMJ and associated muscle related pain/disor-

ders in the past were diagnosed under blanket terms of 'Myofascial Pain' or 'Temporomandibular Pain Dysfunction Syndrome'. Non-standardized diagnostic techniques and classification procedures and generalization of data have affected the prevalence studies on TMD.² Moreover, variation in diagnostic and follow up criteria in various researches have made comparison difficult in TMD research.^{2,3}

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The Research diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) is a tool used by International RDC/TMD Consortium which is a designated network of the International Association for Dental Research. The RDC/TMD guidelines have been devised and used to classify TMD patients for clinical physical diagnosis (Axis I)⁴ and pain related disability and psychological status (Axis II).⁵ It provides clinical researchers with a standardized system that can be evaluated for its use in examining, diagnosing and classifying the most common subtypes of TMD.^{6,7} It is the most widely used TMD diagnostic system for conducting clinical research. It has been translated into 18 languages and is used by a consortium of 45 RDC/TMD-based international researchers. Since its introduction in 1992, the use of RDC/TMD demonstrates sufficiently high reliability for the most common TMD diagnoses, thus supporting its use in clinical research and decision making.⁸ Incidence of TMD based on RDC/TMD has been reported in various racial communities in the west.⁹ No study based on RDC/TMD about TMD incidence in Southeast Asia has been found in electronic and manual literature search carried out by the authors. The aim of the present study was to investigate the frequency of TMD, based on the research diagnostic criteria guidelines, in a group of selective urban based homogeneous young university going students of Pakistan; its relation with depression and somatization; and to compare the data with other similar studies, as well as, to introduce RDC/TMD as a tool for TMD clinical studies in Pakistan.

METHODOLOGY

Data of present investigation was collected from 85 medical and dental students of Fatima Memorial Hospital, College of Medicine and Dentistry (FMH-CMD), Lahore, Pakistan. Subjects chosen were volunteers and were a convenience sample based on ease of availability. The evaluation of the subjects was based on RDC/TMD guidelines.⁶ The RDC/TMD uses a dual axis system including axis I for diagnosing and classifying TMD patients; and axis II for recording behavioral, psychological and psychosocial status. The evaluation consisted of a questionnaire filled by the participant and a detailed clinical assessment in a prescribed pattern for TMD physical diagnosis. The questionnaire included questions about demography; general and oral health (4 questions); pain history (11 questions);

locking of TMJ (2 questions); TMJ clicking (7 questions); joint disease history in the family (4 questions); injuries (2 questions); headache and migraine history (1 question); jaw symptoms related limitation of physical activity (12 questions); and stress related symptoms (32 questions).⁶

Axis I assigned physical diagnosis of the most commonly occurring masticatory muscle and/or TMJ disorders. The diagnosis was based on pain and joint noise history questionnaire filled in by the subject and comprehensive physical examination including:

Range of jaw movement with or without pain

Joint sounds

Painful extra oral and intra oral muscles,

TMJ palpation

Clinical diagnosis was obtained through scoring of a RDC/TMD Axis I algorithm into the subtypes of three major physical diagnostic groups of Group I (Muscle disorders), Group II (TMJ Disc displacements) and Group III (Joint pathosis) as given in Table 1. Based on the assessment and the algorithm, an individual could have more than one major physical diagnosis category.^{4,6} Participants were also categorized as putative (accepted as true on inconclusive grounds) TMD cases on anamnestic (ability to recall past occurrences) reporting of pain in the muscles of mastication area or TMJ in the past month.⁹

Axis II recorded behavioral (e.g. mandibular functional disability), psychologic (e.g. depression, somatization), and psychosocial status (e.g. chronic pain grade for assessing pain severity and life interference) using the questionnaire and its assessment through an algorithm.^{5,6} The phenomenon of somatization results in non-specific physical symptoms presented as noxious or troublesome.¹⁰ The questionnaire filled in by the subject was assessed through scoring of items on depression, nonspecific physical symptoms (pain items included) and nonspecific physical symptoms (pain items excluded). These scores were used to assess behavioral, psychological and psychosocial factors acknowledged to be relevant to the management of TMD patients to categorize depression and somatization (non-specific physical symptoms with and without pain items).⁶ (Table 2)

TABLE 1: CLINICAL PHYSICAL DIAGNOSIS GROUPS⁶

<p>I - Muscle disorders</p> <p>a. Myofascial pain</p> <p>b. Myofascial pain with limited mouth opening</p> <p>No. Group I diagnosis.</p> <p>II - Internal derangement</p> <p>a. Disc displacement with reduction</p> <p>b. Disc displacement without reduction with limited mouth opening.</p> <p>c. Disc displacement without reduction without limited mouth opening</p> <p>No Group II diagnosis</p> <p>III - Joint Pathosis</p> <p>a. Arthralgia</p> <p>b. Osteoarthritis</p> <p>c. Osteoarthrosis</p> <p>No Group III diagnosis</p>

TABLE 2: GRADING FOR DEPRESSION AND SOMATIZATION (NON-SPECIFIC PHYSICAL SYMPTOMS WITH AND WITHOUT PAIN ITEMS)⁶

Grade	Description
0	Not at all
1	A little bit
2	Moderate
3	Quite a bit
4	Extreme

TABLE 3: CHRONIC PAIN GRADE CLASSIFICATION⁶

Grade	Description
0	No TMD in prior 6 months
I	Low disability, low intensity
II	Low disability, high intensity
III	High disability, moderately limiting
IV	High disability, severely limiting

Chronic pain grade classification was graded by assessing characteristic pain intensity and disability points. Characteristic Pain Intensity was evaluated through scoring items in the questionnaire about pain history. Disability Points was evaluated through scoring items (Table 3) in the questionnaire about days taken off from work; interference in daily, recreational, social and family activities; and interference

with ability to work including housework due to facial pain in the past six months.⁶

Data analysis was done in SPSS, version 12.0 (PSS, Inc., Chicago, III., USA), using descriptive analysis, cross-tabs between various variables and Pearson Chi square.

RESULTS

A total of 85 (37 males & 48 females) students of FMH College of Medicine and Dentistry, with a mean age of 21.9 years (18 to 26.5 years, and a SD of 1.3), were assessed. TMD was diagnosed in 17 (20%) students, which included 2 males and 15 females. (Figure 1) Incidence of TMD in females was significantly higher than in males (P = 0.003, Likelihood ratio = 9.883). One participant had muscle disorder (one female with a diagnosis of myofascial pain with limited mouth opening). Maximum number of TMD was in internal derangement group, this included one male (3%) and 16 female (33%) participants having disc displacement with reduction (Figure 2). Most of the participants had bilateral internal derangement. Joint pathosis group contained two students in the arthralgia category including one male and one female. Two participants had multiple diagnoses. This included one female with a diagnosis of myofascial pain with limited mouth opening and disc displacement with reduction; and one female having disc displacement with reduction and arthralgia. A total of 3 (3.5%) participants had TMD related pain, this included 1 male (2.7%) and 2 females (4.4%).

Seventeen participants reported putative TMD i.e. gave a history of pain in the jaw joint or muscles of mastication region in the past month. TMD was confirmed as a physical diagnosis in 6 putative participants, where as, 11 participants did not fulfill the criterion for TMD (p=0.078). Five of these participants were diagnosed with temporomandibular disc displacement with reduction; and one had myofascial pain with limited mouth opening, as well as, temporomandibular disc displacement with reduction. Eleven of 68 non-putative TMD participants had clinical TMD. Nine of the non-putative participants were diagnosed with temporomandibular disc displacement with reduction; one had arthralgia; and one had arthralgia, as well as, disc displacement with reduction.

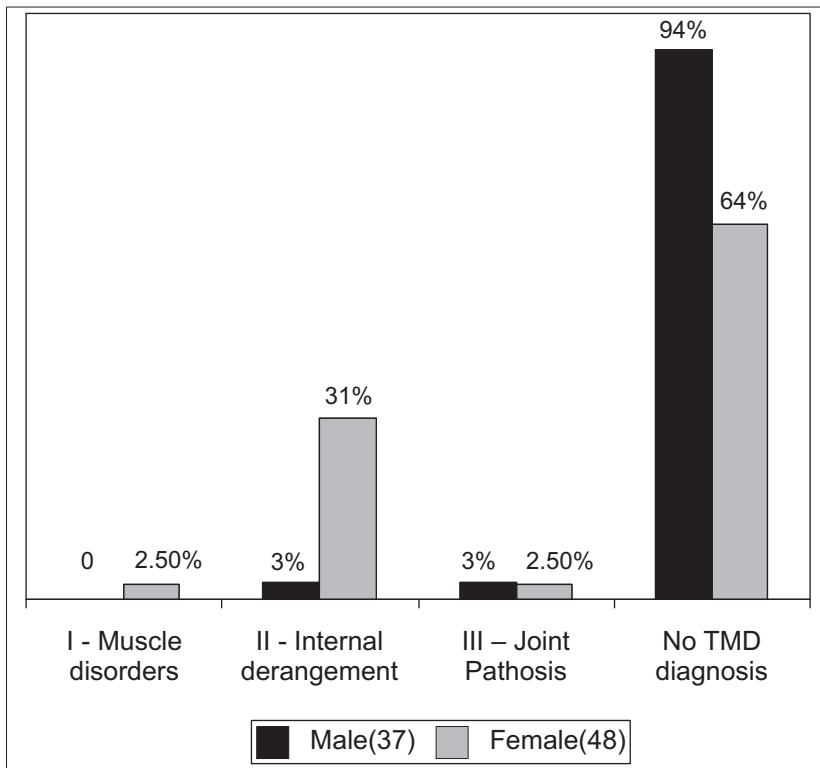
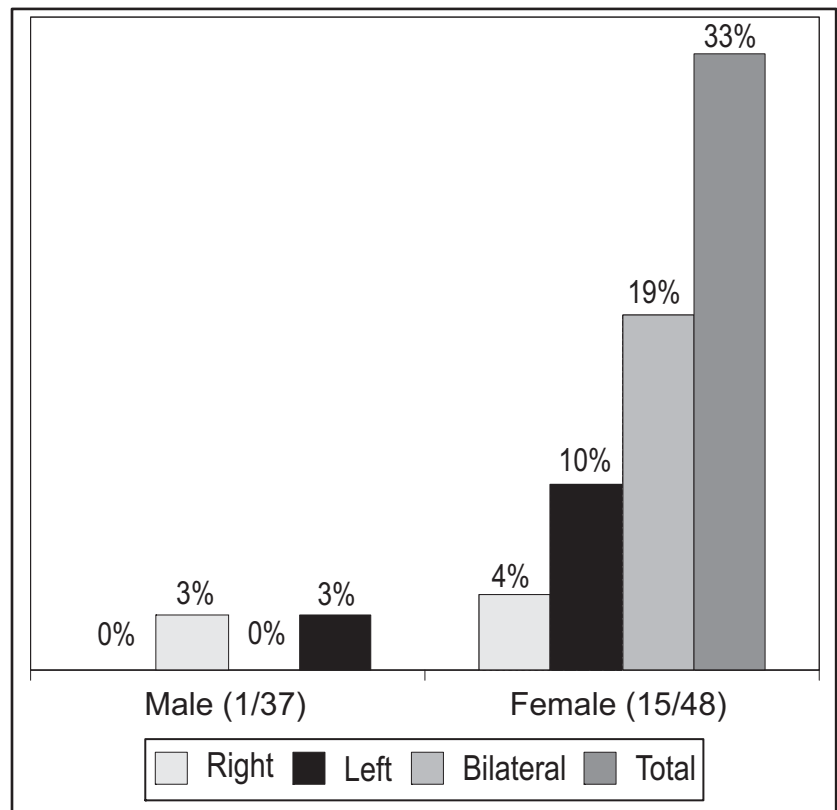


Fig 1: Incidence of TMD in Males & Females.

Fig 2: Incidence of internal derangement in Males & Females.



Twenty two (5 males and 17 females) out of the eighty five participants scored positively for Axis II. Significantly higher number of participants ($p = 0.00$, Likelihood ratio = 10.799) with Axis II had TMD in comparison with those who did not have Axis II (Figure

3). Eight of the ten participants with Axis II were female. Both the male participants with Axis II had TMD as against 8 of 15 female participants with TMD. Chronic pain grade classification (Table 3) showed 4 participants in grade I (low disability low intensity) and

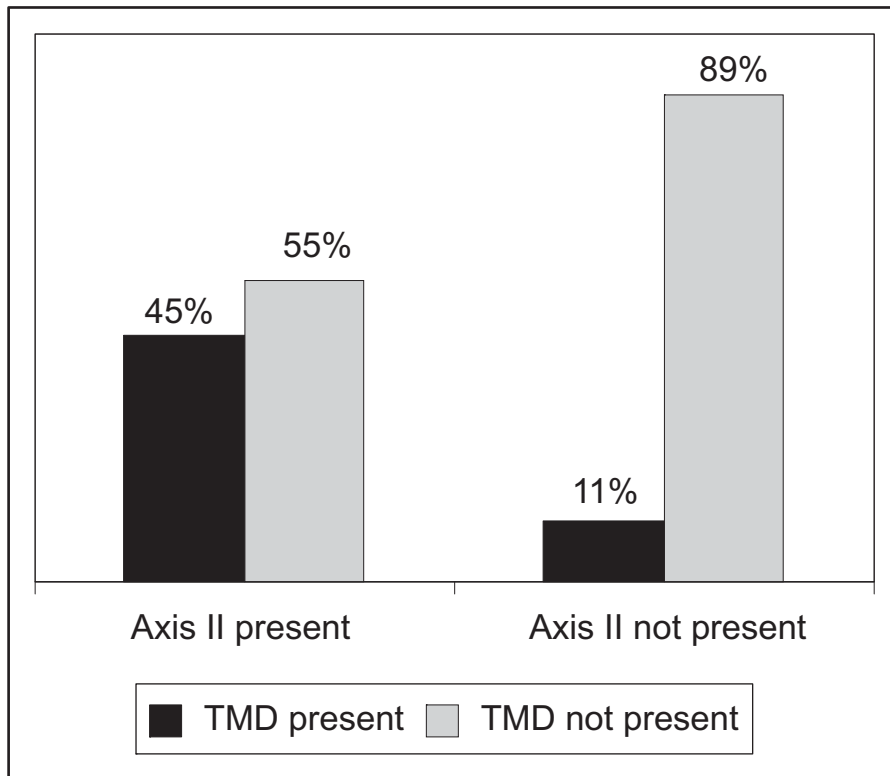


Fig 3: TMD and Axis II.

1 participant in grade II (low disability high intensity). Five (3 - a little bit, 2 - moderate) participants with TMD showed signs of depression (Table 2) based on the questionnaire items scoring, which was not significant in comparison with participants showing signs of depression without TMD ($p=0.108$). Seven of 11 participants with somatization had TMD, which was highly significant in comparison with those with somatization but without TMD ($p = 0.000$, Likelihood ratio = 12.035). All seven TMD participants (a little bit) with somatization showed nonspecific physical symptoms (pain items included), whereas, 3 (a little bit) had nonspecific physical symptoms (pain items excluded). (Table 2)

DISCUSSION

Most of the epidemiological studies on TMD are based on anamnestic (ability to recall past occurrences) questionnaires of orofacial / jaw joint pain and/or joint sounds,^{11,12,13,14,15} and only a few have also carried out physical examination for TMD.^{9,16,17} The sample size and the group representation in the current study do not cover the society. However, the data can be compared with studies of similar sample.^{9,11,12,13,14,15,16,17}

TMD was diagnosed in 17 (20%) students (32% females & 5 % males) in the current study. Higher

incidence of TMD in females have also been noted in other studies as well. Nilsson et al carried out a prevalence study of 28,899 adolescents (73% of regional population for the 12–19 years olds) using a 2 question anamnestic enquiry about facial or TMJ pain reporting a total incidence of 4.2% (6% females & 2.7% males).¹³ A study for reliability and validity of self-reported TMD pain, Nilsson et al assessed 60 adolescents with anamnestic pain and 60 age/gender matched controls without pain using RDC/TMD axis I assessment. The reliability and validity was found to be high for self-reported TMD pain and clinical TMD; and such questionnaire were recommended for TMD epidemiological survey.¹⁸ Further studies report TMD incidence based on anamnestic questionnaires at 53% (63% females & 41% males)¹² and; 57% in females and 42% in males.¹¹ Pedroni reported an incidence of 68% (84% females and 39% males) TMD using an anamnestic questionnaire and clinical assessment.¹⁶ Seventy four percent temporomandibular pain dysfunction syndrome patients were female in a patient population study from Peshawar, Pakistan.¹⁹ One significant finding in our study was that only one patient had muscle disorder and maximum participants had disc displacement with reduction (33%) (Figure 1). Most of the other studies report muscle disorders as the most common.^{9,18}

Thirty five percent (6 out of 17) of the putative TMD participants had clinical TMD, however, 16% of the non-putative participants also had TMD in the present study. In another study, forty one of forty three Caucasians and 11 of 18 African American putative (pain reported in past 6 months) young women were confirmed to have TMD based on RDC/TMD in a biracial population.⁹ Also, eleven percent Caucasians and 5% African Americans non-putative young women were confirmed to have TMD. Pedroni et al categorized patients as TMD and TMD free on the basis of questionnaire about joint sounds and masticatory musculature pain in a Brazilian university population. However, TMD free participants also presented with joint sounds (44%) and masticatory muscular tenderness (30%).¹⁶

Current study shows high incidence of TMD in patients who scored positively for Axis II. Axis II recorded depression, somatization and graded chronic pain through a detailed questionnaire.⁶ This study of young Pakistani population shows 30% depression, 41% somatization and 30% graded chronic pain in TMD patients. A study for similar Caucasian TMD patient population showed 64% depression, 82% somatization and 86% graded chronic pain; and an African American TMD population with 70% depression, 80% somatization and 91% graded chronic pain.⁹ The major RDC/TMD Axis II measures demonstrate these psychometric properties suitable for comprehensive assessment and management of TMD patients. Axis II alerts clinicians to potentially noteworthy depressive symptoms; somatization, which is considered to be an indicator for poor TMD treatment outcome; and graded chronic pain scale, which can be used for tailoring treatment to the level of patient's psychosocial adaptation.¹⁰

The present study shows a lower incidence of TMD in young adults, with much higher prevalence in females. Disc displacement with reduction was the commonest TMD diagnosis. Patients with TMD exhibit much higher RDC/TMD Axis II measures and highlights importance of these factors to be recognized in comprehensive management of TMD.

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