

## Characteristics of 511 patients with temporomandibular disorders referred for physical therapy

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**Objective.** This study aimed (1) to identify the diagnostic subsets of a patient population with temporomandibular disorders (TMD) referred from dental professionals to a physical therapist (PT) in an outpatient physical therapy practice and (2) to use the characteristics of this TMD population to assist clinical decision making in the management of TMD.

**Study Design.** This was an institutional review board–approved, retrospective study of 511 patients referred to a PT. The PT followed the diagnostic guidelines of axis I of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD).

**Results.** All 8 diagnostic subsets of the RDC/TMD were diagnosed among the 511 patients. Concurrent diagnostic subsets, cervical spine involvement, and oral appliance use were described.

**Conclusions.** PTs in an outpatient practice should be proficient in the use of the RDC/TMD. Characteristics identified with this patient population suggest that dentists should involve the services of PTs early in the management of patients with TMD and cervical symptoms. (*Oral Surg Oral Med Oral Pathol Oral Radiol* 2014;118:432-439)

Temporomandibular disorders (TMD) are various clinical conditions that involve the temporomandibular joint (TMJ), masticatory muscles, and associated tissues.<sup>1</sup> TMD may manifest as pain in the temporomandibular region, limitations in jaw motion, and TMJ sounds such as clicking or crepitus with movement.<sup>1</sup> TMD have a prevalence of 8% to 15% in the adult population, affecting women more frequently than men.<sup>2</sup> The risk of TMD increases with age, with the peak prevalence around 35 to 45 years, and TMD ranks only second to low back pain in the United States as a prevalent musculoskeletal problem, with treatment costing an average of US \$4 billion dollars annually.<sup>3,4</sup> Conservative, reversible, and cost-effective treatments are recommended for most patients with acute or chronic TMD pain and dysfunction.<sup>1</sup> Although surgery for disk displacement was at one time more prevalent, it is now often considered only after evidence-based conservative care has failed. Conservative care includes oral appliance therapy, pharmacologic management, behavioral modification, and physical therapy.<sup>1</sup> In the management of TMD, none of the aforementioned conservative treatments has been found to be more effective than others in achieving a positive outcome. The clinician may decide which treatment to offer based on personal bias, ease of providing the treatment, scientific evidence, the cost of treatment, the potential complications, or some combination of those.

Regardless of the reasoning behind the treatment choice, the decision should be based on accurate diagnoses.

Although the numbers are improving, many practicing dentists, physicians, and physical therapists (PTs) are not formally trained in the diagnosis and treatment of TMD.<sup>5,6</sup> A recent survey of US and Canadian dental schools found that only 66% to 75% of programs taught the skills necessary to perform a proper TMD examination.<sup>7</sup> In the dental schools where TMD management was taught, it was likely that the information provided may have been based on personal bias and not on scientific evidence.<sup>7</sup> It is estimated that physicians may get only 1 lecture on the evaluation and diagnosis of TMD throughout their formal education.<sup>8</sup> Information pertaining to the clinical and academic content received by PTs regarding TMD from the approximately 212 accredited programs in the United States is not available. Anecdotal evidence suggests physical therapy students may average less than 3 hours of education on TMD in the university setting. Patients with TMD, if misdiagnosed or untreated, may develop a chronic pain condition potentially resulting in days lost at work, lifestyle disturbances, increased cost to the health care system, and psychosocial magnification and central sensitization.<sup>1,4,9</sup>

### Statement of Clinical Relevance

Physical therapists should be proficient in using the Research Diagnostic Criteria for Temporomandibular Disorders. Characteristics identified with this patient population suggest that dentists should involve the services of physical therapists in the management of patients with temporomandibular disorders and cervical symptoms.

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The majority of patients with TMD referred to PTs for treatment are referred by dentists. To date, there has not been any systematic examination of the application of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) to patients referred by dental professionals to a PT. The first aim of this study was to determine whether a PT in an outpatient physical therapy practice can incorporate the RDC/TMD into an upper-quarter examination for the purpose of gathering clinical data on the TMD diagnostic subsets of patients referred by dentists. The second aim of this study was to evaluate how the characteristics of this TMD population could be used to inform clinical practice by PTs and dental professionals in the management of TMD.

## METHODS

This was an institutional review board–approved, retrospective study with signed consent from each patient. The process used to diagnose the diagnostic subsets of TMD followed axis I of the 1992 RDC/TMD guidelines.<sup>10</sup> At the time of this study, RDC/TMD used  $\leq 35$  mm of interincisal opening, which includes correction for vertical incisal overlap to represent limited mouth opening. This study used  $\leq 30$  mm of interincisal opening without correction of vertical incisal overlap to represent limited mouth opening. Not correcting for vertical incisal overlap reduces reliability concerns.<sup>11</sup>

Consecutive new patients were evaluated from the periods of April 30, 2007, through April 4, 2008, and October 31, 2008, through May 6, 2009. Before the examination, all patients completed a medical history questionnaire, symptom questionnaire, and a symptom location diagram. All patients were evaluated by the author using the diagnostic criteria of axis I of the RDC/TMD. Evaluation findings of the RDC/TMD guided the author in treatment decisions and modifications of subsequent treatments based on the reassessment of the patient's condition using the RDC/TMD. All aspects of patient care, consisting of the evaluation, treatments, and ultimately discharge of the patient, were done by the author, who is referred to as the clinical examiner (CE).

### Inclusion criteria

A total of 579 patients were referred to the CE during the time of data collection. The inclusion criteria for this study were as follows:

1. Patients had to be referred to the physical therapy practice by a dentist.
2. Patients could not have symptoms arising from active pathology of the head, face, jaw, or dentition.
3. Patients had to be able to complete a medical history questionnaire, a symptom questionnaire, and a

symptom location diagram questionnaire, and they had to respond to verbal questions during the examination without assistance.

*Inclusion criterion 1.* Of the 579 patients, 63 did not meet criterion 1 because they were referred to the CE by a physician. The remaining 516 patients were referred by members of the dental profession.

*Inclusion criterion 2.* Of the remaining 516 patients, 3 were omitted from this study because they did not meet criterion 2. After consulting with the referring dentist and with further testing, these 3 patients were excluded owing to cancer of the nasopharyngeal space, a blockage of a parotid gland duct, and a cracked tooth, respectively.

*Inclusion criterion 3.* Of the remaining 513 patients, 2 did not meet inclusion criterion 3. One patient was mentally challenged and the other had been diagnosed with Alzheimer's disease. These 2 patients were unable to complete the necessary forms and were omitted from this study.

## RESULTS

A total of 511 patients met the inclusion criteria. The patients were referred by 65 dentists; 424 of the 511 patients were referred by 49 practitioners of various dental specialties. The remaining 87 patients were referred by 16 oral surgeons. There were 401 white patients, 63 African American patients, 8 Hispanic patients, and 39 patients of other ethnicities. The average age of this population was 43.9 years, with a female-to-male ratio of 5:1. The 422 women had an average age of 44.9, and the 89 men had an average age of 43.7. Marital status was reported as follows: 276, married; 148, never married; 42, divorced; 10, widowed; and 35, no response. A majority of the patients (357) had at least some college or other higher education.

Reasons for why a dentist referred a patient to the PT varied. Reasons for referral included the following:

- The patient's symptoms were not responding to dental intervention such as an oral appliance or occlusal equilibration.
- The patient's symptoms needed to be resolved before dental intervention (such as orthodontic treatment or occlusal equilibration) was initiated.
- If surgical intervention to the TMJ was being considered, the dentist wanted to determine how many of the patient's symptoms were myogenous vs arthrogenous.
- The patient had been evaluated and treated by a number of other health care professionals (primary care physician, otolaryngologist, neurologist, rheumatologist) with no resolution of the symptoms.
- The patient developed symptoms secondary to dental intervention (e.g., the dental procedure was

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