Care of Patients with Temporomandibular Disorders: An Educational Challenge

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The ability to recognize, evaluate, and manage patients with temporomandibular disorders is an important component of general dental practice. Therefore, information about these disorders should be a basic part of the dental curriculum. Although most dental schools do include this subject in their educational programs, its teaching typically involves the presentation of didactic material in formal lectures or in seminars. This teaching, however valuable, rarely includes the "hands-on" clinical experience of actually caring for this patient population. To address this lack of clinical experience, the Department of Oral Diagnostic Sciences of the School of Dental Medicine at the University at Buffalo has also developed a special elective program to offer dental students in their final undergraduate year the opportunity to obtain such experience.

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The dental profession has been involved in the diagnosis and management of temporomandibular disorders (TMD) for many years. Nevertheless, some of the problems associated with the teaching of this subject to dental students may be a reflection of the state of controversy regarding certain aspects of diagnosis, etiology, and treatment of this group of disorders.[1,2] There has also been a significant problem in identifying where responsibility lies for determining and administering the field's educational needs and activities in dental schools.[3] The lack of resolution of this issue may be a reason why there are such disparate views about the management of such patients and about its degree of importance in the dental curriculum. Fortunately, this constraint is being resolved in most dental schools by removing "ownership" of this subject from the traditional clinical specialties. Despite these constraints, the fact that diagnostic criteria now exist and that the current "state-of-the-art" management of most TMD conditions involves conservative, reversible "low-tech" modalities[4] provides the opportunity to teach the clinical application of this subject to predoctoral students in a more consistent manner.

Since in the United States, for example, up to 75% of the population has reported at least 1 sign of joint dysfunction,[5] it is highly likely that clinicians will encounter such patients in their practices. It follows, therefore, that practicing dentists, and thus graduating students, must have the ability to evaluate and manage patients with the signs and symptoms of TMD, or to refer them appropriately. They also need to know their own strengths and limitations regarding the care of such patients, as well as which patients should be referred to orofacial pain specialists or to interdisciplinary pain clinics. Dental schools have an obligation to prepare their graduates to confront these realities and not rely on ad hoc continuing education courses to present "first-time" basic material on this subject. The observation that "our educational system has been remiss at all levels in not teaching its graduates to read, understand, and critically assess scientific literature to reduce their dependency on the interpretations of others" is particularly true in the area of TMD.[6]

If it is agreed that the evaluation and management of patients with TMD is a component of general dental practice, the depth and manner in which it is taught in dental schools becomes an important issue. Most, if not all, dental schools have addressed this issue and do teach at least some aspect of the subject to their students. Such teaching is typically accomplished by didactic lectures and seminars. However, because of an insufficient number of TMD patients, qualified faculty, or curriculum hours, not to mention jurisdictional issues, this teaching rarely includes an applied clinical component. Therefore, unlike most other clinical areas, most dental students do not obtain clinical experience in providing direct care for this group of patients.

The Role of the Predoctoral Program

Teaching the subject of TMD and other types of orofacial pain at the predoctoral level should be aimed at the detection, evaluation, differential diagnosis, and management of at least the most common types of conditions that clinicians may encounter in practice. This aim is particularly important, since the field of TMD and orofacial pain is very broad-based, interfacing with dentistry, medicine, and clinical psychology. The field also involves several dental specialties as well as general practice. It is axiomatic that the teaching of differential diagnosis and clinical judgment are essential components of dental education. This is especially significant in the field of TMD and orofacial pain, where similar or overlapping signs and symptoms can confound the outcome of the diagnostic process as well as clinical judgment that must be made about management options. Thus, teaching this subject greatly enhances students' understanding of the processes of differential diagnosis and the rationale for management. This implies that they must understand the vital importance of patients' medical and dental histories, reliable "structured" examination protocols, and the appropriate use of imaging and other diagnostic tests when necessary. It is also imperative to build in the student's mind the conceptual foundation about the nature of acute and chronic pain as well as about conservative management options and modalities. In the process of teaching this subject, students should also learn the difference between evidence-based care and care resulting from purely anecdotal information.[7]

Although the foregoing principles are very important, they can be perceived as mere educational "abstractions" unless the student is also exposed to some degree of "real-life" care of TMD patients. Only here can they really learn the clinical skills that will enable them to develop at least a preliminary level of clinical competency. There is nothing unique or remarkable about this observation, since most other areas of clinical dentistry (eg, endodontics, oral surgery, periodontics, prosthodontics) require this as part of their predoctoral educational programs.

Required Predoctoral Course at the University at Buffalo

The predoctoral program at Buffalo is 4 years, and during their third year, the entire dental class is required to take a didactic course entitled "Temporomandibular Disorders and Orofacial Pain." This course encompasses such subjects as differential diagnosis, clinical evaluation, orofacial pain conditions, TMD, chronic pain, temporomandibular joint imaging, psychosocial and behavioral factors, and management modalities. The course includes 1 1/2 hours of lectures per week for 16 weeks in the spring semester of the third year, plus small group seminars. In the seminars, groups of 5 or 6 students meet with 1 faculty member for 3 hours each fall and spring semester, and the fundamental principles of differential diagnosis and patient management are emphasized. Students receive instruction in clinical evaluation, particularly in the clinical examination protocol

for the Axis I component of the Research Diagnostic Criteria for TMD (RDC/TMD).[8] Case-based discussions about various conservative treatment modalities are also conducted. In addition, students are required to construct, insert, and adjust an interocclusal stabilization appliance for one of their classmates.

The Special Elective Program in TMD

To address the problem of lack of "hands-on" clinical experience with TMD patients, a special elective program has been developed at the University at Buffalo to offer at least a portion of the fourth-year (final-year) class the opportunity to obtain such experiences. Since a Senior Selective Program already existed in the dental school, the special elective program in TMD was organized within the framework of this school-wide component of the regular curriculum. In this way, a portion (about 10%) of the fourth-year class is able to obtain "real-life" clinical experiences in the care of TMD patients. These clinical experiences are accompanied by weekly case-based, problem-solving seminars, with the result that participating students are also exposed to updated information about TMD and orofacial pain that goes well beyond the basic "required" information presented to all third-year students.

As a result of the high motivation of many fourth-year students, there has been no problem obtaining a "critical mass" of participants for this special elective program. And it deserves to be noted that those students who volunteered to enroll were also committing themselves to extracurricular work that was in addition to their many other fourth-year clinical requirements and obligations. In fact, despite these constraints, this program has been oversubscribed since its inception in 1996. But because of an insufficient number of faculty qualified in this area, the course has been limited to no more than 10 students (about 10% of the class) during each fourth-year fall and spring semester. Those who did enroll have had the opportunity to evaluate and manage at least 3 TMD patients under the direct supervision of a trained and experienced faculty member. This extracurricular clinical experience has also served to raise the students' confidence level as well as their ability to interact with non-dental health professionals. It is important to emphasize that the systematic evaluation of this program is based on the students' course evaluations carried out at the end of each academic year. The overall consensus of these evaluations is that this experience provides a higher level of understanding with regard to the clinical evaluation and management of patients and a foundation for critically reviewing the professional literature. Furthermore, most of the participants stated that they would use the information and clinical skills gained in residency programs and in their private practice.

The Clinical Experience

Since the differential diagnosis of TMD and other orofacial pain conditions is based upon a comprehensive medical and dental history, a physical and clinical examination, and selective use of imaging for conditions affecting the joint structures, it is important that dental students have at least a basic understanding of each component of the diagnostic process. To achieve this goal, a structured approach is employed. Axis I of the RDC/TMD encompasses such a structure and is therefore used in teaching dental students. The advantage of using the RDC/TMD is that its algorithms allow for the assignment of clinical diagnoses to subjects with consistent clinical parameters. And, very importantly, it provides specifications for conducting a standardized clinical examination and is thus highly "teachable." Although there is no doubt about the value of the Axis II component or the RDC/TMD as part of the overall evaluation of patients, its operational specifications require more particular training and knowledge of psychometric measurements, including their interpretation. Therefore, to date, our students have been exposed to it at the didactic level only.

The Patient Population in the Predoctoral Clinics

An additional, and essential, ingredient that has allowed for the development of this special elective program is the presence of a sufficient number of patients who require care for TMD or related orofacial pain conditions. This patient pool is available because there are an insufficient number of professionals in the community who are trained to provide care. In addition, many of these patients have very limited financial resources and many, if not most, are state-aid (Medicaid) patients. Thus, individuals who were unable to obtain care at other institutions or private dental offices in the area were referred to or personally contacted the School of Dental Medicine, where they were sub-

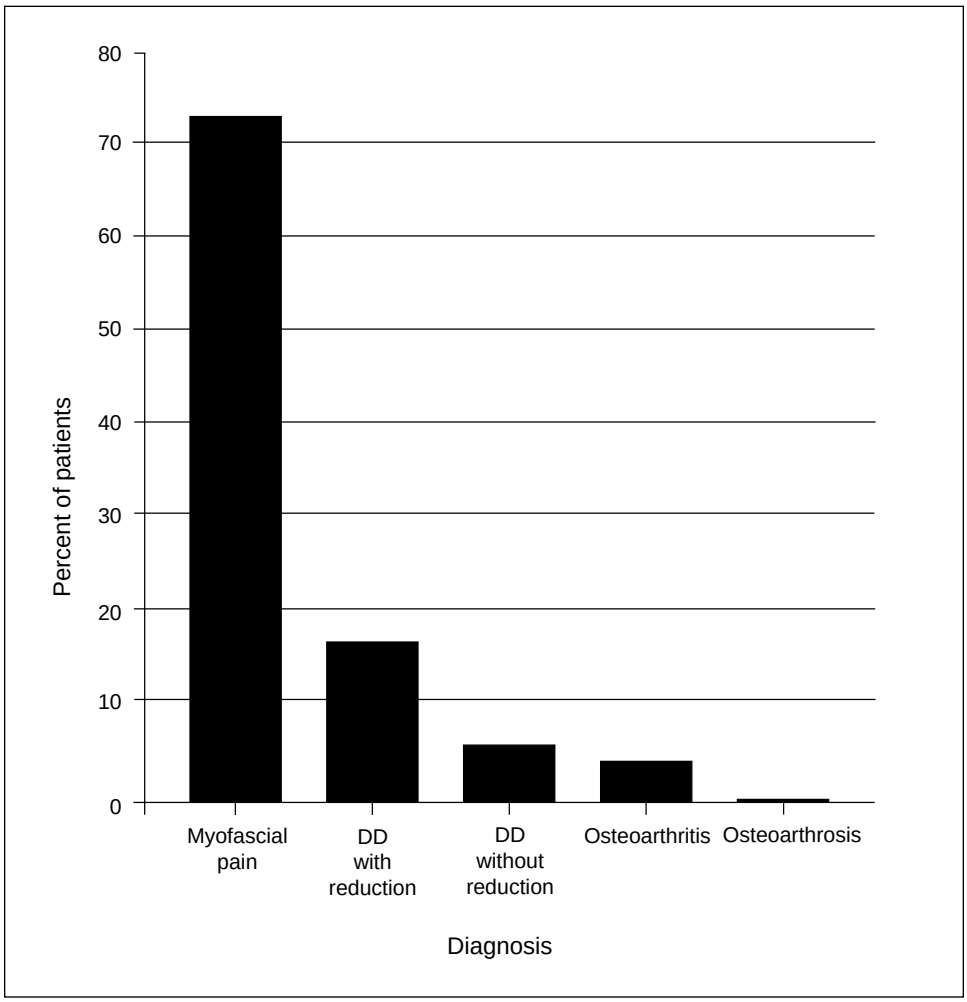

Fig 2 Diagnostic groups as revealed by the RDC/TMD Axis I. DD = disc displacement.

sequently referred to the Special Elective Program on TMD.

The following clinical data describe the characteristics of the patient population seen by the fourth-year students in this program. In a period of 3 years, 71 patients were referred to the TMD Elective Clinic. The mean age was 43.1 (standard deviation ± 14.7 years). The gender distribution among this population was 84% women and 16% men.

In 80% of cases, the chief complaint was pain in the masseter or preauricular regions. Among other chief complaints, joint sounds represented 7.1% and jaw-movement limitations 1.4% (Fig 1). Approximately 83% of the patients reported previous evaluations, either by a dentist or by other health professionals.

Patients were questioned about their awareness of parafunctional activity, and 49% of them stated that they were aware of nocturnal or diurnal habits, specifically clenching or grinding. However, 24% of the patients denied having any parafunctional activity, and 27% claimed they were not aware of it but did not deny the possibility. In terms of chronicity, 73% of the patients reported that the pain had lasted for up to 12 months.

Use of the RDC/TMD criteria revealed that 73% of the patients had myofascial pain, 17% had disc displacement with reduction, 6.1% had disc displacement without reduction, and 4.5% had osteoarthritis (Fig 2). The rest of the patients did not satisfy the RDC/TMD diagnostic criteria since other orofacial pain conditions, such as odontogenic pain, were found among this group.

The management modalities provided by the dental students were completely conservative, ranging from patient education (100% of the

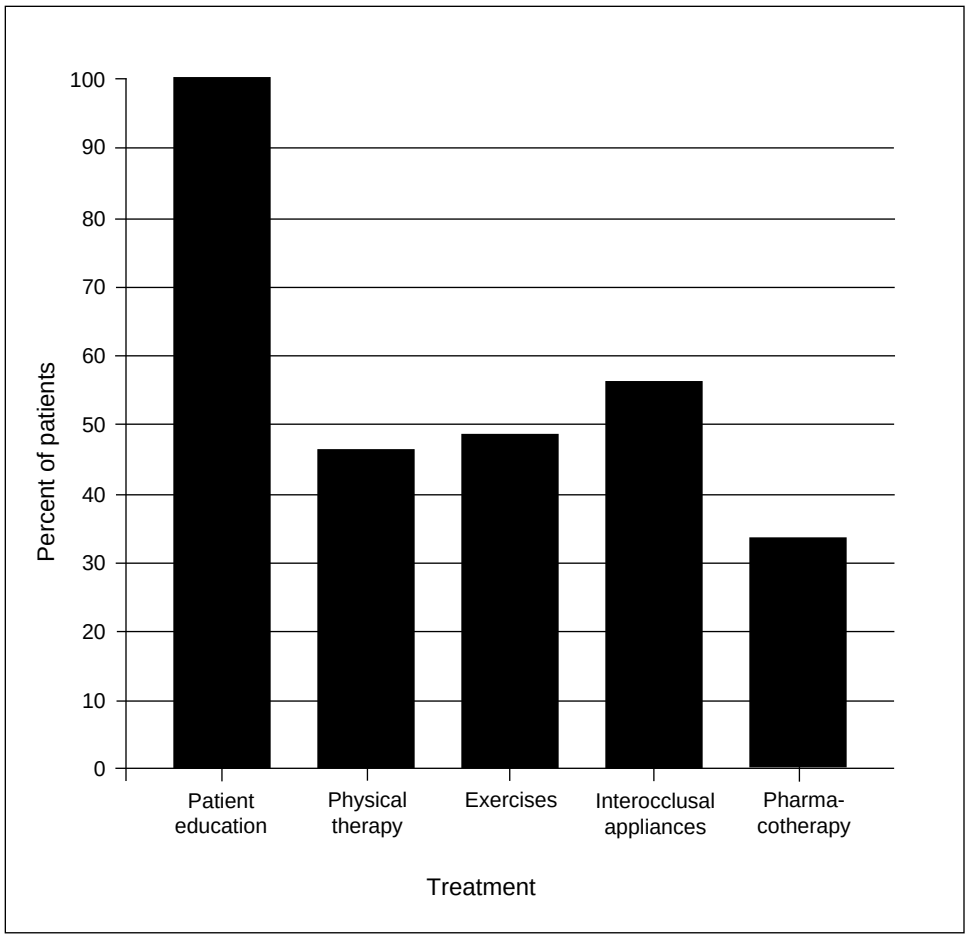

Fig 3 Treatment modalities.

treated patients), physical therapy (eg, heat, cold, or both [47%]), exercises (49%), interocclusal stabilization appliances (57%), and pharmacotherapy (34%) (Fig 3). Most of the patients received a combination of these modalities. The care provided to the TMD patients by the fourth-year students took an average of 4 visits per patient. At the time of discharge all patients reported complete or partial resolution of their symptoms. These patients will be contacted in an ongoing follow-up study to determine the long-term treatment outcomes.

Summary

The special elective program in TMD has a dual purpose. The first is to provide an opportunity for a group of fourth-year dental students to obtain "hands-on" clinical experience in providing care for patients suffering from TMD. As a result of this program, those graduating students who participated are more aware of how to recognize, diagnose, and manage these conditions. Also, they have a better understanding of when to refer patients to health professionals with more extensive training. Furthermore, they are more familiar with the scientific issues underlying the field. A second very important purpose of this program is that it provides the facilities, personnel, and expertise for the care of TMD patients, most of whom could not otherwise obtain such care at other locations, primarily because of socioeconomic factors.

As for the educational results of this program, it

seems clear that fourth-year dental students are capable of caring for TMD patients under controlled conditions and with appropriate supervision and of learning about differential diagnosis and conservative management modalities that are consistent with contemporary standards of care. In addition, exposing students to a range of TMD conditions greatly enhances their ability and competency levels in the diagnosis and primary care of these conditions.

Unfortunately, it is not currently possible at the University at Buffalo for all graduating students to apply their didactic knowledge to the actual care of patients, although this is a highly desirable goal. The principal constraints to achieve this worthy objective are an insufficient number of clinical hours allocated to this subject in the curriculum and a lack of faculty who have the training and experience in caring for such patients and in educating dental students in this field. However, because of the success of this program, there is hope that it can be expanded to encompass the entire fourth-year class in the future. Doing so would also require that recognized clinical competency standards exist that are analogous to those already established for other clinical disciplines. In addition to anticipated future studies of the long-term results of patient treatment, studies are planned to determine whether this special educational program in TMD had an effect on the practice characteristics and behavior of the student participants as compared with their non-participating classmates.

Finally, the existence of a clinical educational program in TMD for predoctoral students does not negate the need for tertiary-care orofacial pain clinics in dental schools. Having such clinics in or associated with dental schools is entirely appropriate, given that many patients with chronic orofacial pain disorders, including TMD, require a more extensive evaluation, including the application of the Axis II from the RDC/TMD and more intensive management of their conditions.

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