Recommendations from the International Consensus Workshop: convergence on an orofacial pain taxonomy

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SUMMARY This 2.5-day workshop was organized by the International RDC⁄TMD Consortium Network of the International Association for Dental Research and the Orofacial Pain Special Interest Group of the International Association for the Study of Pain. Workshop participation was by invitation based on representation within the field, which included the Consortium Network, the Orofacial Pain Special Interest Group, the National Institute for Dental and Craniofacial Research, American Academy of Orofacial Pain, the European Academy of Craniomandibular Disorders, and the International Headache Society; other disciplines included radiology, psychology, ontology, and patient advocacy. The workshop members were divided into workgroups that reviewed core literature describing the properties of the RDC⁄TMD, provided recommendations for revision, and suggested relevant research directions. The goals of this workshop were to (i) finalize the revision of the RDC⁄TMD into a Diagnostic Criteria for Temporomandibular Disorders (DC⁄TMD), which would be more appropriate for routine clinical implementation, (ii) provide a broad foundation for the further development of suitable diagnostic systems for not only TMD but also oro-facial pain as well, and (iii) provide research recommendations oriented towards improving our understanding of TMD and oro-facial pain. This report provides the full description of the workshop and Executive Summary, and it acknowledges the participants and sponsors.

KEYWORDS: temporomandibular disorders, oro-facial pain, classification, consensus

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Introduction

The RDC⁄TMD

The Research Diagnostic Criteria for Temporomandibular Disorders (RDC⁄TMD; Dworkin and LeResche, 1992) is comprised of a dual-axis approach, clearly operationalized data collection procedures, and strict diagnostic criteria. Consequently, the RDC⁄TMD has contributed substantially, based on nearly 20 years’ data, to TMD research. These core characteristics make the RDC⁄TMD a model system for the evaluation of pain disorders, and the RDC⁄TMD has correspondingly been used in a wide range of experimental, clinical, and population studies around the world. In response to the request by the authors of the RDC⁄TMD that further research be conducted to examine the properties of this diagnostic approach, many studies by a wide range of active researchers have focused specifically on the reliability and validity of the RDC⁄TMD itself. The National Institute for Dental and Craniofacial Research (NIDCR) of the National Institutes of Health, US, provided significant funding for a large project – the RDC⁄TMD Validation Project (Schiffman, PI) – which was recently concluded, and the addition of its initial reports to the previous research has now led to the availability of a substantial amount of data examining all of the properties of the RDC⁄TMD. This critical mass of research stimulated the organization of this workshop.
In reviewing the results from the Validation Project, it was clear that the validity of the RDC/TMD ranged from very poor to almost perfect, depending on the diagnosis and its associated tests as operationally defined by the RDC/TMD. The validity of the two myofascial pain diagnoses in terms of the sensitivity was not acceptable, while the validity in terms of specificity was very good. If the myofascial pain diagnoses were considered jointly by eliminating consideration of limitation in opening, the sensitivity was acceptable, and specificity was almost perfect. The validity of each of the disc disorder diagnoses, joint pain diagnosis, and arthritis diagnoses in terms of sensitivity was poor, but the validity in terms of specificity ranged from very good to almost perfect. In sum, the RDC/TMD was overly conservative in capturing myofascial pain diagnoses, consistent with some of the criticisms regarding the overly restrictive criteria designed to minimize false positives in field study settings, and it was weak in capturing diagnoses for which imaging of joint structures is required, as expected; in contrast, individuals were not likely to be over-diagnosed (and consequently receive unneeded treatment) with diagnoses of a myofascial disorder, any of the disc disorders, or an arthritic disorder.

In reviewing the methodological studies contributed by other researchers, it was also clear that the RDC/TMD approach to diagnosis and patient evaluation is essential for scientific progress, in that the wide range of studies conducted in a wide range of settings (see Core Literature in the full report) using this approach has contributed substantially to the understanding of not only TMD but to pain research more broadly as well. Few areas in research on pain disorders can claim this level of comparability across studies owing to agreed upon criteria that include operationalized procedures for data collection. Consequently, the methodological studies also support that the RDC/TMD can be used in multiple settings, that examiners can be readily trained to a sufficient level of reliability, and that language translations result in equivalent instruments for use throughout the world. All of these represent major accomplishments for which the TMD research community should be recognized.

Critical review of the available research, however, also clearly indicated that (i) the diagnostic criteria for the physical diagnoses needed to be refined; (ii) the range of disorders represented by the RDC/TMD needed to be expanded; and (iii) the assessment domains comprising Axis II needed to be reviewed and potentially updated.

A vision of the RDC/TMD for the future

An implicit objective for designing a diagnostic and classification system with two axes for TMD was to provide a more comprehensive picture of how the pain in the person yielded a person in pain than could be obtained by limiting diagnostic assessment based on organ system pathology alone. The dual-axis system would permit early-on identification of TMD subtypes, which reflected the already well-established fact that emotional, cognitive, behavioural, and psychosocial dimensions of personal functioning were as much a factor in progression of chronicity and disableness owing to TMD-related pain as were physical findings – perhaps even more so. Specifically, a dual-axis RDC/TMD would allow clinicians/researchers to locate each patient in a space coordinated by determinants from each axis, with each axis capturing clinically meaningful levels of functioning along their respective dimensions (e.g., range of motion from Axis I and depression symptoms from Axis II, as a simplistic example). The intent to locate the pain-disorder and the person within a 2-dimensional space reflects the principle that the physical aspects (disease) and psychosocial and behavioural aspects (illness) of the person are, in principle, integrated despite the limitations in the methods used for assessing these two very different levels of biological organization.

True integration of physical and behavioural data associated with the disorder would ultimately require more than a two-dimensional plot. It was anticipated that as data became available, the classification process would evolve to eventually yield a comprehensive assessment of the state of the person at any point in time, albeit describable by the different languages and methods of biological and behavioural/social sciences. Because the two enterprises of biology and behaviour are conducted with methodologies and measuring instruments that are so different and use scientific languages that are so different, it had been historically reasonable to assume that bodily level processes and person-level processes were independent aspects of the person. If this assumption of independence was true, we could not, in principle, integrate assessment of the body’s physical functioning with the processes that underlie the behaving
person—we would, in fact, be conceding a mind–body dualism, granting to the mind an independence from biological processes.

In contrast, true integration would reflect what we now acknowledge to be an underlying unitary process. The applicability to TMD of the capability to integrate biological and psychosocial data yielded by the TMD patient remains for the present an empirically verifiable hypothesis to be developed and tested in the coming years through better and more consistent use of a continually up-graded empirically supported DC⁄TMD. Thus, it is well-recognized that the goal of an integrated Axis I-Axis II diagnosis has not yet been fully attained, and it requires for its theoretical and clinical realization a great deal more methodological development and evaluation based on the best emergent scientific evidence. It is hoped that the International Consortium, as founded by Dr Dworkin with funding by NIDCR and now lead by others, will identify with and continue to support this long range goal to develop a comprehensive and holistic framework of diagnosis, classification, and rational treatment decision making—all in the service of providing the best scientific and humane treatment for individuals who suffer from TMD.

The consensus workshop

This 2.5-day workshop was held March 30 through April 1, 2009, in Miami, Florida, in conjunction with the annual meeting of the International Association for Dental Research (IADR). The workshop was organized by the International RDC⁄TMD Consortium Network of the IADR and the Orofacial Pain Special Interest Group (SIG) of the International Association for the Study of Pain to (i) finalize the revision of the RDC⁄TMD into a Diagnostic Criteria for Temporomandibular Disorders (DC⁄TMD), which would be more appropriate for routine clinical implementation, (ii) provide a broad foundation for the further development of suitable diagnostic systems for TMD and, at the same time, to also include oro-facial pain, and (iii) develop recommendations for research per request by program officers from the National Institute for Dental and Craniofacial Research (NIDCR) of the National Institutes of Health (US). The workshop format included formal presentations focused on systematic review guidelines, biomedical ontology, and patient advocacy.

Participation was by invitation. The 36 members were from 12 countries: Australia, Belgium, Canada, Denmark, Germany, France, Italy, The Netherlands, Sweden, Switzerland, UK, and US, and they represented the perspectives of 11 organizations: American Academy of Orofacial Pain; European Academy of Craniofacial Disorders; Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials; International Headache Society; International RDC⁄TMD Consortium Network; National Center for Ontological Research; NIDCR; Orofacial Pain – Prospective Evaluation and Risk Assessment study; Orofacial Pain SIG; TMJ Association; and the RDC⁄TMD Validation Project. The expertise represented by the members included: bioinformatics, clinical pain, epidemiology, medical ontology, neurology, neuroscience, oro-facial pain, patient advocacy, physical therapy, psychology, radiology, and TMD.

The workshop members were divided into workgroups, each of which reviewed core literature describing the properties of the RDC⁄TMD, provided recommendations for revision of the respective parts of the RDC⁄TMD and suggested relevant research directions. Each workgroup then presented the Workgroup Recommendations for critique by the other workshop participants and, following revision by each workgroup, voting occurred on the final day as a method for determining whether sufficient consensus had been achieved.

In accordance with recommendations made during the workshop, the four Workshop Chairs served as a post-workshop ad-hoc Taxonomy Committee to provide final Taxonomy Committee recommendations, particularly in areas where workshop discussions did not lead to clear decisions because of any of time constraints, unresolved controversy, or lack of sufficient level of agreement. Moreover, following the workshop, the Chairs integrated the research recommendations and provided additional synthesis consistent with the goals of the workshop. Consequently, the Workshop Chairs, as authors of the Report and Recommendations document, accept full responsibility for any disagreements that may arise in response to this document. The full Report and Recommendations contains the goals and description of each workgroup’s activity, research recommendations, full list of participants and their roles in the workshop, and the literature base used for the workshop; the report is available at http://www.rdc-tmdinternational.org/Default.aspx?tabid=98.
Executive Summary

The goals established for the workshop are listed below, and each is followed by the respective major recommendations:

1 Create Diagnostic Criteria for TMD (DC/TMD, v1.0) founded on evidence-based revisions to the RDC/TMD, for immediate implementation in clinical settings and in applied research.

(i) The DC/TMD was envisioned as an inclusive set of temporomandibular disorders suitable for routine clinical use by the non-specialist as well as being appropriate for the researcher who needs a valid classification method for TMD. The DC/TMD should qualify the status (e.g., validity in terms of sensitivity and specificity) of each disorder with regard to the evidence base for the disorder and for its related tests. It is recognized that not all disorders included in the DC/TMD will have empirical data supporting the recommended diagnostic tests. However, development and approval of a comprehensive diagnostic manual for clinical use is recommended by the members of this workshop. Such a manual will, in turn, serve as a better foundation for further research regarding all of the disorders that comprise the domain of the temporomandibular disorders.

(ii) Myofascial pain with and without limitation in movement was collapsed into a single disorder, myofascial pain, with revised diagnostic criteria. A new disorder, myofascial pain with referral, was added. Headache, as potentially associated with TMD muscle disorders and defined by section 11-7 of the International Classification of Headache Disorders-II (ICHD-II), was introduced to the DC/TMD, and diagnostic criteria, based on jaw functions that distinguish it from other headache problems, were proposed.

(iii) New diagnostic criteria were created for the existing TMJ disorders of arthralgia, disk displacement with reduction, and disk displacement without reduction (with and without limitation in opening). The previous diagnoses of osteoarthritis and osteoarthrosis were combined into a single disorder, degenerative joint disease, to resolve nomenclature problems across international settings. New disorders were established: disc displacement with reduction with intermittent non-reduction, luxation, subluxation, ankylosis, and rheumatological arthritides.

(iv) The existing constructs within Axis II, consisting of pain intensity, pain-related disability, depression, and non-specific physical symptoms, should be retained, and the existing instruments for measuring these constructs should also be retained. Additional constructs that should be added for routine clinical assessment include: functional limitation of the jaw, overuse behaviours, co-morbid syndromes, and anxiety.

(v) A secondary goal of this workshop was to determine whether this group of disorders was best referred to as ‘Temporomandibular Disorders (TMD)’ or as ‘Temporomandibular Muscle and Joint Disorders (TMJD)’. ‘TMD’ has been the accepted rubric name for about 30 years, while ‘TMJD’ is a term promoted in the past 5–10 years by NIDCR to call attention to the component structures that are involved in this group of disorders. ‘TMJD’ has, however, not been fully accepted by the non-US researchers in this area. Because this workshop was focused on a revised taxonomy for international usage and because it was comprised of leaders in this field representing many countries and other relevant clinical and research societies, addressing the name of the rubric was important. After the workshop, the participants were asked which rubric name was preferred, and voting was held via mail-in ballot. Of the participants, 64% voted, and the tally was 17 in favour of ‘TMD’ and 4 in favour of ‘TMJD’.

2 Identify new diagnostic areas of TMD and associated research diagnostic criteria for TMDs as well as other Axis II measures for new investigation (RDC/TMD, v2.0).

(i) The RDC/TMD v2 was proposed as a separate document that would build upon the core of the DC/TMD by specifying additional diagnostic tests and decision rules to be implemented in research settings to further develop the knowledge about these disorders. The RDC/TMD v2 should also contain additional disorders for which no agreed upon diagnostic criteria exist at present.

(ii) Critical scientific questions regarding headaches associated with TMD muscle disorders include whether they are attributed to TMD and whether the ICHD-II criteria accurately identify such headaches as ‘secondary’. Additional diagnostic tests that may provide better specificity of TMD vs ‘headache’ were added for further research applications.

(iii) Additional Axis II constructs that should be included for research purposes include pain-related catastrophizing, psychiatric co-morbidity, oral health-related quality of life, treatment seeking, sleep, stress, and environmental factors.
(iv) Genotyping needs to be accompanied by strong phenotyping, and that will permit genetics to be implemented as a separate axis in a subsequent revision of the DC/TMD.

(v) Diagnostic testing based on clinical neuroscience (e.g., quantitative sensory testing) will likely emerge as a fourth axis for comprehensive assessment of the individual with pain.

(vi) Implementation of ontological principles in the further development of Axis II is needed, and in particular the conceptual relationships among the anticipated multiple axes will be required.

3 Create an initial draft of Research Diagnostic Criteria for selected other oro-facial pain conditions (RDC/OFP v1.0) where existing data are sufficient.

(i) Data are insufficient at the present time to draft an evidence-based and universal classification of oro-facial pain conditions.

(ii) A possible structure and format for an initial diagnostic entity was proposed based on ontological principles, and it was tentatively termed Chronic Continuous Dento-Alveolar Pain (CCDAP). The structure of this proposed diagnostic entity could facilitate the development of additional diagnostic entities for oro-facial pains.

(iii) This workshop accomplished the critical goals of (i) identifying a diagnostic entity that can be subjected to hypothesis testing, (ii) developing a conceptual structure that will serve as a basis for the development of additional diagnostic entities, (iii) demonstrating the utility of contemporary bioinformatics methods for taxonomic development in this field, (iv) establishing agreement that organized data are needed and developing an initial process to obtain such data, and (v) identifying a group of individuals who will continue to collaborate on this project.

4 Initiate a working Oro-facial Pain Taxonomy Consensus Group that will continue the development of a single integrated taxonomic structure for temporomandibular disorders, oro-facial pain disorders, regional neuropathic pains, odontogenic and soft tissue pains, and related headache based on classification principles currently implemented in medical ontology and bioinformatics.

(i) The consensus of the workshop was that this critical activity needs to be organized by the RDC/TMD Consortium Network and IASP Orofacial Pain SIG, and it needs to include active participation by the American Academy of Orofacial Pain, European Academy of Craniomandibular Disorders, International Headache Society, and other groups as interested.

(ii) It is recommended that a core group of individuals, including the new chair of the Orofacial Pain SIG, meet at the 2010 IASP meeting in Montreal, to focus on QST and neuropathic pain and how to proceed with the RDC/Oro-facial Pain. Peter Svensson will assume the initial leadership.

5 Identify major research directions.

(i) Ontology for TMD and Oro-facial Pain: Develop a disease ontology, and map ontological developments to clinical requirements.

(ii) Classification: Prioritize oro-facial pain classification, and collaborate with other disciplines.

(iii) Developing a Comprehensive Clinical Phenotype: Initiate phenotyping with available data, develop clustering methods for biobehavioural variables, and develop methods for aggregating disorders with shared characteristics.

(iv) Risk Factors and Disease Progression: Conduct longitudinal studies of biobehavioural factors, differentiate normal adaptation from pathologic changes in the TMJ, conduct prospective studies regarding oro-facial pain conditions, assess physiological correlates of pain, and investigate CNS changes in response to pain.

(v) Biopsychosocial Model: Evaluate pain-relevant constructs, develop structural models for biobehavioural factors, integrate physical findings with biobehavioural findings for clinical use, evaluate the role of the environment on pain expression, and incorporate positive psychology.


(vii) Tailored Treatment: Identify rational evidence-based treatment that is consistent with the complexity of complex disorders.

(viii) Provider–Patient Interactions: Evaluate interpersonal factors affecting symptoms, enhance science transfer, investigate the role of patient values, expand the scope of health records, and improve provider-patient communication.

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6 Disseminate the results in appropriate journals and settings.

(i) The core clinical recommendations of the DC/TMD will be submitted to a North American clinical journal.

(ii) The recommendations for advancing research on TMD and on the criteria used to assess TMD will be submitted to a relevant pain research journal.

(iii) Authorship of the DC/TMD and RDC/TMDv2 will be inclusive of all participants at the workshop.

(iv) This document will be made available via the website of the Consortium, and the Executive Summary will be published separately. The research recommendations will be conveyed as a separate document to the NIDCR for their programme planning.

(v) The International RDC/TMD Consortium Network membership will pursue distribution of the clinical recommendations via their respective national dental journals, based on the DC/TMD publication to appear first.

(vi) Educators should consider adopting formal guidelines such as the DC/TMD for teaching of TMD.

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