FJDM | FRENCH JOURNAL OF DENTAL MEDICINE

Defining the competency profile of the French orofacial pain specialist: *a preliminary proposal*

Nathan Moreau DDS, MSc, PhD

Associate Professor, Orofacial Pain Unit, Department of Oral Medicine and Oral Surgery, Bretonneau Hospital (AP-HP), Paris, France

Corresponding author: Dr N Moreau: nthmoreau@gmail.com

Abstract:
Orofacial pain defined as pain perceived in the face and/or oral cavity is caused by diseases or disorders of regional structures, by dysfunction of the nervous system or through referral from distant sources. Treatment of orofacial pain is a specialty in dentistry in many parts of the world and an emerging area of specialisation in others, as in France. Although specifically mentioned in the 2009 ADEE Graduating Dentist competences (competency 5.12) and in the 2017 update (learning outcomes 3.1.1, 3.2.5 and 3.4.5), no formal nationwide curriculum on orofacial pain diagnosis and management has been implemented in France so far, despite an increasing awareness of the importance of orofacial pain education in dentistry. Currently, orofacial pain conditions are thus managed by various dental and/or oral medicine specialists depending on the type of condition and initial training of the practitioner. In the absence of a formal curriculum, these practitioners must therefore be self-taught. After discussing the burden and aetiological diversity of orofacial pain conditions, this paper aims at defining the competency profile of the French orofacial pain specialist, not from a perspective of curricular development but as a guide for self-directed learning.

Key words: *Orofacial pain, specialist, curriculum*

Manuscript submitted: 07 August 2021. **Manuscript accepted**: 21 January 2022.
Doi: https://doi.org/10.36161/FJDM.0012

Introduction

Orofacial pain is a complex medical field at the crossroads of several healthcare professions and medical specialties. The International Association for the Study of Pain (IASP) defines orofacial pain as "*…pain perceived in the face and/or oral cavity. It is caused by diseases or disorders of regional structures, by dysfunction of the nervous system, or through referral from distant sources.*".[1] As such, it encompasses multiple diseases of inflammatory, neuropathic, nociplastic or mixed nature.[2]

Although management of orofacial pain is a recognised specialty in many parts of the world and an emerging area of specialisation in others,[1] it is unfortunately currently not the case in France, despite being specifically mentioned in the 2009 ADEE Graduation Dentist competences (competency 5.12)[3] and in the 2017 update, as a mandatory domain of knowledge (learning outcome 3.1.1), diagnostic (learning outcome 2.2.5) and therapeutic (learning outcome 3.4.5) competence.[4] In 2017, the French Society for the Study and Management of Pain (*Société Française d'Etude et de Traitement de la Douleur*), the French chapter of IASP, published its whitebook on Pain in France.[5] Out of 280 pages, only one pertained to orofacial pain, stating that there are currently 10 tertiary orofacial pain clinics (located in academic centres) and underlining the insufficient training of medical and oral health professionals on the subject,[5] despite an increasing awareness of the importance of orofacial pain education in dentistry.[6]

In France, orofacial pain conditions are currently managed by various dental and/or oral medicine specialists depending on the type of condition and training of the practitioner. As of now, no formal curriculum exists for orofacial pain training in the undergraduate and postgraduate dental settings, with the notable exception of oral surgery, which includes a training module entitled 'orofacial pain and temporomandibular disorders' as stated by Official Bulletin n°19 of the French Ministry of Superior Education and Research of May 12, 2011. Apart from the recently created Master's degree in Orofacial pain from Paris University, to the best of the author's knowledge, no postgraduate training programmes have been developed so far that include all aspects of orofacial pain. Furthermore, orofacial pain has not been integrated in French continuing professional development programmes so far.

Regardless of specialty and/or profession of origin, every orofacial pain specialist should be competent to diagnose and treat most, if not all, causes of orofacial pain. Considering the high burden and important aetiological diversity of orofacial pain conditions, one can ponder over the necessary compe-

tency profile of such specialist, allowing one to train sufficiently both in scope of practice and degree of proficiency.

After discussing the burden and aetiological diversity of orofacial pain conditions, this paper aims at defining the competency profile of the French orofacial pain specialist, not from a perspective of curricular development but as a guide for self-directed learning.

The burden of orofacial pain

As orofacial pain is insufficiently diagnosed and treated (at least in France), it is quite difficult to obtain precise epidemiological data regarding its prevalence in the general population. Nevertheless, it has been suggested that at least one adult out of ten suffers from orofacial pain.[7]

Based on our experience from treating orofacial pain conditions in a specialised tertiary clinic (related in a previous article[8]), the burden of orofacial pain can be summarised as follows:

Orofacial pain can be unbearable:

Acute trigeminal nerve injuries, such as those resulting from the extrusion of endodontic filling material into the mandibular canal, can lead to severe spontaneous and evoked pain that patients rate 10 out of 10 on the numerical rating scale, requiring immediate and appropriate management.[2]

Orofacial pain can be complex:

Pain in the oral cavity can be the main manifestation of a complex systemic condition, such as vitamin B9 deficiency that can result in severe tongue pain, with little to no clinical abnormalities upon inspection (unpublished observations).

Orofacial pain can be misleading:

As many distant and/or systemic diseases can cause referred pain to the oral cavity structures, which themselves can also present with painful or painless local alterations, orofacial pain can be quite misleading and difficult to diagnose in such instances. For example, we have reported a case of a middle-aged female patient who presented with undiagnosed migraine attacks that she localised on her left first maxillary molar, that same tooth incidentally presenting with an asymptomatic chronic endodontic infection and periapical lucency.[2]

Orofacial pain can be dangerous:

Although unbeknownst to most dental (and medical) practitioners, pain resulting from coronary artery disease can present in the orofacial region,[10] as previously reported.[11] As such, early and accurate diagnosis of cardiac-related orofacial pain is essential to initiate proper cardiological referral and treatment.

Orofacial pain can lead to long-term suffering:

Numerous patients that consult in our tertiary clinic have reported significant diagnostic delay before their orofacial pain condition was properly diagnosed and managed (unpublished data). Several patients have had diagnostic delays of over 20 years, such as the case of a 51-year-old patient who presented with recent onset tooth pain, related to undiagnosed chronic hemicrania continua with continuous pain for the past 20 years.[12]

Orofacial pain can lead to sickness:

Among the numerous distant diseases that can present with orofacial pain, some are unfortunately severe and incurable leading to prolonged sickness, such as relapsing-remitting multiple sclerosis that can present as neuropathic orofacial pain of variable clinical expression, changing over time.[13]

Orofacial pain can lead to death:

Finally, despite being quite rare, orofacial pain can be the main symptom of fatal diseases, such as acute myeloid leukaemia (unpublished observations) or severe vasospastic angina,[14] especially in cases associated with significant diagnostic delay.

Aetiological diversity of orofacial pain conditions

Orofacial pain conditions can be classified according to their underlying pathophysiological mechanisms into four categories:

- Nociceptive conditions
- Neuropathic conditions
- Nociplastic conditions
- Mixed conditions.[2]

The knowledge of such mechanisms allows a tailored analgesic strategy, more efficient than using nonspecific analgesics.[2] The numerous conditions responsible for orofacial pain are presented hereafter, classified as aforementioned, and further subdivided according to the importance of their knowledge for the dental/medical student and/or practitioner as follows:

A – *Essential to know*
B – *Important to know but not essential*
C – *Specialist knowledge*

Nociceptive orofacial pain conditions

Nociceptive orofacial pain conditions comprise all painful conditions secondary to the activation of physiological pain pathways, mainly by pronociceptive inflammatory mediators locally released in inflammatory and/or infectious diseases. Management of such nociceptive pain will require the treatment of the underlying condition and the use of either nonspecific analgesics or specific drugs relating to the underlying cause of pain (i.e. anti-inflammatory drugs, muscle relaxants, etc…).[2]

Nociceptive orofacial pain conditions can be subdivided as follows:[2]

– Dental and periodontal diseases:
  - Tooth pulp diseases and related acute periradicular complications (*pulpitis, acute apical periodontitis, acute abscess, cellulitis…*)[A]
  - Cracked-tooth syndrome[A]
  - Dentinal hypersensitivity[A]
  - Acute desmodontitis[A]
  - Post-endodontic pain related to overfilling through an apical fenestration[B]
  - Painful gingival and periodontal diseases (*food impaction, periodontal abscess, necrotising gingivitis or periodontitis…*)[A]

– Mucosal and bone diseases:
  - Osteitis and osteonecrosis[A]
  - Oral mucosal erosions and ulcerations (*herpes virus infection, aphthous ulcers, traumatic ulcers, erosive lichen planus…*)[A]

– Musculo-skeletal diseases:
  - Masticatory myalgia (*myospasm, myositis, bruxism…*)[A]
  - Painful muscle hypertrophy[B]
  - Orofacial dystonias[C]
  - Temporomandibular joint capsulitis[A]
  - Temporomandibular joint osteoarthrosis[B]
  - Temporo-mandibular arthralgia secondary to rheumatic (*systemic osteoarthritis, rheumatoid arthritis, psoriasis, lupus erythematosus, systemic sclerosis, Sjögren syndrome…)* or tumoral diseases *(myxoma, osteoma, chondrosarcoma…*)[C]

– Tendino-ligamentary diseases:
  - Eagle syndrome (*elongated styloid process*)[B]
  - Ernest syndrome (*inflamed stylo-mandibular ligament*)[C]
  - Hamular bursitis[C]

– Sinus diseases:
  - Maxillary odontogenic sinusitis[A]
  - Maxillary rhinogenic sinusitis[A]
  - Aspergillosis[B]

– Salivary diseases:
  - Salivary colic (*sialolithiasis*)[A]
  - Acute sialadenitis[A]

– Referred pain from distant diseases:
  - Coronary artery diseases (*acute coronary syndrome, angina pectoris, vasospastic angina, myocardial infarction…*)[A]
  - Horton's disease (*giant cell arteritis*)[A]
  - Cervical artery dissection (*internal carotid artery, external carotid artery, vertebral artery*)[A]

– Iatrogenic nociceptive orofacial pain:
  - Drug-induced gingival pain (*niacin, ziprasidone*)[C]
  - Vagus nerve stimulation-induced orofacial pain[C]

– Rare nociceptive orofacial pain diseases:
  - Sickle cell disease[C]
  - Borreliosis (*Lyme disease*)[C]
  - Melkersson-Rosenthal syndrome[C]
  - Leprosy[C]

Neuropathic orofacial pain conditions

Neuropathic pain defines a complex and heterogenous family of pathological painful conditions secondary to a lesion of the peripheral and/or central nervous system. Such conditions are often chronic, highly debilitating (more so than nociceptive diseases of similar pain intensity), difficult to diagnose and to treat. Numerous diseases can lead to such neuropathic lesions, whether of traumatic (*nerve section, iatrogenic nerve crush…*), compressive (nerve entrapment), toxic (*local anaesthesia, chemotherapy…*), metabolic (*diabetic neuropathy*), infectious (*postherpetic neuralgia, HIV-related neuropathy*) or ischemic (*cortical or subcortical stroke*) origins.[2]

Neuropathic orofacial pain conditions can be subdivided as follows:[2]

– Craniofacial neuralgias:
  - Trigeminal neuralgia[A]
  - Glossopharyngeal neuralgia[C]
  - Occipital neuralgia[C]
  - Postherpetic neuralgia[B]
  - Other rare neuralgias (*intermediary nerve neuralgia, superior laryngeal nerve neuralgia*)[C]

– Painful trigeminal neuropathies:
  - Painful post-traumatic trigeminal neuropathy (*local anaesthesia, endodontic treatment, tooth avulsion, implant surgery, maxillofacial surgery…*)[A]
  - Painful trigeminal neuropathy secondary to chemotherapy[C]
  - Painful trigeminal neuropathy secondary to tumoral compression (*pontocerebellar angle tumours*)[B]
  - Painful trigeminal neuropathy secondary to nutritional deficiencies (*vitamin B9, B12…*)[B]
  - Painful trigeminal neuropathy secondary to ischaemic conditions (*sickle cell disease*)[C]
  - Painful trigeminal neuropathy secondary to systemic diseases (*sarcoidosis, lymphoma, Sjögren syndrome…*)[C]

– Burning Mouth Syndrome:
  - Primary Burning Mouth Syndrome[A]
  - Secondary Burning Mouth Syndrome (*candidiasis, anaemia, xerostomia, vitamin deficiencies, diabetes, chronic kidney disease…*)[B]

– Central post-stroke pain:
  - Ischemic stroke (*pontine infarction*)[B]
  - Haemorrhagic stroke (*pontine microbleeds*)[B]

– Complex Regional Pain Syndrome:
  - Complex Regional Pain Syndrome Type I[C]
  - Complex Regional Pain Syndrome Type II[C]

Nociplastic orofacial pain conditions

Historically termed 'dysfunctional pain', nociplastic diseases comprise painful conditions secondary to alterations in nociceptive transmission and/or integration, in the absence of tissue lesion (*nociceptive pain*) or lesions of the peripheral and/or central nervous system (*neuropathic pain*). Such conditions are most probably linked to genetically-based alterations in central pain processing and are unfortunately -and erroneously- considered 'psychological' (or even psychiatric) conditions.[2]

Nociplastic orofacial pain conditions can be subdivided as follows:[2]

– Primary headache diseases-related facial pain:
  - Migraine[A]
  - Tension-type headache[A]
  - Cluster headache[B]
  - Paroxysmal hemicrania[C]
  - Hemicrania continua[C]
  - Short-lasting unilateral neuralgiform headache attacks (SUNHA)[C]
  - New daily persistent headache[C]

– Painful temporo-mandibular disorders:
  - Disc displacement (*with or without reduction*)[A]
  - Condylar luxation (*spontaneous, traumatic, iatrogenic*)[B]
  - Myofascial pain syndrome[B]

– Fibromyalgia[C]

Mixed orofacial pain conditions

Mixed pain conditions result from concurrent pathophysiological mechanisms: nociceptive and/or neuropathic and/or nociplastic. Analgesic strategy will have to take into account all the underlying mechanisms of pain to provide proper relief.[2]

Mixed orofacial pain conditions can be subdivided as follows:[2]

– Cancer pain:
  - Tongue pain-related to local or regional upper aerodigestive tract cancer[A]
  - Leukaemia-related pulpitis[A]
  - Numb chin syndrome[A]
  - Lymphoma-related tooth or gingival pain[A]
  - Myeloma-related tooth or gingival pain[A]

– Inferior alveolar nerve neuritis secondary to mandibular osteitis[B]

Proposal of a competency profile for the French orofacial pain specialist

Considering the numerous aforementioned aetiologies of orofacial pain, any dental or medical professional bent on treating such conditions must therefore possess a broad scope of expertise and a systematic approach towards clinical and paraclinical examinations, *conditio sine qua non* for proper diagnosis and therefore management. A proposal of a competency profile for the French orofacial pain specialist (irrespective of his initial specialty or profession) is resumed in *Tables 1-5*.

Conclusion

Orofacial pain, a common presenting symptom, can stem from numerous diseases of variable complexity and severity. Early diagnosis and proper management are thus of paramount importance considering the significant burden of orofacial pain conditions. Regardless of his initial specialty (in the absence of a formal specialty in orofacial pain in France), any practitioner treating orofacial pain patients will need broad and extensive expertise in the numerous underlying diseases and related medical fields. In that respect, the present proposal of a competency profile will hopefully be an impetus towards additional and adequately-oriented self-directed learning.

Table 1: Clinical interview of the painful patient

– Definition of the pain (nature, intensity, location, triggers, aggravating factors, alleviating factors, other signs, Comorbidities)
– Evaluation of psychological, emotional, socio-professional, familial and cultural impact of pain
– Identification of medical and surgical history and current treatments
– Identification of dental history
– Identification of prior explorations and treatments related to current pain
– Evaluation of coping capacity and capacity to understand the disease and treatment options

Table 2: Clinical examination of the painful patient

– Practice of an orofacial neurological examination (facial motor and sensory assessment, oculomotricity, Romberg test, cranial nerves examination) centered on the clinical signs suggestive of secondary headache (signs of increased intracranial pressure, stroke, cervical artery dissection ...)
– Inspection and palpation of head and neck muscles searching for tenderness, pain or trigger points
– Palpation of lymph nodes and subsequent characterization (inflammatory or metastatic)
– Inspection and palpation of superficial temporal arteries searching for signs of temporal arteritis
– Inspection and palpation of facial skin in case of dermatological lesions, especially if in the region of pain
– Examination and auscultation of the temporo-mandibular joints and evaluation of mandibular kinematics
– Practice of a dento-periodontal examination (inspection, palpation, axial and lateral percussion, probing, transillumination, occlusion) searching for signs of carious lesions or trauma and signs of orofacial infection
– Evaluation and quantification of salivation
– Practice of a diagnostic nerve block
– Inspection of all oral (gingiva, cheek, lip, tongue, velum) and oropharyngeal mucosa
– Palpation of the tonsillar fossa searching for an elongated styloid process
– Palpation of the velo-palatine junction searching for signs of hamular bursitis

Table 3: Paraclinical examinations to explore an unexplained orofacial pain

– Indication, practice and analysis of a periapical radiograph
– Indication, practice and analysis of an orthopantornograrn
– Indication, practice and analysis of a cone-beam computed tomography
– Indication and analysis of a cerebral or cranio-facial computed tomography with or without contrast medium
– Indication and analysis of a cerebral or cranio-facial magnetic resonance imaging examination
– Indication, prescription and analysis of relevant blood tests (complete blood count, hepatic function, renal function, nutritional deficiencies, pretreatment tests ...)
– Practice of study plaster molds
– Indication and administration of one or more questionnaires, depending on the parameters) investigated (DN4, HAD, SF-36, 01-IIP ...)

Table 4: Diagnosis of the orofacial pain condition

– Diagnosis and management of pulpal or periodontal tooth pain
– Diagnosis and management of painful periodontal or bone infection
– Diagnosis and management of painful rnucosal disease
– Diagnosis and management of painful rhinosinusal disease
– Diagnosis and management of masticarory myalgia (myospasm) or painful muscle hypertrophy
– Diagnosis and management of myofascial pain syndrome
– Diagnosis and management of painful disk displacement or condylar luxation
– Diagnosis and management of temporomandibular joint capsulitis
– Diagnosis and management of osteoarthrosis/osteoarthritis of the temporomandibular joint
– Diagnosis and management of orofacial dystonias
– Diagnosis and management of trigeminal or glossopharyngeal neuralgia
– Diagnosis and management of painful post-traumatic trigeminal neuropathic pain
– Diagnosis and management of painful trigeminal neuropathy secondary to a nutritional deficiency
– Diagnosis and management of primary burning mouth syndrome
– Diagnosis and management of secondary burning mouth syndrome and underlying etiolog
– Diagnosis and management of primary headache disorders-related facial pain
– Diagnosis and management of secondary headache-related facial pain and urgent referral to the appropriate department
– Diagnosis and management of referred pain of cardiac or cancerous origin

Table 5: Treatment modalities for orofacial pain conditions

– Practice of the main nerve blocks of the orofacial region
– Prescription of an analgesic adapted to the underlying pain mechanism and pain intensity
– Prescription of a topical analgesic (local anesthetics, capsaicin)
– Prescription and monitoring of carbamazepine, oxcarbazepine, gabapentinoids, tricyclic antidepressants, triptans
– Prescription and monitoring of local or systemic corticosteroids
– Prescription and monitoring of anxiolytics
– Prescription of muscle relaxants
– Prescription of sialogogues
– Prescription and monitoring of smoking-cessation drugs
– Practice of cavity excavation and restoration
– Practice of endodontic treatment
– Practice of tooth avulsion
– Practice of bone curettage
– Practice of periodontal scaling and debridemen
– Practice of oral rnucosal biopsy
– Practice of minor salivary gland biopsy
– Practice and adaptation of an occlusal splint
– Practice of active and passive muscle stretching and local cryotherapy
– Explanation and demonstration of self-treatment maxillofacial physiotherapy exercises
– Reduction of disk displacements or condylar luxation
– Indication of hospital-based pharmacological treatments (ropivacaine injections, botulinum toxin injections ...)

References

1. International Association for the Study of Pain. *Orofacial pain facts sheets*. September 2016. [Available at: https://www.iasp-pain.org/Advocacy/GYAP2016Detail.aspx?ItemNumber=5573]

2. Moreau N, Boucher Y. *Douleurs oro-faciales. EMC Médecine Buccale* 2020; **13**: 1-21. [Article 28-290-C-10].

3. Cowpe J, Plasschaert A, Harzer W, Vinkka-Puhakka H, Walmsley AD. *Profile and competences for the graduating European dentist – update 2009. Eur J Dent Educ* 2010; **14**: 193-202.

4. Field JC, Kavadella A, Szep S, Davies JR, DeLap E, Manzanares Cespedes MC. The graduating European dentist – Domain III : Patient-centered care. *Eur J Dent Educ* 2017; **21(S1)**: 18-24.

5. French Society of the Study of Pain. *The White Book of Pain.* 2017. [Available at: https://www.sfetd-douleur.org/les-livres-blancs/]

6. Costa YM, De Koninck BP, Elsaraj SM, Exposto FG, Herrero Babiloni A, Kapos FP, Sharma S, Shimada A. Orofacial pain education in dentistry: a path to improving patient care and reducing the population burden of chronic pain. *J Dent Educ* 2021; **85**: 349-358.

7. Kohlmann T. Epidemiology of orofacial pain. *Schmerz* 2002; **16**: 339-345.

8. Moreau N. Lessons learned from the orofacial pain clinic. *French J Dental Med* 2020; **3**: 1-4.

9. Sulukdjian A, L'Homme R, Chanlon A, Moreau N. Gabapentinoid prescription in Oral Medicine and Oral Surgery practice: Part I – Experience from a French Orofacial pain clinic. *J Oral Med Oral Surg* 2020; **26**: 13.

10. Lopez-Lopez J, Garcia-Vicente L, Jane-Salas E, Estrugo-Devesa A, Chimenos-Küstner E, Roca-Elias J. Orofacial pain of cardiac origin: review literature and clinical cases. *Med Oral Patol Oral Cir Bucal* 2012; **17**: e538-44.

11. Gendron P, Moreau N. A propos d'une odontalgie révélatrice d'un syndrome de menace d'infarctus du myocarde. *AO News* 2020; **34**: 10-11.

12. L'Homme R, Sulukdjian A, Chanlon A, Moreau N. A propos d'une odontalgie chronique révélatrice d'une hémicrânie continue méconnue depuis 20 ans. *Douleur et Analgésie* 2020; **33**: 119-122.

13. L'Homme R, Sulukdjian A, Chanlon A, Moreau N. D'une douleur à l'autre : à propos d'une douleur neuropathique révélatrice d'une sclérose en plaques méconnue. *AO News* 2020; **34**: 12-13.

14. Okajima Y, Hirai A, Higashi M, Harigaya K. Vasospastic angina in a 13-year-old female patient whose only symptom was toothache. *Pediatr Cardiol* 2007; **28**: 68-71.