

## Orofacial pain: an enigma for diagnosis and treatment; a prospective clinical study

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### Abstract

**Objectives:** The aim of this study was to determine most common cause of orofacial pain and gender distribution.

**Materials and Methods:** This was a prospective study that included 200 patients that reported to our Department of Oral Medicine and Radiology with orofacial pain.

**Results:** Out of 200 patients 130 (65%) were females and 70(35%) were males with age range of above 15 to 65 year. Temporomandibular disorders were most common cause orofacial pain .58 cases (29%) out of 200 were temporomandibular disorders with 38(19%) cases of females and 20(10%) cases of males followed by myofascial pain in 48% cases and least incidence of traumatic neuritis in 3% cases.

**Conclusion:** Chronic orofacial pain is a diagnostic challenge and it is possible therefore to make a misdiagnosis Multidisciplinary OFP assessment ideally also includes psychometrics, pain profiling, quantitative sensory testing, haematology and imaging where indicated.

**Keywords:** Orofacial pain, Neuropathic pain, Nociceptive pain, Somatosensory.

### Introduction

Pain is “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (IASP, 1994). Neuropathic orofacial pain is defined by the IASP as “pain caused by a lesion or disease of the somatosensory nervous system.”<sup>1</sup> Orofacial pain, is a common symptom and its prevalence is estimated to be around 13–26% in the community.<sup>2</sup> Orofacial pain is a broad term that comprises multiple painful conditions involving the oral, head, face, and neck area. These painful conditions can involve different structures of head and neck region and can be derived from musculoskeletal, vascular, neurovascular, neuropathic, idiopathic, and psychogenic origins.<sup>3</sup> It is very difficult to diagnose the conditions as they are associated with complex signs and symptoms. Evidence shows that painful conditions in the oral and maxillofacial region are relatively common, affecting approximately 10% to 26% of the adult population.<sup>4-7</sup> The most common chronic orofacial pain conditions are related to poorly-managed acute recurrent dental pain or temporomandibular disorders. Recurrent or persistent dental nociceptive or inflammatory pain must be excluded primarily and this requires a dental practitioner. There are cases, often with multiple complex restorations, is likely to increase the number of patients presenting with difficult to diagnose ‘cracked cusp syndrome’ or low level irreversible pulpitis, both easily resolved with simple dental restorative intervention. Temporomandibular joint (TMJ) disorders comprise of three main groups. Of these the most common are myofascial pain and dysfunctional joint pain (clicks, crepitus and or locking) followed rarely by arthritides. These conditions are predominantly nociceptive and inflammatory in nature with some patients displaying some elements of central excitatory effects of pain.<sup>8</sup> Another group of OFP conditions present with an autonomic component derived by interaction with cervical nerves whose close relationship with the trigeminal nerve and related cranial nerves may explain the

associated symptoms.<sup>9</sup> Trigeminal nerve is the main sensory supply to the orofacial region and its large representation in the sensory cortex means that pain in the orofacial region can have significant biopsychosocial impacts: interferes with daily activities such as eating, drinking, speaking, kissing, applying makeup, shaving and sleeping,<sup>10</sup> and compromises the patient’s self-identity in some cases. Over recent times there have been significant understanding pain mechanism, the implications of which are spread over many different fields including: neuroimaging, psychometrics, neuro-immunity, neurophysiology and pain genetics.<sup>11</sup> Woolf classifies pain into 3 groups: nociceptive (detects noxious stimuli), inflammatory (adaptive and protective), and pathological (neuropathic with a lesion present or dysfunctional with no identifiable cause). He emphasises that the mechanisms are different for each pain type and that treatments should be specific and preferably directed at the distinct mechanisms responsible. Within the orofacial region there has been significant progress in understanding the musculoskeletal pain, neuropathic pain and also in differentiating various pain types related to the Orofacial region.<sup>12</sup>

### Materials and Methods

This was a prospective study that included 200 patients that reported to our Department of Oral Medicine and Radiology with orofacial pain. Out of 200 patients 128 (64%) were females and 72(36%) were males with age range of above 15 to 65 year. Patients below 15 years were not included as they are being treated in department of Pedodontics.

### Inclusion Criterion for the study group was

1. Orofacial pain for more than 6 months related to a diagnosis of idiopathic trigeminal neuralgia, BMS, persistent idiopathic facial pain, non-idiopathic neuropathic pain or temporomandibular disorders that was made according to the criteria of the International Headache Society.

2. Systemic conditions like fibromyalgia.

#### Exclusion criteria for both groups were

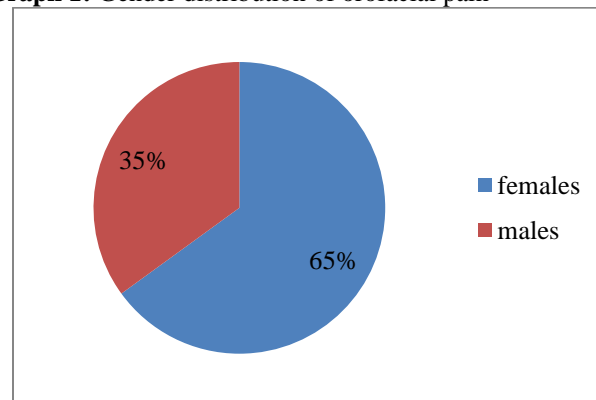
1. Systemic medical conditions (e.g., diabetes mellitus, other chronic pain syndromes, neurological or other rheumatological conditions),
2. Pulpitis.

All participants were informed about the purposes of the study and signed the informed consent. Ethical clearance was taken from institutional ethical committee. Patients that having BMS, posttraumatic painful neuropathy (PTN), temporomandibular disorders and persistent idiopathic facial pain (PIFP) were not using any medication prior 6 months of evaluation. These patients were referred from other clinics and were undiagnosed for their orofacial pain. Our study included seven types of orofacial pain like temporomandibular disorders, myofascial pain and dysfunction syndrome, myofascial pain, burning mouth syndrome, trigeminal neuralgia, local muscle soreness, and traumatic neuritis.

#### Results

The study included 200 patients of age range of 15-65 years. Out of 200 patients 130(65%) were females and 70(35%) were males indicating higher incidence of orofacial pain in females. Graph 1 shows gender distribution of orofacial pain.

**Graph 1:** Gender distribution of orofacial pain



The orofacial pain is divided in seven categories.

Table 1 shows the distribution of orofacial pain. Temporomandibular disorders were most common cause orofacial pain .58 cases (29%) out of 200 were temporomandibular disorders with 38(19%) cases of females and 20(10%) cases of males followed by myofacial pain in 48% cases and least incidence of traumatic neuritis in 3% cases.

**Table 1:** Distribution of various types of orofacial pain in males and females.

Type of orofacial pain	Number of cases		
	Females	Males	Total
Temporomandibular disorders	38	20	58(29%)
Myofacial pain and dysfunction syndrome	20	12	32(16%)
Myofacial pain	38	10	48(24%)
Burning mouth syndrome	16	12	28(14%)
Trigeminal neuralgia	10	8	18(9%)
Local muscle soreness	6	4	10(5%)
Traumatic neuritis	2	4	6(3%)

The patients are divided in six age groups as shown in Table 3. Highest incidence of orofacial pain was found in 2nd decade of life in the age group of 20-30 with total of 58 cases (29%), out of which 40(20%) were females and 18 (9%) males.

**Table 2:** Age wise distribution of orofacial pain

Age group	Males	Females	Total
10-20	5	10	15(7.5%)
20-30	18	40	58(29%)
30-40	13	35	48(24%)
40-50	20	26	46(23%)
50-60	6	19	25(12.5%)
Above 60	4	4	8(4%)

Comparison of orofacial between males and females with greater preponderance of orofacial pain in females. This Graph also shows that temporomandibular disorders and myofascial pain are most common causes of orofacial pain 29% and 24% respectively.

## Discussion

Pain is a significant discomfort faced by majority of people with orofacial disorders. This study was aimed at assessing gender distribution of orofacial pain and most prevalent type of orofacial pain. Temporomandibular joint (TMJ)/musculoskeletal disorders showed the highest prevalence (29%) with a female predilection. According to the study reported by Ryalat *et al.* and Tomoyasu *et al.* with a prevalence rate of 35.4% and 23%, in males and females respectively.<sup>13-14</sup> Fotedar *et al.* reported similar results with male predominance.<sup>15</sup> According to our study prevalence of temporomandibular disorders in females was 19% and in males 10%. Evidence has shown that TMD is highly prevalent in adulthood, affecting 5% to 12% of the population,<sup>16</sup> and is approximately 3 times more common in women than in men.<sup>17-19</sup> According to our study highest incidence of orofacial pain was found in 3<sup>rd</sup> decade of life. Evidence estimates an incidence of 4.3 to 27 cases of Trigeminal neuralgia [TN] per 100,000 per year,<sup>20-21</sup> more common in individuals older than 60 years. In addition, TN more frequently affects women,<sup>22</sup> with an annual occurrence of approximately 5.9/100,000 cases in women and nearly 3.4/100,000 cases in men<sup>20</sup> with a female-to-male proportion of 1.6:1.5.<sup>23</sup> According to our study, trigeminal neuralgia shows higher incidence in females. Burning mouth syndrome [BMS] is not an uncommon condition and affects about 0.7% to 15% of the general population, especially affecting middle-aged postmenopausal women.<sup>24</sup> It occurs usually in the fifth and seventh decades, and the prevalence increases directly proportionally with age in both genders; however, BMS tends to occur approximately 7 times more in women than men.<sup>25</sup> According to our study BMS occurs more in males 4% as compared to females 5%.

Risk factors for chronic oro-facial pain include chronic widespread pain, age, gender and psychological factors. Most population-based studies have shown that women report more facial pain than men with rates approximately twice as high among women compared to men. This may be due to the extensive variety of Orofacial pain conditions, which may have differing gender 'predilections'.<sup>26</sup> The underlying pathophysiology is complex and not clear. However, it has been proposed that gender effects on pain are from an interaction of biological, psychological, and sociocultural factors. Gonadal hormones play an important role in the reproductive system. In women, estrogens and progesterone levels alter through the course of menstrual cycle, during pregnancy, and after menopause. Alternatively, in men, testosterone levels deteriorate with aging. Studies in animals have relied on different nociceptive assays (electrical, thermal, chemical) and measurement responses (tail flick, jump, behavioral cries). Furthermore, the temporal characteristics used in these

studies, such as duration and intensity of nociceptive stimulation, vary.<sup>27-29</sup> It has been reported that women with high estradiol levels exhibit reduced pain sensitivity and increased brain mu-opioid binding. Opposite results were reported for women in low estradiol levels.<sup>30</sup>

A recent report highlights some important strategies that helps in understanding various pain types and making a diagnosis or differential diagnosis.<sup>31</sup> History-taking remains utmost important in facilitating the diagnostic process. Blau suggested fifteen questions to facilitate the history taking process in OFP which cover the following aspects of the presenting pain:<sup>32</sup>

1. Onset
2. Frequency
3. Duration
4. Provoking factors
5. Site of initiation of pain
6. Radiation and referral of pain
7. Is the pain deep or superficial
8. Aggravating or exacerbating factors
9. Relieving factors
10. Characteristics of the pain
11. Severity
12. Other associated features, for example lacrimation or other autonomic signs and symptoms
13. Previous management strategies attempted
14. Patient's perceived cause(s) of pain

Following the history of the presenting complaint, several recent recommendations for the assessment of pain patients cover the necessity for a full medical, dental, and social history.<sup>33-39</sup>

The examination of a patient with OFP should include the examination of some tissues or systems may be added as the diagnostic process:

## Inspection

1. Head and neck, skin, topographic anatomy, and swelling or other orofacial asymmetry
2. General inspection of the ears, nose, and oropharyngeal areas

## Palpation:

1. Temporomandibular joint and masticatory muscles, tests for strength and provocation. With assessment and measurement of the range of mandibular movement
2. Palpation of soft tissue (including lymph nodes)
3. Palpation of cervical muscles and assessment of cervical range of motion
4. Cranial nerve examination
5. Examination and palpation of intraoral soft tissue
6. Examination of the teeth and periodontium (including occlusion)

There are also some conditions and diseases that mimic OFP. Conversely some OFP conditions may be misdiagnosed or misinterpreted as toothache and these are outlined below:

### Systemic diseases associated with headache and orofacial pain are

1. Metastatic disease
2. Hyperthyroidism
3. Multiple myeloma
4. Hyperparathyroidism
5. Vitamin B deficiencies
6. Systemic lupus erythematosus
7. Vincristine and other chemotherapy for cancer
8. Folic acid and iron deficiency anaemias
9. Pagets disease.

### Orofacial pain that may be confused with toothache are

1. Trigeminal neuralgia
2. Trigeminal neuropathy[secondary to trauma or tumour invasion]
3. Atypical facial pain
4. Cluster headache
5. Maxillary sinusitis

### Conclusion

Chronic orofacial pain is a diagnostic challenge and it is possible therefore to make a misdiagnosis. The biological, psychological, and social impact of orofacial pain should always be examined and patients should receive a diagnosis, or provisional in some cases, so that treatment should be given as soon as possible. Multidisciplinary OFP assessment ideally also includes psychometrics, pain profiling, quantitative sensory testing, haematology and imaging where indicated.

**Conflict of Interest:** None.

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