



Global Year Against Pain in Women

real women, real pain

Sex and Gender Differences in Orofacial Pain

Orofacial Pain: Prevalence and Impact

- Acute (e.g. toothache, oral sores) and chronic (e.g. temporomandibular muscle and joint disorder or TMJD/TMD pain) orofacial pain are highly prevalent conditions
- Most forms of orofacial pain are more common among women than men, and women report greater impact of oral pain
- The most common form of chronic orofacial pain is TMJD pain, which affects approximately 10% of the population
- TMJD is twice as common in women than men, and a greater proportion of women with TMJD seek treatment for this condition
- Trigeminal neuralgia, while much rarer than TMJD, occurs roughly twice as often in women as in men
- Burning mouth syndrome occurs at dramatically higher rates in women than men

Experimental Models of Orofacial Pain

- Injection of certain chemicals into the masseter (jaw) muscles of healthy persons can produce pain similar that reported by patients with TMJD pain
- Women report more intense, more widespread, and longer lasting pain after such injections
- In response to experimental jaw pain, women show less activation of opioid receptors in their brain compared to men, suggesting a reduced ability to modulate facial pain using the endorphins
- Administration of exogenous estrogen increased women's ability to activate opioid receptors to modulate experimental jaw pain

Sex Hormones and Orofacial Pain

- TMJD is most likely to occur in females during the reproductive years, such that sex differences in prevalence are smaller (or nonexistent) prepubertally and post-menopausally
- Some evidence suggests that use of exogenous estrogens (e.g. oral contraceptives, hormone replacement) increases risk of TMJD
- TMJD pain symptoms vary across the female menstrual cycle, and tend to lessen during pregnancy

Other factors may impact sex differences in orofacial pain

- Chronic TMD pain is often co-morbid with other painful conditions, which are also more prevalent in women, such as: fibromyalgia, irritable bowel syndrome, and vulvar vestibulitis
- Psychological factors have been associated with TMJD pain, including somatization, depression, and other indices of psychological distress, and women tend report higher levels of these factors than men in the general population

What needs to be done?

- A better understanding for the reasons underlying sex differences in orofacial pain is needed
- Whether women and men with orofacial pain respond differently to different treatments also needs to be determined

References:

- Cairns BE. The influence of gender and sex steroids on craniofacial nociception. *Headache* 2007;47:319-324.
- Drangsholt M, LeResche L. Temporomandibular disorder pain. In: Crombie IK, Croft PR, Linton SJ, LeResche L, Von Korff M, editors. *Epidemiology of Pain*. Seattle: IASP Press, 1999. pp. 203-233.
- LeResche L, Mancl L, Sherman JJ, Gandara B, Dworkin SF. Changes in temporomandibular pain and other symptoms across the menstrual cycle. *Pain* 2003;106:253-261.
- LeResche L, Saunders K, Von Korff MR, Barlow W, Dworkin SF. Use of exogenous hormones and risk of temporomandibular disorder pain. *Pain* 1997;69:153-160.
- Manzoni GC, Torelli P. Epidemiology of typical and atypical craniofacial neuralgias. *Neurol Sci* 2005;26 Suppl 2:s65-s67.
- Riley JL, III, Gilbert GH. Orofacial pain symptoms: an interaction between age and sex. *Pain* 2001;90:245-256.

Shinal RM, Fillingim RB. Overview of orofacial pain: epidemiology and gender differences in orofacial pain. *Dent Clin North Am* 2007;51:1-18, v.

Smith YR, Stohler CS, Nichols TE, Bueller JA, Koeppe RA, Zubieta JK. Pronociceptive and antinociceptive effects of estradiol through endogenous opioid neurotransmission in women. *J Neurosci* 2006;26:5777-5785.

Zubieta JK, Smith YR, Bueller JA, Xu Y, Kilbourn MR, Jewett DM, Meyer CR, Koeppe RA, Stohler CS. mu-opioid receptor-mediated antinociceptive responses differ in men and women. *J Neurosci* 2002;22:5100-5107.

Copyright International Association for the Study of Pain, September 2007.