

The Prevalence and Type of Pain in Dental Patients

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Summary

Pain is known to be a frequent reason for the patient's arrival to the dental clinic. The aim of this study was to determine how often patients come to the dental clinic because of toothache or pain in the oral cavity; how high the percentage of acute or chronic pain, and the distribution of the aforementioned pains according to the sex of the patients.

Examination of the frequency of pain in dental patients was carried out on a sample of 2,735 subjects during a period of approximately one year. Pain was determined in 16.49% of patients and the remaining 83.51% of patients were without pain. There were slightly more female patients (54%) than male (46%), although correlation between pain and sex of the patients was not statistically significant. The higher number of female patients was the result of the greater number of female patients admitted. With regard to the duration of pain, acute pain was significantly more frequent (around 84%) than chronic pain (around 16%). Within the structure of acute and chronic pain odontalgia was most frequent in 89% of all the acute pains and in 90% of all chronic pains, which was significantly more than all other types of pain. The frequency of acute odontalgia, with respect to the total number of admitted patients, amounted to 12.36% of patients and chronic odontalgia 2.38% of patients.

Key words: *acute pain, chronic pain, odontalgia, toothache.*

Acta Stomat Croat
2004; 13-17

ORIGINAL SCIENTIFIC
PAPER
Received: December 29, 2003

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Introduction

Pain is an unpleasant, subjective sensory and sensitive sensation connected with real or potentially damaged tissue (1). It belongs to the senses which directly send messages to the brain on the condition of the organism and its relation to the surroundings (2). Pain is always subjective, and manifests with a feeling of pain and activity of the sympathetic: fear, anxiety, dilatation of the pupils, tears, tachycardia, hypertension, nausea, vomiting, auditory effects and grimaces (3, 4). The threshold of pain is usually similar in different racial groups. However, pain perception is different (5). The level of perception to pain is not permanent: pain threshold and reaction to pain change under different conditions (6). Hence investigations have shown that negative emotions such as fear, anxiety or anger have a stronger effect on perception to pain than positive emotions (7), and that men have greater tolerance to pain because of biological differences, i.e. the presence of GIRK2 proteins in men which reduces pain (8), although less sensitivity of natural chemical mediators than women. It would therefore appear that men better tolerate pain, but that mediators better mask the pain in women. Furthermore, there are genes which are responsible for the level of opiate receptors, which are found on the surface of brain cells. These opiate receptors bind to physical natural opiates and participate in reducing pain, and it is considered that the amount of opiate receptors determines pain threshold (9).

Pain is a very frequent reason for the patient's arrival in the dental clinic, and most frequently pain caused by the tooth itself and its supporting structures. The anatomy of the tooth and physiology of painful sensation and pathways is very specific, and therefore a detailed approach to the patient is essential in order to determine that accurate diagnosis and appropriate therapy is undertaken.

Namely, diagnosis is occasionally quite difficult because the pain, which appears to have a dental cause, may be the result of a quite different source and *vice versa*. Consequently, dental and medical specialist cooperation is often needed in order to accurately determine the cause of the pain in the orofacial region, particularly in the case of multiple symptomatic and chronic pains.

Orofacial pain is a broad concept, incorporating a multitude of diagnostic entities which cause pain in the region of the head and face (10). They consist of two parts: facial and oral. Facial pain occurs in the area under the orbitomeatal line, above the neck and in front of the ears, while oral pain occurs in the area of the oral cavity (11). The most frequent cause of pain in the orofacial region is odontalgia or toothache (12). It is well known that pathological changes in the pulp lead to reversible or irreversible pulpitis, which can advance to necrosis and later to periradicular abscess with or without cellulitis (13). In addition, a large number of teeth, particularly in older persons, develop necrosis without painful symptoms (14). Pathological conditions connected with the periodont which can cause pain are gingival abscess, periodontal abscess, periradicular abscess, vertical root fracture, and acute ulceronecrotic gingivitis (15).

Vermeire P. (16) considers that every therapist should consider all pain in the mouth and on the face to be of dental origin, until proved otherwise.

Contrary to such traditional opinions that tooth pain or its sensitivity to percussion mainly indicate pulpitis or necrosis, Konzelman et al. (17) consider that these symptoms may in fact be the result of sensitivity of the tooth to trigger points in the masticatory muscles. Thus the authors consider that miofacial painful syndrome should first be excluded in patients with dental pain or sensitivity to percussion.

The concept orofacial idiopathic pain is understood to mean atypical facial pain, stomatodynia, atypical odontalgia and some disorders of the temporomandibular joint (18). They are characterised by unknown aetiology and mutual clinical characteristics: long-term pulsating and burning pain which cannot be identified (1920). Knowledge of the symptoms of non-odontogenic toothache (acute and chronic syndromes of the jaws which simulate toothache) (21) is also very important in differential diagnosis of orofacial pain. The above syndromes mainly occur as spontaneous, multiple toothache, and then as stimulating, burning, non-pulsating toothache, and as constant, unchanging, permanent and recurrent toothache. Their mutual characteristic is the impossibility of determining the tooth which causes the pain, and neither local anaesthesia nor relevant therapy eliminates the pain (22). The aim of the pres-

ent study was to investigate the frequency of pain in dental patients with respect to intensity and duration, and also the sex of the patients.

The objective was to determine the following:

1. The number of patients admitted with pain in the orofacial region in relation to the total number of admitted patients.
2. The number of patients with pain, according to sex.
3. The occurrence of acute and chronic pain

Subjects and methods

The study consisted of 2,735 patients who came to the dental clinic for regular check-ups, therapy, or because of symptoms arising as a result of pathological conditions of the orofacial region. The total number of men was 1,173 and women 1,562. Of the total number of all admitted patients the number of patients admitted because of pain in the orofacial region was also analysed.

Patients of all age structure, both sexes, and of different social background and education were included equally in the sample.

The study was based on history data obtained from the patients and a clinical examination by the therapist, which included inspection, palpation, percussion, thermal and electrical examination of the pulp vitality, examination of the periodont and eventual X-ray examination. On the basis of the data obtained the number of patients with pain was recorded. With regard to duration pain was classified as acute and chronic and also classified according to the type of pain. Pain which lasted for longer than 6 months was recorded as chronic pain (23).

From the obtained number of entities we calculated the frequency of patients with pain altogether, and subsequently according to sex, the duration of acute and chronic and the frequency of the diagnosis which caused the pain. For all the examined variables the following were calculated:

- Standard error of proportion which represents the measure of variation of the proportion of the sample around the true actual proportion of the causes.
- Interval of reliability within which, with a specific measure, reliability exists.

The results are presented in three-dimensional diagrams.

Results

Number and sex of the patients admitted with pain in relation to the total number of all patients admitted

During the period from 1 November 2001 to 30 November 2002 2,735 patients were admitted. Of this number 2,284 (83.51%) had no pain, and 451 (16.49%) had pain (Figure 1). With the margin of reliability of $p < 0.05$ ($\pm 1.52\%$) the interval of reliability ranges from 14.97% to 18.01% of the patients admitted with pain, out of all patients admitted.

Of the 451 patients with pain 245 were women (54.32%) and 206 men (45.68%) (Figure 2). Difference in the proportion of patients of male and female sex admitted with pain is statistically significant at the level $p < 0.0096$. In the examined period more female patients with pain were admitted than male patients with pain. Correlation between pain and the sex of patients is not statistically significant. The higher number of female patients was a consequence of the greater total number of female patients admitted.

Number of patients admitted with acute and chronic pain

With the margin of reliability of $p < 0.05$ ($\pm 3.38\%$) the interval of reliability is 80.66% to 87.42% of patients admitted with acute pain, and 12.58% to 19.34% of patients admitted with chronic pain, of all the patients admitted with pain (Figure 3). Patients with acute pain comprised 13.86% ($p < 0.05$) of all the patients admitted. Patients with chronic pain comprised approximately 2.63% ($p < 0.05$) of all the patients admitted. During the examined period more patients with acute pain were admitted than with chronic pain.

Acute pain

Within the structure of acute pains odontalgia was predominant, which was determined in 338 (89.18%) patients of all the patients admitted with acute pain. They comprised 74.94% ($p < 0.05$) of all

the patients admitted with pain, i.e. 12.36% ($p < 0.05$) of all patients admitted.

During the examined period statistically significantly more patients were admitted with odontalgia than patients with mucogingival pain ($p < 0.0015$) and statistically significantly more patients with mucogingival pain than patients with postoperative pain ($p < 0.0013$). Difference in the number of patients admitted with postoperative pain and those admitted with pain in the salivary glands, maxillary sinus and TMJ pain is not statistically significant ($p < 0.05$) (Figure 4).

Chronic pain

Within the structure of chronic pain odontalgia was predominant, which occurred in 65 patients (90.28%). With the margin of reliability of $p < 0.05$ ($\pm 6.84\%$) the interval of reliability ranged from 83.44% to 97.12% of patients admitted with odontalgia, and 14.41% ($p < 0.05$) of all patients admitted with pain, i.e. 2.38% ($p < 0.05$) of all patients admitted.

Difference in the number of patients admitted during the examined period with odontalgia and orofacial idiopathic pain, pain in the maxillary sinus and TMJ pain is statistically significant ($p < 0.0015$), while differences between the frequencies of other types of chronic pain were not statistically significant ($p < 0.05$) (Figure 5).

Discussion

A total number of 2,735 subjects were included in the study during a period of approximately one year. Of that number 16% of the patients had pain on arrival and around 84% no pain. There were slightly more women (around 54%) than men (around 46%), although correlation between pain and sex of the patients is not statistically significant. The higher number of female patients was due to the greater total number of female patients admitted. With regard to the duration of pain, acute pain was significantly more frequent than chronic (84% of all pain). Within the structure of acute pain odontalgia was significantly more frequent (89%), and determined in approximately 79% of all those with pain.

Comparison of the results of our study on the frequency of pain with the investigations of other authors, showed similar results.

In our study we found frequency of acute odontalgia with regard to the number of patients admitted in 12.3% of cases, while the frequency of chronic odontalgia amounted to 2.3% of the total number of patients. By summing up acute and chronic odontalgia the frequency amounted to 14.74%. Vargas et al. (24) reported that during their investigation in the USA 13.6% of subjects had suffered toothache over the last six months. He also did not find differences with regard to sex.

Also in the USA Lipton et al. (25) found odontalgia in 12.2% of cases. In our study the temporomandibular joint (TMJ) was painful in 3.06%, while according to their investigation TMJ was painful in 5.3% of cases. Riley et al (26) reported that toothache was more frequent in men (23.8%) than in women (10.3%). Locker & Grushka (27) carried out a study on 594 subjects, and as many as 39.7% had suffered dental, oral or facial pain in the last four months. The percentage is high as sensitivity to hot and cold was included. Significant difference with regard to sex was not found. Dao & Le Resche (28) concluded that women complain of pain more frequently, i.e. more intense and long-term pain than men, which explains the lower threshold and tolerance, although there is little evidence of this. MacFarlane et al. (29) carried out an investigation in the Public Health Dental Clinic on 2,504 subjects. Prevalence of orofacial pain was 26%, and was more frequent in women (30%) than in men (21%), and 6% patients complained of pain in the TMJ. Rauhala et al. (30) carried out an epidemiological study of orofacial pain and found frequency of 12% in women and 18% in men during one year. In Toronto Eriksen (31) registered the incidence of dental pain in adults over a period of four weeks in 14% of cases. Agerberg & Carlson (32) carried out an investigation of chronic facial pain in Scandinavia, where they found equal painfulness in men and women. Pullinger et al. (33) found that the frequency of chronic facial pain was greater in women. In Florida Riley & Gilbert (34) in 724 subjects, during a period of six months, found prevalence of pain connected with TMJ in 8.3%, facial pain in 3.1%, toothache in 12% and pain connected with oral changes in 15.6% of cases. Men

were more sensitive to temperature changes and women to TMJ. Hall et al. (35) investigated the validity of McGill-Melzack's questionnaire on pain in 200 patients, and established frequency of pain caused by pathological conditions of the pulp in 52.2%, and in 9% of cases the pain was caused by TMJ. Brajković & Macan (36) carried out an investigation in 2,766 emergency patients examined in the Department of Maxillofacial and Oral Surgery, University Hospital "Dubrava", Zagreb during a period of one year. After extraction pain was determined in 2.61% of cases, difficult eruption in 1.92%, joint disorders in 1.63% and inflamed salivary glands

in 0.61%. The above results agree with our results of postoperative pain in 2.11% of cases, and pain caused by the salivary glands in 0.53% of patients. While TMJ pain in our patients was rather more frequent. In the foregoing investigation there were more men with pain than women.

In conclusion we can agree with MacFarlane et al. (37) who consider that there is a great need for epidemiological studies of orofacial pain in order to better analyse aetiology, including demography and life style, local and mechanical factors and medical history, with the aim of achieving better diagnosis and therapy.