

# Non-odontogenic Pain and its Treatment: A Systematic Review

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## ABSTRACT

The purpose of this review is to determine the proper treatment for the non-odontogenic pain in dental practice. The study protocol was compiled by conducting a Pubmed and Wiley search of English literature. Searches were conducted to identify articles published in the last five years of dentistry that focus on pain non-odontogenic. The MeSH keywords used were "non-odontogenic pain" and "treatment." The search limits applied to the electronic search were the English language, search period, and type of text availability. The database search found 62 references, also 30 articles from PubMed, and 32 articles from Wiley. There were no duplicate references from all the 62 articles gathered. The titles and abstracts were reviewed afterward. Twenty-seven articles were selected for the full-text review. The full text was then reviewed by the researchers and found five articles that met the inclusion criteria. Non-odontogenic pain is a condition with multiple pathophysiological causes, and the process was complicated because high-quality literature is still sparse. Further studies with appropriate evidence levels will be needed in the future.

**Keywords:** Nonodontogenic, Pain, Treatment.

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## INTRODUCTION

An oral cavity is one of the reflections of our body that is still in the grey area. The pain which occurs in the orofacial region is complex and overlapping various surgical and medical disciplines. The determination of oral pain diagnosis is a challenge for most dental practitioners. The non-odontogenic origin pain is not an actual dental pathology. It could be the pain referred to by the dentition comes from other sources nearby. Unnecessary treatment often caused by a misdiagnosis.<sup>1</sup>

The non-odontogenic pain clinical signs and symptoms are varied. It could mimic other disorders that do not originate from the oral or facial region. Pain can range from mild and intermittent to very aching, continuous pain. Tooth pain does not all come from the structure of the tooth. It is very important to know the source of the pain. So as to determine the appropriate diagnosis and treatment. The therapy for primary pain is clear. This does not cause diagnostic errors for some doctors.<sup>2</sup>

Non-odontogenic pain is a type of pain with multiple pathophysiological causes. Some patients of unknown origin complain of persistent pain after several dental treatments. Dental treatment of patients should be performed in patients with pain without a clear clinical cause.<sup>3,4</sup> The aim of this review is to determine the appropriate treatment for non-odontogenic pain in dental practice.

## METHODS

This systematic review was based on PRISMA guidelines (Item Reporting Options for a systematic review and meta-analysis)). This guide was used to evaluate health care interventions at the time of the study. PICO question was used to bring this article to be more focused on analyzing studies obtained from database searches. The PICO (population, intervention, control, and outcome) question of this review was: P= patients with non-odontogenic pain, I = cause of the

pain, C = the different treatments of each case, O = reduced or loss of complaints of the patients.

## Search strategy

The initial search was carried out on Pubmed and Wiley. One of the inclusion criteria used to determine the protocol in this study was English Literature. A search was made to determine several articles published in dental-themed journals over the past five years that have focused on non-odontogenic pain. The MeSH keywords used are "non-odontogenic pain" and "treatment." The end of the search specified when conducting an electronic search using English, the search time, and the type of text availability. A full-text article manual search and related reviews are performed afterward. Sixty-two studies explain this, but only five studies that can be used for fulfilling the inclusion criteria. The keywords used must be specific to identify the appropriate study needs and follow the conditions for several questions in PICO.

## Eligibility Criteria

The inclusion criteria used for this systematic review were:

- English language article
- Any study published last five years
- Studies report non-odontogenic pain relief
- Studies report non-odontogenic causes of pain, clinical features, diagnosis and treatment

The exclusion criteria were all studies that did not satisfy the requirements mentioned above, such as any studies without full text.

## Selections of Study

Specific keywords that are used by both the authors who participated (PP and BT) determines the selection of the appropriate papers and abstracts reading the entire text. Independently, the two researchers were determined

according to predetermined inclusion criteria. The author then downloads and evaluates all the abstracts and complete texts that have been determined. Eligibility criteria were used to identify several articles to be used for this systematic review.

### Extraction of Data

The two independent reviewers (PP and BT) evaluated all of the articles according to the inclusion and exclusion criteria. All extracted data were explained about the non-odontogenic pain, psychogenic pain, neuropathic pain, idiopathic pain, psychogenic pain or pain of psychosocial origin and the outcome of the statistical analysis which compared the following quantifiable factors: 1) Cause of the non-odontogenic pain; 2) Clinical features; 3) Diagnosis; 4) Treatment.

### RESULT

The database search found 62 references, also 30 articles from PubMed, and 32 articles from Wiley. There were no duplicate references from all the 62 articles gathered. The titles and abstracts were reviewed afterward. Twenty-seven articles were selected for the full-text review. The full texts then are evaluated by the two authors and yielded five articles that met the inclusion criteria. The diagram of article selection is shown in figure 1. The electronic literature search yielded a total of 5 selected articles of 62 studies. After 27 titles reviewed, five articles were chosen for this systematic review inclusions, whereas the other 35 articles were excluded for some different reasons.

There were 65 patients from 5 articles included in this review. Gary et al., in 2016, had a 59-year-old man as their patient with facial pain disorders from the odontogenic origin as a chief complaint. He suffered this pain for ten years. The clinical examination revealed the fracture of the right outer orbit rim and was diagnosed as rare intraosseous hemangioma of the maxilla. He was treated with removal of the lesion in maxilla surgically and replaced with a prosthesis.<sup>5</sup>

Agbaje et al., in 2018, had research with 46 patients who suffered from orofacial and TMJ pain. The patients were undergoing orthognathic surgery in two different types: bimaxillary osteotomies and bilateral sagittal split osteotomies. Thirty-six patients had the TMJ pain, seven patients had orofacial pain, while three remaining patients had both. The muscle tenderness in palpation, mouth opening, and the closing was found in the clinical examinations. The diagnosis for these patients was TMJ and orofacial non-odontogenic pain. The acute condition was treated with NSAIDs. The chronic treatment with counseling, warmth application, bilateral chewing and splint therapy, physical therapy, and the removal of osteosynthesis plate was done in the patients with pain secondary to osteosynthesis plate. The arthroscopic surgery was advised as the treatment of the patients with TMJ pain refractory to conservative treatment.<sup>6</sup>

Fernandez Ana et al., in 2016, treated a 10-year-old girl who suffered from orofacial pain and facial asymmetry. In clinical examination, they found facial asymmetry, the tumor in the left side of the facial in the temporomandibular area, severe joint dysfunction, the lateral deviation, and limited mouth opening. The oral mucosa was found intact, and there was a bulging of the mandibular ramus's internal and external cortex. She was diagnosed with aneurysmal bone cyst and

underwent surgery. The etiology of this disease remains unclear.<sup>7</sup>

Kim Sang Yun et al., in 2018, had two patients with severe pain as the chief complaint. There were two different causes of pain. The first patient had the pain after the placement of dental implants in the maxilla, while the other patient had it after facial nerve reconstruction during plastic surgery. Both patients were treated with drugs and physical therapy.<sup>8</sup> Makino Izumi et al., in 2018, had 15 patients diagnosed with Non-odontogenic persistent dentoalveolar pain (NPDP). They complained about pain duration of more than three months and treated with jaw movement exercise.<sup>9</sup>

### CONCLUSION

This review revealed the clinical practice evidence in treating the non-odontogenic pain based on some basic scientific knowledge available, diagnosis, clinical examinations, and the treatment systems. The literature seeks information on non-odontogenic pain and associated primary diseases. Non-odontogenic pain is a type of pain with a variety of pathophysiological causes. It is very difficult to find rare, high-quality literature. Further study is needed, especially those with the most appropriate level of evidence.

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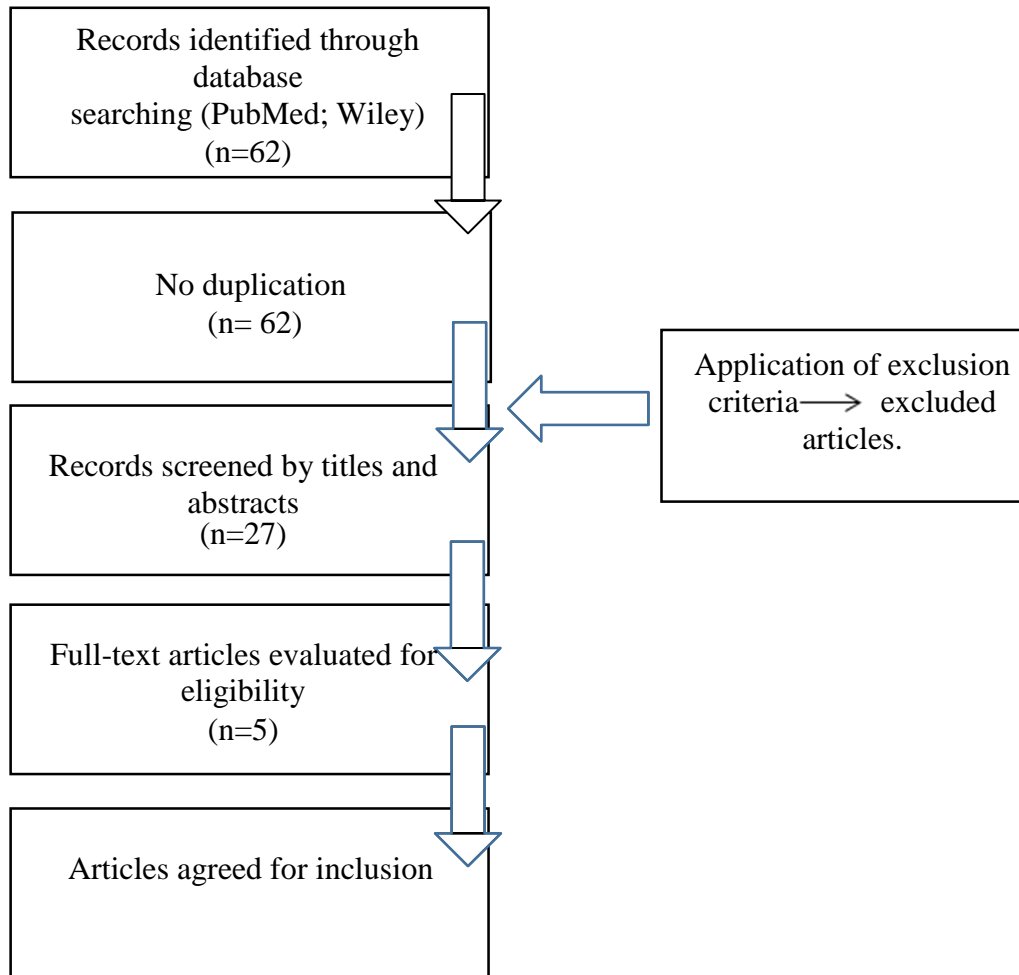


Figure 1. Article selection flow chart.

Table 1: The summary of five articles about the nonodontogenic pain of sixty-five patients

Author	Patient	Complaint	Clinical examination	Diagnosis	Etiology	Treatment
Gary M, et al. 2016	59-year-old Man	Facial pain disorders of nonodontogenic origin since 2006 (10 years ago)	On the outer right edge of the orbit, fracture occurs	Rare interosseus hemangioma of the maxilla	Trauma	given surgical therapy and performed the prosthetic replacement in the Maxilla where the lesion is present
Agbaje Jimoh, et al. 2018	46 patients (male and female)  Age: 16-66-year-old	36 patients: TMJ pain  7 patients: orofacial pain 3 patients: both	Muscle tenderness in palpation, mouth opening, and closing	TMJ and orofacial nonodontogenic pain	Orthognathic surgery → bimaxillary osteotomies and bilateral sagittal split osteotomies	Acute: NSAIDs Chronic: Physical therapy, counseling, warmth application, and bilateral chewing and splinting therapy were also applied. In patients with secondary pain, the osteosynthetic plate was removed. Arthroscopic surgery is given in patients with TMJ pain that is refractory to conservative treatment.
Fernandez Ana et al. 2016	10-year-old girl	Orofacial pain, facial asymmetry	Facial asymmetry, a facial tumor on the left side of the temporomandibular region, joint dysfunction, lateral deviation, and difficulty opening the mouth. intact oral mucosa and protruding internal and external cortex from the mandible on intraoral examination	Aneurysmal bone cyst	Remains unclear → congenital, trauma, vascular etiology	Surgery
Kim Sang Yun, et al. 2018	67-year-old woman.	In the left anterior buccal vestibule of the jaw, atast becomes severe pain. It was also reported that after several implants were placed in the upper jaw, the upper lip felt tight.	Not mentioned	Painful, traumatic trigeminal neuropathy was diagnosed.	The placement of dental implants in the maxilla	Given Two hundred milligrams of Tegretol® (Novartis, Basel, Switzerland) twice daily for 2 weeks.
	A 52-year-old woman	The left face area is felt. Severe intermittent pain. The facial area includes the masseter, left zygoma, and the temporomandibular joint area. Stiff pain. And on the left cheek, there is excessive salivation.	Not mentioned	Patients diagnosed with traumatic, painful trigeminal neuropathy.	After the reconstruction of the facial nerve during plastic surgery.	Neurontin. Simultaneously, 25 U Innotox (Medytox Inc., Seoul, Korea) was injected into the left masseter and given physical therapy. Performed five times with Sellalux (Medical United, Seoul, Korea), for 1 to 2 months, given a low-level laser.
Makino Izumi, et al. 2018	15 patients Age>18 years	Pain duration more than 3 months	Not mentioned	Nonodontogenic persistent dentoalveolar pain (NPDP)	Not mentioned	Jaw movement exercise