

Knowledge of orofacial pain in students of the Dental Professional Program Faculty of Dental Medicine, Universitas Airlangga

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ABSTRACT

Background: Orofacial pain is associated with the hard and soft tissues of the head, face, and neck. Knowledge of orofacial pain helps in getting information on clinical symptoms, trigger factors, and risks of orofacial pain, as well as clinical and supportive examinations for identifying the pain. The dental professional students' knowledge influences the ability to diagnose and decide on an appropriate treatment plan. This knowledge is seen from the intelligence level in obtaining information about orofacial pain. **Purpose:** To describe the level of knowledge of orofacial pain in the students of the Dental Professional Program, Faculty of Dental Medicine, Universitas Airlangga, based on intelligence level. **Methods:** This research was a descriptive study. Data was taken using a questionnaire on google form with a simple random sampling data technique and was analyzed using SPSS version 25. **Results:** The majority understand the general description of postherpetic neuralgia (PHN), as well as the risk factors and triggers (93.4% and 87.8%, respectively) associated with it. Further, 90.6% understand burning mouth syndrome (BMS) and the clinical symptoms of PHN. BMS based on clinical examination and support is understood by 96.1%, and 82.9% know how to manage trigeminal neuralgia (TN). Intelligence level is divided into three categories, namely source of knowledge (55.8% are from lectures, journals, and textbooks), material repetition (77.3% never repeated), and retention of material (65.2% no retention). **Conclusion:** Students' knowledge of orofacial pain is good, but the relationship between the level of intelligence and knowledge is not yet known.

Keyword: intelligence level; knowledge; orofacial pain

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INTRODUCTION

Orofacial pain is the pain associated with the hard and soft tissues of the head, face, and neck. Pain stimulation through tissues such as skin, blood vessels, teeth, glands, or muscles sends impulses through the trigeminal nerve, which is transmitted through a special nerve network to the central nervous system, interpreted as pain or discomfort.¹

In the United States, the prevalence of orofacial pain, according to a study by Lipton et al.,² is as follows: the most common orofacial pain originating from toothache was reported by 12.2% of the population, 5.3% complained about temporomandibular joint (TMJ) pain, and 1.4% complained about pain related to face or cheeks. More

than 81% of patients suffer from orofacial pain originating from trigeminal system.¹ Orofacial pain is usually characterized or described as burning, sharp, episodic, or continuous pain, which can also be accompanied by a headache. Pain associated with headaches is felt in the teeth, but the origin of the pain is hard to identify. There are degrees of orofacial pain ranging from mild to moderate to severe. Some patients also complain of tinnitus, vertigo, paresthesias, hyperalgesia, and allodynia.³ The causes of orofacial pain can be local, namely from teeth, starting from caries, periodontal disease, musculoskeletal disease, and neuropathology. These are some of the most common causes of orofacial pain.⁴ Other causes of orofacial pain include vascular disorders, post-traumatic pain, and lesions on the ears, nose, and oral cavity.⁵

Trigger and risk factors of orofacial pain are anxiety disorders, systemic disorders, trauma, and behavioral disorder.⁶ Clinical and supporting examinations were performed to help determine the diagnosis. Clinical and supporting examinations for orofacial pain include palpation of joints and muscles, dental examination, and panoramic examination or cone beam computed tomography (CBCT) examination.¹ According to a study conducted by Ziegeler et al.,⁷ it is said that in practice, it is very difficult to diagnose orofacial pain because the clinical symptoms of each disease related to orofacial pain are the same. This makes it difficult for dental students and professional dentists to determine the correct diagnosis and treatment plan. Therefore, if dental students lack the theoretical knowledge of orofacial pain, it may later get difficult for them to treat orofacial pain patients.⁷

According to research by Borromeo and Trinca,⁸ in dental education, the topic of orofacial pain, according to the International Association for the Study of Pain (IASP), includes the definition, mechanism, and assessment of pain. This topic is a basis for a dentist’s knowledge about orofacial pain.

Along with clinical and supporting examinations, knowledge of orofacial pain is used to make an accurate diagnosis, which is obtained by examining clinical symptoms, triggers, and risk factors. Based on research conducted by Ziegeler et al.⁷ in 2018 on 533 general and specialist dentists and 130 dental students, it was found that 92% of dental students stated that they feel either “not at all” (56%) or only “somewhat” (36%) prepared for the diagnosis or treatment of non-dental orofacial pain. Only 23% of the dentists reported “good” or “very good” confidence in diagnosing non-dental orofacial pain. The knowledge attained by dental students during their undergraduate dental education influences their capability of diagnosing and carrying out appropriate treatment plans. Intelligence is the ability to understand and solve problems with the obtained knowledge.⁹ One type of intelligence is crystallized intelligence that improves with the increase in knowledge, experience, and skills possessed by an individual.¹⁰ Based on this theory, knowledge can be determined by the level of intelligence. So here, the author wanted to describe the level of knowledge of orofacial pain in the students of the Dental Professional Program, Faculty of Dental Medicine, Universitas Airlangga.

MATERIALS AND METHODS

In this observational descriptive study, dental professional students’ of batch 2018 and 2019 of the Dental Medicine Faculty, Universitas Airlangga, participated voluntarily. By applying the Slovin formula ($e=0.05$), the minimum number of samples needed was 175, with the proportion of 90 dental professional students from batch 2018 and 91 dental professional students from batch 2019, due to a slight difference in the number of dental professional students

from each batch. There are two inclusion criteria: First, a student of the Faculty of Dental Professional Program, Faculty of Dental Medicine, Universitas Airlangga. Second, willingness to fill out informed consent and a questionnaire. Meanwhile, the exclusion criteria are students of the Faculty of Dental Professional Program, Faculty of Dental Medicine, Universitas Airlangga, who have completed all the stations.

The research was conducted online from the end of January 2021 until early February 2021. Health Research Ethical Clearance Commission approved it in the Faculty of Dental Medicine, Universitas Airlangga, with registration number 458/HRECC.FODM/X/2020 (approval date: October 09, 2020). The research was done using a 20-item questionnaire, which tested the validity and reliability of the questionnaire with Statistical Package for the Social Sciences (SPSS) version 25 for Windows (IBM, New York, USA). The questionnaire was divided into two groups: respondents’ sociodemographic data and the items to measure respondents’ knowledge level. The questionnaire had five domains, and each domain consisted of four questions representing four diseases related to orofacial pain and three regarding intelligence levels.

The data were collected through a Google form questionnaire. Some comprehensive and adequate explanations about the research aim were also given. The link was shared via social media. Respondents willing to participate had to give consent by ticking the provided check box before entering the questionnaire section. Respondent’s answers were measured using the Guttman scale, in which respondents have to provide answers in the form of “true” or “false.” The answers to the questionnaire were assessed on a 0–1 scale, with each correct answer getting a value of 1 and the wrong or no answer 0.

RESULTS

Out of 310 dental professional students in the Faculty of Dental Medicine, Universitas Airlangga, who were given the questionnaire’s link, 181 decided to participate. The result not only fulfilled the minimum number of respondents needed but also got a 58% of response rate. The sociodemographic characteristic of the respondents is described in Table 1. The majority of respondents were 23 years old, with as many as 79 respondents (43.6%). Most

Table 1. Frequency distribution of respondents based on sociodemographic characteristics

	Categories	n	%
Age	20	1	0.6
	21	7	3.9
	22	64	35.4
	23	79	43.6
	24	25	13.8
Gender	Male	30	16.6
	Female	151	83.4
Batch	2018	90	49.7
	2019	91	50.3

of the respondents were female, and about 50.3% were from batch 2019.

Table 2 shows the knowledge of orofacial pain based on the general description of orofacial pain. Respondents' answers exceeded 80%; the highest percentage of correct answers was found in the general description of postherpetic neuralgia, which was 93.4%.

While Table 3. shows that dental professional students can recognize clinical symptoms of orofacial pain well, especially in burning mouth syndrome and postherpetic neuralgia, which have the highest percentage in this question, which is 90.6%. In the item asking about the risk factors and triggers of orofacial pain, 159 respondents (87.8%) correctly answered the risk factors and triggers

Table 2. Distribution of knowledge based on an overview

Disease	Question	Answer				Total	
		True		False		n	(%)
		n	(%)	n	(%)		
Trigeminal Neuralgia	Trigeminal neuralgia often occurs at the age of 40–70 years	162	89.5	19	10.5	181	100
Burning Mouth Syndrome	Burning mouth syndrome is rarely located on the tongue	160	88.4	21	11.6	181	100
Postherpetic Neuralgia	Postherpetic neuralgia due to reactivation of the latent virus	169	93.4	12	6.6	181	100
Atypical Facial Pain	Atypical facial pain is idiopathic pain	163	90.1	18	9.9	181	100

Table 3. Distribution of knowledge based on clinical symptoms

Disease	Question	Answer				Total	
		True		False		n	(%)
		n	(%)	n	(%)		
Trigeminal Neuralgia	Trigeminal neuralgia is often unilateral	146	80.7	35	19.3	181	100
Burning Mouth Syndrome	Pain intensity of burning mouth syndrome can be severe	164	90.6	17	9.4	181	100
Postherpetic Neuralgia	Postherpetic neuralgia is characterized by hyperalgesia	164	90.6	17	9.4	181	100
Atypical Facial Pain	Atypical facial pain is usually characterized by long-lasting pain	138	76.2	43	23.8	181	100

Table 4. Distribution of knowledge based on risk factors and triggers

Disease	Question	Answer				Total	
		True		False		n	(%)
		n	(%)	n	(%)		
Trigeminal Neuralgia	Chewing movements, talking, and smiling can trigger attacks of pain in trigeminal neuralgia	145	80.1	36	19.9	181	100
Burning Mouth Syndrome	Burning mouth syndrome cannot be triggered by gastrointestinal disorders	157	86.7	24	13.3	181	100
Postherpetic Neuralgia	Immunosuppressive conditions can trigger postherpetic neuralgia	159	87.8	22	12.2	181	100
Atypical Facial Pain	Atypical facial pain is not triggered by a depressive disorder	143	79.0	38	21.0	181	100

Table 5. Distribution of knowledge based on clinical and supporting examination

Disease	Question	Answer				Total	
		True		False		n	(%)
		n	(%)	n	(%)		
Trigeminal Neuralgia	In trigeminal neuralgia, CT scan or MRI cannot be performed	130	71.8	51	28.2	181	100
Burning Mouth Syndrome	Examination of burning mouth syndrome is also examined by the condition of the mucosa	174	96.1	7	3.9	181	100
Postherpetic Neuralgia	Intensity and quality tests were carried out with a pain scale for postherpetic neuralgia examination	173	95.6	8	4.4	181	100
Atypical Facial Pain	Examination of atypical facial pain does not require examination of the head and neck	170	93.9	11	6.1	181	100

Table 6. Distribution of knowledge based on management

Disease	Question	Answer				Total	
		True		False		n	(%)
		n	(%)	n	(%)		
Trigeminal Neuralgia	Trigeminal neuralgia can only be treated with lamotrigine	150	82.9	31	17.1	181	100
Burning Mouth Syndrome	The drug, clonazepam, can be given for burning mouth syndrome	145	80.1	36	19.9	181	100
Postherpetic Neuralgia	Postherpetic neuralgia contraindications to treatment with topical lidocaine	92	50.8	89	49.2	181	100
Atypical Facial Pain	Atypical facial pain contraindications to treatment with tricyclic depressants	100	55.2	81	44.8	181	100

Table 7. Distribution of knowledge based on intelligence level

	Categories	n	%
Source of knowledge	Course material	80	44.2
	Lecture materials, journals, and textbooks	101	55.8
Material repetition	Yes	41	22.7
	No	140	77.3
Retention of material	Yes	63	34.8
	No	118	65.2

of postherpetic neuralgia, which can be seen in Table 4. Burning mouth syndrome still occupies the highest correct answers on the item about clinical and supporting examinations. As many as 174 respondents (96.1%) answered correctly (Table 5). However, the management of postherpetic neuralgia turned out to have the lowest percentage in Table 6, where only 92 respondents (50.8%) answered correctly.

Table 7 describes knowledge from the respondents based on intelligence level, divided into three categories: source of knowledge, material repetition, and retention of material. The majority of respondents' knowledge about orofacial pain was obtained from lectures, journals, and textbooks (55.8%). Regarding the repetition of orofacial pain material, most respondents, namely 140 people (77.3%), stated that they had never repeated the material. The answer "not easy to understand" regarding orofacial pain was also given by 118 respondents (65.2%).

DISCUSSION

Knowledge of orofacial pain was assessed under five domains: general description, clinical symptoms, risk factors and triggers, clinical and supporting examinations, and management. Each domain of knowledge included four orofacial pain diseases: trigeminal neuralgia, burning mouth syndrome, postherpetic neuralgia, and atypical facial pain. In the first domain, knowledge based on the general description found that postherpetic neuralgia got the highest percentage of correct answers, namely 93.4%, where respondents agreed that the incidence of postherpetic neuralgia was due to reactivation of a latent virus. This is because postherpetic neuralgia is pain that occurs due to the reactivation of the varicella-zoster virus (VZV). The virus begins to settle in the body after a primary varicella infection (chickenpox) that may have occurred decades ago, ultimately causing postherpetic neuralgia.¹¹

Dental professional students' knowledge of orofacial pain is not limited to the general description. They can also give correct answers with a percentage as high as 90.6% on clinical symptoms, especially postherpetic neuralgia and burning mouth syndrome. One of the clinical signs of postherpetic neuralgia is hyperalgesia. Meanwhile, the pain intensity can become more severe in burning mouth

syndrome. Pain in the burning mouth syndrome occurs in the morning and continues to aggravate to the maximum intensity by night.³

In the third domain, namely, knowledge based on risk factors and triggers of four orofacial pain diseases, postherpetic neuralgia still ranks first in the percentage of correct answers (87.8%) given by dental professional students with burning mouth syndrome ranking second (86.7%). Dental professional students know that an immunocompromised host condition is one of the triggering factors for postherpetic neuralgia. This is in accordance with a study conducted by Muñoz-Quiles¹² that patients with immunocompromised conditions have a higher risk of developing herpes zoster, recurrence of herpes zoster, and also complications of postherpetic neuralgia.

In the fourth domain, namely, knowledge based on clinical and supporting examinations of four orofacial pain diseases, the majority of respondents answered correctly, especially on burning mouth syndrome (96.1%) and postherpetic neuralgia (95.6%). One of the clinical examinations for burning mouth syndrome is to examine the condition of the mucosa because certain patients describe burning mouth syndrome as a burning sensation in the oral mucosa without any obvious mucosal changes.¹³ Therefore, mucosa should be examined to identify or rule out factors that may be contributing to the disease.¹⁴ Whereas in postherpetic neuralgia, it is necessary to test the intensity and quality with a pain scale where patients with postherpetic neuralgia can experience three main types of pain: 1) constant pain without a stimulus, which is often described as burning, aching, or throbbing; 2) intermittent pain without a stimulus, which feels like getting stabbed or an electric shock; 3) pain caused by the stimulus but not proportional to the stimulus received (hyperalgesia).¹⁰

In the fifth domain, namely, knowledge based on management, it was found that there were two orofacial pain diseases where the respondents gave almost similar numbers of correct and incorrect answers. Among them is postherpetic neuralgia, with 45 correct answers—50.8% correct answers. Dental professional students answered questions about postherpetic neuralgia contraindications to treatment using topical lidocaine with the correct answer: disagree. There was almost a balance between right and wrong answers to questions regarding postherpetic neuralgia. There is a balance between correct and incorrect answers because, in the drugs for first-line postherpetic neuralgia based on the recommendations of the American Academy of Neurology (2004), the International Association for the Study of Pain (2007), and the European Federation of Neurological Societies (2010) are tricyclic antidepressants that are gabapentin and pregabalin, and topical lidocaine 5%. However, the UK and Canadian guidelines place topical lidocaine as a second-line drug.¹⁵ Since topical lidocaine is also an anesthetic, many dental professional students' answers agreed with the question that topical lidocaine is contraindicated with treatment contraindications.

Multiple teaching strategies, such as theoretical, preclinical, and clinical education, are used by dental schools. Assessment of these strategies has a crucial role in evaluating the efficiency of the provided education methods and the achievement of the intended learning outcomes of future graduate dentists.^{16,17} To obtain knowledge about orofacial pain, dental professional students obtain and collect information. In this study, the researcher asked the students about the source from which they received information on orofacial pain. Around 44.2% of students stated that they got information from the lecture material. Furthermore, 55.8% stated that they got information from lecture materials, journals, and textbooks. In obtaining information, the more sources obtained, the better the knowledge obtained. In addition to the source of knowledge, the distribution of the material in the study found that around 22.7% of students often revised study material on orofacial pain, and 77.3% said that they did not often revise. Revising study material enables a person's ability to recall experiences or information stored in short-term memory. There are many ways to revise existing information, including revising the material with a list of presentations sequenced correctly according to the serial recall category, revising the material that is freely unstructured (free recall), and revising the material with instructions such as given essay questions (cued recall).¹⁸

Regarding understanding the material on orofacial pain, in a study, around 34.8% of dental professional students said it was easy to understand, and 77.2% said it was not easy to understand. Understanding is a level of knowledge defined as a person's ability to interpret material correctly. A person with a good understanding can explain, conclude, and give examples of the material being studied. The study results showed that many students found orofacial pain material hard to understand because they could not recall the previously learned study material.¹⁹

The research results showed that many students found orofacial pain material hard to understand because to determine or conclude the etiology and management of orofacial pain, one must understand and know clinical symptoms such as pain onset, duration, and location, and not just a clinical picture. There is a need to understand and identify the risk factors associated with pain or the origin and triggers of pain.²⁰ Understanding chronic pain etiology and treatment has been challenging for all health fields. Therefore, raising the standards of required competencies in dental training is essential to reduce the population burden of chronic pain and improve the clinical care of dental patients.²⁰ The importance of understanding orofacial pain for students of the dental profession is to be able to determine the diagnosis and management of orofacial pain management. So they must understand the terminology and concepts of orofacial pain.⁸ The limitation of this research

is that there is no relationship between intelligence and knowledge. In conclusion, students' knowledge of orofacial pain is good, but the relationship between the level of intelligence and knowledge is not yet known.

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