Current Research in Interdisciplinary Studies, 4(4):1–11, 2025. DOI: 10.58614/cris441

Current Research in Interdisciplinary Studies

Journal homepage: https://www.jpub.org/journal-details.php?journal-id=40

Research Article

Evaluation of Orofacial Pain in Patients Attending the Dental Clinic of the Faculty of Dentistry, University of Health Sciences

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Article Info

Keywords: *Orofacial pain; pain quality; pain intensity; and management.*

Received: *02.09.2025*
Accepted: *15.09.2025*
Published: *19.09.2025*

Abstract

Objectives: Orofacial pain is a significant issue affecting a considerable portion of the global population, with a prevalence of about 10%-25%. Women are more likely to experience this type of pain compared to men, and it is more common among the elderly. The present study aims to identify the prevalence of orofacial pain, the features, and the most common treatment modalities among patients attending the dental clinic at the Faculty of Dentistry, University of Health Sciences.
Methods: A descriptive cross-sectional study was conducted at the dental clinic, Faculty of Dentistry. The variables induced personal geographic information, pain characteristics, and management. The pain quality and intensity were assessed using short-form McGill pain questionnaires and a visual analog scale (VAS).
Results: The total number of participants was 1,743. The prevalence of orofacial pain in the dental clinic was 19.8% (n=345). All participants were mostly female (58.8%) (OR=1.4:1), with a mean age of 42 years old. The most common type of pain reported was odontogenic pain (93%), followed by non-odontogenic pain (7%). Pain locations were mostly assessed in the maxillary and mandibular regions, with pain quality described as mostly throbbing, sharp, and aching. Pain intensity ranged on a visual analog scale of 1-10, with the majority of pain intensities being moderate (VAS=4-6). The most common pain management strategies for participants were tooth extraction (46%), endodontic treatment (22%), and a small proportion of systemic medication (5.2%) for non-odontogenic pain.
Conclusion: Orofacial pain in the dental clinic is still a common issue, particularly both odontogenic and non-odontogenic orofacial pain. Its management requires a comprehensive approach tailored to the specific characteristics and intensity of pain experienced by the individual.

1. Introduction

Pain is an abnormal sensation that occurs both somatically and psychologically. When the body experiences such a problem, it clearly affects or interferes with people's daily lives. Therefore, when someone experiences pain, it is necessary to seek a solution to the problem completely through various methods, such as consulting a doctor. The issue of pain is related to both the body and emotions, leading to stress or depression [1]. In addition to impacting one's mental state, pain or physical injury problems also affect people's quality of life,

How To Cite: H. Vang, V. Inthakoun, P. Sayaxang, P. Sihavong, A. Photsavang, V. Bouphavanh, K. Luangamat, M. Kitavalada, S. Siriranonh, T. Meunmanisone, A. Homsavath, M. Simalavong. Evaluation of Orofacial Pain in Patients Attending the Dental Clinic of the Faculty of Dentistry, University of Health Sciences. *Current Research in Interdisciplinary Studies*, 4(4):1–11, 2025. https://doi.org/10.58614/cris441

particularly their ability to engage in family and social activities [2]. The prevalence of pain in populations worldwide ranges from 9.9% to 50.3%, with women, the elderly, and individuals living in rural areas experiencing higher rates of pain [3, 4].

Pain in the orofacial area is a significant issue affecting a considerable portion of the global population, with a prevalence of about 10%-25%. Women experience pain more frequently than men, with a ratio of 2:1, and it is more common among the elderly [5]. In the United States, it is reported that up to 16.1% of individuals seeking dental services experience pain in the orofacial region. Orofacial pain also poses economic challenges for families, impacting health and requiring a significant portion of the treatment budget [6, 7]. Patients often seek dental care to address these issues in dental clinics. However, there is a lack of a database on orofacial pain in the Lao People's Democratic Republic. This study is the first report of orofacial pain at the dental clinic of the Faculty of Dentistry. We describe the clinical characteristics of orofacial pain, including demographics, pain characteristics, pain evaluation, and management.

2. Methodology

2.1. Study Design and Population

This study was a cross-sectional descriptive study aimed at describing the characteristics, location, pain quality, pain intensity, and pain management of patients in the outpatient department (OPD) who seek services at the dental clinic of the Faculty of Dentistry, University of Health Sciences. The study was conducted within 5 months, from February to June 2024 with a total of 345 participants with orofacial pain aged 16 years and older screened.

2.2. Study criteria

Inclusion criteria

All patients aged 16 years and older who agree to participate in the study and are currently experiencing orofacial pain at the time of the interview are eligible.

Exclusion criteria

Patients who do not agree to participate, are under 15 years old, or are not currently experiencing orofacial pain at the time of the interview and examination were excluded.

2.3. Examine and Data Collection

The sampling method was applied to all patients who visited the outpatient department (OPD) of the dental clinic during the study period. Patients who met the inclusion criteria were further interviewed to gather personal information such as age, sex, education, occupation, medical history, dental history, chief complaint, and underwent a thorough oral examination. After conducting the interview, examination, and pain assessment, a diagnosis was made, and a treatment plan was formulated in the dental clinic. Patients were referred to the appropriate unit. All orofacial pain management in this study followed the routine guidelines of the dental clinic at the Faculty of Dentistry, University of Health Sciences.

2.4. Orofacial Pain Evaluation

The quality of pain in the orofacial region was assessed using the short-form McGill Pain Questionnaire to evaluate the nature and pattern of pain, which can assess chronic pain in the orofacial area. Researchers described and asked the participants questions about the characteristics of their pain and recorded [8, 9]. Additionally, the visual analog scale (VAS) or numerical rating scale (NRS) was used to evaluate the pain intensity. The VAS is indicated by a horizontal ruler 10 centimeters (100 mm) in length, marked by "no pain" (score of 0) and worst imaginable pain (score of 10). The data recording asked the patients to indicate their pain orally and indicate on the VAS ruler score how much pain they experienced [10–12].

2.5. Statistical analysis

After collecting and verifying all the data records for accuracy and completeness, the data were entered into the program SPSS version 27 for analysis. The distribution of orofacial pain categories was analyzed using descriptive statistics based on the study's objectives. The variables are presented as percentages, and chi-square tests were conducted for the statistically significant values, which are $P<0.05$.

3. Results

3.1. Population Demographics

The total number of patients who visited the dental clinic during the study period from February to June 2024 was 1,743. Out of these, 345 patients (19,8%) reported experiencing pain and were screened Table 1. This study conducted on 345 patients, including 203 women (58.8%) and 142 men (41.2%), aged between 16 and 96 years old, with an average age of 42 years old [13]. The education level of the participants mostly bachelor or higher (31.1%). Most of the patients in this study were from Vientiane Capital (92.5%), with some from other provinces. The occupations of the study participants ranged from unemployed to civil servants, with the majority being civil servants Table 2.

Table 1: Prevalence of orofacial pain in dental clinic patients

Orofacial pain	Gender		Total (%)
	Male (%)	Female (%)	
Not currently experiencing pain	536 (30.75)	862 (49.45)	1,398 (80.20)
Currently experiencing pain	142 (8.15)	203 (11.64)	345 (19.80)
Total	**678 (38.9)**	**1,065 (61.1)**	**1,743 (100)**

Table 2: Distribution of patients with orofacial pain according to socio-geographic characteristic

Age (years)	Gender		Total (%)
	Male (%)	Female (%)	
16-19	8 (2.3)	15 (4.3)	23 (6.7)
20-29	30 (8.7)	45 (13.0)	75 (21.7)
30-39	21 (6.1)	37 (10.7)	58 (16.8)
40-49	37 (10.7)	32 (9.3)	69 (20.0)
50-59	20 (5.8)	43 (12.5)	63 (18.3)
60-69	14 (4.1)	19 (5.5)	33 (9.6)
70-79	8 (2.3)	5 (1.4)	13 (3.8)
80-89	4 (1.2)	4 (1.2)	8 (2.3)
90-99	-	3 (0.9)	3 (0.9)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Education level			
None	2 (0.6)	10 (2.9)	12 (3.5)
Primary school	12 (3.5)	31 (9.0)	43 (12.5)
Secondary school	22 (6.4)	35 (10.1)	57 (16.5)
High school	25 (7.2)	50 (14.5)	75 (21.7)
Collage	26 (7.5)	24 (7.0)	50 (14.5)
Bachelor and higher	55 (15.9)	53 (15.4)	108 (31.1)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Resident			
Vientiane Capital	132 (38.3)	187 (54.2)	319 (92.5)
Another province	10 (2.9)	16 (4.6)	26 (7.5)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Occupation			
Unemployed	13 (3.8)	49 (14.2)	62 (18.0)
Student	15 (4.3)	22 (6.4)	37 (10.7)
Farmer	11 (3.2)	20 (5.8)	31 (9.0)
Labor	16 (4.6)	6 (1.7)	22 (6.4)
Business	23 (6.7)	54 (15.7)	77 (22.3)
Government staff	49 (14.2)	50 (14.5)	99 (28.7)
Retired	15 (4.3)	2 (0.6)	17 (4.9)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**

3.2. Medical history and chief complaint

All patients in this study who came for examination and interviews are elderly, so the most common health problems or illnesses were high blood pressure (11.6%), followed by diabetes (2.6%), and others. The drugs regularly used in this group of patients are antihypertensive drugs. Clinical symptoms detected in patients with oral and facial pain were pain and swelling in the affected area, with all patients experiencing pain (100%) Table 3.

Table 3: Personal illness

Personal Disease	Gender		Total (%)
	Male (%)	Female (%)	
None	119 (34.5)	152 (44.1)	271 (78.6)
Hypertension	14 (4.1)	26 (7.5)	40 (11.6)
Diabetes	2 (0.6)	7 (2.0)	9 (2.6)
Heart disease	2 (0.6)	1 (0.3)	3 (0.9)
Hyperthyroidism	-	2 (0.6)	2 (0.6)
Cancer	-	2(0.6)	2 (0.6)
Asthma	-	2 (0.6)	2 (0.6)
Multi systemic disease	5 (1.4)	11 (3.2)	16 (4.6)
Total	**119 (34.5)**	**152 (44.1)**	**271 (78.6)**
Personal medication			
Yes	20 (5.8)	40 (11.6)	60 (17.4)
No	122 (35.4)	163 (47.2)	285 (82.6)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Clinical signs			
Pain	142 (41.2)	203 (58.8)	345 (100)
Edema	59 (17.1)	56 (16.2)	115 (33.3)
Fever	3 (0.9)	6 (1.7)	9 (2.6)
Dysphagia	4 (1.2)	9 (2.6)	13 (3.8)
Trismus	8 (2.3)	10 (2.9)	18 (5.2)
Burning	-	1 (0.3)	1 (0.3)
Bleeding	2 (0.6)	1 (0.3)	3 (0.9)

3.3. Distribution of Orofacial Pain

The orofacial pain can be caused by two main origins: odontogenic pain and non-odontogenic pain [14]. In this study, we found that odontogenic pain accounts for the majority of cases (93.0%), while non-odontogenic pain accounts for only 7.0%. The duration of orofacial pain onset in the orofacial region before patients sought examination or interview in this study ranged from 1 day to 1 year, with the most common duration being 3 days, followed by 1 and 2 weeks. A few of them delayed seeking the dentist to solve their pain [15]. Pain locations that lead to pain in the orofacial area include the jaw, especially the maxillary (33.3%) and mandibular (57.1%), as well as the oral mucosa (2.9%), and other orofacial soft tissue sites Table 4.

The clinical diagnosis of the patients who came to the service during this period, based on the actual clinical examination, revealed that most of them had odontogenic causes. Therefore, the diagnosis showed many dental problems, such as periapical periodontitis/abscess (33.9%), followed by pericoronitis (20.3%), irreversible pulpitis (13.3%), and periodontal disease (13.9%). On the other hand, non-odontogenic orofacial pain was found to be related to oral mucosa diseases such as oral lichen planus (2.6%), trigeminal neuralgia (1.7%), and other diseases Table 5.

Table 4: Distribution of orofacial pain

Pain origin	Gender		Total (%)
	Male (%)	Female (%)	
Odontogenic	133 (38.6)	188 (54.4)	321 (93.0)
Non-odontogenic	9 (2.6)	15 (4.4)	24 (7.0)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Duration of pain			
1 day	6 (1.7)	8 (2.3)	14 (4.1)
3 days	37 (10.7)	42 (12.2)	79 (22.9)
1 week	35 (10.1)	48 (13.9)	83 (24.1)
2 weeks	17 (4.9)	32 (9.3)	49 (14.2)
1 month	27 (7.8)	39 (11.3)	66 (19.1)
6 months	9 (2.6)	8 (2.3)	17 (4.9)
1 year	11 (3.2)	26 (7.5)	37 (10.7)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Pain location			
Mandibular	81 (23.5)	116 (33.6)	197 (57.1)
Maxillary	44 (12.8)	71 (20.6)	115 (33.3)
Tongue	1 (0.3)	-	1 (0.3)
Oral mucosa	5 (1.4)	5 (1.4)	10 (2.9)
Mandibular and maxillary	7 (2.0)	5 (1.4)	12 (3.5)
Submandibular	2 (0.6)	2 (0.6)	4 (1.2)
Facial	2 (0.6)	4 (1.2)	6 (1.7)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**

Table 5: Distribution of orofacial pain according to clinical diagnosis

Orofacial pain	**Gender**		**Total (%)**
	Male (%)	**Female (%)**	
Odontogenic pain			
Reversible pulpitis	6 (1.7)	19 (5.5)	25 (7.2)
Irreversible pulpitis	16 (4.6)	30 (8.7)	46 (13.3)
Periapical periodontitis/abscess	56 (16.2)	61 (17.7)	117 (33.9)
Pericoronitis	31 (9.0)	39 (11.3)	70 (20.3)
Periodontal disease	21 (6.1)	27 (7.8)	48 (13.9)
Alveolitis/dry socket	-	1 (0.3)	1 (0.3)
Radicular cyst	-	1 (0.3)	1 (0.3)
Cracked tooth	2 (0.6)	9 (2.6)	11 (3.2)
Space infection	1(0.3)	1 (0.3)	2 (0.6)
Non-odontogenic pain			
Trigeminal neuralgia	2 (0.6)	4 (1.2)	6 (1.7)
Major aphthous	2 (0.6)	1 (0.3)	3 (0.9)
Oral cancer	1 (0.3)	2 (0.6)	3 (0.9)
Oral lichen planus	3 (0.9)	6 (1.7)	9 (2.6)
TMDs	-	2 (0.6)	2 (0.6)
Lymphadenitis	1 (0.3)	-	1 (0.3)
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**
Pain quality			
Throbbing	61 (17.7)	81 (23.5)	142 (41.2)
Shooting	24 (7.0)	38 (11.0)	62 (18.0)
Sharping	67 (19.4)	98 (28.4)	165 (47.8)
Cramping	4 (1.2)	2 (0.6)	6 (1.7)
Hot-burning	11 (3.2)	19 (5.5)	30 (8.7)
Aching	65 (18.8)	95 (27.5)	160 (46.4)
Heavy	16 (4.6)	16 (4.6)	32 (9.3)
Tender	47 (13.6)	53 (15.4)	100 (29.0)
Tiring-exhausting	14 (4.1)	15 (4.3)	29 (8.4)
Sickening	38 (11.0)	54 (15.7)	92 (26.7)
Fearful	7 (2.0)	17 (4.9)	24 (7.0)
Punishing-cruel	19 (5.5)	25 (7.2)	44.(12.8)

3.4. Pain Quality

The nature of pain is described as characteristic of pain onset in short-form McGill Pain Questionnaires [8, 9] in the whole body or even in the orofacial area. The most common symptoms reported by the study patients were dental symptoms such as throbbing, sharp pain, and aching pain Table 5. The distribution of pain quality based on the cause showed that dental pain such as reversible pulpitis, irreversible pulpitis, and periapical periodontitis/abscess were described with a high percentage in the nature sign as throbbing, sharp, and aching, as well as periodontal pain and pericoronitis. Oral mucosa disease and oral soft tissue diseases were described as throbbing, stabbing and hot-burning pain [16]. The Chi-square test, analysis of the nature of orofacial pain, showed that most symptoms were significantly related to diseases such as dental caries, periodontal disease, periocoronitis, trigeminal neuralgia, oral mucosa diseases pain, and oral cancer (P-value$<$0.3) Table 6.

Table 6: Distribution of pain quality according to the cause

Orofacial Pain	Pain quality												P-value
	Throbbing (%)	**Shooting (%)**	**Sharp (%)**	**Cramping (%)**	**Hot-burning(%)**	**Aching (%)**	**Heavy (%)**	**Tender (%)**	**Tiring exhausting(%)**	**Sicking (%)**	**Fearful (%)**	**Punishing g-cruel(%)**	
RP	4 (1.2)	3 (0.9)	16 (4.6)	-	1 (0.3)	3 (0.9)	1 (0.3)	2 (0.6)	-	6 (1.7)	1 (0.3)	1 (0.3)	<0.001*
IRP	26 (7.5)	9 (2.6)	30 (8.7)	1 (0.3)	1 (0.3)	16 (4.6)	1 (0.3)	10 (2.9)	-	6 (1.7)	2 (0.6)	4 (1.2)	0.294
PAP/AB	41 (11.9)	17 (4.9)	42 (12.2)	2 (0.6)	4 (1.2)	66 (19.1)	10 (2.9)	43 (12.5)	10 (2.9)	27 (7.8)	6 (1.7)	6 (1.7)	0.258
PC	39 (11.3)	17 (4.9)	36 (10.4)	3 (0.9)	9 (2.6)	37 (10.2)	10 (2.8)	23 (6.6)	9 (2.6)	20 (5.7)	7 (2.0)	18 (5.2)	0.177
PD	15 (4.3)	6 (1.7)	19 (5.5)	-	6 (1.7)	29 (8.4)	4 (1.2)	11 (3.1)	1 (0.3)	14 (4.0)	2 (0.6)	8 (2.3)	0.258
DS	-	-	-	-	-	1 (0.3)	-	-	-	-	-	-	1.000
RC	-	-	-	-	-	1 (0.3)	-	-	-	-	-	-	1.000
SI	2 (0.6)	1 (0.3)	1 (0.3)	-	-	1 (0.3)	1 (0.3)	1 (0.3)	-	-	-	-	1.000
TN	5 (1.4)	5 (1.4)	2 (0.6)	-	1 (0.3)	-	2 (0.6)	-	5 (1.4)	5 (1.4)	3 (0.9)	4 (1.2)	0.838
MA	1 (0.3)	1 (0.3)	3 (0.9)	-	3 (0.9)	-	1 (0.3)	1 (0.3)	1 (0.3)	3 (0.9)	-	2 (0.6)	0.722
OC	2 (0.6)	2 (0.6)	1 (0.3)	-	-	1 (0.3)	1 (0.3)	1 (0.3)	-	2 (0.6)	1 (0.3)	-	0.802
OLP	1 (0.3)	1 (0.3)	5 (1.4)	-	5 (1.4)	2 (0.6)	-	3 (0.9)	-	4 (1.2)	1 (0.3)	-	0.060**
CT	5 (1.4)	-	9 (2.6)	-	-	3 (0.9)	1 (0.3)	4 (1.2)	1 (0.3)	3 (0.9)	-	1 (0.3)	0.662
TMDs	1 (0.3)	-	1 (0.3)	-	-	-	-	-	1 (0.3)	1 (0.3)	1 (0.3)	-	1.000
LD	-	-	-	-	-	-	-	1 (0.3)	1 (0.3)	1 (0.3)	-	-	1.000
Total	**142 (41.1)**	**62 (17.9)**	**165 (18.8)**	**6 (1.8)**	**30 (8.7)**	**160 (46.3)**	**32 (9.2)**	**100 (28.9)**	**29 (8.4)**	**92 (26.6)**	**24 (6.9)**	**44 (12.7)**	**0.310****

*Pearson Chi-Square statistic significant, P-value<0.05.

**Fisher's Extact statistic significant, P-value<0.05.

RP= Reversible pulpitis, IRP= Irreversible pulpitis, PAP/AB= Periapical periodontitis/abscess, PC= Pericoronitis, PD= Periodontal disease, DS= Dry socket, RC= Radicular cyst, SI= Space infection, TN= Trigeminal neuralgia, MA= Major aphthous, OC= Oral cancer, OLP= Oral lichen planus, CT= Cracked tooth, TMDs= Temporomandibular disorders, LD= Lymphadenitis.

Table 7: Pain intensity

Orofacial pain (VAS)	Gender		Total (%)	P-value
	Male (%)	Female (%)		
0	-	-	-	
1-3	56 (16.2)	68 (19.7)	124 (35.9)	
4-6	59 (17.1)	106 (30.7)	165 (47.8)	0.044*
7-9	27 (7.8)	25 (7.2)	52 (15.0)	
10	-	4 (1.2)	4 (1.1)	
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**	

VAS: No-hurt (0), Hurt little bit (1-3) [mild pain],
Hurts little more and hurts even more (4-6) [moderate pain],
whole lot (7-9) [severe pain], Hurts worst (10) [most severe pain] [11, 12, 17].

Table 8: Statistical analysis of pain intensity among different orofacial pain origin

	Pain intensity (VAS)				
Orofacial pain	1-3 n (%)	4-6 n (%)	7-9 n (%)	10 n (%)	**P-value**
Reversible pulpitis	17 (4.9)	7 (2.0)	1 (0.3)	-	0.006*
Irreversible pulpitis	10 (2.9)	26 (7.5)	10 (2.9)	-	0.112
Periapical periodontitis/abscess	42 (12.1)	63 (18.2)	12 (3.4)	-	0.278
Pericoronitis	22 (6.4)	32 (9.3)	16 (4.6)	-	0.163
Periodontal disease	21 (6.1)	25 (7.2)	2 (0.6)	-	0.102
Alveolitis/Dry socket	-	1 (0.3)	-	-	0.779
Radicular cyst	-	1 (0.3)	-	-	0.779
Space infection	-	-	1 (0.3)	1 (0.3)	<0.001*
Trigeminal neuralgia	-	-	3 (0.9)	3 (0.9)	<0.001*
Major aphthous	2 (0.6)	1 (0.3)	-	-	0.701
Oral cancer	2 (0.6)	1 (0.3)	-	-	0.701
Oral lichen planus	1 (0.3)	6 (1.7)	2 (0.6)	-	0.442
Cracked tooth	6 (1.7)	2 (0.6)	3 (0.9)	-	0.218
Temporomandibular disorders	1 (0.3)	-	1 (0.3)	-	0.436
Lymphadenitis	-	-	1 (0.3)	-	0.130
Total	**124 (35.9)**	**165 (47.8)**	**52 (15.0)**	**4 (1.1)**	**0.112**

*Pearson Chi–squares test, statistic significant P-value <0.05. VAS: No-hurt (0),
Hurt little bit (1-3) [mild pain], Hurts little more and hurts even more (4-6) [moderate pain], Hurts whole lot (7-9) [severe pain], Hurts worst (10) [most severe pain].

3.5. The Pain Intensity

The pain intensity assessed using the visual analog scale (VAS) shows that all participants in the study experienced pain ranging from the lowest level (1) to the most severe level (10).The majority of participants reported moderate pain levels (VAS=4-6), and the pain intensity was statistically significantly related (P-value¡0.044). When comparing pain intensity based on the gender of the participants, women experienced more pain than men (OR=1.4:1) Table 7. The Pearson chi-square tests analysis showed a comparison of pain intensity based on the cause of pain origin variables showed that odontogenic orofacial pain, particularly dental pain, was the primary cause of orofacial pain. This study found that non-odontogenic orofacial pain, such as trigeminal neuralgia, was the most severe (VAS=10) (P-value<0.001) as well as orofacial space infection (P-value<0.001) Table 8.

3.6. Pain management

There are various treatment options available for managing pain in the mouth and face, based on the clinical diagnosis. Therefore, treatment in a dental clinic should be tailored to the individual patient's condition, including non-pharmacologic and pharmacologic treatments. The orofacial pain management of these participants was carried out according to the routine protocol of the dental clinic at the Faculty of Dentistry, University of Health Sciences. The management depended on the clinical diagnosis or severity of the disease, ranging from pulp capping and endodontic treatment for odontogenic origin to systemic medication for non-odontogenic orofacial pain. The most prevalent treatment options were endodontic treatment and tooth extraction, with systemic medication being used less frequently for non-odontogenic pain Table 9.

Table 9: Orofacial pain management according to the cause

Pain management	Gender		Total (%)	P-value
	Male (%)	Female (%)		
Indirect/direct pulp capping	10 (2.9)	17 (4.9)	27 (7.8)	
Endodontic treatment	29 (8.4)	47 (13.6)	76 (22.0)	
Tooth extraction	67 (19.4)	94 (27.2)	161 (46.7)	0.602
Scaling/root planning	23 (6.7)	25 (7.2)	48 (13.9)	
Surgery/drainage	8 (2.3)	7 (2.0)	15 (4.3)	
Systemic medication	5 (1.4)	13 (3.8)	18 (5.2)	
Total	**142 (41.2)**	**203 (58.8)**	**345 (100)**	

4. Discussion

Orofacial pain encompasses a range of discomforts located in the face and oral cavity. Its prevalence, characteristics, and management have been subjects of various studies, providing a comprehensive understanding of this condition. Here, we will discuss orofacial pain by examining factors such as prevalence, gender differences, age-related patterns, pain characteristics, and management strategies. This discussion will also include comparisons with findings from other studies to contextualize current understanding. In our study, all participants had experienced orofacial pain, with a prevalence of 19.8%, and a higher proportion of females compared to males (1.4:1). The participants' ages ranged from 16 to 96 years, with an average age of 42 years, and various occupations, with the majority being government employees. Most participants had a bachelor's degree or higher. Odontogenic pain accounted for 93% of cases, while only 7% were non-odontogenic pain, with clinical symptoms such as pain experienced by all participants, as well as swelling, dysphagia, trismus, and mouth soreness in some cases. The nature of pain in the study was mostly described as sharp, throbbing, shooting, and aching $(P-value \leq 0.31)$, with pain intensity ranging from mild to severe [6].

Orofacial pain is a common complaint affecting a significant portion of the population. Epidemiological studies indicate that approximately 11% to 33% of individuals experience orofacial pain at some point in their lives [14, 18]. Our study identified that 19.8% of the participants have experienced orofacial pain. This prevalence can vary based on population demographics and geographic location. However, our study is consistent with a study from a general dental clinic in the United States that found about 16.1% of adults reported orofacial pain, while studies in the general population in Canada reported 12% [6, 9, 17]. This prevalence is higher than a review study of orofacial pain prevalence in European countries (specifically Sweden) from several years ago, which showed that 4.9% of individuals had experienced pain [15]. Additionally, our study's prevalence is lower than that reported in a study from Southern Europe, which reported a 32% prevalence [19]. The reported prevalence of orofacial pain may vary slightly due to differences in healthcare systems and diagnostic criteria; therefore, large population studies are needed to ensure an accurate assessment of orofacial pain incidence in the country.

Gender plays a notable role in the prevalence and experience of orofacial pain. Research consistently shows that women are more likely to experience orofacial pain than men. Our study found that, women are 1.4 times more likely to suffer from a common form of orofacial pain compared to men. This may be caused by external/internal factors such as personal habits and practices, hormonal factors, psychosocial stressors, and differences in pain perception, which are hypothesized to contribute to this disparity [18, 20–23]. Age influences the prevalence and type of orofacial pain experienced. Younger individuals often report pain associated with TMDs and orthodontic issues, while older adults frequently experience orofacial pain due to dental issues such as tooth decay or gum disease, which can be exacerbated by comorbidities like arthritis. When comparing the prevalence of orofacial pain among different age groups, we found that the age groups 20-29 and 40-49 years had a higher prevalence than other groups. This is similar to previous studies that have shown a higher prevalence of pain in adulthood (30-39 and 40-49 years) [24]. The duration of the chief complaint before seeking the dentist is important to address the individual issue. If there is a delay, the issue may worsen or become more severe. In our study, we focused on the duration of orofacial pain issues before patients came to the dental clinic. Our results showed that the duration ranged from 1 day to 1 year, with the majority of patients seeking treatment within 3 days to 1 week. Some patients delayed seeking treatment for 6 months to 1 year before visiting the dentist, particularly for non-odontogenic pain [13, 25, 26].

Pain in the orofacial region can originate from various sources in the oral cavity, including hard tissue, soft tissue, teeth, alveolar bone, and surrounding structures. In this study, we classified two main sources: odontogenic, which includes dental caries, periodontal disease, and pericoronitis, and non-odontogenic, such as soft tissue conditions like oral cancer, oral sores, and trigeminal neuralgia. The majority of the pain is located in the mandibular and maxillary regions (57% and 33%), with a few cases originating from the oral mucosa [27, 28]. Due to time limitations, there may be a lack of potential for addressing orofacial pain. Odontogenic pain caused by teeth, especially pulpal pain from reversible and irreversible pulpitis, periapical periodontitis/abscess, pericoronitis, cracked teeth, etc., are all common types of pain and are most frequently seen in dental clinics (93%), which is consistent with a previous study. This may be due to various factors such as age, poor oral hygiene, and eating habits [6, 27, 29–31]. Non-odontogenic pain in patients at the dental clinic of the Faculty of Dentistry was identified at an incidence of 7%. This pain mostly included oral mucosa diseases such as oral lichen planus and major aphthous ulcers, as well as trigeminal neuralgia. These results indicate a higher prevalence of non-odontogenic pain compared to what has been reported in hospital in Tanzania (3.3%) [32]. Trigeminal neuralgia is found in 1.7% of the population, with women being more affected than men at a ratio of 2:1. Symptoms present as overlapping odontogenic pain, which can make it difficult for clinicians to distinguish from dental pain. This confusion can lead dentists to mistakenly extract the tooth, ultimately failing to alleviate the patient's pain [33, 34].

Pain quality refers to the nature of pain present in clinical cases in humans. Each disease condition shows exclusive signs and characteristics. Orofacial pain can be caused by various sources, especially hard tissue and soft tissue, including dental pulp and surrounding tooth pain. In addition to dental pain, the soft tissues such as muscles, blood vessels, and nerves also exhibit specific types of pain in the orofacial region. In our study, we identified different types of pain associated with various diseases such as dental pain, neuralgia, cancer pain, and oral mucosa-related pain; most of them showed throbbing, shooting, sharp, hot-burning, and aching pain. Pulpal pain was found to have a high portion of cases showing throbbing, shooting, and aching pain, whereas oral mucosa diseases such as major aphthous ulcers and oral lichen planus exhibited symptoms such as hot-burning and sharp pain, and neuralgia, such as trigeminal neuralgia, presented clinical

signs of sharp, shooting, or electric shock-like pain. Although the symptoms were not significantly analyzed statistically because they may be influenced by various factors, the pain quality observed in the present study is consistent with previous studies [16, 32, 35], and shows similar characteristics.

Pain intensity in the orofacial region varies throughout the body, ranging from mild to severe pain. In the current study, patients with orofacial diseases reported pain levels ranging from mild to severe on a visual analog scale (VAS) of 1-10, with an average intensity of moderate (VAS=4-6). Dental pain was found to be less severe compared to trigeminal neuralgia, which was the most severe type of pain reported (VAS=10). All pain intensities in the orofacial region were statistically significant $(p - value < 0.044)$. The pain intensity in the current study is similar to other studies with a level of moderate pain [28, 30, 35]. The pain intensity varied depending on the disease and the different characteristics of pain described, as well as the duration experienced by the patients. Even though the diagnoses seemed similar, the pain characteristics were different. However, all symptoms seemed to have the same pain level [36].

The management of orofacial pain is based on clinical diagnosis. There are various treatment options available for managing pain in the current study, including non-pharmacologic and pharmacologic treatments. The orofacial pain management of these participants was carried out according to the routine protocol of the dental clinic at the Faculty of Dentistry, with pain evaluation and management planning. The pain from dental causes had primary treatments such as pulp capping, endodontic treatment, and root planning. For non-odontogenic origins and infectious diseases, systemic medication was prescribed depending on the severity of the disease [14, 36–39]. All of these treatments have good results, especially for dental pain, but for non-dental pain, it is challenging to treat. Therefore, dentists must pay special attention to the treatment of pain in the orofacial region [40, 41].

This study only provides an overview of pain in the orofacial region. Due to time constraints and limitations in the study design, the data may not accurately represent the diversity of orofacial pain experiences across different populations. Many aspects and factors have not been studied in depth. Future studies should aim to include a more diverse population in terms of risk factors, pathophysiological mechanisms, and management protocols to ensure that the findings are more specific and applicable to a wider clinical management of orofacial pain patients.

5. Conclusion

Orofacial pain, including odontogenic and non-odontogenic pain, is a prevalent condition with significant gender and age-related variations. Its management requires a comprehensive approach tailored to the specific characteristics and intensity of pain experienced by the individual. Comparing findings across studies helps in understanding the global and regional differences in prevalence, pain characteristics, and treatment strategies, ultimately guiding better management practices.

Article Information

Disclaimer (Artificial Intelligence): The author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.), and text-to-image generators have been used during writing or editing of manuscripts.

Consent: All participants were provided with details of the research, asked to voluntarily participate in the study, and signed a consent form.

Author's Contributions: This work was carried out in collaboration among all authors. Author HV contributed to the conception, design, data acquisition, data interpretation, and drafted and critically revised the manuscript. Authors VI, PS, PS, AP, VB, KL, SS, TM, AH and MS contributed to data acquisition, data analysis and data interpretation, drafted and critically revised the manuscript. All authors read and approved the final manuscript.

Ethical Approval: The ethical approval for this study was granted by the ethics committee of the University of Health Sciences, Lao PDR. Ref. No. 660/IREC. 18 JAN 2024.

Acknowledgements: The authors would like to thank the Faculty of Dentistry for providing a site for this work. Many thanks to the individuals who supported our research and made it successful. Finally, thanks to our research team, who worked hard to complete the study, especially the cooperative participants in the dental clinic during this study. Appreciation to Dr. Mick Soukavong, Faculty of Medicine, University of Health Sciences, for providing statistical analysis consulting.

Competing Interests: Authors have declared that no competing interests exist.

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