Original Article

Prevalence of Oromaxillofacial Lesions in Major Histopathological Centers in Sulaimani City

Gasha R. Salim[1], Dena N. Mohammad[2], Balkees T. Garib[2], Hassanain H. Khudier[3]*

Abstract

Objective: Oral and maxillofacial lesions are among the most prevalent oral diseases all over the world. They can be diagnosed through a thorough history and oral examination. The present study was aimed to determine the prevalence and distribution of oromaxillofacial lesions in response to sex, age, type of surgery, site of distribution, clinical presentation, and histopathological diagnosis in Sulaimani city.

Methods: A retrospective study conducted from January 2016 to December 2019 in three major histopathological centers in Sulaimani, 774 patients with oral and maxillofacial lesions were studied. Required data, including sex, age, type of surgical biopsy, site of lesions, and the clinical presentations of these lesions, were obtained from the patients' archived profiles and records. The collected data were analyzed through descriptive statistics and Chi-square test, and P-values of < 0.05 were considered significant.

Results: Over half of the patients (54.3%) were females. The patients' age ranged from 1 day to 90 years. Excisional biopsy was the most frequently conducted surgical procedure (67.8%). Intraoral soft lesions accounted for (64.2%) of the whole lesions, followed by bone lesions (20.4%). Soft tissue mass was the most common clinical presentation (62.3%). The most commonly diagnosed lesions were reactive/hyperplastic lesions (24.2%) and epithelial tumors (11.4%). There was a significant relationship between age and histopathological diagnosis as the p-value =0.000.

Conclusions: Histopathological records provide essential data that help predict the frequent site and type of the most prevalent oral and maxillofacial lesions in Sulaimani city. They can be used for prevention and treatment planning.

Keywords: *Oromaxillofacial lesions, Biopsy, Squamous cell carcinoma.*

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1. *Ministry of Health, Sulaimani Directorate of Health, Sulaimani, Iraq.*
2. *Department of Oral Diagnosis, College of Dentistry, University of Sulaimani, Sulaimani, Iraq.*
3. *Department of Pathology, College of Medicine, University of Sulaimani, Sulaimani, Iraq.*

** Corresponding author: dena.mohammad@univsul.edu.iq.*

Introduction

Several oromaxillofacial lesions affect the oral region. Clinical features with associated histopathological findings are pivotal for the final diagnosis of these lesions[1]. Disrupted oral health limits vital routine activities like speaking, chewing, and swallowing and deteriorates social life[2,3]. Community-based studies showed a broader gap in the prevalence of oral mucosal diseases that ranges from 10.8% to 81.3%[4,5]. Physicians regularly encounter oral and maxillofacial lesions (OMFL) in practice. For recognizing and diagnosing common OMFLs, a thorough history and a complete oral examination are required; knowledge of clinical characteristics such as size, location, surface morphology, color, pain, and duration is also helpful[6].

Furthermore, no one can underscore the role of risk factors for the development of lesions. Poor oral hygiene, age, gender, tobacco use, alcohol consumption, and some systemic conditions are the commonly cited risk factors for these lesions[7-9]. Geographic peculiarities, intake of medications, and denture-related lesions should also be considered[10,11].

Lesions can be either benign or malignant. Al-Hindi et al. in their study classified the oral lesions according to the origin of the tissue, based on histologic records into reactive, cystic, bone lesions, odontogenic tumors, epithelial lesions, inflammation/infections, mesenchymal tumors, immune-mediated diseases, salivary gland diseases, and tumors, pigmented lesions, tooth abnormalities and unspecified lesions[12].

The clinical presentation and the histopathological distribution of oral lesions often differ between pediatrics and adults[13,14]. For example, a study from Thailand showed that 15.05% of oro-facial lesions occur among pediatrics and cystic lesions were the most frequent, followed by inflammatory/reactive lesions and tumor-like lesions[15].

Several studies reported OMFLs from different parts of the world[7,12,16-21]. However, few published Iraqi studies registered the histopathological records of all the oral lesions in different cities in Baghdad, Erbil, Basrah, and AL-Muthanna[14, 22-24].

Most oro-facial diagnosed lesions in different studies were reactive[12,18-21]. Nevertheless, we could not come across single research that addresses OMFL lesions' prevalence even in a single studied area, as there is a lack of standardization in recoding system of biopsied cases in response to their site of occurrence, clinical presentation, and the experience of the pathologist in different centers in the diagnosis of various oral lesions. Therefore, this study aimed to determine the prevalence and distribution of OMFLs in response to sex, age, type of surgery, site of distribution, clinical presentation, and histopathological diagnosis in Sulaimani city.

Patients and methods

Study sample

This retrospective study determined the clinicopathological findings of archived surgical pathological reports of patients with oral and maxillofacial lesions from three major pathological centers (the pathological lab of College of the Dentistry/University of Sulaimani, Shorsh pathological lab, and private Shahid Saifaldeen center) in Sulaimani city for four years' duration extending from 01 January 2016 to 31 December 2019. Ethical approval was obtained from the Research Protocol Ethics Committee of Kurdistan Board of Medical Specialties and Ethical Committee of the College of the Dentistry /University of Sulaimani.

The demographic distribution of data and the type of surgical biopsy (incisional or excisional) were recorded. Furthermore, the involved site and the clinical presentation of the archived oro-maxillofacial lesions were determined (from the records of the clinical and radiographic investigations of the archived reports). Finally, the lesions were specified according to their final histopathological diagnosis of the archived reports following the classification of oromaxillofacial lesions done by Neville et al.[25]. Lastly, the missed data of archived surgical reports were identified.

Statistical analysis

The data were entered into Microsoft excel and cleaned, checked for completeness and consistency. Then it was imported to statistical package for social sciences (SPSS) software version 16 for processing and analysis. The data were summarized in tables. A Chi-square test was done to see the association between categorical variables. Statistical significance for variables was considered with $p < 0.05$.

Results

In this study, 774 patients were diagnosed as OMFLs from pathological archived reports of the three major histopathological centers. Lesions were most commonly detected in females (54.3%). Patients' age ranged from 1 day to 90 years. The mean age of patients was 40.2 (SD ±20.1 years). Based on ten years age classification, 18.0% (n=139) of the cases were ≤20 years, 16.8% (n=130) were above the age of 60 years, and 16.9% (n=131) were between the age of 41 and 50

years. The age was not registered in 70 cases of the archived reports. Most patients were collected from Shahid Saifaldeen center (n= 357, 46.1%) Table 1. From total surgical procedures, 67.8% were excisional biopsy, as shown in Figure.1.

Regarding the site of distribution of the OMFLs. Intraoral soft lesions were the most commonly detected lesions (n=497, 64.2%), followed by bone lesions (n=158, 20.4%) and salivary gland lesions (n=53, 6.8%). Among oral soft lesions, gingival and alveolar mucosa were predominantly affected (13.4%), followed by the tongue (12.9%), lip (12.7%), and cheek (12.4%). At the same time, bone lesions were seen more frequently in the maxilla (n=74, 9.6%). The sample distribution in different sites is shown in Table 2.

The clinical presentation of OMFLs revealed that soft tissue mass was the most common finding (n=482, 62.3%), followed by ulcerative lesions (n=54, 7.0%), and periapical lesions (n=53, 6.8%), and bony mass (n=49, 6.3%). The least presented findings were mobile teeth, fistula, and pigmented lesions, which were detected in only one case for each of them. Table 3.

The lesions were distributed according to their final histopathological diagnosis. Reactive/hyperplastic lesions were the most commonly reported lesions (n=187, 24.2%), with the most predominate fibroepithelial lesions (106 out of 187), followed by epithelial tumors (n=88, 11.4%), of which oral squamous cell carcinoma had a high frequency (74 out of 88). Oral anomalies and metastatic carcinomas were less commonly detected in the studied sample, as they were 0.3% and 0.1 %, respectively. The histopathological diagnosis of the lesions is shown in Table 4.

A high significant relation was found between age groups and different histopathological diagnoses (P-value 0.000). The most commonly detected age group with OMFLs was (41-50) years (131 cases); within this age group, the reactive/hyperplastic lesions were predominantly reported (30 cases), followed by immunological diseases (15 cases) and epithelial tumors (14 cases). Interestingly within the two age groups of (51-60) and (61-70), the reactive/hyperplastic lesions were most commonly found, followed by the epithelial tumors, as shown in Table 5.

Table 1: Demographic characteristics and the frequency of cases in the three major histopathological centers.

		Frequency	Percentage
Sex	Female	420	54.3
	Male	348	45
	Not reported	6	0.8
	Total	774	100
Age group	1 day -10 year	51	6.6
	11-20	88	11.4
	21-30	111	14.3
	31-40	105	13.6
	41-50	131	16.9
	51-60	88	11.4
	61-70	84	10.9
	71-80	36	4.7
	81-90	10	1.3
	Not reported	70	9.0
	Total	774	100
Lab	College of Dentistry	175	22.6
	Shahid Saifaldeen center	357	46.1
	Shorish center	242	31.3
	Total	774	100

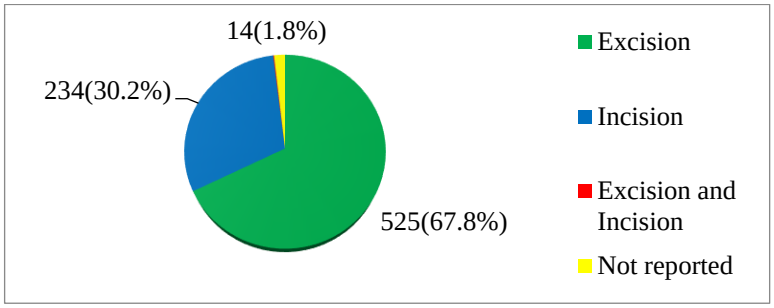

Figure 1: Distribution of the sample in response to type of surgery.

Table 2: Distribution of studied sample in different Oro-facial sites.

Oro-facial sites		Frequency	Percentages
Intra oral soft lesions (n=497)	Gingiva and alveolar mucosa	104	13.4
	Tongue	100	12.9
	Lip	98	12.7
	Cheek	96	12.4
	Palate	43	5.6
	Overlap	18	2.3
	Floor of mouth	13	1.7
	Vestibule	12	1.6
	Retromolar	7	0.9
	Socket	5	0.6
	Oro-pharyngea	1	0.1
Bone lesions (n=158)	Maxilla	74	9.6
	Mandible	68	8.8
	Jaw (maxilla or mandible)	12	1.6
	Maxillary sinus	4	0.5
Face lesions		26	3.4
Neck lesions		34	4.4
Salivary gland lesions		53	6.8
Not reported		6	0.8
Total		774	100

Table 3: Clinical presentation of different Oro-facial lesion in the studied sample.

Clinical presentation	Frequency	Percentages
Soft tissue mass	482	62.3
Ulcer	54	7.0
Periapical lesion	53	6.8
Bony mass	49	6.3
Cyst of the jaw	38	4.9
White lesion	34	4.4
Ulcerated mass	19	2.5
Normal tissue*	19	2.5
Ulcerated white lesion	6	0.8
Erthyroleukoplakia	5	0.6
Pain	5	0.6
Desquamative gingivitis	4	0.5
Fistula	1	0.1
Mobil tooth	1	0.1
Pigmented lesion	1	0.1
Not reported	3	0.4

*****Normal: normal tissues of biopsied cases that were taken from labial mucosa to exclude Sjogren syndrome.

Table 4: The distribution of the sample according to different histopathological diagnosis.

Diagnosed lesion	Frequency	Percentage
Reactive/hyperplastic lesions	187	24.2
Epithelial tumors	88	11.4
Bone lesions	68	8.8
Salivary gland diseases	68	8.8
Cysts	56	7.2
Periapical lesions#	53	6.8
Connective tissue tumors	47	6.1
Immunological diseases	48	6.2
Salivary gland tumors	46	5.9
Nonspecific ulcer	30	3.9
Normal *	19	2.5
Epithelial lesions	25	3.2
Odontogenic tumors	11	1.4
Bone tumors	9	1.2
Hematoma	6	0.8
Microbial infections	6	0.8
Reactive hyperplasia of lymph node	4	0.5
Oral anomalies	2	0.3
Metastasis carcinoma	1	0.1
Total	774	100

*****Normal: normal tissues of biopsied cases that were taken from labial mucosa to exclude Sjogren syndrome.

periapical lesions: for inflammatory odontogenic lesions at the apex of the teeth (granuloma, cyst and abscess)

Table 5: Age groups relation to different histopathological diagnosis in the studied sample.

Diagnosed lesions	age groups									Total
	10-Jan	20-Nov	21-30	31-40	41-50	51-60	61-70	71-80	81-90	
Reactive/hyperplastic	5	18	25	31	30	21	26	7	3	166
Epithelial tumors	0	2	4	4	14	14	24	16	4	82
Bone lesions	10	5	14	12	9	5	6	1	0	62
Salivary gland diseases	10	22	6	4	8	5	1	0	1	57
Cyst	8	12	12	11	7	2	0	0	0	52
immunological	0	2	4	7	15	12	4	2	0	46
Periapical lesions	1	11	15	7	6	4	2	0	0	46
Connective tissue	10	1	6	5	12	5	3	3	0	45
Salivary gland tumors	0	4	8	5	8	8	8	2	0	43
Nonspecific ulcer	1	1	2	3	12	6	3	1	0	29
Epithelial lesions	0	3	6	5	4	1	0	2	1	22
Normal	0	4	1	3	4	1	3	2	0	18
Odontogenic tumors	3	1	2	3	0	1	1	0	0	11
Bone tumors	1	1	2	1	0	3	1	0	0	9
Hematoma	0	0	1	2	0	0	1	0	1	5
Microbial infection	0	0	0	2	2	0	0	0	0	4
Reactive hyperplasia of	1	1	2	0	0	0	0	0	0	4
Oral anomalies	1	0	1	0	0	0	0	0	0	2
Metastasis carcinomas	0	0	0	0	0	0	1	0	0	1
Total	51	88	111	105	131	88	84	36	10	704*

*70 cases had no age reported in surgical reports, p -value =.000

Discussion

The incidence rate of oral lesions varies widely depending on; geographic location, age, sex, race, and criteria of histopathological evaluation. Furthermore, the spectrum of oral disease distribution in a particular region or community may be affected by other factors, including socioeconomic status, patient awareness, culture, habit, changes in lifestyle and increasing interest or difficult access to oral healthcare, malnutrition, and poor oral health hygiene[26].

According to studies carried out over the years, different oral lesions are prevalent in different parts of the world. In this study, females have been reported to suffer from OMFLs more than men, similar findings reported by other studies of neighboring countries[12,21,27,28]. The most prevalent lesions in the current study were seen in the middle age groups (41-50) with a mean age of 40. Nearly similar findings were reported by Moridani et al., Alanazi et al., Aljazaeri et al., and Toum et al.[21,22,23,26], as they found the mean ages of their patients were 38, 38, 38.4 + 13.65. 40.1 respectively. This result was more than that reported by Joseph et al. in Kuwait and Akinmoladun et al. in Nigeria, as they found the mean ages of their patients were 37.83 ± 16.62 and 36.1 ±18.9 respectively[9,29]. At the same time, another study conducted in two referral pathological centers in Tehran illustrated higher mean age of 44 ± three years[30]. This difference is attributed to diverse associated habits and environmental factors and patient awareness in visiting the health care centers in different geographical regions.

Furthermore, another study referred to the aging process as a stimulating factor for OMFLs, such that the course of aging might lead to individuals' exposure to oral diseases. Factors such as degeneration of collagen fibers, reduced cell proliferation, fat loss, and salivary changes play a significant role in such vulnerability. The overall consequence is the impairment of the immune system[31].

In the present study, more than two-thirds of surgical procedures were excisional biopsies; this could be related to that most OMFLs reached a specific size that indicated the removal for both histopathological evaluation and treatment of the associated lesions. Moreover, 64.2% of recorded oral samples were related to soft lesions, followed by bony lesions 20.4 %. This finding could be explained by the fact that the soft lesions were easily recognized by both the patients and dental clinicians and the influence of the trauma and other irritating environmental factors on the development of these lesions. On the other hand, the bone lesion diagnosis necessitates a complete interpretation of clinical, radiographic, and histopathological investigations. The result of this study was similar to other studies done in Saudi Arabia[12], Kuwait[32], and India[33], as they reported predominate soft tissue lesions followed by bony lesions. However, in their studies, Jahanbani et al. and Demko et al. revealed a lower prevalence of oral soft lesions compared to this study, which was 49.3% and 26.7%, respectively[34,35]. This difference could be related to different data analyses done by these two studies, as they were clinically-based studies with varied study samples and referral centers.

Regarding soft tissue distribution in the present study, gingival and alveolar mucosa is the most affected site (13.4%), followed by the tongue (12.9%) and lip (12.7%). While a study done in Basrah city of Iraq reported predominate oral lesions in the tongue (18.2%) followed by lower jaw (17.7%) and buccal mucosa (15.7%)[23]. Shahsavari et al. detected similar sequence distribution of oral benign soft tissue tumors in their study, which was gingiva (53.1%), followed by the tongue (13.4%) and lip (12.7%)[36]. Ali and Sundaram, in their study, found that the buccal mucosa as most frequent site 26.8%, followed by lower lip 20.3% and gingiva 19.9%[32]. Another research indicated that benign neoplasms were frequently seen in the palate, tongue, and upper lip, in descending order. Simultaneously, non-neoplastic lesions were detected most commonly in the gingiva, buccal mucosa, and lower lip[28]. This difference might be related to various classification criteria applied in different studies, site-specific distribution in other countries, and specified lesions in some of these studies.

In the current study, soft tissue mass and ulcerative lesions were the most common findings. Injuries occurred during routine daily activities and or associated irritation factors contribute to most trauma-associated lesions in the oral and maxillofacial region[37]. Furthermore, the oral mucosa can be affected by a wide range of reactive, infectious, precancerous, and neoplastic lesions that significantly impact general health[32].

Histological evaluation determines the essential diagnostic information and can indicate the malignant transformation of potentially malignant diseases, influencing the subsequent prognosis and the treatment planning of certain serious diseases [18]. The most commonly recorded lesions in the present study were reactive/hyperplastic lesions, followed by epithelial tumors. Similarly, Mortazavi et al. referred to reactive hyperplastic lesions as a common sub-mucosal response to trauma from teeth or dental prostheses[38]. The traumatic irritants include overextended borders of appliances, sharp spicules of bones, chronic biting, foreign bodies, and overhanging margins associated with the development of these lesions[39]. Previous

pediatric studies revealed that hyperplasic/reactive lesions were most frequently seen, followed by salivary gland lesions[14,40]. While a study done in Saudi Arabia showed that oral reactive lesions were the most commonly detected (20.1%), followed by cystic lesions (17.6%)[12]. Another study conducted in Kuwait reported predominate reactive lesions (52.7%) followed by inflammatory lesions (27.2%) in the non-neoplastic group, while epithelial tumors (74.6%) followed by mesenchymal (25.4%) within the neoplastic category[32]. Histopathological records conducted in Basrah city of Iraq showed that the reactive lesions were the most prevalent one (42.7%), followed by malignant tumors (epithelial, salivary, and mesenchymal) (19.1%)[23]. Another Iraqi study done in Erbil city demarcated different distribution of oral lesions with prominent mucosal and skin lesions (33.9%) followed by benign tumors (odontogenic, mesenchymal, and salivary) (24.2%)[22]. Ali and Musa in Al-Muthanna city of Iraq, in their small sample of oral lesions, reported the most prevalent reactive lesions (1.4%), followed by both epithelial lesions and benign salivary tumors (0.5%) each[24]. A single-center retrospective study in Dubai showed that the most commonly recognized lesions were reactive (25%), followed by chronic granulomatous infections (13.5%)[18]. Lastly, a seven-year retrospective study done in Iranian patients illustrated that the reactive lesions (21.5%) followed by odontogenic cysts (17.3%) were the most commonly seen[21]. This difference in the studies reflects varied selected samples of the population, different criteria of specification and subclassification of benign and malignant oral lesions within diverse categories by the authors, and general health status in underdeveloped and developing countries.

Oral anomalies were less commonly identified lesions in the present study. This result was similar to Alhindi et al.'s finding that teeth anomalies were less detected oral lesions[12]. At the same time, a study done by Ali and Sundaram indicated that pigmented lesions were the least recorded ones[32].

The current study reported oral squamous cell carcinoma as the most common epithelial tumor, and this finding was in accordance with other middle east studies[12,20-23,27,29,32]. Previous two studies conducted in Pakistan and Nigeria also revealed squamous cell carcinoma as the most prevalent orofacial lesion[7,9].

The highest peak of epithelial tumors in the present study was detected in patients aged (61-70) years. This result was nearly similar to Alhindi et al.'s finding, as they found that the epithelial tumors were commonly seen in patients' mean age ranged from (56.6- 67.7)[12]. At the same time, Ali and Sundaram reported epithelial tumors most widely in the fifth decade of life[32].

Lastly, a wide range of studies recorded OMFLs in different parts of the world. Still, they differ in the disease categorization approach, age selection, prevalence of reported oral lesions. Furthermore, environmental factors, habits, general health status, and quality of life-related to the studied region affect oral lesions' frequencies.

Conclusions

In the present study, reactive/hyperplastic lesions constitute the most prevalent identified oral lesions needing conservative treatment. However, epithelial tumors, the second predominant lesions, required more intensive treatment and patient follow-up. The reported data concerning oral lesions' distribution and the most prevalent lesions within specific age groups in Sulaimani city is valuable to practitioners and decision-makers to provide effective treatments for the population. In addition, it helps adopt new strategies for oral lesions prevention.

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References

1. Rezende Oliveira S, Fernandes Araújo Almeida T, Aparecida da Silva T, Alves Mesquita R, Guimarães Abreu L. Comparison of tissue artifacts in punch and scalpel biopsies of oral and maxillofacial lesions: A systematic review and meta-analysis. J Stomatol Oral Maxillofac Surg. 2020;121(6):704-12.
2. Emeka C, Effiom O, Gbotolorun O, Oluwakuyide R, Adeyemi M, Olojede A, et al. Diagnostic concordance characteristics of orofacial lesions seen in lagos university teaching hospital. Afr J Oral and Maxillofac Path. Med. 2016;2(1):1-6.
3. Okoh D, Orikpete E, Omoregie O, Ojo M. A study of the clinicopathologic patterns of orofacial carcinomas in a Nigerian population. Afr J Oral and Maxillofac Path. Med. 2015;1(2):10-17.
4. Kansky AA, Didanovic V, Dovsak T, Brzak BL, Pelivan I, Terlevic D. Epidemiology of oral

mucosal lesions in Slovenia. Radiol Oncol. 2018;52(3):263-6.
5. Mansour Ghanaei F, Joukar F, Rabiei M, Dadashzadeh A, Kord Valeshabad A. Prevalence of oral mucosal lesions in an adult Iranian population. Iran Red Crescent Med J. 2013;15(7):600-4.
6. Gonsalves WC, Chi AC, Neville BW. Common oral lesions: Part I. Superficial mucosal lesions. Am Fam Physician. 2007;75(4):501-7.
7. Alam J, Siddiqui AA, Mian RI, Mirza AJ, Khan S, Alam MK. Histopathological Evaluation of Oral and Maxillofacial Lesions Managed at a Tertiary Care Teaching Hospital in Karachi, Pakistan. Int Medical J. 2018;25(1):42-4.
8. Adesina OM, Soyele OO, Oyetola EO, Fatusi OA. Review of 109 cases of primary malignant orofacial lesions seen at a Nigerian Tertiary Hospital. Niger postgrad Med J. 2018;25(4):246-51.
9. Akinmoladun VI, Akintububo OB, Adisa AO, Ojo EO, Ayuba D. Evaluation of the histopathology of orofacial lesions in a North-East Nigerian tertiary centre. Ann Afr Med. 2013;12(2):105-9.
10. Shulman JD, Beach MM, Rivera-Hidalgo F. The prevalence of oral mucosal lesions in US adults: data from the Third National Health and Nutrition Examination Survey, 1988–1994. J Am Dent Assoc. 2004;135(9):1279-86.
11. Espinoza I, Rojas R, Aranda W, Gamonal J. Prevalence of oral mucosal lesions in elderly people in Santiago, Chile. J Oral Pathol Med. 2003;32(10):571-5.
12. AlHindi NA, Sindi AM, Binmadi NO, Elias WY. Retrospective study of oral and maxillofacial pathology lesions diagnosed at the Faculty of Dentistry, King Abdulaziz University. Clin Cosmet Investig Dent. 2019;11:45-52.
13. Ataíde AP, Fonseca FP, Santos Silva AR, Jorge Júnior J, Lopes MA, Vargas PA. Distribution of oral and maxillofacial lesions in pediatric patients from a Brazilian southeastern population. Int J Pediatr Otorhinolaryngol. 2016;90:241-44.
14. Abdullah BH, Jabbar Abdul Qader OA, Mussedi OS. Retrospective analysis of 1286 oral and maxillofacial biopsied lesions of Iraqi children over a 30 years period. J. Pediatr. Dent. 2016;26(1):16-20.
15. Dhanuthai K, Banrai M, Limpanaputtajak S. A retrospective study of paediatric oral lesions from Thailand. Int J Paediatr Dent. 2007;17(4):248-53.
16. Soyele OO, Aborisade A, Adesina OM, Olatunji A, Adedigba M, Ladeji AM, *et al.* Concordance between clinical and histopathologic diagnosis and an audit of oral histopathology service at a Nigerian tertiary hospital. Pan Afr Med J. 2019;34:100.19388.
17. Mahmoudi P, Razavi SM, Tahani B. Orofacial Pathological Lesions in Children and Adolescents: A 25-year survey in Iran. J Dent (Shiraz). 2018;19(4):265-72.
18. Al Shayeb M, Mathew L, Elkaseh A, Kuduruthullah S. Exploring trends in reported orofacial lesions in Dubai: A single-centre retrospective study. Oral diseases. 2020;26(6):1343-45.
19. Hatem M, Abdulmajid ZS, Taher EM, El Kabir MA, Benrajab MA, Kwafi R. Benign Orofacial Lesions in Libyan Population: A 17 Years Retrospective Study. Open Dent. J. 2015;9:380-7.
20. Alanazi YM, Alrwuili MR, Latif K, Alenzi NA, Alenzi BA, Aljabab MA. A 5-years retrospective study of oral pathological lesions in 425 Saudi patients. *Pak Oral Dent J*. 2016;36:45-8.
21. Moridani S, Shaahsavari F, Adeli M. A 7-year retrospective study of biopsied oral lesions in 460 Iranian patients. RSBO. 2014;11(2):118-24.
22. Yakin M, Jalal JA, Al-Khurri LE, Rich AM. Oral and maxillofacial pathology submitted to Rizgary Teaching Hospital: a 6-year retrospective study. Int Dent J. 2016;66(2):78-85.
23. Aljazaeri S, Al Qudsi G, Jaber H, Al Elwi W, Haddad S, Echrish H. Biopsy records to the oral lesions in Basrah between 2012-2017. J Oral Med, Oral Surg, Oral Pathol, Oral Radio. 2020;6(2):74-80.
24. Ali Hadi Fahad, Sabah Qaysar Musa. Prevalence of oral lesions in Al-Muthannagovernorate, Iraq: (Clinicopathological study)". Int. j. enhanc. Res. sci. technol. eng .2018;7(1):8-12.
25. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology,.4th. ed. Saunders: Elsevier; 2016. p.604-605.
26. El Toum S, Cassia A, Bouchi N, Kassab I. Prevalence and Distribution of Oral Mucosal Lesions by Sex and Age Categories: A Retrospective Study of Patients Attending Lebanese School of Dentistry. Int J Dent. 2018;2018:4030134.
27. Saleh SM, Idris AM, Vani NV, Tubaigy FM, Alharbi FA, Sharwani AA, *et al.* Retrospective analysis of biopsied oral and maxillofacial lesions in South-Western Saudi Arabia. Saudi Med J. 2017;38(4):405–12.
28. Al-khateeb TH. Benign oral masses in a Northern Jordanian Population- a retrospective Study. Open Dent J. 2009;28,3:147-53.
29. Joseph BK, Ali MA, Dashti H, Sundaram DB. Analysis of oral and maxillofacial pathology lesions over an 18-year period diagnosed at Kuwait University. J Invest Clin Dent. 2019;e12432.

30. Shahsavari F, Sadri D, Jolehar M, Farzanehnejad R. Epidemiologic Study of the Prevalence of Oral Mucosal Lesions in the Biopsied Samples at Buali and Imam Khomeini Hospitals from 2000 to 2014. J Res Dentomaxillofac Sci. 2016;1(1):28-33.
31. Fonseca MF, Kato CO, Pereira MC, Gomes LT, Abreu LG, Fonseca FP *et al.* Oral and maxillofacial lesions in older individuals and associated factors: A retrospective analysis of cases retrieved in two different services. J Clin Exp Dent. 2019;11(10):e921-9.
32. Ali M, Sundaram D. Biopsied oral soft tissue lesions in Kuwait: a six-year retrospective analysis. Med Princ Pract. 2012;21(6):569–75.
33. Gambhir RS, Veeresha KL, Sohi R, Kakkar H, Aggarwal A, Gupta D. The prevalence of oral mucosal lesions in the patients visiting a dental school in northern India in relation to sex, site, and distribution: a retrospective study. J Clin Exp Dent. 2011;3(1):e10–7.
34. Jahanbani J, Sandvik L, Lyberg T, Ahlfors E. Evaluation of oral mucosal lesions in 598 referred Iranian patients. Open Dent J. 2009;3:42-7.
35. Demko CA, Sawyer D, Slivka M, Smith D, Wotman S. Prevalence of oral lesions in the dental office. Gen Dent. 2009;57(5):504-9.
36. Shahsavari F, Khourkiaee S, Ghasemi Moridani S. Epidemiologic study of benign soft tissue tumors of oral cavity in an Iranian population. 3dj. 2012;1(1):10-5.
37. Chen JY, Wang WC, Chen YK, Lin LM. A retrospective study of trauma-associated oral and maxillofacial lesions in a population from southern Taiwan. J Appl Oral Sci. 2010;18(1):5-9.
38. Mortazavi H, Safi Y, Baharvand M, Rahmani S, Jafari S. Peripheral exophytic oral lesions: a clinical decision tree. Int J Dent. 2017;2017:9193831.
39. Paul S, Pudukulangara A, Kulal R, Sambashivaiah S. Report of an unusually Huge Fibroepithelial Polyp managed with Diode Laser. J Health Sci Res 2015;6(2):52-5.
40. Mouchrek M. M. M, Gonçalves L. M, Bezerra-Júnior J. R. S, Maia E. C. S, *et al.* Oral and maxillofacial biopsied lesions in Brazilian pediatric patients: A 16-year retrospective study. Revista Odonto Ciencia. 2011;26(3):222-6.