

# Prevalence of Oral Mucosal Lesions in Children

## Prevalencia de Lesiones de la Mucosa Oral en Niños

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**ABSTRACT:** Lesions of the oral mucosa are a broad range of different alterations located in the soft tissue of the oral cavity. The studies that describe the prevalence of oral mucosal lesions have been carried out mainly in an adult population. Therefore, in the literature available both in Chile and abroad, there are few reports about pathological lesions and alterations of the normality of the oral mucosa in pediatric population. A descriptive observational cross-sectional study was conducted, with non-probability sampling for convenience, with a sample of 219 patients and a level of confidence of 95 %. We estimated 30 % of children with oral mucosal lesions. Patient history and the presence of oral mucosal lesions were registered in the clinical records specific to this study. In 101 patients a prevalence of 37.62 % of oral mucosal lesions was observed. The most frequent lesion was the minor aphthous ulcer (6.9 %), followed by irritation fibroma (5 %), traumatic ulcer (5 %), traumatic erosion (4 %), impetigo (4 %), pigmented lesion (3 %), and others, at lower rates. The most prevalent location was the lips with a 38.5 %.

**KEY WORDS:** oral mucosal lesions, pediatric population, traumatic ulcers, aphthous stomatitis.

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## INTRODUCTION

Oral mucosal lesions are a broad group of alterations located in the soft tissues of the oral cavity, recognizable by their etiology, clinical characteristics, prognosis, and dissimilar treatments.

The clinical exam to obtain a diagnosis of oral conditions and lesions is fundamental, which is why, it must be correct, thorough, and systematic. The exam of soft tissues in pediatric patients involves knowledge of normal size, shape, color, and texture of the structures that comprise it. The correct exploration of the oral mucosa can provide important tools in diagnosing developmental, neoplastic, infectious, or inflammatory alterations (Espinoza *et al.*, 2003).

The lesions in oral mucosa in children can present as vesicles, ulcers, macules, changes in color, size alterations, and configuration of the oral anatomy (Donoso *et al.*, 2013).

In Chile, there are few studies about oral mucosal lesions, neither in adult or pediatric

populations (Kramer *et al.*, 1980; Cueto *et al.*, 2013; Pinto *et al.*, 2014). On the other hand, it is important to organize and standardize the criteria of examination for the various medical procedures in oral mucosa.

Several studies in different geographic locations have reported frequency in oral mucosal lesions. In a study conducted in Argentina by Muniz *et al.*, in 1981, for a total sample of 75 healthy pediatric male patients, ages 6 to 13, 46 patients presented oral mucosal lesions, with a prevalence of 61.3 %. The most common lesions were angular cheilitis (14.7 %), followed by herpes labialis (10.7 %), impetigo (9.3 %), geographic tongue, recurrent aphthous ulcer, and verruca vulgaris (2.7 %) (Muñiz *et al.*, 1981).

In a study carried out in South Africa by Arendorf *et al.* (1996), with a sample of 1051 patients, a 32.90 % prevalence of oral mucosal lesions was observed. The most prevalent was the recurrent aphthous ulcer (10.87 %), followed by herpes labialis (5.2 %), angular cheilitis (3.54 %), geographic tongue (2.95 %),

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depapillated tongue (2.6 %), ankyloglossia, traumatic ulcer (1.41 %), mucocele (1.18 %) and impetigo (0.94 %) (Arendorf *et al.*).

In Mexico, Espinoza-Zapata (2006) conducted a study with a sample of 1165 patients between 1 and 16 years old. The prevalence of oral mucosal lesions was 7.4 %. The most frequent lesions were: fibrous hyperplasia (3.18 %), oral candidiasis (1.89 %), and ulcerative lesions (1.2 %) (Espinoza-Zapata *et al.*).

## MATERIAL AND METHOD

An observational, descriptive study was conducted. Non-probability sampling was used for convenience depending on scheduling and availability of the patients from the Pediatric Dentistry Clinic of the Universidad del Desarrollo. A sample of 219 patients from a population of 680 patients treated at that clinic in the year 2014, with a 95 % level of confidence, 5 % margin of error, and an estimated of 30 % of the pediatric patients with oral mucosal lesions. The sample was distributed into two groups: healthy patients and patients with systemic diseases.

The inclusion criteria were patients from 3 years old to 13 years old, both genders.

The sample was examined between July and September in 2015. This study was approved by the undergraduate research Ethics Committee of the Faculty of Medicine - Clínica Alemana of Universidad del Desarrollo, and before carrying out the clinical trial; the patients and their proxies signed an informed consent and assent.

In this study, the instrument used for measuring was the clinical record, based on the clinical exam of the oral mucosa applied by the World Health Organization described in the study "Guide to epidemiology and diagnosis of oral mucosal diseases and conditions" (Espinoza *et al.*) and in "Pediatric Oral Medicine" a guide of pediatric oral medicine (Witman *et al.*, 2003), where the general data about children was registered by illnesses, type, and location of the lesion. This was carried out through direct observation without using complementary exams, which is why the diagnosis was based on the clinical exam. In case of finding any oral mucosal lesion, a photographic register of the lesion was taken.

The results obtained in the clinical records were processed using Microsoft Office Excel 2011® worksheet, where a descriptive statistic was made, doing statistical process of data.

## RESULTS

One hundred one pediatric patients were examined in the pediatric dentistry clinic in the UDD clinic from July to September 2015, where all of the patients studied fitted the inclusion criteria.



Fig. 1. Minor aphthous ulcer on labial mucosa.



Fig. 2. Traumatic ulcer on the oral groove.



Fig. 3. Irritated Fibroid on oral mucosa.



Fig. 4. Fissured tongue on dorsum of the tongue.



Fig. 5. Pigmented lesion on vermillion margin.

In this group of 101 patients, 47 (46.5 %) were men and 54 (53.5 %) were female. The age group of the patients was from 4 to 13 years of age, with a median of 8, and a mean of 8.7 years old.

Of the entirety of the sample, 38 patients (37.6 %) were diagnosed with at least one oral mucosal lesion during the exam. The frequency percentages of oral mucosal lesion in men and female were 36.2 % in the former and 38.9 % in the latter. Of these, only one patient had two lesions simultaneously (2.6 %).

In Table I, the diagnosis of the 39 oral mucosal lesions in 38 patients can be appreciated. The more

prevalent lesions were minor aphthous ulcers (6.9 %), irritation fibroma (5 %), traumatic ulcer (5 %), traumatic erosion (4 %), impetigo (4 %), pigmented lesions (3 %), and recurrent herpes labialis (2 %).

Respecting the anatomical location of the oral mucosal lesions, 9 were located on labial mucosa, 6 on the vermillion border, 5 on buccal mucosa, 3 on labial commissures, 3 on gingiva, 3 on the floor of the mouth, 3 on the buccal groove, 2 on dorsum of the tongue, 2 on apex of the tongue, 1 attached mucosa, 1 on the hard palate, and 1 on the tonsillar pilar (Table II).

## DISCUSSION

The prevalence of oral mucosal lesions in this study was of 37.6 % of the studied pediatric population. In the revised studies, this percentage varies from a 4.1 % (Arendorf *et al.*) to a 78.4 % (Espinoza-Zapata *et al.*). Even though the demographic characteristics of the studied population are different, the percentage of the lesions found in this study is very similar to the prevalence found in Argentina by Crivelli *et al.* (1988) being this one a 39.04 %; and also very similar to the one in Spain by García-Pola *et al.* (2002) which was 38.94 %.

The most prevalent pathologies were minor aphthous ulcer (6.9 %), irritation fibroma (5 %), traumatic ulcer (5 %), traumatic erosion (4 %), impetigo (4 %), pigmented lesions (3 %), herpes labialis (2 %), intraoral herpes (1 %), mucocele (1 %), ranula (1 %), telangiectatic granuloma (1 %), fissured tongue (1 %), geographic tongue (1 %), submucous abscess (1 %), morsicatio buccarum (1 %), and gingivitis caused by friction (1 %).

The most frequent location observed in oral mucosal lesions, was labial mucosa (23.1 %), followed by vermillion border (15.4 %), buccal mucosa (12.8 %), labial commissures (7.7 %), buccal groove (7.7 %), gingiva (7.7 %), floor of the mouth (7.7 %), apex of the tongue (5.1 %) dorsum of the tongue (5.1 %), attached mucosa (2.6 %), tonsillar pillars (2.6 %), hard palate (2.6 %). The anatomical location is similar to the one observed by Shulman (2005) with 30.7 % on lips, and the one by Hussein & Noori (2014) with a 37.4 % on lips.

This study shows a tendency of frequent diagnoses of oral mucosal lesions that could be found

Table I. Oral mucosal lesions presented in 38 patients. (1 patient presented 2 simultaneous diagnosis).

Type of lesion	Number of lesions found
Minor aphthous ulcers	7
Irritation fibroma	5
Traumatic ulcer	5
Traumatic erosion	4
Impetigo	4
Pigmented lesions	3
Recurrent herpes labialis	2
Recurrent intraoral herpes	1
Mucocele	1
Ranula	1
Telangiectatic granuloma	1
Fisured tongue	1
Geographic tongue	1
Submucous abscess	1
Morsicatio buccarum	1
Gingivitis caused by friction	1

Table II. Frequency of oral mucosal lesions distributed by anatomical location.

Anatomical location	Frequency of lesions	Prevalence of lesions
Labial mucosa	9	23.08 %
Vermilion margin	6	15.38 %
Oral mucosa	5	12.79 %
Labial commissures	3	7.69 %
Oral groove	3	7.69 %
Gingiva	3	7.69 %
Floor of the oral cavity	3	7.69 %
Dorsum of tongue	2	5.09 %
Apex of tongue	2	5.09 %
Attached mucosa	1	2.60 %
Hard palate	1	2.60 %
Tonsillar pillars	1	2.60 %

Table III. Oral mucosal lesions compared with other studies.

	Crivelli et al., (Argentina) 1988	García Pola et al., (España) 2002	Bessa et al., (Brasil) 2004	Shulman J. (EE.UU) 2005	Jiménez et al., (Venezuela) 2007	Majorana et al., (Italia) 2010	Köse et al., (Turquia) 2013	Hussein & Noori (Irak) 2014	Yáñez (Chile) 2015
	4 a 13 años n=846 (9)	6 años n=624 (10)	0 a 12 n=1211 (11)	2 a 17 años n=10030 (12)	2 a 17 años n=245 (13)	0 a 12 n=2918 (14)	0 a 12 años n=1034 (15)	6 a 13 n=5113 (16)	4-13 n=101
Geographic tongue	3 %	4,5 %	9,1 %	1,1 %	3,3 %	2,9 %	1,7 %	1,3 %	1 %
Recurrent aphthous ulcer	10,9 %	2,2 %	1,6 %	1,6 %	0,4 %	4,7 %	2,7 %	2,3 %	6,9 %
Angular cheilitis	3,5 %	2,1 %	0,8 %	0,2 %	2 %	0,5 %	0,5 %	1,7 %	
Herpes labialis	5,2 %	1,6 %	0,8 %	1,4 %		2,7 %	0,4 %	3,35	2 %
Fissured tongue	2 %		1,5 %	0,1 %		0,1 %	0,3 %	1,7 %	1 %
Ankyloglossia	1,4 %	2,1 %	0,5 %			0,2 %			
Traumatic lacerations	1,4 %	12,2 %	2,2 %	0,4 %	2,9 %	5,1 %	0,2 %	1,6 %	5 %
Mucocele	1,2 %	0,8 %	0,8 %	0,04 %	1,6 %		1,5 %	0,04 %	1 %
Coated tongue		16 %				2,1 %	0,3 %		
Angioma		3,8 %							
Dentoalveolar abscess		1,3 %		0,09 %			0,4 %		1 %
Melanotic macules		1,1 %	2,6 %			0,1 %			3 %
Fordyce spots		1 %	0,3 %				0,2 %		
Bite lesions			6,1 %	0,05 %					
Candidiasis			1,8 %		3,3 %	8,2 %	1,1 %		
Primary herpetic gingivostomatitis			0,3 %	0,03 %	1,3 %		1,3 %		
Impetigo	0,9 %		0,2 %						4 %
Morsicatio Buccarum			0,2 %		5,3 %				1 %
Fibroma			0,2 %	0,01 %	4,1 %			0,02 %	5 %
Leukoplakia					5,3 %				
Actinic cheilitis					2 %				
Median rhomboid glossitis							0,5 %		
Prevalence of lesions	39,04 %	38,94 %	27 %	10 %	28,16 %	28,90 %	13,70 %	0,02 %	37,6 %
Most frequent location				30,7 % lips 14,7 % dorsum of the tongue 13.6 % oral mucosa.	28 % oral mucosa and gingiva 25 % lips 16 % tongue.		28 % tongue 21 % gingiva, 18 % labial mucosa, 12 % oral mucosa, 9 % lips, 8 % oral groove, 4 % labial commisure.	37,4 % lips, 23,9 % oral mucosa, 18,5 % tongue, 14,1 % labial mucosa, 13,2 % labial commisure.	23,1 % labial mucosa, 15,4 % vermillion margin, 12,8 % oral mucosa

in the Chilean population. The diagnosis of these oral mucosal lesions is a challenge for the dentist because of its varied clinical expression, which is why, early and adequate diagnosis, allows the application of accurate therapeutic proposals. It is important to continue this line of investigation in other pediatric populations in Chile and extending the sample size.

## CONCLUSIONS

This study describes the frequency of oral mucosal lesions found in 38 patients out of 101 examined in the Pediatric Dentistry Clinic of Universidad del Desarrollo in 2015 from July to September.

The prevalence of oral mucosal lesions was 37.6 %, similar to other epidemiological studies (Crivelli *et*

*al.*; García-Pola *et al.*). In the group of healthy patients prevalence was 35.3 %, and in the group of patients with systemic diseases it was 50 %.

The minor aphthous ulcer was the most prevalent oral mucosal lesion, followed by irritation fibroma, and traumatic ulcers. The most frequent anatomical location was labial mucosa (23.08 %). The most frequent age range was from 9 to 13 years old with 19.8 % of prevalence in oral mucosal lesions.

Even though most of the oral mucosal lesions evaluated in this study can be diagnosed in a purely clinical way; there are some oral mucosal lesions that need confirmation through an anatomopathological study. The time for data collection and the fact that there was only one examiner limited the ability to reach the sample size proposed at the beginning.

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**RESUMEN:** Las lesiones de la mucosa oral comprenden un amplio conjunto de alteraciones que se localizan en los tejidos blandos de la cavidad oral. Los estudios que describen la prevalencia de lesiones de mucosa oral, se han realizado principalmente en población adulta, por lo tanto en la literatura internacional y en Chile, existen escasos reportes acerca de lesiones patológicas y alteraciones de la normalidad de mucosa oral en población pediátrica. Se realizó un estudio observacional, descriptivo y transversal, de tipo no probabilístico por conveniencia, donde se calculó una muestra de 219 pacientes con un nivel de confianza de 95 %. Se estimó un porcentaje de 30 % de niños con lesiones de mucosa oral. Se registró la anamnesis del paciente y presencia de lesiones de mucosa oral en la ficha clínica específica para el estudio. Se observó en 101 pacientes una prevalencia de 37,62 % de lesiones de mucosa oral. La lesión más frecuente fue el afta menor, seguido de fibroma irritativo, úlcera traumática, erosión traumáticas, impétigo, lesiones pigmentadas y entre otras con menor frecuencia. La localización más prevalente fue los labios con 38,5 %.

**PALABRAS CLAVE:** lesiones de mucosa oral, población pediátrica, úlceras traumáticas, estomatitis aftosa.

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