Original Article

Orofacial Manifestations and Oral Health-Related Quality of Life in Patients with Systemic Lupus Erythematosus

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Abstract

Objective: This study evaluated orofacial manifestations and oral health-related quality of life in patients with systemic lupus erythematosus (SLE) in the Turkish population. It also aims to investigate the relationship between these findings and disease activity and other associated factors. **Methods:** Patients referred from the rheumatology clinic and SLE-diagnosed patients were evaluated in the oral diagnosis clinic. Orofacial manifestations were assessed through clinical examinations, and oral health status was evaluated using the Decayed-Missing-Filled Teeth (DMFT) index. Disease activity was measured using the Systemic Lupus Erythematosus Disease Activity Index 2000 (SLEDAI-2K), while oral health-related quality of life was assessed with the Oral Health Impact Profile-14 (OHIP-14). Statistical analyses, including Pearson correlation and Kruskal–Wallis tests, were performed to evaluate associations among disease activity, oral health status, and quality of life. **Results:** The study included 70 SLE patients (67 females, 3 males; mean age: 46.3 ± 13.5 years). Orofacial lesions were present in 25.7% of the patients, and the cheek mucosa was the most commonly affected site. Bruxism was detected in 42.9% of patients, while burning mouth syndrome was observed in 11.4% of patients. Disease activity assessment showed that 45.7% had no activity, and 47.1% had mild severity. The OHIP-14 analysis indicated that psychological discomfort was the most affected domain (2.8 ± 2.26), whereas handicap had the least impact (0.97 ± 1.32). Although significant correlations were found between the OHIP-14 subscales, no significant correlation was observed between SLEDAI-2K scores and OHIP-14 subscales ($P > 0.05$). **Conclusion:** Orofacial lesions in SLE patients were relatively common and varied in presentation. Although no direct relationship was found between disease activity and oral health-related quality of life, significant associations existed between different domains of OHIP-14. These findings highlight the need for a multidisciplinary approach to managing oral health in SLE patients to improve their overall quality of life.

Keywords: *Oral health impact profile, orofacial manifestations, SLEDAI-2K, systemic lupus erythematosus*

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Introduction

Systemic lupus erythematosus (SLE) is an autoimmune disease in which the body's immune system attacks its own cells and tissues. SLE affects multiple organ systems, including the skin, joints, kidneys, brain, heart, lungs, blood cells, and orofacial region. The European League Against Rheumatism (EULAR) and the American College of Rheumatology (ACR) have established specific criteria for diagnosing SLE. According to these criteria, oral ulcers are among the key clinical findings, and patients may also exhibit other orofacial

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manifestations. Periods of remission and flare of the disease can be assessed according to symptoms using a special scale such as the systemic lupus erythematosus disease activity (SLEDAI-2K).[1] In SLE, oral symptoms have an important role both in the diagnosis of the disease and in the evaluation of its activity.[2,3]

Previous studies have demonstrated that the frequency, severity, and types of mucocutaneous lesions and other clinical and serological manifestations of SLE can vary significantly across ethnic backgrounds, with specific populations exhibiting distinct profiles in terms of disease onset and progression.[4,5] The incidence of oral lesions in SLE patients ranges between 8% and 45%.[6] Oral lesions in SLE exhibit various presentations, including oral ulcers, leukoplakic plaques, lichenoid reactions, petechiae, purpura, raised keratotic patches, and erythematous areas. These lesions are typically found on the lip or cheek mucosa and are often associated with accompanying cutaneous manifestations. A characteristic oral lesion in SLE is the presence of white plaques with central erythema, occasionally featuring telangiectasia and keratotic striae at the periphery.[7-9] Desquamative gingivitis and a burning sensation in the mouth are also oral findings.[10] Recent research has identified elevated levels of cariogenic bacterial species, including Streptococcus sobrinus and Streptococcus mutans, in supragingival plaque samples from patients with SLE.[11] Additionally, that study has reported that tooth decay is significantly prevalent in this population.[11]

The frequency of oral lesions in SLE patients has been associated with several factors, including oral hygiene status, smoking, duration of disease, the number of pregnancies following disease diagnosis, SLE treatment medications other than corticosteroids, and daily corticosteroid dosage. These conditions can negatively impact patient comfort, social and psychological wellbeing, and overall quality of life.[12]

Oral health-related quality of life (OHRQoL) describes the impact of oral health conditions on an individual's daily functions, general wellbeing, and overall quality of life. Various measurement methods have been developed to evaluate the impact of OHRQoL. The Oral Health Impact Profile (OHIP) scale is a widely utilized, comprehensive, and subjective tool in community oral health research and clinical studies.[13,14] This scale assesses seven main domains: functional limitations, physical pain, psychological discomfort, physical disability, social disability, psychological disability, and handicap. It has been determined that higher total scores indicate greater problem severity and a decline in quality of life.[15]

This study aims to comprehensively evaluate orofacial and extraoral findings in patients with SLE within the Turkish population, to classify intraoral lesions, and to investigate their associations with relevant factors. Although orofacial manifestations such as oral ulcers, lichenoid lesions, and burning mouth syndrome have been well documented in SLE patients, this study is the first to assess the impact of these findings on OHRQoL in a Turkish cohort using the OHIP-14-TR scale. Furthermore, less commonly studied findings, including bruxism and masseter hypertrophy, were also examined. Participants were evaluated based on age, gender, socioeconomic status, oral hygiene practices, denture use, clinical examination findings, and harmful habits such as smoking and alcohol consumption.

Methods

Study design and participants

Seventy patients, diagnosed with SLE and followed up in the rheumatology clinic, who were over the age of 18 and did not have any psychological disorders, were included in the study. This study was conducted in the Department of Oral Diagnosis and Dentomaxillofacial Radiology after receiving ethical approval from the Non-Interventional Research Ethics Committee (No: 2024/09-04, Date: 06/03/2024). All procedures were carried out in accordance with the principles of the Declaration of Helsinki. Clinical examinations were performed after the participants signed an informed consent form.

SLEDAI-2K (Systemic Lupus Erythematosus Disease Activity Index 2000)

Disease activity was evaluated using the Systemic Lupus Erythematosus Disease Activity Index 2000 (SLEDAI-2K), a validated tool for assessing lupus severity.[16] This index assigns weighted scores to 24 clinical and laboratory manifestations observed within the past 10 days, with higher scores reflecting greater disease activity. The scoring is structured as follows: 8 points for severe conditions (e.g., seizures, psychosis, cerebrovascular events), 4 points for moderate manifestations (e.g., arthritis, proteinuria, rashes), 2 points for mild symptoms (e.g. alopecia, mucosal ulcers, pericarditis), and 1 point for minimal symptoms (e.g., fever, leukopenia, thrombocytopenia). Based on the total score, disease activity is classified as mild (1–5), moderate (6–10), high (11–19), and very high (≥20).[16]

Oral hygiene habits and sociodemographic findings

Patients' demographic and lifestyle data, including age, gender, marital status, educational and economic status, oral hygiene practices, smoking and alcohol consumption habits, frequency of dental visits, and

health insurance details, were collected through a structured questionnaire. Following the clinical examination, all participants received personalized oral health instructions, including proper toothbrushing techniques, dietary recommendations, and guidance on maintaining regular dental visits.

Orofacial findings

In our study, we investigated the presence of orofacial findings in patients, including ulcers, lichenoid lesions, leukoplakia, petechiae, purpura, raised keratotic plaques, vesiculobullous lesions, cheilitis, erythematous areas, telangiectasia, Candida infections associated with immunosuppression, and periodontal diseases. Additionally, conditions such as burning mouth syndrome, xerostomia, bruxism, extraoral facial lesions, periodontal disease, lymphadenopathy, and malignancies were evaluated.

Each patient was evaluated through the examination and consensus of two oral diagnosis and radiology specialists (*FA and MO*). The DMFT (Decayed-Missing-Filled Teeth) index and its components were assessed, excluding third molars, resulting in a maximum possible score of 28.[17]

Given that SLE predominantly manifests through mucocutaneous and soft tissue involvement rather than osseous alterations,[18] the study design specifically focused on evaluating soft tissue lesions. This clinical study specifically avoided radiographic examinations based on ethical considerations regarding unnecessary radiation exposure.

OHIP-14 scale

OHIP-14 is a scale that evaluates functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap measures with two questions each.[19] Each question offers five response options: 'never' (0), 'almost never' (1), 'sometimes' (2), 'quite often' (3), and 'very often' (4). Scores for each of the seven subscales can be independently calculated. Higher total and subscale scores reflect a greater negative impact on the individual's quality of life. In our study, we used the 'OHIP-14-TR' form, the validity and reliability of which were established in Turkish by Başol *et al*.[20] in 2014.

Sample size calculation

The sample size of the study was determined, with the GPower 3.1.9.7 program. The effect size was calculated as 0.7, the power was 0.80, and the sample size was calculated as 68 for a study with a 5% margin of error level and 95% confidence level. Oral mucosa examinations were performed on 68 patients diagnosed with SLE.

Statistical analysis

Descriptive statistics were calculated for all continuous variables, including mean, standard deviation, median, and their corresponding interquartile range (IQR). The normality of the data distribution was assessed using the Shapiro–Wilk test. For non-normally distributed data, the Mann–Whitney u-test was performed on continuous variables. The multiple comparison was conducted using the Kruskal–Wallis test, a nonparametric method employed to compare the distributions of age, sedimentation rate, and CRP levels across different periodontal groups. For variables where significant differences were detected, post-hoc pairwise comparisons were performed to identify specific group differences. Additionally, the Bonferroni correction was applied to adjust for multiple comparisons, ensuring that the risk of Type I error was minimized. For categorical variables, Chi-square test or Fisher's exact test was applied. Pearson correlation analysis was conducted to examine the relationships between disease activity (SLEDAI-2K) and oral health-related quality of life (OHIP-14) subscales. Correlation coefficients (r) and related P values were calculated. All statistical analyses were performed using IBM SPSS Statistics (Version 30.0, IBM Corp., Armonk, NY, USA). All tests were two-tailed, and a significance level of $P < 0.05$ was applied for all analyses.

Results

A total of 70 patients diagnosed with SLE were included in the study, consisting of 3 males and 67 females, with an age range of 18 to 77 years (mean: 46.3 ± 13.5). Lesions were observed in 25.7% (n = 18) of patients, most commonly affecting the cheek region (12.9%). Extraoral facial lesions were also frequent, occurring in 5.7% of cases. Bruxism was present in 42.9% of patients, while burning mouth syndrome was identified in 11.4% [Figure 1].

Table 1 summarizes the relationship between lesion presence and clinical or demographic factors. Patients who brushed once daily had a higher lesion prevalence (38.7%) than those who brushed twice daily (15.8%). Similarly, prosthesis users exhibited a higher lesion prevalence (35.7%) compared to nonusers (19.0%) (P = 0.118). However, a significant association was found between lesion presence and cutaneous involvement (P = 0.037), with 34.1% of patients with cutaneous involvement having lesions, compared to 11.5% of those without. Occupational status showed a borderline significant association (P = 0.050), with unemployed individuals having a higher lesion prevalence (33.3%) than employed individuals (12.0%). Although DMFT scores did not show statistical

Table 1: Relation between lesion presence and various clinical and demographic factors

Groups	Lesion		*P*
	No, *n* (%)	Yes, *n* (%)	
Gender			
Male	3 (100)	0 (0)	0.564[a]
Female	49 (73.1)	18 (26.9)	
Smoking			
Non-smoker	39 (75.0)	13 (25.0)	0.999[a]
Smoker	13 (72.2)	5 (27.8)	
Steroid use			
No steroid	37 (75.5)	12 (24.5)	0.720[b]
Steroid	15 (71.4)	6 (28.6)	
Pregnancy after diagnosis			
No pregnancy	38 (76.0)	12 (24.0)	–
One pregnancy	8 (57.1)	6 (42.9)	
Two pregnancy	6 (100)	0 (0)	
Marital status			
Married	35 (76.1)	11 (23.9)	0.633[b]
Single	17 (70.8)	7 (29.2)	
Alcohol consumption			
No alcohol	44 (74.6)	15 (25.4)	0.999[a]
Alcohol	8 (72.7)	3 (27.3)	
Tooth brushing frequency			
Never	1 (100.0)	0 (0.0)	–
Once a day	19 (61.3)	12 (38.7)	
Twice a day	32 (84.2)	6 (15.8)	
Prosthesis use			
No prosthesis	34 (81.0)	8 (19.0)	0.118[b]
Prosthesis	18 (64.3)	10 (35.7)	
SLEDAI_2K			
None	25 (78.1)	7 (21.9)	–
Mild	23 (69.7)	10 (30.3)	
Moderate	4 (80.0)	1 (20.0)	
Arthritis			
No arthritis	11 (68.8)	5 (31.3)	0.536
Arthritis	41 (75.9)	13 (24.1)	
Cutaneous ınvolvement			
No cutaneous	23 (88.5)	3 (11.5)	0.037[a]
Cutaneous	29 (65.9)	15 (34.1)	
Occupation			
No occupation	30 (66.7)	15 (33.3)	0.050[a]
Occupation	22 (88.0)	3 (12.0)	
Insurance			
No ınsurance	2 (100.0)	0 (0.0)	0.999[b]
Insurance	50 (73.5)	18 (26.5)	
Dry mouth			
None	20 (76.9)	6 (23.1)	0.698[a]
Dry mouth	32 (72.7)	12 (27.3)	
Periodontal condition			
None	4 (100.0)	0 (0.0)	–
Gingivitis	20 (69.0)	9 (31.0)	
Periodontitis	28 (75.7)	9 (24.3)	
DMFT score			
0–8	20 (71.4)	8 (28.6)	–
8–16	20 (80.0)	5 (20.0)	
16–24	5 (62.5)	3 (37.5)	
24–32	7 (77.8)	2 (22.2)	

[a]Fisher's exact test, [b]Chi-square (χ^2) test

significance, higher scores were generally associated with a slight increase in lesion prevalence.

Table 2 compares erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) levels, and age across periodontal groups. Age distribution differed significantly ($P = 0.024$), with a median age of 32.5 years (IQR: 23.7–53.2) in those without periodontal disease, 44 years (IQR: 32.5–51.0) in gingivitis patients, and 51 years (IQR: 41–59.5) in periodontitis patients. ESR increased with disease severity, with median values of 5.5 mm/h (IQR: 2.5–32.2) in individuals without periodontal disease, 11 mm/h (IQR: 5.5–24.5) in gingivitis, and 22 mm/h (IQR: 10.5–38) in periodontitis ($P = 0.022$). Pairwise analysis revealed a significant difference between the gingivitis and periodontitis groups ($P = 0.015$). While CRP levels showed an increasing trend, the difference was not statistically significant ($P = 0.192$).

The OHIP-14 evaluation indicated that psychological discomfort was the most affected domain, while handicap was the least affected [Table 3]. No significant correlation was found between SLEDAI-2K scores and OHIP-14 subscales ($P > 0.05$). However, significant correlations were observed among OHIP-14 subscales. Functional limitation correlated strongly with physical pain ($r = 0.465$, $P < 0.001$) and physical disability ($r = 0.337$, $P = 0.004$). Psychological discomfort was significantly associated with social disability ($r = 0.273$, $P = 0.022$) and handicap ($r = 0.315$, $P = 0.008$). A strong correlation was also found between social disability and handicap ($r = 0.851$, $P < 0.001$).

The OHIP-14 functional disability score was significantly higher in patients with central nervous system involvement (median = 3.5, IQR: 3–4) compared to those without (median = 0, IQR: 0–2) ($P = 0.003$). However, no significant differences were found in total OHIP-14 scores or other subscales. Additionally, patients with burning mouth syndrome had significantly higher physical pain scores (median = 4, IQR: 4–5.75) compared to those without (median = 2, IQR: 0–4) ($P = 0.003$).

Figure 1: (a) Malar Erythema, (b) Geographic Tongue, (c) Lichenoid Reaction and Pigmentation, (d) Pigmentation, (e) Masseter Hypertrophy Associated with Bruxism, (f) Dental Impression Marks Associated with Bruxism on Tongue

Table 2: Comparison of ESR, CRP, and age across periodontal groups

Variables	None	Gingivitis	Periodontitis	*P*
Age, median (IQR)	32.5 (23.7−53.2)	44 (32.5−51.0)[a]	51 (41−59.5)[b]	0.024*
ESR, median (IQR)	5.5 (2.5−32.2)	11 (5.5−24.5)[c]	22 (10.5−38)[d]	0.022*
CRP, median (IQR)	1.8 (0.3−8.1)	2 (0.9−4.3)	3.3 (1.4−7.4)	0.192*

*Kruskal–Wallis test. There is a difference between a and b (P=0.020). There is a difference between c and d (P=0.015)

Table 3: OHIP-14 subscale scores

OHIP-14 subscales	Mean/Standard deviation
Functional Limitation	1.11±1.5
Physical Pain	2.37±2.05
Psychological Discomfort	2.8±2.26
Physical Disability	1.11±1.78
Social Disability	1.5±2.06
Psychological Disability	1.02±1.46
Handicap	0.97±1.32

Discussion

This study examined oral lesions, orofacial manifestations, their associations with related factors, and oral health-related quality of life in patients with SLE. To the best of our knowledge, this is the first study to evaluate these parameters in the Turkish population, providing a comprehensive assessment of orofacial findings, disease activity, and their impact on quality of life.

There are various studies in the literature regarding oral lesions associated with SLE and oral findings in patients with SLE.[21,22] In their study, Aurlene *et al.*[21] reported prevalence rates of 87.6% for dental caries, 85% for severe periodontitis, and 86% for oral mucosal lesions in patients with SLE. They noted significantly higher rates of dental caries, periodontitis, and oral mucosal lesions in patients with active SLE than those with inactive disease. The higher prevalence of lesions and caries reported in their study compared to ours may be attributed to several factors, including a higher proportion of patients with active SLE (35%), their larger sample size, and potential racial differences in the populations studied. Arruda *et al.*[22] classified oral lesions based on biopsy results from patients with SLE. Their findings revealed that lesions were most commonly located on the hard and soft palate (32.0%), with ulcers (26.6%), erosions (26.6%), and white lesions (23.4%) being the most frequent types. By

focusing on pre-existing lesions, their study identified a broader range of lesion types compared to our research. In addition to commonly observed lesions such as oral ulcers, petechiae, and lichenoid reactions, less frequently reported findings, including bruxism, masseter hypertrophy, and geographic tongue, were also identified in a subset of patients

In the literature, various researchers have investigated the relationship between oral lesions and factors such as smoking, disease duration, number of pregnancies, steroid use, and use of other medications associated with SLE.[6,12,23] Del Barrio-Díaz *et al*.[23] investigated oral lesions and their associated factors in patients with cutaneous lupus erythematosus (CLE) and SLE. Cutaneous lesions were found, significantly associated with disease activity, while gingivitis was found, significantly associated with systemic inflammation in CLE patients. In patients with SLE, gingival telangiectasias were found to be statistically significantly associated with leukopenia, hypocomplementemia, and systemic inflammation. In their study on the Iranian population, Khatibi *et al*.[12] found a relationship between lesions and oral hygiene, disease duration, whether the disease is active or inactive, frequency of pregnancy, daily corticosteroid use, and SLE drugs other than corticosteroids. Kudsi *et al*.[6] evaluated the association between factors related to oral mucosal lesions in SLE patients among the Syrian population. They found an association between oral hygiene, disease duration, number of pregnancies, use of corticosteroids other SLE treatment drugs, and oral lesions. Our study investigated the relationship between these factors and lesions, but no relationship was found. The reason for this may be the small number of lesions in the patients evaluated and the fact that the patients' disease activity was mostly under control.

Although there are numerous studies in the literature assessing quality of life in rheumatological diseases, research evaluating quality of life using the OHIP scale in patients with SLE is relatively limited compared to other rheumatological conditions.[24] From these studies, Correa *et al*.[15] investigated the impact of oral symptoms on the quality of life in patients with SLE. Their findings indicated that patients with a higher number of missing teeth experienced a lower oral health-related quality of life. A significant difference was observed in the levels of physical disability among these individuals. Additionally, the use of dentures was identified as a key factor contributing to the negative impact on oral health-related quality of life. Furthermore, OHIP scores were notably higher in individuals with moderate SLE-related damage compared to those without any damage. Schmalz *et al*.[24] evaluated oral health-related quality of life in patients with different rheumatic diseases such as rheumatoid arthritis, SLE, systemic sclerosis, ankylosing spondylitis, psoriatic arthritis, and vasculitis. They found that psychosocial impact was more pronounced, especially in SLE patients. In our study, psychological discomfort and physical pain were identified as the most affected domains based on OHIP-14, whereas handicap was the least affected. The patients with burning mouth syndrome and periodontal diseases had functional limitations such as difficulty in chewing and speaking. These limitations were also reflected in elevated OHIP-14 physical pain and functional limitation scores. Although no significant correlation was found between the SLEDAI-2K and OHIP-14 subscales in our study, significant correlations were observed between the OHIP-14 subscales. These discrepancies are thought to be attributable to differences in oral health status among patients.

Strengths and limitations

This study is the first to comprehensively evaluate orofacial manifestations, oral lesions, and oral health-related quality of life in SLE patients within the Turkish population. By integrating dentistry, rheumatology, and biostatistics, this study provides a multidisciplinary perspective on the relationship between oral health and SLE disease activity.

The primary limitation of this study is the inability to obtain biopsies from the lesions. Another important limitation of this study is the lack of microbiological analysis for the identification of cariogenic bacteria. Because in addition to the oral hygiene habits of the patients, this microbiological difference may also affect the incidence of caries. Additionally, the small sample size is due to patient referrals being limited to a single center. Moreover, the high proportion of patients with well-controlled disease posed challenges in identifying oral lesions within this population. Future studies should focus on larger cohorts with active disease and incorporate lesion biopsies for a more comprehensive analysis.

Conclusion

In conclusion, this study demonstrates that oral lesions can be managed by controlling disease activity. The findings indicate that an increase in physical pain is associated with greater mental and social disabilities. Additionally, functional limitation was found to be significantly correlated with mental disability. These findings highlight the significant psychosocial burden of oral symptoms, emphasizing the need for a multidisciplinary healthcare approach to improve patient outcomes and quality of life.

Author contributions

Conceptualization: F.A., G.S.

Methodology: F.A., M.O., F.B., G.S.
Validation: M.O., G.S.
Formal analysis: M.E.A.
Investigation: F.B., G.I., E.K.
Resources: F.A., G.I., E.K.
Data Curation: G.I., E.K.
Writing – original draft preparation: F.A.
Writing – review and editing: F.A., G.S., M.O.
Visualization: E.K.
Supervision: M.O., G.C.
Project administration: F.A.

Ethics approval

This study was conducted in the Department of Oral Diagnosis and Dentomaxillofacial Radiology after receiving ethical approval from the Non-Interventional Research Ethics Committee. (No: 2024/09-04, Date: 06/03/2024). All procedures were carried out in accordance with the principles of the Declaration of Helsinki.

Consent to participate

Clinical examinations were performed after the participants signed an informed consent form.

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Conflicts of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

1. Romero-Diaz J, Isenberg D, Ramsey-Goldman R. Measures of adult systemic lupus erythematosus: Updated Version of British Isles Lupus Assessment Group (BILAG 2004), European Consensus Lupus Activity Measurements (ECLAM), Systemic Lupus Activity Measure, Revised (SLAM-R), Systemic Lupus Activity Questionnaire for Population Studies (SLAQ), Systemic Lupus Erythematosus Disease Activity Index2000 (SLEDAI-2K), and Systemic Lupus International Collaborating Clinics/ American College of Rheumatology Damage Index (SDI). Arthritis Care Res 2011;63:37-46.
2. Bertsias GK, Pamfil C, Fanouriakis A, Boumpas DT. Diagnostic criteria for systemic lupus erythematosus: Has the time come? Nat Rev Rheumatol 2013;9:687-94.
3. Rahman A, Isenberg DA. Systemic lupus erythematosus. N Engl J Med 2008;358:929-39.
4. Parodis I, Lanata C, Nikolopoulos D, Blazer A, Yazdany J. Reframing health disparities in SLE: A critical reassessment of racial and ethnic differences in lupus disease outcomes. Best Pract Res Clin Rheumatol 2023;37:101894.
5. Morais SA, Isenberg DA. A study of the influence of ethnicity on serology and clinical features in lupus. Lupus 2017;26:17-26.
6. Kudsi M, Nahas LD, Alsawah R, Hamsho A, Omar A. The prevalence of oral mucosal lesions and related factors in systemic lupus erythematosus patients. Arthritis Res Ther 2021;23:229.
7. Lourenço SV, de Carvalho FR, Boggio P, Sotto MN, Vilela MA, Rivitti EA, *et al*. Lupus erythematosus: Clinical and histopathological study of oral manifestations and immunohistochemical profile of the inflammatory infiltrate. J Cutan Pathol 2007;34:558-64.
8. Grimaldo-Carjevschi M, López-Labady J, Villarroel-Dorrego M. Squamous cell carcinoma on the palate in a patient with systemic lupus erythematosus: Case report and review of literature. Lupus 2011;20:519-22.
9. Petri M, Orbai AM, Alarcón GS, Gordon C, Merrill JT, Fortin PR, *et al*. Derivation and validation of the Systemic Lupus International Collaborating Clinics classification criteria for systemic lupus erythematosus. Arthritis Rheum 2012;64:2677-86.
10. Brennan MT, Valerin MA, Napeñas JJ, Lockhart PB. Oral manifestations of patients with lupus erythematosus. Dent Clin North Am 2005;49:127-41.
11. Rodriguez JP, Torres LJ, Martinez RE, Abud Mendoza C, Solis CE, Coronel S, *et al*. Frequency of dental caries in active and inactive systemic lupus erythematous patients: Salivary and bacterial factors. Lupus 2016;25:1349-56.
12. Khatibi M, Shakoorpour AH, Jahromi ZM, Ahmadzadeh A. The prevalence of oral mucosal lesions and related factors in 188 patients with systemic lupus erythematosus. Lupus 2012;21:1312-5.
13. John MT, Patrick DL, Slade GD. The German version of the oral health impact profile – Translation and psychometric properties. Eur J Oral Sci 2002;110:425-33.
14. Slade GD, Spencer AJ. Development and evaluation of the oral health impact profile. Community Dent Health 1994;11:3-11.
15. Corrêa JD, Branco LGA, Calderaro DC, Mendonça SMS, Travassos DV, Ferreira GA, *et al*. Impact of systemic lupus erythematosus on oral health-related quality of life. Lupus 2018;27:283-9.
16. Gladman DD, Ibañez D, Urowitz MB. Systemic lupus erythematosus disease activity inde×2000. J Rheumatol 2002;29:288-91.
17. World Health Organization. Oral Health Surveys: Basic Methods. World Health Organization; 2013.
18. Fanouriakis A, Tziolos N, Bertsias G, Boumpas DT. Update on the diagnosis and management of systemic lupus erythematosus. Ann Rheum Dis 2021;80:14-25.
19. Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol 1997;25:284-90.
20. Başol ME, Karaağaçlıoğlu L, Yılmaz B. Developing a Turkish oral health impact profile-OHIP-14-TR. Turkiye Klinikleri J Dent Sci 2014;20:85-92.
21. Aurlene N, Manipal S, Prabu D. Prevalence of oral mucosal lesions, dental caries, and periodontal disease among patients with systemic lupus erythematosus in a teaching hospital in Chennai, Tamil Nadu. J Family Med Prim Care 2020;9:3374-80.
22. de Arruda JAA, Villarroel-Dorrego M, Freire CH, Molina-Ávila I, Pimentel-Solá JM, Gilligan G, *et al*. Oral lesions of systemic lupus erythematosus: A collaborative Latin American study. Lupus 2024;33:864-73.
23. Del Barrio-Díaz P, Reyes-Vivanco C, Cifuentes-Mutinelli M, Manríquez J, Vera-Kellet C. Association between oral lesions and disease activity in lupus erythematosus. J Eur Acad Dermatol Venereol 2020;34:349-56.
24. Schmalz G, Patschan S, Patschan D, Ziebolz D. Oral-health-related quality of life in adult patients with rheumatic diseases – A systematic review. J Clin Med 2020;9:1172.