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RESEARCH ARTICLE
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THE EFFECT OF CLINICAL SYMPTOM OF LICHEN PLANUS ON QUALITY OF LIFE RELATED TO ORAL HEALTH

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ABSTRACT
Lichen planus frequently develops in mucous membranes which manifest first in the oral cavity. The research investigates how clinical symptoms of oral lichen planus affect the quality of life linked to oral health (OHRQoL) for patients. The assessment included using the Oral Health Impact Profile 14(OHIP) standardized questionnaire to measure how pain together with discomfort and functional difficulties affect patients in their daily functioning and mental well-being. The evaluation showed symptomatic OLP patients report major OHRQoL deterioration because of persistent pain together with challenges in eating and appearance concerns. Research outcomes demonstrate why OLP patients need specialized treatment approaches to control symptoms which lead to enhanced life quality.

Keywords OHIP-14, Oral lichen planus, Quality of life

INTRODUCTION
Lichen planus (LP) affects the oral mucosa with regularity as one of the persistent and widespread mucocutaneous conditions. Despite an unknown origin of the illness doctors can point to immunologic processes as key factors in the development of these lesions. Adult middle-aged women show the highest instances of the condition.[1]
Scientific evidence points to oral lichen planus being a T-cell-mediated inflammatory reaction which manifests through various theoretical immunopathogeneses including antigen-specific and non-specific pathways and autoimmune response and humoral immunity. The exact antigens that trigger immune responses remain unidentified since the year 2001.[2]
Various research studies reflect distinct prevalence levels of LP lesions and epidemiological findings.[3] Research methods together with population characteristics and collection techniques and sample population counts remain as leading factors that result in these inconsistent findings.

Research work about LP has mainly focused on hospitals and dental offices along with minimal population-based research studies.

The symptoms of Oral Lichen Planus include burning feelings which progress to severe continuous pain. Research alongside clinical practice depends significantly on pain measurement related to OLP.[4,5] All currently used pain rating systems fail to adequately measure complex pain components which possess multiple dimensions. Medical providers utilize Oral Health-Related Quality of Life (OHRQoL) because this approach would help them better grasp how pain affects patients in its totality.

The available pain rating methodologies lack the required capability to evaluate or measure both pain intensity together with its multiple dimensional aspects. The oral manifestation of lichen planus fails to pose a survival-threatening risk to patients. The health effects of oral lichen planus lead to deteriorating social, psychological and physical components of overall life quality. The reported effects of this condition lead to problems with eating and severe cases can result in malnutrition and weight reduction. Dietary satisfaction poses a threat to patients which could lead to impaired social abilities and diminished happiness.

This study was conducted to assess the effect of clinical symptoms of Lichenplanus on quality of life of patients.

METHODS

The research design incorporated a case-control approach combined with a descriptive-analytical and cross-sectional study. The case group included patients who received medical confirmation of oral lichen planus from both clinical examinations and histopathology tests and had reached 18 years of age or older. The diagnosis of lichen planus was made by white lesions showing characteristic lacy pattern. Three traditional histological features of oral lichen planus i.e basal layer liquefaction degeneration and epithelial hyperkeratinization along with lymphocytic dermo-epidermal junction infiltrate and band-like connective tissue.

The study excluded patients who had additional oral mucosal lesions and pregnant women and smokers along with individuals who presented other oral mucosal changes and medical conditions that could affect patient psychology and life quality from the case group.

The research included 38 participants with normal oral mucosa as part of the control group. Persons between 18 years old who had no oral lesions or diseases such as diabetes which could affect their life quality were eligible for inclusion in the control group. The author reviewed patient medical records to perform the research and established demographic data such as gender and age following similar research while including 38 participants without oral mucosal issues in the control group together with 36 participants in the case group based on z: 1.96 with p=q=0.5 and d=0.05. The Tongprasom scoring system served as the method to measure the clinical degree of skin lesions. The Tongprasom scoring system utilized a five-level assessment where 1 marked only mild white lines and 2 indicated white lines with atrophic areas measuring less than 1 square centimeter and 3 marked atrophic areas exceeding 1 square centimeter, 4 indicated white lines presenting erosive areas under 1 square centimeter while 5 represented erosive areas exceeding 1 square centimeter. The researcher documented the most severe score from all oral lesions of lichen planus for each individual patient. The participants used a Visual Analog Scale (VAS) that spanned from 0 no discomfort to 10 the present pain intensity related to oral lichen planus to measure their pain experience. Prolonged pain reaching a level that you never imagine to experience. Patients reported pain intensity as either mild (0–3) or moderate (4–7) or severe (8–10). The rating categories were distinguished.

Quality of life assessment relied on the valid Persian version of the Oral Health Impact Profle (OHIP-14) questionnaire. The evaluation instrument contained 14 items which examined various aspects related to mental health and life quality dimensions. Each subcategory of the survey contained two statements that investigated functional limits, physical pain, psychological discomfort, physical disability, psychological disability, social impairment and handicap.

Two methods existed to analyze the responses: Simple Count (SC) method together with Additive method. The first evaluation method used numeric values to measure responses where never equaled zero but seldom equaled one and occasionally equaled two and frequently equaled three and always equaled four. Lower scores in the OHIP-14 questionnaire symbolize better life quality and extend from zero to fifty-six points. A computed "severity" indicator showed better mental perception following assessment.

Researchers developed five groups based on patient severity scores that included very low, low, moderate, severe and very severe categories. Under the SC method the option scores were set as 1 for occasional, frequent and continuous responses while never and seldom rated as 0. A specific approach was chosen because it acknowledged that people may not correctly understand varied options within the questionnaire. The scores from the OHIP-14 ranged between 0 to 14.

The analysis used T-test while Mann-Whitney U test and Chi-Square as well as SPSS to process the research data.

RESULTS

In case group 64.2% were female and were 35.7% male while in control group 64.7% female and 35.2% were male. The gender composition of both groups matched each other closely because their statistical comparison yielded a P value of 0.41. The mean age in case group was 48.2 ± 8.3 years and in control group was 43.9 ± 9.7 years ($p = 0.23$), suggesting no statistically significant difference in age between groups. The research groups contained participants who fall within middle adulthood which matches the normal demographic profile of oral lichen planus (OLP) patients and other related study populations. The case group composed of 80.3% married participants while the control group contained 69.1% married participants. The association between marital status and case/control status remains tentative but potentially significant according to the $P = 0.08$ value. Similar proportions in case (55.3%) and control (55.8%) groups had diploma or higher education ($p = 0.06$), showing no significant relationship between education levels and case/control status.

Both groups reported similar rates of ≥2 visits per year (~78%), with $P = 0.15$, showing no significant difference. Both groups had high compliance (~82%), with $P = 0.08$, indicating brushing habits were consistent across groups. Significantly more case group participants used dental floss (42.85%) compared to the control group (29.41%) ($p = 0.05$), suggesting a potential association between dental flossing and the condition being studied. Slightly more control group participants reported using mouthwash (21.42% in case vs. 14.7% in control), but $p = 0.25$, indicating no significant difference. Slightly fewer individuals in the case group (17.85%) had good oral health compared to the control group (20.58%).

Table 1. Sociodemographic Characteristics and Oral Health Compliance Status in Case and Control Groups.

Variable	Case Group (No. / %)	Control Group (No. / %)	P Value
Gender			
Male	17 (35.7%)	17 (35.3%)	0.41
Female	30 (64.3%)	30 (64.7%)	
Mean Age	48.2 ± 8.3	43.9 ± 9.7	0.23
Age Range			
Minimum	39	35	0.21
Maximum	64	60	
Marital Status			
Married	38 (80.3%)	33 (69.1%)	0.08
Single	9 (19.7%)	15 (30.9%)	
Education			
≥ Diploma	26 (55.3%)	26 (55.9%)	0.06

Variable	Case Group (No. / %)	Control Group (No. / %)	P Value
< Diploma	21 (44.7%)	21 (44.1%)	
Occupation			
Employed	33 (69.6%)	29 (61.8%)	0.31
Unemployed	14 (30.4%)	18 (38.2%)	
Income per month			
≥ $100	34 (73.2%)	34 (72.1%)	0.17
< $100	13 (26.8%)	13 (27.9%)	
Dental Visits			
≥ 2 times	37 (78.6%)	37 (77.9%)	0.15
< 2 times	10 (21.4%)	10 (22.1%)	
Toothbrushing			
Yes	39 (82.1%)	39 (82.4%)	0.08
No	8 (17.9%)	8 (17.6%)	
Dental Floss			
Yes	20 (42.9%)	14 (29.4%)	0.05
No	27 (57.1%)	34 (70.6%)	
Mouthwash			
Yes	10 (21.4%)	7 (14.7%)	0.25
No	37 (78.6%)	40 (85.3%)	
Oral Health Status			
Good	8 (17.9%)	10 (20.6%)	0.12
Average	26 (55.3%)	30 (61.8%)	
Poor	13 (26.8%)	7 (17.6%)	

Table 2 provides an analysis of the mean scores (ADD and SC) and standard deviations from OHIP-14 questionnaire subgroups for case and control participants. It examines oral health effects on quality of life (QoL). The case group participants had higher ADD score at 2.18 ± 1.9 than the control group participants did at 1.36 ± 1.2 which showed significant functional limitations between the groups (P=0.03∗P = 0.03^*P=0.03∗).Participants from the case group achieved significant SC scores of 1.41 ± 0.75 while control group participants scored 0.54 ± 0.55 (P=0.02∗P = 0.02^*P=0.02∗).The patients in the case group faced problematic daily oral functionality which highlighted the complete impact on their quality of healthcare.

The participants from both groups demonstrated equal levels of physical pain as indicated by their statistically equal ADD scores (2.21 ± 1.2 for cases, and 2.18 ± 1.1 for controls, P=0.08P = 0.08P=0.08).Two groups showed similar results for SC score (1.31 ± 0.55 for the case group and 1.01 ± 0.32 for the control group) which produced an P = 0.84P=0.84P=0.84 value.

The case patients scored an average 3.32 ± 1.5 on score ADD for psychological discomfort while control patients scored an average 2.21 ± 1.4 but the results were not statistically different with P = 0.14.The case participants scored 1.01 ± 0.31 in the Score SC section higher than the control participants scored 0.41 ± 0.46 (P=0.03∗P = 0.03^*P=0.03∗).Psychological discomfort creates substantial emotional distress for the study participants who are in the case group possibly because of their visible medical condition or its long-term status.

Patients in the case group demonstrated higher ADD scores for physical disability of 3.25±1.1 compared to 2.05±1.2 from the control group yet the discrepancy lacked statistical significance (P=0.06P = 0.06P=0.06).A statistical analysis found that the case group scored 0.86 ± 0.68 points higher SC score than the control group with 0.37 ± 0.35 points (P=0.01∗P = 0.01^*P=0.01∗).

The case group participants reported a marginally higher ADD score for social disability of 2.65 ± 1.9 than the control group participants with 2.15 ± 1.1 (P=0.09P = 0.09P=0.09).The analysis

revealed no statistically significant differences between the two groups for SC score (case group: 0.85 ± 0.76; control group: 0.34 ± 0.52; p = 0.35).
The case group demonstrated a higher ADD rating for total OHIP scores of 10.12 ± 18.15 compared to the control group at 8.71 ± 15.11 with an almost statistically significant difference (P=0.05P = 0.05P=0.05).The case participants obtained results that were slightly elevated SC score (6.22 ± 3.21) than the control participants (5.21 ± 3.61) although the difference was not significant (P=0.21P = 0.21P=0.21).

Table 2: Comparison of Mean OHIP-14 Scores and Standard Deviations across Subgroups Using Two Scoring Methods in Case and Control Cohorts"

Subgroups of OHIP-14	Score ADD (Mean ± SD)	P Value	Score SC (Mean ± SD)	P Value
Functional Limitation	Case: 2.18 ± 1.9	0.03*	Case: 1.41 ± 0.75	0.02*
	Control: 1.36 ± 1.2		Control: 0.54 ± 0.55	
Physical Pain	Case: 2.21 ± 1.2	0.08	Case: 1.31 ± 0.55	0.84
	Control: 2.18 ± 1.1		Control: 1.01 ± 0.32	
Psychological Discomfort	Case: 3.32 ± 1.5	0.14	Case: 1.01 ± 0.31	0.03*
	Control: 2.21 ± 1.4		Control: 0.41 ± 0.46	
Physical Disability	Case: 3.25 ± 1.1	0.06	Case: 0.86 ± 0.68	0.01*
	Control: 2.05 ± 1.2		Control: 0.37 ± 0.35	
Psychological Disability	Case: 2.71 ± 1.7	0.12	Case: 1.31 ± 0.82	0.51
	Control: 2.04 ± 1.3		Control: 1.24 ± 0.62	
Social Disability	Case: 2.65 ± 1.9	0.09	Case: 0.85 ± 0.76	0.35
	Control: 2.15 ± 1.1		Control: 0.34 ± 0.52	
Handicap	Case: 2.42 ± 1.7	0.28	Case: 1.02 ± 0.72	0.07
	Control: 1.21 ± 1.2		Control: 0.61 ± 0.21	
Total OHIP-14	Case: 10.12 ± 18.15	0.05	Case: 6.22 ± 3.21	0.21
	Control: 8.71 ± 15.11		Control: 5.21 ± 3.61	

Table 3 evaluates how the Thongprasom Sign Score correlates with pain assessment through VAS and OHIP-14 questionnaire severity. 26 participants (41.1%) had very low clinical severity, 12 participants (21.4%) were classified as having low clinical severity, 9 participants (16%) were classified as moderate severity, 7 participants (12.5%) reported severe clinical severity and 5 participants (9%) had very severe clinical symptoms.Patient quality of life shows a moderate positive connection with the Thongprasom Sign Score through OHIP-14 tests since worsening clinical conditions lead to deteriorating quality of life scores.The severity of oral lichen planus (OLP) lesions increases based on higher scores recorded through Thongprasom.
The magnitude of relationship between VAS scores and Thongprasom scores demonstrates lower strength than OHIP-14 scores.The stages of oral disease progression align with a worsening of quality of life from Score 1 (very low) to Score 4 (severe).The measurement data at Score 5 (very severe) indicates a small level of stability but may reveal both adjustment behavior patterns combined with personal approaches to dealing with the condition.
The pain intensity increases from Score 1 to Score 4 while showing minor variations at Score 5 possibly due to how patients perceive pain and prescription drugs along with the location of the lesions.

Table 3: Correlation of Oral Health Impact (OHIP-14) Severity with Pain Intensity in Oral Lichen Planus: A Thongprasom Sign-Based Stratified Study.

Thongprasom Sign Score	No.	%	Score Severity OHIP-14	CC*	P Value	Mean ± SD of VAS	CC*	P Value
1	22	41.1%	Very Low	rs=0.421***	P=0.001	1.22 ± 2.31	rs=0.241***	P=0.01
2	10	21.4%	Low			1.42 ± 2.61		
3	8	16%	Moderate			1.76 ± 2.91		
4	6	12.5%	Severe			2.45 ± 3.56		
5	4	9%	Very Severe			2.02 ± 3.79		
Total	47	100%	Moderate			3.1 ± 0		

Rs spearman's correlation coefcient
* Correlation Coefcient
**correlation is signifcant at the 0.05 level (2-tailed)
***correlation is signifcant at the 0.001 level (2-tailed)
# p<0.05 (Mann–Whitney U test) compare to one-step lower clinical severity scores

DISCUSSION

Lichen planus exists as a chronic inflammatory condition which specifically affects both skin tissue and mucous membranes. Through the fourth decade of life oral lichen planus (OLP) most commonly emerges to affect women more than males (1.4:1).Between 1% and 2% of people have this condition. Doctors will identify four distinct patterns of lichen planus based on reticular, papular, plaquelike, erosive and atrophic and bullous manifestations. More exclusive oral locations receive rare involvement yet the buccal mucosa along with tongue and gingival tissue remain most common intraoral locations.[6,7] The presence of skin lesions does not need them to appear with oral mucosal lesions nor do they need to be separate from them. The skin lesions display violaceous flat-topped papules that affect genital area as well as wrist and ankles while avoiding facial skin.[8,9]

Various scientific studies scrutinized OLP origins while researchers proposed several specific antigen as well as nonspecific inflammatory pathways to explain its pathophysiology. Although the main goal of treatment is palliative care the therapeutic approaches used span from laser therapy to topical steroid usage.[10]

OLP is an autoimmune disorder characterized by CD8+ T cell-mediated apoptosis of basal epithelial keratinocytes. The disease initiation involves presentation of endogenous antigens, including self-peptides or heat shock proteins, by keratinocytes. This triggers an immune response wherein CD8+ cytotoxic T lymphocytes infiltrate the epithelial layer, primarily through chemokine-directed migration. The inflammatory infiltrate, predominantly comprising CD8+ T cells with a minor CD4+ T cell component, targets basal keratinocytes, leading to their apoptotic destruction via cytotoxic mechanisms. MHC-1 antigens on keratinocytes together with CD4+ lymphocytes already in the activated state directly activate these migrating CD8+ cells during the pathogenic process.[11]

In addition to MHC-II expression enhancement OLP lesions have increased numbers of cells which fittingly name Langerhans cells. CD4 + T helper cells receive their activation signal by Interleukin (IL)-12 followed by CD4 + T helper cells activation of CD8+ T cells via receptor interaction and the signaling of interferon γ (INF-γ) and IL-2. After activation the CD8+ T lymphocytes destroy basal keratinocytes through specific mechanisms which include granzyme B-activated apoptosis along with Fas-FasL-mediated and tumor necrosis factor (TNF)-α.[12]

Clinical presentation allows doctors to properly diagnose reticular lichen planus by itself. Frequent identification of bilateral interlacing white striae on posterior buccal mucosa skin marks the condition as pathognomonic. It remains difficult to identify erosive and erythematous types of OLP as well as treat candidal infections that take on the reticular appearance. The clinical presentation of oral lichen planus requires careful differentiation from several potentially similar conditions.

Primary considerations include frictional keratosis resulting from chronic cheek chewing or other mechanical irritation, along with various lichenoid reactions that may be drug-induced or contact-associated. The diagnostic evaluation should also encompass leukoplakia (particularly its homogeneous and proliferative verrucous variants), oral manifestations of lupus erythematosus, and autoimmune blistering disorders such as pemphigus vulgaris and mucous membrane pemphigoid.[13,14] Additionally, infectious processes like erythematous candidiasis and chronic ulcerative stomatitis must be excluded through appropriate clinical and histopathological examination. This comprehensive differential diagnosis is essential for accurate classification and subsequent management.

CONCLUSION

The research shows that OLP strongly affects patient life quality specifically among patients with erosive/bullous forms and those with higher Thongprasom scores. The medical treatment of pain management with lesion reduction and psychological interventions can help decrease the impact of OLP on patients. Research studies should investigate how well such interventions work to enhance OHIP-14 outcome results.

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