

Prevalence of Reticular Oral Lichen Planus: A Retrospective Study

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Abstract

Oral lichen planus(OLP) is a common chronic mucocutaneous disorder with an immune mediated pathogenesis. Etiology of OLP is unknown, but it is thought to be the result of an autoimmune process with an unknown predisposing factor. The clinical presentation of OLP ranges from mild painless white keratotic lesions to painful erosions and ulcerations. It has various oral manifestations with the reticular type being the most common. The erosive and atrophic variants are less common but most likely to cause symptoms. Topical corticosteroids constitute the mainstay for symptomatic lesions of OLP. The aim of this study is to investigate the prevalence of reticular variant of oral lichen planus. Materials and Methods: In the present study a total of 68 patients were included. The demographic, clinical and treatment details were recorded. All the collected data was analyzed by SPSS IBM software Results: Among 63 patients with OLP 60.3% were females showing a bilateral involvement in the buccal mucosa (92.1%) with $P < 0.05$. The reticular variant constituted (37.1 %) of all the total cases and erosive variant was the most common (57.1%).Corticosteroids were the most common drug. Conclusion: Within the limitations of the study it is evident that OLP has more female prevalence, erosive form was more frequent followed by the reticular form of Lichen planus. Buccal mucosa was the most commonly affected site and majority of the patients were treated using Corticosteroids.

Keywords: oral lichen planus, reticular lichen planus, erosive lichen planus, epidemiology

Introduction

The term Lichen planus (LP) is derived from the Greek word “leichen” meaning tree moss and the Latin word “planus” meaning flat¹. Erasmus Wilson first described the condition LP in 1869, as a chronic disease affecting the skin, scalp, nails and mucosa, with possible rare malignant transformation.²

Oral Lichen Planus (OLP) is a chronic inflammatory disease, it is the mucosal counterpart of cutaneous

lichen planus. The disease affects 0.5-2% of the general population. This disease most commonly involves middle aged patients of 30-60 yrs age group and females are more prone with the ratio of 1.4:1³. Children are rarely affected. The clinical history confirms the relationship between OLP and oral cancer. Therefore it should be considered a precancerous lesion, however the malignant transformation rate is around 6% only and is considered as an oral potentially malignant disorder(OPMD).¹

The pathogenesis remains unknown, although recent data have shown that immunological mechanisms may play an important role as a causative or contributing factor⁴. It is a T-cell mediated autoimmune disease in which the auto-cytotoxic CD8+T cells trigger apoptosis of the basal cells of the oral epithelium⁵. Oral Lichen Planus can be associated with other autoimmune disorders such as myasthenia gravis, alopecia areata, vitiligo & ulcerative colitis. Some patients with OLP

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have a higher concentration of serum antibodies against desmoglein compared to healthy controls, which may be another indication of involvement of autoimmunity in the pathogenesis of OLP⁶.

In 1968, Anderson divided OLP into 6 clinical forms: reticular, plaque-like, papular, atrophic, erosive and bullous⁷. It is not uncommon for the same patient to present with multiple forms of OLP. Among these types reticular and erosive types are the main types. The reticular lesions, the most recognized form of OLP, are often asymptomatic and appear as multiple papules with a network of small, raised, whitish-gray, lacy lesions referred to as Wickham's striae⁸. Wickham's striae are usually bilateral and seen on buccal mucosa, mucobuccal fold, gingiva and rarely on palate, tongue and lips⁹. OLP involving the gingiva is termed as "desquamative gingivitis" which¹⁰ clinically manifest as a fiery red erythema of attached gingiva. OLP lesions which are associated with patchy brown melanin deposits are termed as inflammatory melanosis¹¹.

Erosive OLP presents as presents as a mix of erythematous and ulcerated areas surrounded by finely radiating keratotic striae. The lesions of erosive OLP migrate overtime and tend to be multifocal. Patients with this form of OLP can often present with symptoms ranging from episodic pain to severe discomfort that can interfere with normal masticatory function¹². OLP lesion, especially the erosive variant is associated with poor oral hygiene. It remains to be known if the lesion secondarily impacts the ability of the patient to maintain a good hygiene or the poor oral hygiene is a contributor to the lesion.^{13,14} The prognosis of this lesion in good with repeated bouts of relapses and remissions and the erosive variant alone has a malignant transformation potential.¹⁵ The variants OLP which are likely to undergo malignant transformation are also capable of showing changes in the salivary m-RNA.¹⁶ Interestingly none of the OLP lesions are associated with the usage of tobacco habits.^{17,18} The plaque form of OLP mimics leukoplakia in that appears a white homogenous, slightly elevated, multifocal smooth lesion, affecting the tongue & buccal mucosa¹⁹. Bullous and papular forms are rare in the oral mucosa. This retrospective study is done to assess the prevalence of reticular lichen planus among oral lichen planus patients.

Materials and Methods

In this retrospective study the archived patient records of the department of Oral Medicine and Radiology, Saveetha Dental College were collected and the data was assessed from the time period of March 2019 - April 2020. From the records of 86000 patients all known cases of OLP were picked up. Ethical clearance was obtained from the Institutional Ethics Committee of Saveetha Dental College (ethical approval number : SDC/SIHEC/2020/DIASDATA/0619-0320). The main advantages of this study were that the data was all prevalidated and the main disadvantages were that it was an unicentric study and only a single ethnicity of the population was studied.

The patient records were reviewed and analyzed, variables recorded were the age, gender, variant of OLP, the site of the lesion and the therapy used. The assessment was done by 2 observers. The data was randomly cross verified by either recalling the patients or having telephonic conversations with the patient. The internal validity of the study was established as the data was collected from a verifiable and standardised database. The external validity is established as the data is from a clinical setup which is duplicatable.

The collected data was entered into Microsoft Excel and exported to SPSS IBM software. chi-square test was done which was used to study the association between site and occurrence of the lesion ; and therapy and the variant of the lesion by chi-square analysis.

Results and Discussion

A total of 63 cases of oral lichen planus were taken during the study period. Among them 39.7% were male and 60.3% were female [Table-1], aged (26-73) years with a mean of 38.5 years. The prevalence of OLP according to the affected site when analysed shows the most common site of involvement to be the buccal mucosa [Fig-1] which is statistically significant. The study also showed the distribution of various forms of lichen planus erosive pattern was more in number followed by reticular pattern of lichen planus [Fig-2]. According to the therapy used in treatment of oral lichen planus when analysed reveals 81% were treated using corticosteroids and 19% were treated using a combination of corticosteroids and antihistamines, among which Corticosteroids were the

most used line of treatment in OLP patients[Fig-3], which is statistically significant.

Table-1 : Gender distribution of the cases.

GENDER	PERCENTAGE
Male	39.7%
Female	60.3%

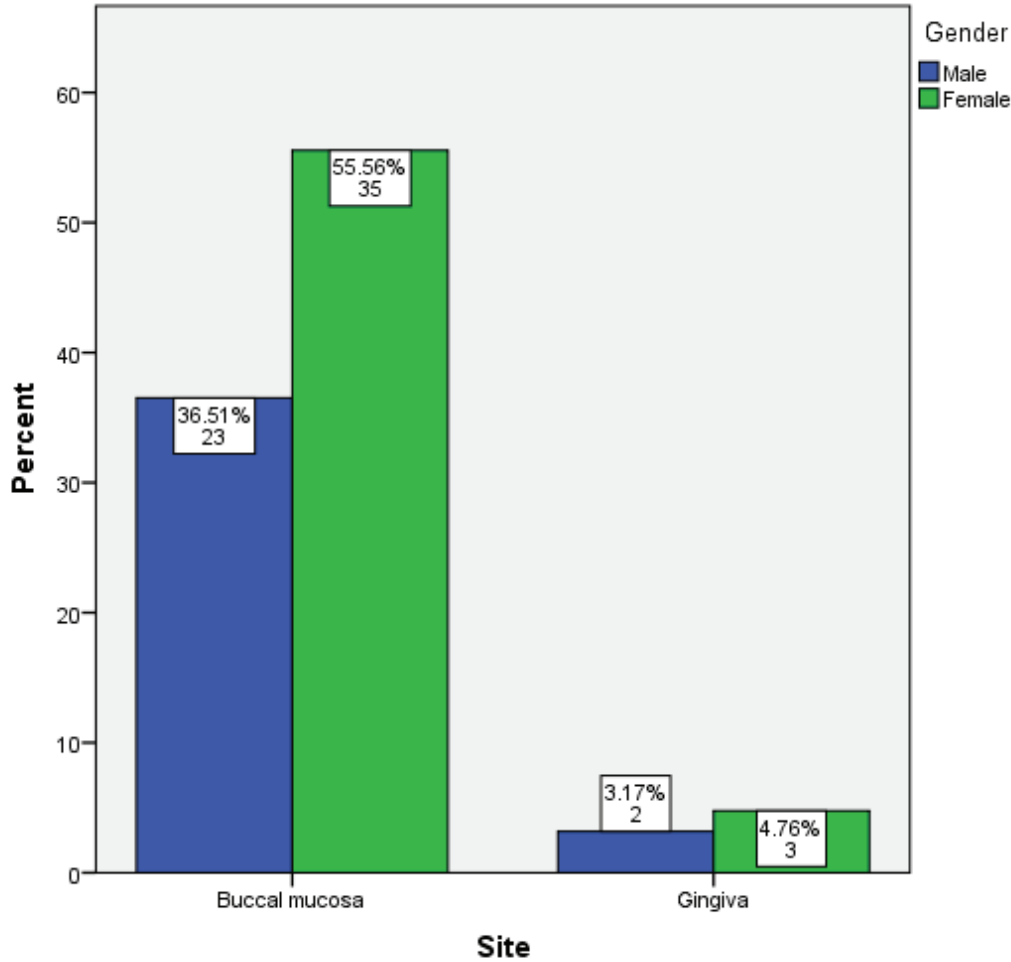


Figure 1: This is a clustered bar graph representing the association of the site of occurrence of the lesion with the total number of patients on a gender basis. The X axis represents the site of occurrence of the lesion and Y axis represents the total number of patients. The blue colour represents the male gender and green colour represents the female gender. A total of 58 patients presented with lesions in the buccal mucosa out of which 23 (36.51%) were males and 35(55.61%) were females and 5 patients in the gingiva of which 2(3.17%) were males and 3(4.76%) were females. A chi square analysis was done to compare the gender and site of occurrence which gave a P value - 0.043 (P<0.05) which is statistically significant indicating buccal mucosa is the most predominant site for the occurrence of the lesion.

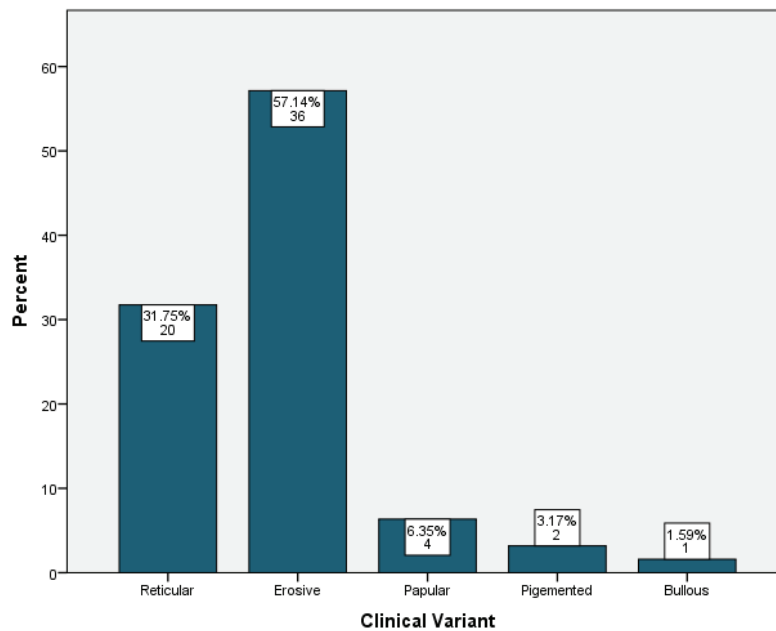


Fig-2: This is a bar graph showing the relative frequency of variants of Oral Lichen planus with the total number of patients. The X-axis represents the variants and Y-axis represents the total number of patients. The blue colour represents the various clinical variants. The most commonly seen in the erosive type 36(57.14%) of Oral Lichen planus was the most prevalent type followed by reticular variant 20(31.75%). The other types namely papular had 4(6.35%) of cases, pigmented 2(3.17%) and bullous 1(1.59%)

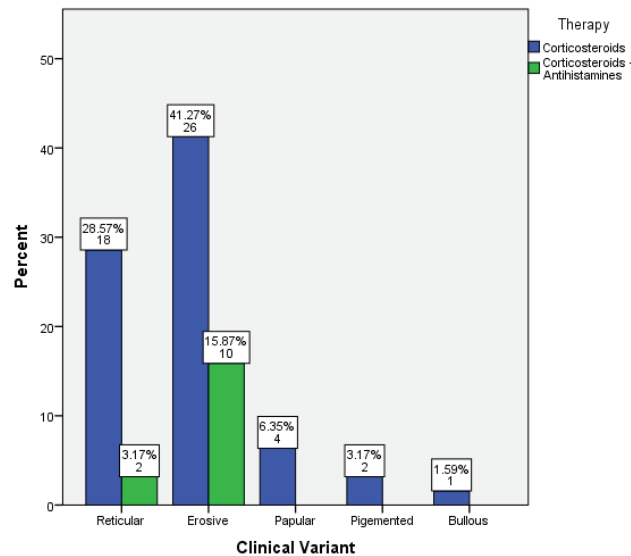


Fig 3: This is a clustered bar graph showing the association between therapy used for the different variants of oral lichen planus with the total number of patients. X-axis gives the clinical variants and y axis gives the total number of patients. The blue colour represents corticosteroids and green colour represents corticosteroids & antihistamines. In the reticular variant 18(28.57%) of patients were prescribed corticosteroids and 2(3.17%) of patients prescribed both drugs. In the erosive variant 26(41.27%) of patients were prescribed corticosteroids and 10(15.87%) of patients prescribed both drugs. In the papular variant 4(6.35%) patients were prescribed corticosteroids. In the pigmented and bullous 2(3.17%) and 1(1.59%) of patients were prescribed only steroids. A Chi-square analysis was done to compare the clinical variants with the therapy used for treatment which gave a P value-0.049(P<0.05) which is statistically significant implying steroids as the most common drug.

On analysis of the data, it was found corticosteroids were used predominantly in the management of reticular OLP while the combination of antihistamine and steroid was used in the management of erosive OLP.

According to the World Health Organisation OLP is categorized into a group of potentially malignant disorders²⁰, while its most severe complication is the progression into oral squamous cell carcinoma. It accounts for 90% of malignant tumors in the head and neck region. It is commonly diagnosed in middle aged individuals. It is a multifactorial disease. The malignant process is based on increased proliferation of basal layer cells under the influence of mediators from inflammatory infiltrate that activate different pathways leading to tumor formation²¹.

Reticular lesions that are asymptomatic²² generally require no therapy but only watchful observation. In general management should be aimed at treating atrophic and erosive/ulcerative lesions, alleviating accompanying symptoms and reducing the potential risk of malignant transformation²³. Topical corticosteroids are available adhesive vehicles or can be used as mouth rinses²⁴. Empirical evidence suggests that mouth rinses are of value to patients with wide spread OLP. Systemic steroid therapy is reserved for patients in whom lesions are recalcitrant to topical steroids. Steroids are generally used in the management of several immune mediated disorders.²⁵

The histological findings of OLP are a number of epithelial changes, the amount and extensions of which vary. They include epithelial orthokeratotic hyperkeratosis, hyperkeratosis, parakeratosis, epithelial atrophy or hyperplasia, acanthosis, saw-tooth rete pegs, liquefaction and degeneration, single cell necrosis called colloid bodies^{25,26}. The superficial dermis shows a dense, well-defined, band-like inflammatory infiltrate composed of lymphocytes and macrophages²⁷. Histological evaluation is also important as solely clinical criteria may result in false-positive findings for lesions similar to OLP.

In this retrospective study we assessed the demographic and clinical features of oral lichen planus patients along with the therapy used for treatment. In this study we observed that out of 63 patients, there was more of female prevalence than males, females were

60.3% which was in accordance with Mostafa Betal, who found 68.7% females were affected by OLP²⁸. This was also seen in MCarbone et al; study where more than 60% of the patients affected by OLP were females²⁹. On the contrary Anita D Munde et al in their study showed that 61.7% males were affected whereas our study showed only 39.7% of male prevalence⁹. Others like Rohan et al also showed 75.4% male prevalence in oral lichen planus³⁰.

Bilateral involvement of buccal mucosa was seen in 92.1% of the patients followed by gingiva in our study. Soma Susan et al also showed similar results in their study where 77% of the patients showed presence of OLP in the buccal mucosa. Munde et al also showed that buccal mucosa was the most affected site.

Our study showed that the erosive form of Lichen Planus was the most prevalent clinical type which was not in accordance with Rohan Sachdev et al, their study showed 67.6% of reticular variant of oral lichen planus³¹. Carbone et al's study revealed that 42% of the patients were using topical corticosteroids, whereas our study showed that 81% of the patients were using corticosteroids. Along with steroids nutritional supplements also can be prescribed for the patients.^{32,33}

The data for this study had been obtained from our internal archives and similar studies that have been done in the past had matching results with the existing literature evidence.³³ There have also been observational studies done from the archived database which has yielded positive results.^{10,34}

The limitations of this study was the smaller sample size and the follow up with the recurrence potential of the lesion is not recorded. A future study incorporating a larger sample size might be required.

Conclusion

Our study shows that the erosive variant of OLP which is the symptomatic variant while the reticular variant which is asymptomatic is the second most commonest variant. Patients with OLP should be counselled as the nature of this chronic condition and different approaches of treatment. Patients should be informed that they may experience altering periods of symptomatic remission and exacerbation. Clinicians

should maintain a high index of suspicion for all intraoral areas that appear unusual. This vigilance is especially important in patients with Oral Lichen planus as it has the potency to transform into a carcinoma.

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References

- Farhi D, Dupin N. Pathophysiology, etiologic factors, and clinical management of oral lichen planus, part I: facts and controversies. *Clin Dermatol.* 2010 Jan;28(1):100–8.
- Steele JC, Clark HJ, Hong CHL, Jurge S, Muthukrishnan A, Kerr AR, et al. World Workshop on Oral Medicine VI: an international validation study of clinical competencies for advanced training in oral medicine. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2015 Aug;120(2):143–51.e7.
- Sugerman PB, Savage NW, Walsh LJ, Zhao ZZ, Zhou XJ, Khan A, et al. The pathogenesis of oral lichen planus. *Crit Rev Oral Biol Med.* 2002;13(4):350–65.
- Agha-Hosseini F, Moslemi E, Mirzaii-Dizgah I. Comparative evaluation of low-level laser and CO₂ laser in treatment of patients with oral lichen planus. *Int J Oral Maxillofac Surg.* 2012 Oct;41(10):1265–9.
- Eversole LR. Immunopathogenesis of oral lichen planus and recurrent aphthous stomatitis. *Semin Cutan Med Surg.* 1997 Dec;16(4):284–94.
- Lukac J, Brozović S, Vucicević-Boras V, Mravak-Stipetić M, Malenica B, Kusić Z. Serum autoantibodies to desmogleins 1 and 3 in patients with oral lichen planus. *Croat Med J.* 2006 Feb;47(1):53–8.
- Nosratzahi T. Oral Lichen Planus: an Overview of Potential Risk Factors, Biomarkers and Treatments. *Asian Pac J Cancer Prev.* 2018 May 26;19(5):1161–7.
- Eisen D, Carrozzo M, Bagan Sebastian J-V, Thongprasom K. Number V Oral lichen planus: clinical features and management. *Oral Dis.* 2005 Nov;11(6):338–49.
- Munde AD, Karle RR, Wankhede PK, Shaikh SS, Kulkurni M. Demographic and clinical profile of oral lichen planus: A retrospective study. *Contemp Clin Dent.* 2013 Apr;4(2):181–5.
- Patil SR, Maragathavalli G, Araki K, Al-Zoubi IA, Sghaireen MG, Gudipani RK, et al. Three-Rooted Mandibular First Molars in a Saudi Arabian Population: A CBCT Study. *Pesqui Bras Odontopediatria Clin Integr.* 2018 Aug 27;18(1):4133.
- Sugerman PB, Savage NW. Oral lichen planus: causes, diagnosis and management. *Aust Dent J.* 2002 Dec;47(4):290–7.
- Edwards PC, Kelsch R. Oral lichen planus: clinical presentation and management. *J Can Dent Assoc.* 2002 Sep;68(8):494–9.
- Subashri A, Maheshwari TN. Knowledge and attitude of oral hygiene practice among dental students. *Research Journal of Pharmacy and Technology.* 2016;9(11):1840–2.
- Rohini S, Kumar VJ. Incidence of dental caries and pericoronitis associated with impacted mandibular third molar-A radiographic study. *Research Journal of Pharmacy and Technology.* 2017;10(4):1081–4.
- Venugopal A, Maheswari TNU. Expression of matrix metalloproteinase-9 in oral potentially malignant disorders: A systematic review [Internet]. Vol. 20, *Journal of Oral and Maxillofacial Pathology.* 2016. p. 474.
- Maheswari TNU, Venugopal A, Sureshababu N, Ramani P. Salivary micro RNA as a potential biomarker in oral potentially malignant disorders: A systematic review [Internet]. Vol. 30, *Tzu Chi Medical Journal.* 2018. p. 55.
- Muthukrishnan A, Warnakulasuriya S. Oral health consequences of smokeless tobacco use. *Indian J Med Res.* 2018 Jul;148(1):35–40.

18. Misra SR, Shankar YU, Rastogi V, Maragathavalli G. Metastatic hepatocellular carcinoma in the maxilla and mandible, an extremely rare presentation. *Contemp Clin Dent*. 2015 Mar;6(Suppl 1):S117–21.
19. Ismail SB, Kumar SKS, Zain RB. Oral lichen planus and lichenoid reactions: etiopathogenesis, diagnosis, management and malignant transformation. *J Oral Sci*. 2007 Jun;49(2):89–106.
20. Shen Z-Y, Liu W, Feng J-Q, Zhou H-W, Zhou Z-T. Squamous cell carcinoma development in previously diagnosed oral lichen planus: de novo or transformation? *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2011 Nov;112(5):592–6.
21. Liu Y, Messadi DV, Wu H, Hu S. Oral lichen planus is a unique disease model for studying chronic inflammation and oral cancer. *Med Hypotheses*. 2010 Dec;75(6):492–4.
22. Subha M, Arvind M. Role of magnetic resonance imaging in evaluation of trigeminal neuralgia with its anatomical correlation. *Biomedical and Pharmacology Journal*. 2019;12(1):289–96.
23. Al-Hashimi I, Schifter M, Lockhart PB, Wray D, Brennan M, Migliorati CA, et al. Oral lichen planus and oral lichenoid lesions: diagnostic and therapeutic considerations. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2007 Mar;103 Suppl:S25.e1–12.
24. Muthukrishnan A, Bijai Kumar L. Actinic cheilosis: early intervention prevents malignant transformation. *BMJ Case Rep [Internet]*. 2017 Mar 20;2017.
25. Dharman S, Muthukrishnan A. Oral mucous membrane pemphigoid - Two case reports with varied clinical presentation. *J Indian Soc Periodontol*. 2016 Nov;20(6):630–4.
26. Muthukrishnan A, Bijai Kumar L, Ramalingam G. Medication-related osteonecrosis of the jaw: a dentist's nightmare. *BMJ Case Rep [Internet]*. 2016 Apr 6;2016.
27. Carlos R, Contreras E. Risk of squamous cell carcinoma in 402 patients with oral lichen planus: a follow-up in an Italian population, S. Gandolfo, L. Richiardi, M. Carrozo, R. Broccoletti, M. Carbone, M. Pagano, C. Vestita, S. Rossso, F. Merleti, *Oral Oncology* (2004) 40: 77-83. *Oral Oncol*. 2004 Oct;40(9):964.
28. Mostafa B, Ahmed E. Prevalence of oral lichen planus among a sample of the Egyptian population. *J Clin Exp Dent*. 2015 Feb;7(1):e7–12.
29. Carbone M, Arduino PG, Carrozzo M, Gandolfo S, Argiolas MR, Bertolusso G, et al. Course of oral lichen planus: a retrospective study of 808 northern Italian patients. *Oral Dis*. 2009 Apr;15(3):235–43.
30. Sachdev R, Mukerjee S, Garg K, Singh G, Saxena S, Sambyal S, et al. Demographic Prevalence of Oral Lichen Planus in Males: A Retrospective Study [Internet]. Vol. 3, *Acta Scientific Dental Sciencs*. 2019. p. 111–4. Available from: <http://dx.doi.org/10.31080/asds.2019.03.0606>
31. Varghese SS, George GB, Sarojini SB, Vinod S, Mathew P, Mathew DG, et al. Epidemiology of Oral Lichen Planus in a Cohort of South Indian Population: A Retrospective Study. *J Cancer Prev*. 2016 Mar;21(1):55–9.
32. Chaitanya NC, Muthukrishnan A, Krishnaprasad CMS, Sanjuprasanna G, Pillay P, Mounika B. An Insight and Update on the Analgesic Properties of Vitamin C. *J Pharm Bioallied Sci*. 2018 Jul;10(3):119–25.
33. Chaitanya NC, Muthukrishnan A, Babu DBG, Kumari CS, Lakshmi MA, Palat G, et al. Role of Vitamin E and Vitamin A in Oral Mucositis Induced by Cancer Chemo/Radiotherapy- A Meta-analysis. *J Clin Diagn Res*. 2017 May;11(5):ZE06–9.
34. Choudhury P, Panigrahi RG, Maragathavalli AP, Patra PC. Vanishing roots: first case report of idiopathic multiple cervico--apical external root resorption. *J Clin Diagn Res*. 2015;9(3):ZD17.