Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 45 No. 3 (2024)

Retrospective Analysis of Adjuvant Propulsion Strategies in the Pharmacotherapy of Oral Lichen Planus (OLP)

[1]Dr.Dhanya.M , [2]Dr.Uma Maheswari TN , [3]Dr Dhanvanth.M

[1]Post Graduate Resident, Department of Oral Medicine and Radiology And Special Care Dentistry, Saveetha Dental College And Hospitals , Saveetha Institute of Medical and Technical Sciences , Saveetha University, Chennai-600077 , Tamilnadu,India

[2]Corresponding Author , Professor and Head , Department of Oral Medicine And Radiology , Saveetha Dental College And Hospitals , Saveetha Institute of Medical and Technical Sciences Saveetha University, Chennai-600077 , Tamilnadu,India

3Senior Lecturer, Department of Oral Medicine and Radiology, Priyadarshini Dental College and Hospital, Tiruvallur, Tamil Nadu,India

Abstract: Oral lichen planus is a chronic inflammatory condition affecting the oral cavity. Various treatment modalities have been carried out in treating OLP out of which adjuvant antihistamine, antifungal therapies encores a crucial role. The core objective of the study was to assess the therapeutic effectiveness of the employed adjuvant Propulsion strategies, by retrospectively extracting the data of patients who reported to the Department of Oral Medicine And Radiology And Special Care Dentistry using electronic data recording device of the institution from the time period of 2019-2023. Parameters such as patient's age, gender, clinical variants of OLP, underlying systemic disease, Conventional and adjuvant therapies employed and their respective VAS (Visual analogue scale) and Lesion size (Thongprasom criteria) were documented. The data were later statistically analyzed with SPSS Software version 26.0 by employing Fisher's exact test, Chi square test and Independent samples Mann Whitney tests which yielded a significant P value of <0.001. Since oral lichen planus has a highest recurrence rate and slower cure, the use of adjuvant therapies along with the conventional therapies could be implicated, aiding in a synergistic action and faster resolution of the lesion.

Keywords: antifungal, antihistamine, lichen planus, oral, prevalence

1. Introduction

Oral lichen planus is a chronic inflammatory, autoimmune disease driven by T lymphocytes causing numerous pathogenic pathways, which includes humoral immunity, autoimmunity and other non-specific pathways. Out of these mechanisms, antigen-specific cell-mediated immunity is considered as an accepted process in which cytotoxic CD 8+ T cells cause the basal cells of the oral epithelium to undergo apoptosis [1].

The etiology of it is still inconclusive but literature claims that immunopathogenesis ,psychosocial factors to be the major factors for pathogenesis [2].

Globally, the prevalence was 1.01%, with India having the lowest prevalence rate of 0.49% and Europe having the greatest prevalence of 1.43% [3]. It was reported that the overall malignant transformation rate of oral lichen planus was 0.2% [4].

The current treatment trends or strategies carried, includes corticosteroid therapy ,Retinoids, low level laser therapy, Immunomodulators, ultraviolet irradiation, Calcineurin inhibitors, Photodynamic therapy, and so on, out of which Triamcinolone Acetonide 0.1% is the most commonly employed topical medication [5,6].Apart from the conventional treatment modalities adjuvant therapies have been extensively prescribed in the day to day therapeutic management of OLP, which includes Vitamin D Supplements, systemic Acyclovir Therapy, Immunoglobulins and probiotics [7-10]. Despite having numerous advantages over conventional treatment

strategies, the recurrent nature of oral lichen planus hinders its therapeutic potential. To overcome this lacunae adjuvant therapies could be prescribed along with conventional therapies and its effectiveness should be reported.

2. Objectives

Thus the core aim behind this study was to assess the co-existing adjuvant therapies among the new cohort of patients with OLP, and further the objective of the study was to assess the therapeutic efficacy of the employed adjuvant therapies.

3. Methods

Ethical consideration

After providing an explanation of the study's purpose and potential clinical Implications, the institute's ethical approval was obtained.

Ethical number- **IHEC/SDC/OMR-2103/22/332**

Study Design and Data extraction

To perform this retrospective analysis, patient data from 2019 to 2023 who visited the dental institute's Department of Oral Medicine and Radiology were extracted.

Data extraction was done through an electronic data recording device of the institution with clinically diagnosed cases of Oral lichen planus from a time period of 2019-2023. After removing the duplicates a total number of 312 patient details were obtained. Since this was a retrospective study, G power calculations were not required.

Inclusion and Exclusion criteria

-Patients with unilateral and bilateral presentation of clinically diagnosed cases of oral lichen planus, patients with all clinical variants of oral lichen planus were included according to the WHO Criteria [11] . Only Patients who have completed the course of therapy and under follow ups were included. -Patients with oral Lichenoid reactions, Pregnant patients, patients under age of 18, patients who were currently under treatment for oral lichen planus, patients with other Oral potentially malignant disorders were excluded. Primary and secondary reviewers assessed the data case sheet independently and the inclusion of each patient was carried out. Incomplete data of the patients were excluded from the raw data

Parameters

The two major parameters included adjuvant antifungal and antihistamine therapies and their efficacies were analyzed by assessing the VAS Score [12] and Thongprasom criteria [13], from baseline till the final visit. Other Additional Parameters extracted included, patient's age, gender, Clinical types of oral lichen planus, conventional therapies.

Statistical Analysis

Later, using IBM SPSS Statistics for Windows, Version 26.0, statistical analysis was performed on the collected data. The Chi-Square test was used to compare the proportions between the groups; Fisher's exact test and Mann Whitney tests were done if any anticipated cell frequency was less than five.

4. Results

A total of 312 study patients were assessed in this investigation. Correlations between various parameters were assessed using Fisher's exact test, Mann-Whitney U Test and chi square tests at a significance threshold of 5%.

Gender prevalence

This study employed a female predominance of about 62.7% and a male predominance of about 37.3%. On comparing the gender with the prevalent clinical types (Erosive, Reticular and other), Males had a higher rate of prevalence to the reticular variant of about 62%, and to the erosive variant of about 32.9%.

Females had a higher rate of prevalence of 40.6% to the Erosive variant and 32.9% to that of the reticular type.

On comparing the gender with that of the prescribed therapies, a female population of 40.6% and a male population of 46.8% received conventional treatment with Triamcinolone Acetonide 0.1%. [Table 1]

Table 1-Gender specificity of drugs used

		Gender						p-value
		Male		Female		Total		
		N	%	N	%	N	%	
Steroid management	Triamcinolone 0.1%	37	46.8	54	40.6	91	42.9	0.189*
	Betamethasone 0.5mg	3	3.8	11	8.3	14	6.6	
	Triamcinolone 0.1% + Betamethasone 0.5mg	9	11.4	25	18.8	34	16.0	
	Prednisolone 5mg	27	34.2	42	31.6	69	32.5	
	Triamcinolone 0.1% + Prednisolone 5mg	2	2.5	0	.0	2	.9	
	Clobetasol 0.05%	1	1.3	1	.8	2	.9	
	Total	79	100.0	133	100.0	212	100.0	
Adjuvant antihistamine therapy	No	39	49.4	53	39.8	92	43.4	0.176
	Yes	40	50.6	80	60.2	120	56.6	
	Total	79	100.0	133	100.0	212	100.0	
Adjuvant antifungal therapy	No	17	21.5	29	21.8	46	21.7	0.961
	Yes	62	78.5	104	78.2	166	78.3	
	Total	79	100.0	133	100.0	212	100.0	

* Fisher's exact test p-value

Age prevalence

Prevalence of Oral lichen planus was commonly observed in patients with age ranging from 41-63 years, Out of which Reticular variant was more prevalent among patients between 36-50 years of age and erosive variant was more prevalent among the age groups of 51-65 years [Table 2]

Table 2- Age distribution in clinical types

Clinical variant	Age group (years)										p-value
	20 - 35		36 - 50		51 - 65		> 65		Total		
	N	%	N	%	N	%	N	%	N	%	
Reticular	35	64.8	36	51.4	35	47.3	8	57.1	114	53.8	0.411*
Erosive	17	31.5	27	38.6	32	43.2	4	28.6	80	37.7	
Others	2	3.7	7	10.0	7	9.5	2	14.3	18	8.5	
Total	54	100.0	70	100.0	74	100.0	14	100.0	212	100.0	

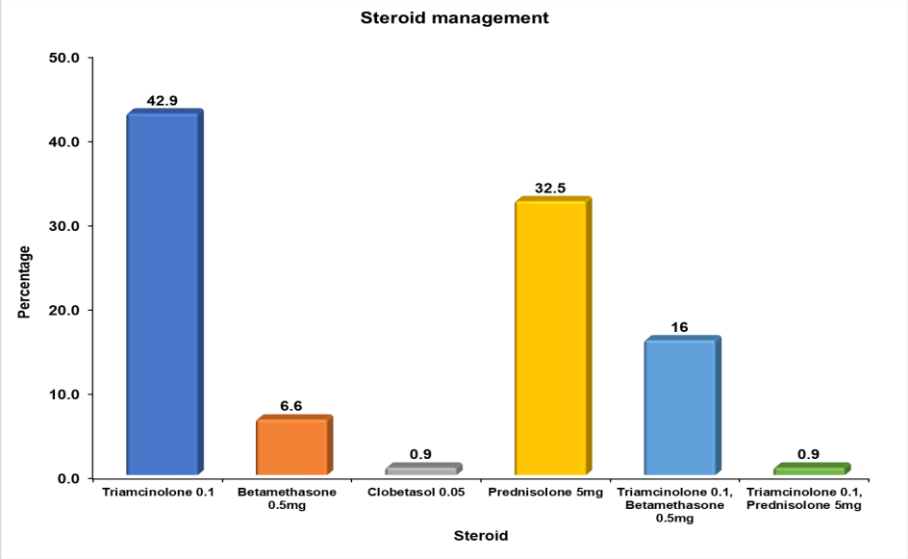
* Fisher's exact test p-value

Conventional steroid therapy

Many conventional steroids were prescribed to patients such as Triamcinolone 0.1%, Clobetasol 0.05%, Prednisolone 5mg, Betamethasone 0.5mg and other combinations included Triamcinolone 0.1%+Betamethasone 0.5mg, Triamcinolone 0.1%+Prednisolone 5mg.

Out of these steroid therapies the highest prescribed steroid was Triamcinolone 0.1% with a percentage of 42.9% followed by prednisolone 5mg. [Graph 1]

Graph 1 - Distribution of different steroidal management



Graph 1 depicts the distribution of various steroidal management, out of which the highest percentage of steroid prescribed was Triamcinolone 0.1% with 42.9% followed by prednisolone 5mg.

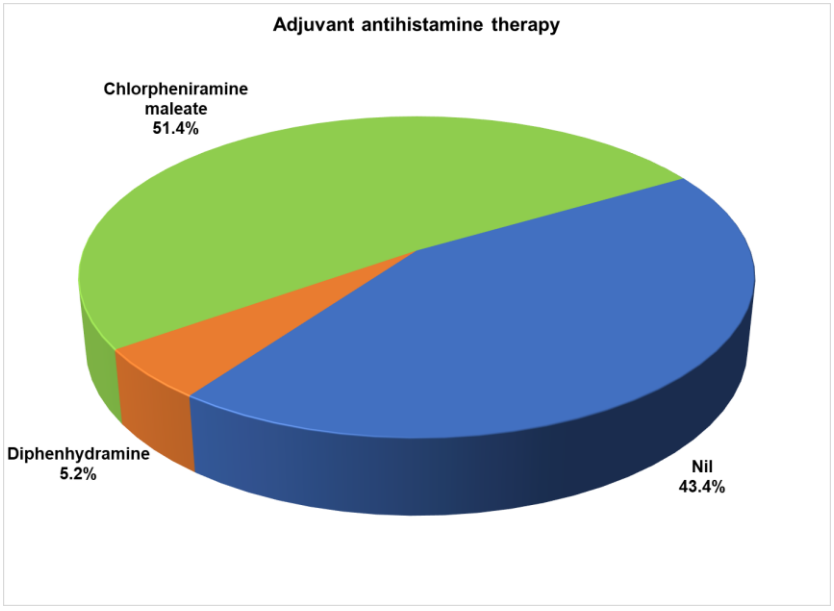
Adjuvant therapies

The most common adjuvant therapies prescribed were anti histamines (Diphenhydramine and chlorpheniramine maleate) and antifungal therapies (Clotrimazole 1%).

The most common antihistamine prescribed was chlorpheniramine maleate with a prevalence rate of 51.4%, and the most commonly prescribed anti fungal was Clotrimazole 1% with a prevalence rate of 78.3%. [Graph 2] [Graph 3]

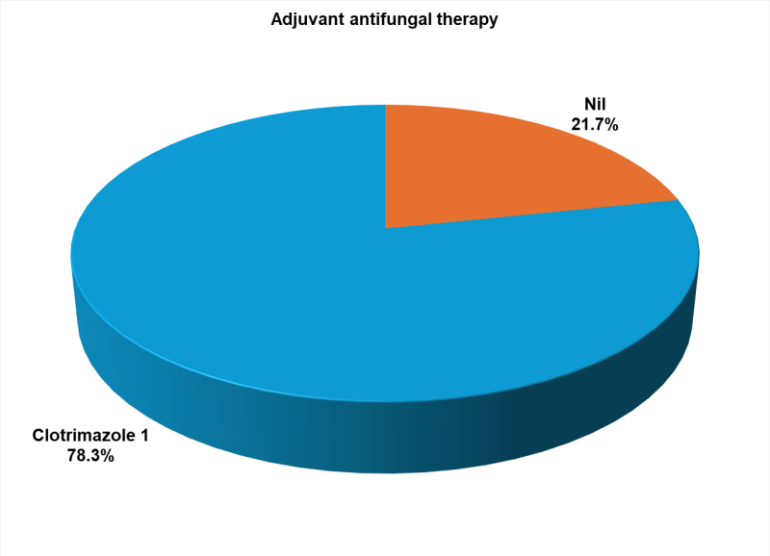
On comparing the adjuvant therapies with the clinical variants, 96.3% of patients with erosive type were prescribed with antihistamine and 90.% of patients were prescribed antifungal therapy. Not every patients were prescribed with adjuvant therapies, only patients with symptomatic cases for more than 15 days were subjected to these adjuvant therapies [Graph 4]

Graph 2- Distribution of Adjuvant antihistamine therapies



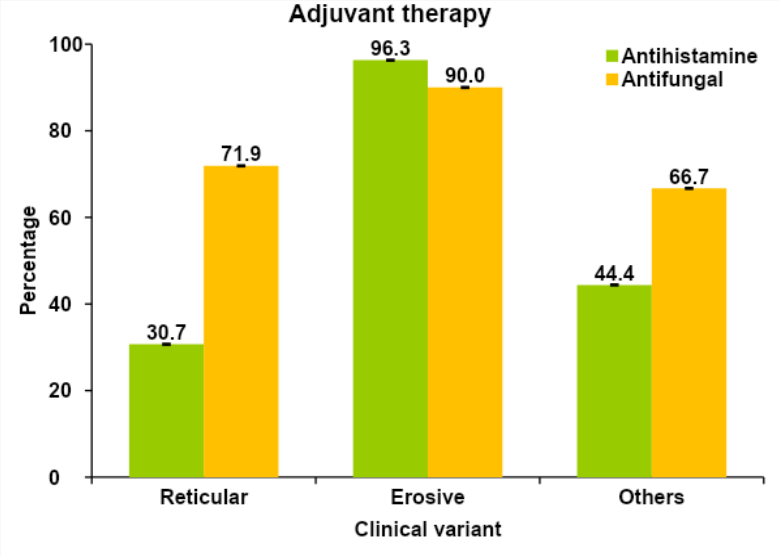
Graph 2 depicts the most common antihistamine prescribed among the patients was chlorpheniramine maleate with a prevalence rate of 51.4%,

Graph 3- Distribution of Adjuvant antifungal therapies



Graph 3 depicts most commonly prescribed anti fungal was Clotrimazole 1% with a prevalence rate of 78.3%

Graph 4- Comparison of clinical types with Adjuvant therapies



Graph 4 depicts the distribution of adjuvant therapies among clinical variants of oral lichen planus, amongst which, 96.3% of patients with erosive type were prescribed with antihistamine and 90.% of patients were prescribed antifungal therapy.

Conventional versus adjuvant therapies

On comparing the Thongprasom scoring (Baseline and last visit) of patients taking adjuvant antihistamines and antifungal therapies a significant P value of <0.001 was obtained. [Table 3]

On Comparing the VAS Scores (Baseline and Last visit) of patients taking adjuvant antihistamine and antifungal therapies with patients not taking adjuvant therapies a significant difference in the value was < 0.001. [Table 4]

Table 3- Thongprasom scoring from baseline to final visit in patients taking adjuvant therapies

		Adjuvant antihistamine therapy		p-value*
		No	Yes	
Thongprasom -first visit	N	92	120	0.572
	Median	5.0	5.0	
	1st Quartile	4.0	4.0	
	3rd Quartile	5.0	5.0	
	Mean	4.5	4.6	
	Std Dev	.5	.5	
Thongprasom -last visit	N	92	120	**<0.001**
	Median	2.0	1.0	
	1st Quartile	2.0	1.0	
	3rd Quartile	3.0	2.0	
	Mean	2.5	1.1	
	Std Dev	.6	.7	
p-value[#]		**<0.001**	**<0.001**	

* Independent-Samples Mann-Whitney U Test

[#] Related-Samples Wilcoxon Signed Rank Test

Table 4- VAS scoring from baseline to final visit in patients taking adjuvant therapies

		Adjuvant therapy		p-value*
		No	Yes	
Vas score -first visit	N	46	166	0.681
	Median	9.0	9.0	
	1st Quartile	8.0	9.0	
	3rd Quartile	10.0	10.0	
	Mean	9.1	9.0	
	Std Dev	.9	.7	
Vas score-last visit	N	46	166	**<0.001**
	Median	6.0	4.0	
	1st Quartile	5.0	3.0	
	3rd Quartile	7.0	4.0	
	Mean	5.9	3.9	
	Std Dev	1.1	.8	
p-value[#]		**<0.001**	**<0.001**	

* Independent-Samples Mann-Whitney U Test

[#] Related-Samples Wilcoxon Signed Rank Test

5. Discussion

In this retrospective study with a sample size of 312 patients, aimed at assessing the prevalence of adjuvant therapies employed in the management of oral lichen planus through electronic data recording devices of the institution. Out of which 78.3% and 51.4% of the patients were on adjuvant antifungal and anti histamine therapies

respectively. The study also further evaluated the effectiveness of these therapies in comparison with the other steroid therapy using VAS Score and Thongprasom scale which depicted a significant P value of < 0.00.

This current study not only assessed the adjuvant therapies, but it also assessed the other general parameters which depicted a female predominance of 62.7% which was in agreement with other research by and Dvorak et al and Ovia et al [14,15].The current study showed a mean age prevalence of 41-63 years. Among various clinical presentations of oral lichen planus, reticular variant was most prevalent among our study followed by the erosive variant exhibiting a percentage prevalence of 53% and 37% respectively, These results were on par with other studies by Osipooff et al and Abreu Lg et al [16,17].

Various treatment modalities have been carried out, of which trials of Mamadapur et al, Murugan et al, have used, triamcinolone Acetonide 0.1%, Clobetasol as a primary treatment strategy upon which a mean depletion of pain score and the lesion size was noted [18,19]. In our current study Prednisolone 5mg and Triamcinolone Acetonide were commonly used as the most preferred conventional treatment strategy.

In this current study we have assessed the other adjuvant therapies prescribed for the patients along with conventional steroids; which showed clotrimazole 1% (78%) as the most prescribed antifungal drug and chlorpheniramine maleate(51.4%) as the most given antihistamine drug. Study by Marble et al have assessed the adjuvant antifungal therapy which encoded clotrimazole to be the most administered antifungal agent, which further showed a significant reduction in the lesion size with a P value of 0.02, when compared with patients taking steroid therapy [20].

Similarly Study by MP SK et al assessed the institutional based second line therapies employed in oral lichen planus which illustrated that 65% of the patients were treated with chlorpheniramine. These two studies were in line with our current study [21].

One of the study's shortcomings is the lack of evaluation of malignant transformation rate of OLP. Other limitations include the lesser number of samples collected, and non assessment of the association of OLP with other oral potentially malignant disorders.

Besides the limitations, the current study has added more knowledge to the existing literature that adjuvant therapies could possibly be used as a routine treatment tool along with conventional steroids in reducing the recurrence of the lesion and in obtaining better patient compliance in the future. In Conclusion, Prevalent adjuvant antihistamine and antifungal therapies aid as a combined management in treating patients with oral lichen planus.

6. Future prospects

Future studies could concentrate on comparing the prevalence of these various clinical parameters among different ethnicities of people and in different countries; and could also correlate the therapeutic efficacy of the medications in the long term.

Since fewer studies have assessed the effectiveness of the adjuvant therapies, future clinical trials could aim at evaluating the effectiveness of these adjuvant therapies.

References

1. Nagi R, Muthukrishnan A, Rakesh N. Effectiveness of photodynamic therapy (PDT) in the management of symptomatic oral lichen planus-A systematic review. Journal of Oral Biology and Craniofacial Research. 2023 Mar 1;13(2):353-9
2. Andabak-Rogulj A, Vindis E, Aleksijevic LH, Skrinjar I, Juras DV, Ascic A, Brzak BL. Different Treatment Modalities of Oral Lichen Planus- A Narrative Review. J of Dentistry 2023 ;11:26.
3. Gonzalez-Moles MA, Warnakulasuriya S, Gonzalez-Ruiz I, Gonzalez-Ruiz L, Ayen A, Lenouvel D, Ruiz-Avila I, Ramos-Garcia P. Worldwide prevalence of oral lichen planus: A systematic review and meta-analysis. J of Oral diseases 2021 ;27:813-28.
4. Offen E, Allison JR. What is the malignant transformation potential of oral lichen planus?. J Evidence-Based Dentistry 2022 ;23:36-7

5. Didona D, Caposiena Caro RD, Sequeira Santos AM, Solimani F, Hertl M. Therapeutic strategies for oral lichen planus: State of the art and new insights. Frontiers in medicine. 2022 Oct 4;9:997190
6. Sandhu S, Klein BA, Al-Hadlaq M, Chirravur P, Bajonaid A, Xu Y, Intini R, Hussein M, Vacharotayangul P, Sroussi H, Treister N. Oral lichen planus: Comparative efficacy and treatment costs—A systematic review. BMC Oral Health. 2022 May 6;22(1):161.
7. Zakiawati D, Al Farisyi M, Dewi TS. Efficacy of systemic acyclovir as adjuvant therapy for oral lichen planus. The American Journal of Case Reports. 2021;22:e934554-1
8. Bender A, Fix C, Eubel V, Eming R, Pollmann R, Schmidt T, Hertl M. Adjuvant high-dose intravenous immunoglobulins for recalcitrant erosive oral lichen planus: mixed clinical responses. European Journal of Dermatology. 2018 Jul;28:496-501.
9. Saeed S, Choudhury P, Ahmad SA, Alam T, Panigrahi R, Aziz S, Kaleem SM, Priyadarshini SR, Sahoo PK, Hasan S. Vitamin D in the Treatment of Oral Lichen Planus: A Systematic Review. J of Biomedicines 2022 ;10:2964
10. Zanetta P, Ormelli M, Amoruso A, Pane M, Azzimonti B, Squarzanti DF. Probiotics as Potential Biological Immunomodulators in the Management of Oral Lichen Planus: What's New?. Int J of mol sciences 2022 ;23:3489.
11. Rotaru DI, Sofineti D, Bolboacă SD, Bulboacă AE. Diagnostic Criteria of Oral Lichen Planus: A Narrative Review. Acta Clin Croat. 2020 Sep;59(3):513-522. doi: 10.20471/acc.2020.59.03.16. PMID: 34177062; PMCID: PMC8212651.
12. Makatsori M, Pfaar O, Calderon MA. Allergen immunotherapy: clinical outcomes assessment. The Journal of Allergy and Clinical Immunology: In Practice. 2014 Mar 1;2(2):123-9.
13. Pakfetrat A, Delavarian Z, Falaki F, Khorashadizadeh M, Saba M. The effect of pimecrolimus cream 1% compared with triamcinolone acetonide paste in treatment of atrophic-erosive oral lichen planus. Iranian journal of otorhinolaryngology. 2015 Mar;27(79):119.
14. Dvorak G, Monshi B, Hof M, Bernhart T, Bruckmann C, Rappersberger K. Gender aspects in oral health-related quality of life of oral lichen planus patients. Int J of stomatology & occlusion medicine 2015 ;8:33-40.
15. Ovia M, Gheena S, Sandeep A. Age and Gender Predilection of Lichen Planus among Patients Visiting Dental College. Int J of Pharm Research 2020.
16. Osipoff A, Carpenter MD, Noll JL, Valdez JA, Gormsen M, Brennan MT. Predictors of symptomatic oral lichen planus. Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology. 2020 May 1;129(5):468-77.
17. Abreu LG, Mesquita RA, Ribeiro-Rotta RF, Mendonca EF, Batista AC. Clinicopathologic data of individuals with oral lichen planus: A Brazilian case series. J of clinical and experimental dentistry 2019 ;11:e1109.
18. Mamadapur R, Naik Z, Kumar SL, Bagewadi A. Comparative efficacy of topical coconut cream and clobetasol propionate ointment for the management of oral lichen planus: A double-blinded randomised control trial. Indian J of Pharmacology 2022 ;54:84.
19. Murugan AJ, Ganesan A, Aniyan YK, Lakshmi KC, Asokan K. Comparison of topical purslane & topical 0.1% triamcinolone acetonide in the management of oral lichen planus- a double blinded clinical trial. J of BMC Oral Health 2023 ;23:678.
20. Marable DR, Bowers LM, Stout TL, Stewart CM, Berg KM, Sankar V, DeRossi SS, Thoppay JR, Brennan MT. Oral candidiasis following steroid therapy for oral lichen planus. J of Oral diseases. 2016 Mar;22(2):140-7.
21. MP SK. Treatment modalities in the management of oral lichen planus- An Institutional Experience International. Journal of Early Childhood Special Education. 2022 Jul 1;14(5).