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# Assessment of Periodontal Status in Patients with Oral Leukoplakia

Research Article

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## Abstract

The occurrence of periodontal diseases in humans has been a global problem. Certain risk factors affect the initiation, progression and severity of periodontitis. The present study has been designed to assess the periodontal status in patients with oral leukoplakia. The study was carried out among 27 subjects with oral leukoplakia. The required data were collected and imported to SPSS analysis software for analysis. A total of 44.4% were reported to have generalized chronic gingivitis and 55.6% were having generalized chronic periodontitis. It was observed that elderly patients between 50 to 80 years (55.6%) are more prone to generalised chronic periodontitis. The p value obtained is 0.503 which is not significant ($p>0.05$). We also observed that males (96.3%) were more commonly reported with oral leukoplakia and diagnosed with periodontal diseases than females (3.7%).The results of this study provide the prevalence of periodontal diseases in oral leukoplakia. The association of periodontitis with premalignant lesions may influence the risk of disease progression and thus preventive therapeutic measures for periodontal diseases can be planned for oral leukoplakia patients.

**Keywords:** Periodontal Disease; Periodontitis; Premalignant Lesions; Oral Cancer; Oral Leukoplakia; Gingivitis.

## Introduction

Oral leukoplakia is a potentially malignant disorder affecting mucosa of the oral cavity. Other than smoking and liquor, the risk factors for the development of this oral lesion are still less recognised [4]. Leukoplakia is an asymptomatic, potentially malignant lesion in the oral mucosa. However, leukoplakia increases your risk of oral cancer. Oral cancers often form near leukoplakia patches. Stress and socio-economic factors may be additive risk factors for leukoplakia and acute infections in the oral cavity may contribute to the risk [45].

It is known that one of the most frequent potentially malignant disorders of oral mucosa is Oral leukoplakia. It was first defined by the world health organisation in 1978 as 'a white patch or plaque which cannot otherwise be characterized clinically or pathologically as any other disease' [44]. As oral leukoplakia can mimic a large variety of lesions, a possible causal factor is suspected such as dental restoration, mechanical irritation [4]. The studies done on oral leukoplakia are very rare, so it is difficult to value its real malignant transformation rate due to different regional habits [28].

Periodontitis is a very common disease caused by oral bacterial inflammation and leading to irreversible attachment loss, bone destruction and eventually tooth loss. It is a multi-factorial disease modified by numerous risk factors such as smoking, social background, diabetes, genetic susceptibility, attitude towards health and supragingival plaque control [7].

Periodontitis is related to different pathological states in the oral cavity including pre malignant and malignant lesions. This is also true for smoking, the most important risk factor for oral leukoplakia and for periodontitis [17]. The occurrence of periodontal disease in humans is a global problem [29]. Periodontal disease is found to affect the Male gender more than the females [49]. Furthermore lack of oral hygiene encourages plaque formation, which leads to increase in pathogenic bacteria that are associated

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with severe forms of periodontal disease [10]. Periodontal diseases are prevalent both in developed and developing countries and affect about 20-50% of global population. High prevalence of periodontal disease in adolescents, adults and older individuals make it a public health concern [47]. The risk of periodontal disease increases with the advancing age that is why the high prevalence of periodontal disease is seen among elderly population. Previous studies identified that age is associated with periodontal disease [19].

Previously our team has a rich experience in working on various research projects across multiple disciplines. (Ramamurthy and Mg, 2018)[33], (Gupta, Ariga and Deogade, 2018)[12], (Vikram et al., 2017)[54], (Paramasivam, Vijayashree Priyadharsini and Raghunandhakumar, 2020)[25], (Palati et al., 2020)[23], (Samuel, Acharya and Rao, 2020)[43], (Muthukrishnan and Wanakulasuriya, 2018)[22], (Govindaraju, Neelakantan and Gutmann, 2017)[11], (Chen et al., 2019)[6], (Priyanka et al., 2017)[31], (Sitharthan et al., 2019)[46], (Priyadharsini et al., 2018)[30], (Azeem and Sureshbabu, 2018)[3], (Wu et al., 2019)[56], (Abitha and Santhanam, 2019)[1].Now the growing trend in this area motivated us to pursue this project.

Taking into consideration the lack of data about periodontal disease in Indian population of oral leukoplakia cases, the present study has been designed to assess the periodontal status of patients with oral leukoplakia in an institutional setup.

## Materials And Methods

In this retrospective study, records of 86000 patients visited Saveetha Dental College and Hospitals from June 2019 to march 2020 were reviewed and the data were analysed. In this study, we reviewed data of 27 patients diagnosed with oral leaukoplakia. Data collected regarding age, gender and different types of periodontal diseases such as generalised chronic gingivitis, localised chronic periodontitis, generalised chronic periodontitis and localised chronic gingivitis diagnosed in oral leukoplakia patients. The data collected were tabulated into excel sheets. It was then transferred to SPSS and analysed by Chi- square test.

## Results & discussion

The study population consisted of 27 individuals of which 26 (96.3%) were males and 1 patient (3.7%) was female. [Figure 1] Regarding age 50-80 (55.6%) years of age group were most commonly affected followed by 30-50 years (40.7%) and 10-30 years (3.7%). The most commonly observed diagnosis in our study is generalised chronic periodontitis (55.6%) and it is followed by generalised chronic gingivitis (44.4%). [Figure 2] The data was analysed using SPSS software Chi-square tests was done and the p value obtained is 0.503, which is not significant, (p>0.05). There were no reported cases of localised chronic periodontitis and localised chronic gingivitis in oral leukoplakia patients.

In our present study, periodontal diseases were more commonly observed in 50-80 years of age. Most studies suggest that periodontal disease is more severe in older adults because of cumulative tissue destruction over a lifetime rather than an age-related, intrinsic deficiency or abnormality which affects periodontal susceptibility. However, it is still unclear in the case of whether aging is a risk factor for severe periodontal disease, or if its impact is due to the prolonged exposure of older subjects to true etiologic factors.

**Figure 1: The graph shows association of distribution of gender reported with oral leukoplakia. X-axis represents the gender type and Y-axis represents the patient count. Males (96.3%) were higher than females (3.7%)**

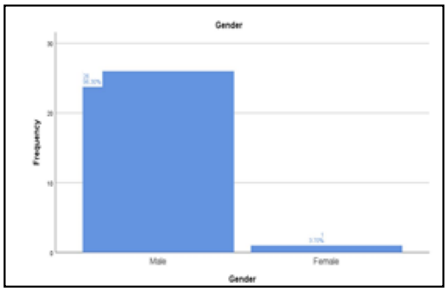
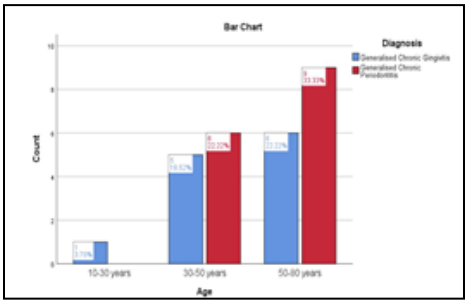



**Figure 2: The graph shows the association of prevalence of periodontal diseases in relation to age. The X axis represents the age group and Y axis represents the patient count. Blue denotes Generalised chronic gingivitis and red denotes generalised chronic periodontitis. Generalised chronic gingivitis (22.22%) and generalised chronic periodontitis (33.33%) were more commonly observed in participants in the age group of 50 to 80 years than in participants of other age groups; however it is not statistically significant. Chi square test, p value: 0.503 (p<0.05 which is not statistically significant).**



The main objective in oral leukoplakia's management of care is to detect and to prevent malignant transformation.(Meyer et al., 2008) At the first, the ceasing of the risk activities such as smoking is recommended. Further the histopathological evaluation is needed. Oral leukoplakia presenting low malignant risk may be either completely removed or not and the decision should consider other factors such as location size and in the case of smokers, the patient's engagement in smoking cessation [50].

Therefore, cessation of smoking can prevent periodontal cases, since smoking is a major risk factor for periodontal disease. [16]. Smoking cessation not only inhibits further progression of periodontal disease but can also decrease the periodontal tissue destruction [15].

Chronic periodontitis is the most common and widely recognised infection worldwide with high clinical significance for dentists. Chronic periodontitis triggers the development of (OSCC) oral squamous cell carcinoma [13]. Recently, there is improving enthusiasm in the development of various types of cancer and their contribution to inflammation as also the underlying pathophysiological factors that lead to malignant transformation [34, 14].

Periodontitis is treated by dental professionals with scaling and root planing of bacteria and calculus to address the inflammation deep into the root. Topical antibiotics (metronidazole, minocycline, and doxycycline) and systemic antibiotics (doxycycline 100 mg daily, metronidazole 500 mg twice daily) are also used [38, 37] Chlorhexidine rinses may also be prescribed. Oral hygiene is an essential aspect of management and can be supported by medical professionals. Oral hygiene should include brushing twice daily with fluoridated toothpaste, ideally using an electric oscillating toothbrush, flossing daily, avoiding sugary snacks and drinks, avoiding tobacco products, and regular dental visits and cleanings. [31, 9].

Oral Leukoplakia around the world is around 1-2% for all ages together. There are geographical differences with regard to gender distribution. Leukoplakias are usually more typical among smokers than non-smokers [55].

WHO recommends employing integrated public health preventive strategies which should be based on the common risk factor approach. Risk factors such as smoking,stress and low socioeconomic status are associated with periodontal disease as well as other systemic chronic diseases; therefore inclusion of oral disease prevention strategies in chronic systemic disease is needed. Preventive initiatives can curtail the burden of disease of the level of population [27].

Proper mouth cleaning, regular tooth brushing and dental flossing are most effective in preventing oral disease and periodontitis [51]. Despite utmost significance of tooth brushing, about half of the population brush twice a day. There are various types of toothbrushes in reducing dental plaque [34].

Although the role of diet in the prevention of dental caries is more significant compared with preventing periodontal disease; nonetheless poor diet can negatively affect periodontal tissues causing rapid progression of disease [52].

A diet high in fruits, vegetables and low in fat and sugars is required for healthy periodontal tissues [2]. Stannous fluoride has antiplaque and antigingivitis effects and it reduces the proportion of bacteria and spirochetes in subgingival areas, thus can help to promote gingival health [24]. Chlorhexidine, triclosan, essential oils and zinc in toothpastes, mouthwashes and gels are used to control specific periodontal bacteria as well as plaque [21]. Moreover research data from several clinical trials support that antibacterial mouth rinses have equal or greater efficiency in controlling gingival disease than the use of interproximal dental floss [39].

The limitations of the present study are small sample size. There was insufficient data of female patients with oral leukoplakia to statistically analyse the association of oral leukoplakia and periodontal diseases based on gender. Our institution is passionate about high quality evidence based research and has excelled in various fields ( (Pc, Marimuthu and Devadoss, 2018 [26]; Priyadharsini et al., 2018 [30]; Ramesh et al., 2018 [36]; Ezhilarasan, Apoorva and Ashok Vardhan, 2019 [8]; Ramadurai et al., 2019 [32]; Sridharan et al., 2019 [48]; Vijayashree Priyadharsini, 2019 [53]; Chandrasekar et al., 2020 [5]; Mathew et al., 2020 [18]; R et al., 2020 [41]; Samuel, 2021 [42]). We hope this study adds to this rich legacy.

## Conclusion

Further research is needed to explore the underlying mechanics and risk factors of periodontal diseases and oral leukoplakia, to develop initiative preventive strategies. Preventive programs for periodontal disease should utilize common risk approaches to reduce the magnitude of other chronic diseases. Decreased periodontal disease burden can minimize treatment needs and can reduce financial impact on healthcare systems.

The role of the dentist and general practitioner is important in the early diagnosis when leukoplakia is usually asymptomatic. Ideal dental diagnosis and procedures should be evaluated.

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