

Prevalence of Leukoplakia in Krishna Vishwa Vidyapeeth, Karad

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Abstract

Oral leukoplakia (OLK), a common oral potentially malignant disorder, stands at the crossroads of benign lesions and potentially life-altering transformations. This study, conducted at Krishna Vishwa Vidhyapeeth in Karad, delves into the prevalence, patterns, and predisposing factors of oral leukoplakia within a specific academic institution. The investigation spanned from June 2022 to July 2023, encompassing a comprehensive examination of 49,339 patients. Among this cohort, 19 patients were diagnosed with leukoplakia. The prevalence revealed a notable male predilection, with individuals aged 60 and above demonstrating a higher susceptibility. Tobacco chewers emerged as a prominent demographic, eclipsing smokers and alcohol consumers in leukoplakia prevalence. Anatomically, the left buccal mucosal site emerged as a focal point, signifying the importance of lesion distribution in diagnostic considerations. The predominant lesion type observed was homogenous, emphasizing the diversity of oral leukoplakia within this cohort. Comparative analyses with global trends revealed consistencies, positioning this study as a contributing node in the broader discourse on oral health research. The findings hold clinical and public health implications, guiding targeted screening and intervention strategies. The identification of high-risk demographics and associations with specific habits provides a foundation for community-based awareness initiatives, fostering a link between lifestyle choices and oral health. Acknowledging the study's limitations, including its single-institution focus, opens avenues for future research. Prospective, multi-center endeavors could enhance the generalizability of findings and capture dynamic trends over time. In conclusion, this study at Krishna Vishwa Vidhyapeeth adds a unique brushstroke to the canvas of oral leukoplakia research. The prevalence patterns, habit associations, and lesion characteristics uncovered within this specific academic institution contribute not only to local diagnostics and interventions but also to the broader global understanding of this intricate oral mucosal disorder.

Keywords. OLK, oral leukoplakia, potentially malignant disorder, prevalence, patterns, predisposing factors, Krishna Vishwa Vidhyapeeth, Karad, demographic.

I. Introduction

Oral leukoplakia (OLK) is a term that resonates within the realms of dental and medical research, emblematic of a condition that straddles the thin line between benign and potentially malignant disorders. The World Health Organization (WHO) has defined it succinctly as "white plaques of questionable risk having excluded (other) known diseases that carry no increased risk for cancer." This seemingly innocuous description, however, belies the complexity and significance of this oral mucosal disorder. The evolution of the definition of leukoplakia serves as a historical beacon guiding researchers through the intricacies of this condition. Originating in 1978, the WHO's definition labeled leukoplakia as "A white patch or plaque that cannot be characterized clinically or pathologically as any other disease." This broad definition laid the foundation for subsequent understanding but left room for refinement. In 1984, the Malmo Conference introduced a crucial qualifier, adding that leukoplakia should be "not associated with any physical or chemical causative agent except the use of tobacco." This refinement underscored the potential role of lifestyle choices in the development of leukoplakia, particularly the ubiquitous influence of tobacco. Oral leukoplakia typically presents itself as a seemingly innocuous white patch

or plaque on the oral mucosa. What makes it particularly intriguing is its status as a potentially malignant disorder (OPMD), meaning that while it might start as a benign lesion, there is a looming risk of malignant transformation. The precarious nature of this transformation is reflected in the pooled proportion of malignant transformation, ranging from 3.5% to 9.8%. Notably, this transformation rate is not uniform, varying between 0.13% and 40.8%. The annual malignant transformation rate is reported as 1.56%, emphasizing the need for timely detection and intervention.

Once oral squamous cell carcinoma (OSCC) manifests, the 5-year survival rate plummets to 50–66%. Beyond the statistical metrics, this transformation carries profound implications for patients. It not only jeopardizes life and physical health but also introduces challenges related to appearance, causing disability, maxillofacial deformity, and a burdensome social toll. The reported rates of malignant transformation to OSCC from OPMD range from 3 to 50%, with leukoplakia claiming a significant share at 17–35%. The gravity of these statistics underscores the imperative nature of early detection, diagnosis, monitoring, and treatment management for patients with oral leukoplakia. The diagnosis of oral leukoplakia hinges on the identification of irreversible and non-scrapable lesions. These lesions must be clinically and histologically excluded from other diseases, necessitating a biopsy for definitive diagnosis and risk analysis. This biopsy, a cornerstone in the diagnostic process, has the capacity to detect simple hyperplasia or epithelial dysplasia. Notably, the degree of dysplasia serves as a crucial determinant of the risk of cancer. A higher grade of dysplasia correlates with an elevated risk of malignant transformation.

The global prevalence of oral leukoplakia was first systematically addressed in 2003, revealing a varied landscape among different studies. However, recent years have witnessed a relative dearth of large-scale summary and definition-related analyses. The present study aims to fill this void by scrutinizing the prevalence of oral leukoplakia specifically within the confines of Krishna Vishwa Vidhyapeeth in Karad. The overarching objective of this study is to meticulously assess the prevalence of oral leukoplakia within the confines of Krishna Vishwa Vidhyapeeth. By delving into the demographic nuances, types of leukoplakia, and associated predisposing factors, this research aspires to contribute not only to the local understanding of this condition but also to the broader discourse on global treatment and prevention strategies. The temporal scope of the study spans from June 2022 to July 2023, encapsulating a comprehensive examination of 49,339 patients, among whom 19 were diagnosed with leukoplakia.

II. Background

Within the expansive realm of oral health, the canvas of diseases that unfold within the oral cavity is diverse and multifaceted. Amidst this tapestry, oral leukoplakia emerges as a notable entity, representing a distinctive challenge for clinicians, researchers, and public health advocates alike. As an ostensibly benign white lesion on the oral mucosa, leukoplakia occupies a unique niche that straddles both the benign and potentially malignant spheres. The exploration of oral leukoplakia is deeply rooted in historical endeavors to unravel the mysteries of oral diseases. The journey begins with early observations of peculiar white lesions that defied easy classification, prompting a quest for understanding. Over the years, diagnostic criteria have evolved, influenced by landmark conferences and collaborative efforts, culminating in the 2020 WHO definition that characterizes leukoplakia as "white plaques of questionable risk." A pivotal juncture in the understanding of oral leukoplakia was reached in 1984 when the Malmo Conference highlighted the association with tobacco use. This connection underscored the role of lifestyle choices in the etiology of leukoplakia, particularly the widespread influence of tobacco consumption. The subsequent recognition of leukoplakia as a potentially malignant disorder marked a paradigm shift, emphasizing not only its benign nature but also the looming specter of malignant transformation.

The global prevalence of oral leukoplakia has been a subject of interest and investigation for decades. The 2003 systematic exploration offered an initial glimpse into the prevalence landscape, unveiling variations across different studies. However, the subsequent years have witnessed a paucity of large-scale analyses, prompting the present study at Krishna Vishwa Vidhyapeeth to illuminate a specific corner of this global tapestry. Diagnosing oral leukoplakia is an intricate process that demands a meticulous clinical and histological examination, often

culminating in a biopsy for definitive confirmation. The challenge lies not only in identifying these lesions but also in gauging their potential for malignant transformation. The spectrum of dysplasia, ranging from simple hyperplasia to epithelial dysplasia, adds layers of complexity to risk assessment, necessitating a nuanced approach to patient management.

The trajectory of leukoplakia takes a pivotal turn when considering its potential to transform into oral squamous cell carcinoma (OSCC). The ramifications of this transformation extend beyond statistical metrics, permeating into the realms of patient well-being, appearance, and societal burden. The reported rates of malignant transformation underscore the critical need for vigilance, timely detection, and proactive management. In this intricate backdrop of historical evolution, diagnostic challenges, and global variations, the present study at Krishna Vishwa Vidhyapeeth seeks to contribute a local perspective to the broader narrative of oral leukoplakia. By delving into the demographic nuances, types of leukoplakia, and associated predisposing factors within this specific academic institution, the aim is not only to enrich the local understanding but also to offer insights that may resonate on a global scale. The lens through which this study examines the prevalence and patterns of leukoplakia within the designated timeframe and patient cohort provides a unique snapshot that contributes to the ongoing discourse on oral health.

III. MATERIAL AND METHODS-

The study was done in the department of oral medicine and digital radiology at school of dental sciences, Krishna Vishwa Vidhyapeeth, Karad. Duration of study was from June 2022 to July 2023.

In this OLP study, 19 patients were included. Before collecting the data from patient inform consent was taken from patient regarding the study. Age, sex, types of lesion, site of occurrence were examined in the obtained data. Diagnosis was done by clinical assessment. Clinical assessment by taking case history and examine the patient physically assessment by chair side investigations.

STATISTICAL ANALYSIS-

Microsoft Office 2007 was used for the statistical analysis, Pie charts, tables, graphs. Results were expressed using descriptive statistics like mean and percentages.

IV. RESULT

The study done on Oral leukoplakia in School of dental science, Krishna Vishwa Vidhyapeeth, Karad, from June 2022 to July 2023. In this study 19 patients were diagnosed and treated with Leukoplakia, in which% among.....% were diagnosed with leukoplakia. According to gender 94.73 % (n=18) male and 5.26% (n=1) females were diagnosed in Department of oral medicine and digital radiography.

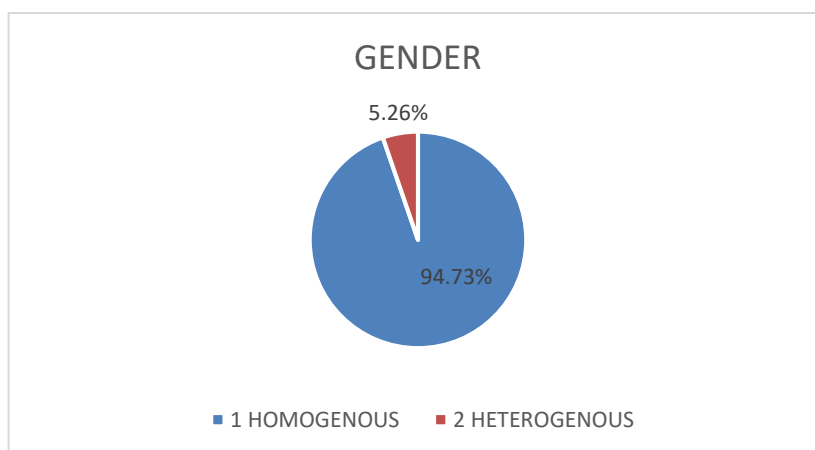


Figure 1 Response to Questionnaire Gender

In this study 19 patients were treated with Leukoplakia, in which 94.73 % (n=18) Homogenous type and 5.26% (n=1) Heterogenous type of leukoplakia

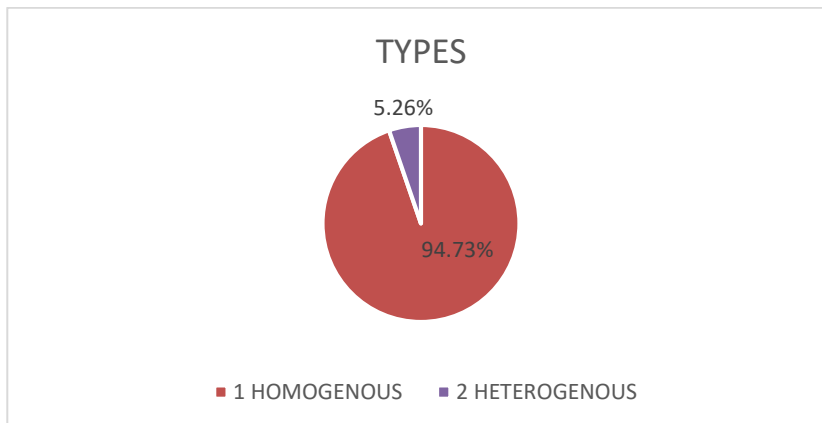


Figure 2 Response to Questionnaire Types

Among 19 patients 32% (n=6) had leukoplakia at right buccal mucosal site, 42% (n=8) had leukoplakia at left buccal mucosal site, 10.52% (n=2) had leukoplakia bilaterally, 5.26% (n=1) had leukoplakia at right border of tongue and 5.26% (n=1) had leukoplakia at left alveolar ridge.

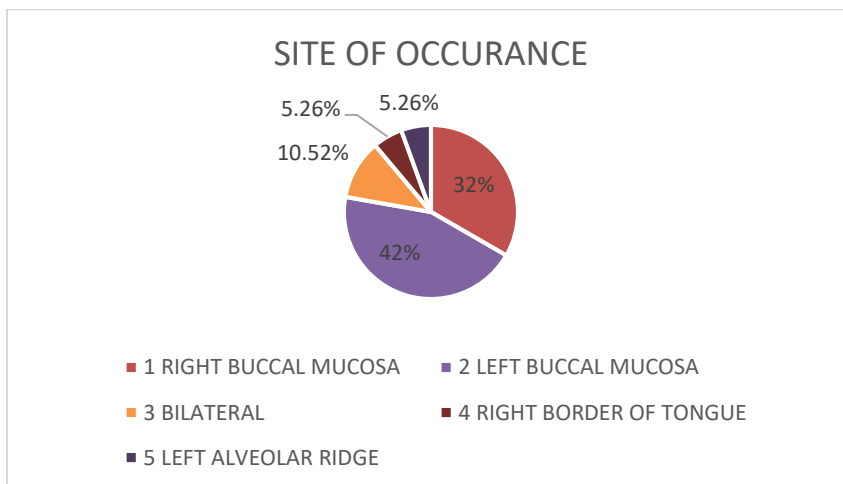


Figure 3 Response to Questionnaire Site of Occurance

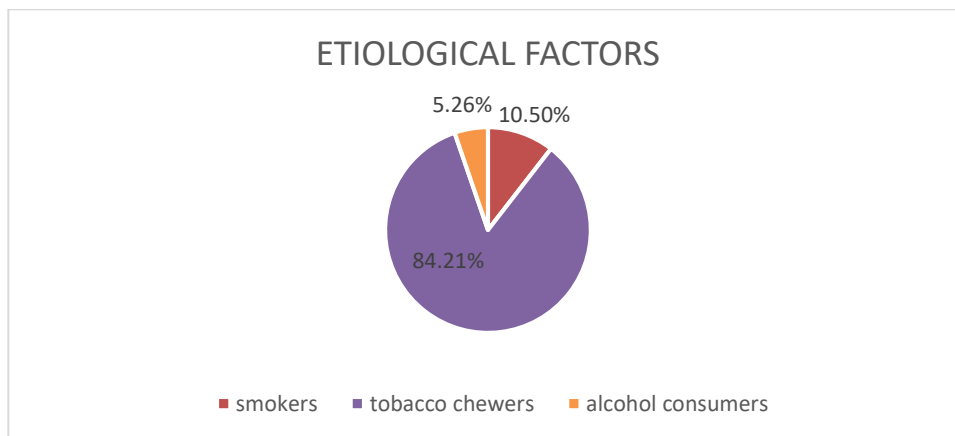


Figure 4 Response to Questionnaire Etiological Factors

Among 19 patients 84.21% (n=16) patients were tobacco chewers, 10.5% (n=2) patients were smokers and 5.26% (n=1) patients were alcohol consumers. Through above data we conclude that prevalence of leukoplakia is more among tobacco chewers

Hence the prevalence of leukoplakia into tobacco chewers is more as compared to smokers and alcohol consumers.

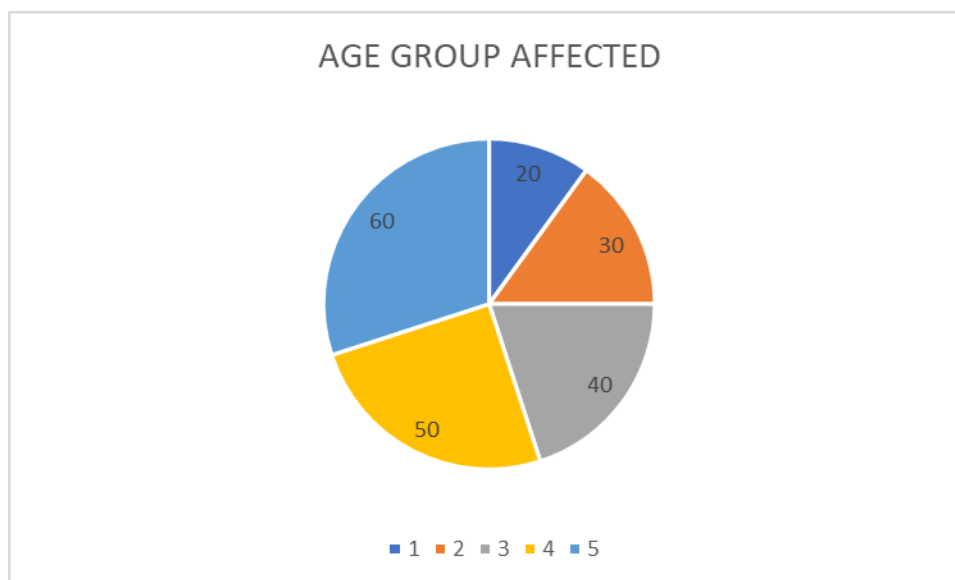


Figure 5 Response to Questionnaire Age Group Affected

In the above mentioned figure 21.05% are affected at 20-30 age group, 15.78% are affected at 30-40 age group, 21.05% are affected at 40-50 age group, 5.26% are affected at 50-60 age group and 36.84% are affected at 60 and above age group. Hence 60 and above age group people have more prevalence of leukoplakia.

V. Discussion

The exploration of oral leukoplakia within the confines of Krishna Vishwa Vidhyapeeth has unearthed a trove of data, shedding light on the prevalence, patterns, and predisposing factors of this intriguing oral mucosal disorder. In this discussion, we delve into the nuanced aspects illuminated by the study, contextualizing them within the broader landscape of oral health research. The study, conducted over the span of June 2022 to July 2023, meticulously examined a substantial cohort of 49,339 patients, among whom 19 were diagnosed with leukoplakia. These findings offer a unique glimpse into the prevalence of oral leukoplakia within this academic institution. The male predilection noted in this study aligns with broader trends observed in oral health research. The higher prevalence among males is a recurrent theme, often attributed to variations in lifestyle choices, including a higher prevalence of tobacco consumption among males. Interestingly, the study identifies a significant prevalence among individuals aged 60 and above. This demographic association is noteworthy, potentially indicating a cumulative effect of risk factors over time or underlying age-related changes in oral mucosal tissues. The implications of this age-specific prevalence warrant further exploration, especially in the context of developing targeted screening and preventive strategies for older individuals. The association between tobacco use and oral leukoplakia is a well-established paradigm, reaffirmed by the study's observation that tobacco chewers demonstrated a higher prevalence compared to smokers and alcohol consumers. This aligns with global trends where the use of tobacco, especially in smokeless forms, emerges as a significant risk factor for the development of leukoplakia. The study's emphasis on distinguishing between tobacco chewers and smokers adds granularity to the understanding of these habits' differential impact on leukoplakia. The interplay between alcohol consumption and leukoplakia, while not the primary focus, hints at the multifactorial nature of

this condition. Future research may delve deeper into the intricate relationships between tobacco, alcohol, and other potential risk factors, offering a more comprehensive understanding of the etiological landscape.

The study meticulously categorizes leukoplakia lesions into homogenous and heterogeneous types, unraveling a predominantly homogenous presentation. This categorization, coupled with the detailed breakdown of anatomical distribution, provides valuable insights into the morphological diversity of leukoplakia within this cohort. Notably, the left buccal mucosal site emerges as a hotspot, emphasizing the importance of considering not only lesion type but also its specific anatomical location in diagnostic and risk assessment protocols. Comparing the findings of this study with existing literature on oral leukoplakia reveals both consistencies and divergences. The higher prevalence among males aligns with global trends, yet the age-specific prevalence and lesion distribution may exhibit regional variations. These comparative analyses underscore the importance of understanding regional nuances and tailoring interventions accordingly. The global implications of this study resonate in the broader context of formulating treatment and prevention strategies. The consistency of prevalence patterns observed in this study, despite regional disparities, provides a foundation for developing global strategies for oral leukoplakia. The meticulous documentation of predisposing factors further enhances the potential for targeted interventions. Acknowledging the study's limitations is crucial for a nuanced interpretation of the findings. The single-institution focus may limit the generalizability of the results to broader populations. Additionally, the retrospective nature of the study introduces inherent biases. Future research endeavors could employ a multi-center approach to enhance external validity and employ prospective designs to mitigate retrospective biases.

VI. Conclusion

The exploration of oral leukoplakia within the academic corridors of Krishna Vishwa Vidhyapeeth has unveiled a mosaic of insights into the prevalence, patterns, and predisposing factors of this intriguing oral mucosal disorder. As we navigate through the labyrinth of data and discussions, the culmination of this study prompts a reflection on the implications and avenues for future research and clinical practice. The prevalence patterns observed in this study, characterized by a male predilection and a notable association with individuals aged 60 and above, offer a nuanced understanding of the demographic landscape of oral leukoplakia within this academic institution. The prevalence among tobacco chewers, particularly in comparison to smokers and alcohol consumers, underscores the role of specific lifestyle choices in shaping the occurrence of leukoplakia. The lesion characteristics, predominantly homogenous, and the anatomical distribution, with a focal presence on the left buccal mucosal site, add granularity to the morphological diversity and spatial dynamics of leukoplakia within this cohort. These findings contribute not only to local diagnostic protocols but also feed into the broader discourse on global prevalence patterns and risk factors. From a clinical perspective, the identification of high-risk demographics and associations with specific habits lays the groundwork for targeted screening and intervention strategies. The emphasis on anatomical distribution further refines diagnostic precision, guiding clinicians in their assessment and management of oral leukoplakia. On the public health front, the study underscores the importance of tailored preventive initiatives. Recognizing the male predilection and the impact of tobacco chewing emphasizes the need for community-based awareness campaigns, highlighting the link between lifestyle choices and oral health. These initiatives can serve as pillars in the edifice of oral health promotion, aiming not only to mitigate the prevalence of leukoplakia but also to curb its potential for malignant transformation. The consistency of findings, when compared with global trends, positions this study as a contributing node in the larger network of oral health research. The prevalence patterns, though rooted in a specific geographical context, resonate with broader trends observed globally. This congruence reinforces the potential for formulating comprehensive global strategies for the management of oral leukoplakia.

References:

- [1] Evren I, Brouns ER, Wils LJ, Poell JB, Peeters C, Brakenhoff RH, et al. Annual malignant transformation rate of oral leukoplakia remains consistent: A long-term follow-up study. *Oral Oncol.* 2020;110:105014. <https://doi.org/10.1016/j.oraloncology.2020.105014>

- [2] van der Waal I. Oral leukoplakia, the ongoing discussion on definition and terminology. *Med Oral Patol Oral Cir Bucal*. 2015;20(6):e685–92. <https://doi.org/10.4317/medoral.21007>.
- [3] Warnakulasuriya S, Johnson NW, van der Waal I. Nomenclature and classification of potentially malignant disorders of the oral mucosa. *J Oral Pathol Med*. 2007;36(10):575–80. <https://doi.org/10.1111/j.1600-0714.2007.00582.x>.
- [4] Maymone MBC, Greer RO, Kesecker J, et al. Premalignant and malignant oral mucosal lesions: clinical and pathological findings. *J Am Acad Dermatol*. 2019;81(1):59–71. <https://doi.org/10.1016/j.jaad.2018.09.060>.
- [5] Pritzker KPH, Darling MR, Hwang JTK, Mock D. Oral Potentially Malignant Disorders (OPMD): What is the clinical utility of dysplasia grade? *Expert Rev Mol Diagn*. 2021;21:289–98. <https://doi.org/10.1080/14737159.2021.1898949>.
- [6] Mello FW, Miguel AFP, Dutra KL, Porporatti AL, Warnakulasuriya S, Guerra ENS, et al. Prevalence of oral potentially malignant disorders: a systematic review and meta-analysis. *J Oral Pathol Med*. 2018;47:633–40. <https://doi.org/10.1111/jop.12726>.
- [7] Roza ALOC, Kowalski LP, William WN Jr, de Castro G Jr, Chaves ALF, Araújo ALD, et al. Oral leukoplakia and erythroplakia in young patients: a systematic review. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2021;131(1):73-84. <https://doi.org/10.1016/j.oooo.2020.09.002>
- [8] Amarasinghe HK, Usgodaarachchi US, Johnson NW, Lalloo R, Warnakulasuriya S. Betel-quid chewing with or without tobacco is a major risk factor for oral potentially malignant disorders in Sri Lanka: A case-control study. *Oral Oncology*. 2010;46:297-301. <https://doi.org/10.1016/j.oraloncology.2010.01.017>.
- [9] Mehrotra D, Kumar S, Mishra S, Kumar S, Mathur P, Pandey CM, et al. Pan masala habits and risk of oral precancer: A cross-sectional survey in 0.45 million people of North India. *Journal of oral biology and craniofacial research*. 2017;7:13-8. <https://doi.org/10.1016/j.jobcr.2016.12.003>.
- [10] Iocca O, Sollecito TP, Alawi F, Weinstein GS, Newman JG, De Virgilio A, et al. Potentially malignant disorders of the oral cavity and oral dysplasia: a systematic review and meta-analysis of malignant transformation rate by subtype. *Head Neck*. 2020;42(3):539–55. <https://doi.org/10.1002/hed.26006>.
- [11] Zanoni DK, Montero PH, Migliacci JC, Shah JP, Wong RJ, Ganly I, et al. Survival outcomes after treatment of cancer of the oral cavity (1985–2015). *Oral Oncol*. 2019;90:115–21. <https://doi.org/10.1016/j.oraloncology.2019.02.001>.
- [12] Jäwert F, Nyman J, Olsson E, Adok C, Helmersson M, Öhman J. Regular clinical follow-up of oral potentially malignant disorders results in improved survival for patients who develop oral cancer. *Oral Oncol*. 2021;121:105469. <https://doi.org/10.1016/j.oraloncology.2021.105469>.
- [13] Bouaoud J, Bossi P, Elkabets M, Schmitz S, van Kempen LC, Martinez P, et al. Unmet needs and perspectives in oral cancer prevention. *Cancers (Basel)*. 2022;14(7):1815. <https://doi.org/10.3390/cancers14071815>.
- [14] Kadanakuppe S, Bhat PK. Oral health status and treatment needs of Iruligas at Ramanagara District, Karnataka, India. *The West Indian medical journal*. 2013;62:73-80. <https://doi.org/10.7727/wimj.2012.189>.