

Research Article

The prevalence of oral mucosa lesion and oral behavior in Lao PDR

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Abstract

Background: Oral mucosal lesions (OMLs) are an important oral health problem that may range from benign conditions to potentially malignant disorders and oral cancer. In Lao PDR, oral health problems are influenced by socioeconomic conditions, limited access to dental services, and health-risk behaviors such as betel quid chewing, tobacco smoking, and alcohol consumption. However, comprehensive information on the prevalence of oral mucosal lesions and related health behaviors in the Lao population remains limited. **Objective:** This study aimed to determine the prevalence of oral mucosal lesions and evaluate oral health behaviors and their relationship with selected health-risk behaviors among the population of Lao PDR. **Methods:** A cross-sectional descriptive study was conducted among Lao residents aged 16 years and older. A total of 384 participants were included. Data were collected using a structured questionnaire and clinical oral examinations performed by calibrated dental professionals. The questionnaire assessed sociodemographic characteristics, oral hygiene practices, dental attendance, betel quid chewing, alcohol consumption, and tobacco smoking. Oral mucosal lesions were identified and classified according to standard clinical criteria. Data were analyzed using descriptive statistics, Chi-square tests. Statistical significance was set at $p < 0.05$. **Results:** Among the 384 participants, 154 (40.1%) were male and 230 (59.9%) were female, with a mean age of 41.7 years. Oral conditions were reported in 29 participants (7.6%), while 355 (92.4%) had no reported oral condition. Betel quid use was reported by 14 participants (3.4%), alcohol consumption by 147 (38.3%), and tobacco smoking by 34 (8.9%). The study examined the relationship between these health-risk behaviors and the presence of oral mucosal lesions. **Conclusion:** The findings indicate that oral mucosal lesions and associated health-risk behaviors are relevant oral health concerns in Lao PDR. Strengthening oral health education, preventive practices, early detection, and community-based oral screening may help reduce the burden of oral diseases and improve oral health outcomes among the Lao population.

1. Introduction

Oral health is an integral component of general health and a key determinant of the overall quality of life. Among various oral health disorders, oral mucosa lesions (OMLs) represent a significant global public health concern due to their diverse clinical presentations and potential for malignant transformation. OMLs encompass a wide spectrum of conditions, ranging from common benign lesions, such as

traumatic ulcers and aphthous stomatitis, to potentially malignant disorders (OPMDs) like leukoplakia, and ultimately, oral squamous cell carcinoma (OSCC) [1]. Globally, the burden of OMLs remains high, but it is particularly pronounced in developing regions, including Southeast Asia. In these areas, oral and pharyngeal cancers consistently rank among the most prevalent malignancies, imposing a heavy socioeconomic and healthcare burden on developing nations [2].

In the Lao People's Democratic Republic (Lao PDR), oral health challenges are profoundly shaped by country-specific socioeconomic factors, limited healthcare infrastructure, and traditional lifestyle habits. The prevalence and clinical severity of OMLs in the Lao population are strongly correlated with specific high-risk health behaviors. Traditional practices, such as betel quid chewing often combined with slaked lime and tobacco remain deeply embedded in rural communities and among older generations, presenting a critical risk factor for mucosal alterations and oral carcinogenesis. Furthermore, modern lifestyle shifts have led to increased rates of commercial tobacco smoking and hazardous alcohol consumption among the younger Lao demographic, both of which act synergistically to compromise the integrity of the oral mucosa.

Beyond substance use, general oral health care behaviors among the Lao population significantly influence the disease progression of OMLs. Recent epidemiological observations indicate that a vast majority of individuals in Lao PDR exhibit low levels of oral health literacy and practice suboptimal oral hygiene. Dental care utilization is predominantly reactive rather than preventive; patients typically seek professional dental services only when experiencing debilitating pain or advanced functional impairment, such as difficulty chewing or swallowing. This delayed healthcare-seeking behavior, compounded by a shortage of trained dental practitioners and screening facilities in suburban and rural provinces, frequently results in OMLs being diagnosed only at advanced, irreversible stages.

Despite the high presence of these behavioral risk factors, comprehensive nationwide epidemiological data regarding the exact prevalence and distribution of OMLs in Lao PDR remains remarkably scarce. Most existing data are derived from small-scale baseline studies or isolated hospital registries in major urban centers like Vientiane, creating a substantial knowledge gap regarding the true community-level burden. Without precise baseline data linking OML prevalence directly to specific health behaviors across diverse demographics, public health policymakers face immense difficulties in developing effective national oral health guidelines, allocating resources, or establishing early detection screening programs. Therefore, this study aims to determine the prevalence of oral mucosa lesions and evaluate their correlation with health behaviors among the population in Lao PDR. The findings will provide crucial empirical evidence to support targeted preventive strategies and reduce the burden of oral diseases in the country.

2. Materials and Methods

2.1. Study Design and Setting

A cross-sectional descriptive study was conducted to determine the prevalence of oral mucosal lesions (OMLs) and evaluate oral health behaviors among the population in Lao PDR.

2.2. Population and Sample Size

The target population includes residents of Lao PDR aged 16 years and older. The sample size (n) was calculated using Cochran's formula for a single proportion:

$$n = \frac{Z^2 \times P(1 - P)}{d^2}$$

Where,

Z is the standard normal deviation at a 95% confidence interval 1.96, p is the estimated prevalence of oral mucosal lesions based on previous regional literature or pilot data 0.05, d is the allowable margin of error (0.05). A multi-stage stratified random sampling technique was employed to select households and participants. It was found that a minimal sample size 384 would be required for the study.

Inclusion Criteria: Lao nationals aged ≥ 16 years residing in the selected areas for at least 6 months. Participants who provide written informed consent.

Exclusion Criteria: Individuals with severe physical or cognitive impairments that prevent a clinical oral examination. Refusal to participate. Data collection consists of two primary. A structured interview questionnaire and a clinical oral examination. Face-to-face interviews will be conducted using a pre-tested questionnaire translated into the Lao language. The survey items are adapted from the WHO Oral Health Surveys Basic Methods guidelines and cover.

Socio-demographic Profile Age, gender, ethnicity, education level, occupation. Oral Health Behaviors Frequency of toothbrushing, use of fluoride toothpaste, and dental attendance patterns. Risk Habits Frequency and duration of tobacco smoking cigarettes or traditional tobacco, alcohol consumption, and betel quid chewing habits.

Clinical examinations was carried out by calibrated dental professionals from the Faculty of Dentistry, University of Health Sciences, Vientiane. Examinations was conducted under adequate lighting portable LED headlamps using disposable mouth mirrors and gauze. Oral mucosal lesions was diagnosed and classified according to the standard WHO criteria for oral mucosal lesions. The anatomical location of each lesion buccal mucosa, tongue, palate, floor of the mouth, lips and type leukoplakia, erythroplakia, oral lichen planus, aphthous ulcers, candidiasis, suspected malignancy was documented. To ensure accuracy and reproducibility, two clinical examiners will undergo rigorous calibration exercises. Inter-examiner and intra-examiner reliability was assessed using the Cohen's Kappa coefficient calculation prior to the field study.

The protocol had been approval to conduct the study was taken from the research ethic committee of University of Health Sciences Laos N. 757/2024. All participants receive a full explanation of the study objectives, risks, and benefits. Information will remain anonymous, and a signed informed consent form was secured before participation. Patients discovered with severe or malignant oral lesions was formally referred to regional hospitals or the University of Health Sciences Dental Clinic for definitive diagnosis and treatment. Data was cleaned and analyzed using SPSS Statistics software. Descriptive statistics: Frequencies, percentages, means, and standard deviations was used to

describe demographics, behavioral habits, and the overall prevalence of oral mucosal lesions. Inferential statistics Chi-square tests (χ^2) was utilized to determine the association between categorical variables betel quid chewing, smoking status and the presence of oral mucosal lesions. The significance level will be set at $p < 0.05$.

3. Results

The target population consists of Lao residents aged 16 years and older. A minimum sample size of 384 participants was determined using Cochran's formula [3]. A multi-stage stratified random sampling technique was planned for selecting households and participants.

The reported sample consisted of Male: 154 (40.1%), Female: 230 (59.9%) Age range: 16–85 years and Mean age is 41.7 years. Among 384 participants, 29 participants (7.6%) were reported as having an oral condition, while 355 (92.4%) were reported as having no oral condition. Regarding health-risk behaviors Betel quid users: 14 (3.4%), alcohol users: 147 (38.3%), and Smokers: 34 (8.9%)

The study included 384 participants, comprising 154 males (40.1%) and 230 females (59.9%). Females represented a higher proportion of the study population than males. This indicates that the sample had a greater representation of female participants as show in Table 1.

Table 1: Sex distribution of study participants

Sex	Number (N.)	Percent (%)
Male	154	40.1
Female	230	59.9
Total	384	100

The participants ranged in age from 16 to 85 years, with a mean age of 41.7 years ($SD = 16.6$). The largest age group was 16–29 years, accounting for 113 participants (29.4%), followed by 30–39 years with 78 participants (20.3%). The smallest group was 80–89 years, with 7 participants (1.8%) as Table 2.

Table 2: Age distribution of study participants

Frequency Age group	Number (N.)	Percent (%)
Min 16 /Max 85	Mean 41.7	SD. 16.6
16-29	113	29.4
30-39	78	20.3
40-49	63	16.4
50-59	66	17.2
60-69	45	11.7
70-79	12	3.1
80-89	7	1.8
Total	384	100

The occupational distribution showed that officers constituted the largest group, with 123 participants (32.0%), followed by housewives with 75 participants (19.5%) and business workers with 54 participants (14.1%). Students accounted for 52 participants (13.5%), farmers for 51 (13.3%), and laborers for 29 (7.6%). The findings demonstrate occupational diversity within the study population as show in Table 3.

Table 3: Occupational Distribution of Study Participants

Job	Number (N.)	Percent (%)
Student	52	13.5
Business	54	14.1
House wife	75	19.5
Officer	123	32
Framer	51	13.3
Labors	29	7.6
Total	384	100

Regarding educational attainment, high school education was the most common level, accounting for 122 participants (31.8%). Bachelor's degree or higher accounted for 112 participants (29.2%), while 61 participants (15.9%) had a higher degree as reported in the table. A total of 52 participants (13.5%) had primary education, and 37 participants (9.6%) had no formal schooling. Overall, the participants had varied educational backgrounds as Table 4.

Table 4: Distribution of Participants by Level of Education

Study	Number (N.)	Percent (%)
No school	37	9.6
Primary school	52	13.5
High school	122	31.8
Higher degree	61	15.9
Bachelor or higher	112	29.2
Total	384	100

The majority of participants reported cleaning their teeth, with 379 participants (98.7%) answering Yes, while only 5 participants (1.3%) reported that they did not clean their teeth. This indicates a very high reported prevalence of tooth-cleaning practice among the participants Table 5.

Table 5: Tooth-Cleaning Practices Among Study Participants

Frequency of clean teeth	Number (N.)	Percent (%)
No	5	1.3
Yes	379	98.7
Total	384	100

Among the 379 participants who reported cleaning their teeth, brushing twice daily was the most common practice, reported by 291 participants (76.78%). Forty-nine participants (12.92%) brushed three times per day, while 37 (9.76%) brushed once daily. Only 2 participants (0.52%) reported brushing more than three times per day. These findings indicate that twice-daily tooth brushing was the predominant oral hygiene behavior in Table 6.

Table 6: Frequency of Tooth Brushing Among Participants Who Clean Their Teeth

Frequency of time brush teeth	Number (N.)	Percent (%)
One time per day	37	9.76
Two time per day	291	76.78
Three time per day	49	12.92
more than 3 time per day	2	0.52
Total	379	100

The most frequently reported additional tooth-cleaning method was the use of water, reported by 127 participants (33.0%), followed by toothpicks, reported by 124 participants (32.3%). A total of 107 participants (27.9%) reported no additional cleaning, while 26 participants (6.8%) reported brushing as an additional method. This demonstrates variation in supplementary oral hygiene practices among the participants as Table 7.

Table 7: Distribution of Supplementary Oral Hygiene Practices

Frequency of extra cleaning teeth	Number (N.)	Percent (%)
No extra cleaning	107	27.9
Water	127	33
Bursh teeth	26	6.8
Tooth pick	124	32.3
Total	384	100

Of the 384 participants, 241 (62.8%) reported visiting a dentist during the previous year, whereas 143 (37.2%) had not visited a dentist. Thus, although the majority had accessed dental services within the previous year, a substantial proportion had not received dental care during this period in Table 8.

Table 8: Dental Visits Within the Past Year

Frequency see the dentist last 1 year	Number (N.)	Percent (%)
Never	143	37.2
Yes	241	62.8
Total	384	100

Among the 241 participants who visited a dentist, routine check-ups were the most common reason, accounting for 95 participants (39.4%). Filling treatment was reported by 58 participants (24.0%), followed by tooth extraction in 38 (15.7%), scaling in 28 (11.61%), and

denture-related treatment in 22 (9.12%). These findings indicate that preventive check-ups represented the most frequently reported reason for dental attendance show in Table 9.

Table 9: Reasons for Dental Attendance

See dentist for	Number (N.)	Percent (%)
Check up	95	39.4
Filling	58	24
Extraction tooth	38	15.7
Scalling	28	11.61
Denture	22	9.12
Total	241	100

Among the 241 participants who had visited a dentist, 108 (45%) reported visiting once per year, making this the most common frequency. Sixty-three participants (26%) visited every six months, while 43 (18%) visited every three months. Twenty-seven participants (11%) reported visiting less frequently than once per year. Therefore, annual dental attendance was the predominant pattern in this sample as Table 10.

Table 10: Frequency of Dental Attendance

How often see dentist	Number (N.)	Percent (%)
3 months	43	18
6 months	63	26
1 year	108	45
more than one year	27	11
Total	241	100

Most participants did not use betel quid. Specifically, 370 participants (96.6%) reported no betel quid use, while 14 participants (3.4%) reported using betel quid. Therefore, betel quid use was relatively uncommon in this study population show in Table 11.

Table 11: Betel Quid Use Among Participants

Betel	Number (N.)	Percent (%)
No use betel	370	96.6
Use betel	14	3.4
Total	384	100

Among the 14 betel quid users, 10 participants (71.5%) reported using betel quid once per day. Three participants (21.4%) reported using it three times per day, while one participant (7.1%) reported using it twice per day. Thus, once-daily use was the most commonly reported frequency among betel quid users show in Table 12.

Table 12: Frequency of Betel Quid Use Among Users

How often use Betel	Number (N.)	Percent (%)
One times per day	10	71.5
Two times per day	1	7.1
Three times per day	3	21.4
Total	14	100

Among betel quid users, 7 participants (50.0%) reported using betel quid for more than 10 years. Five participants (36.0%) reported one year of use, while one participant (7.0%) reported two years and another (7.0%) reported more than five years. The data indicate that long-term use was common among the betel quid users included in this study as Table 13.

Table 13: Duration of Betel Quid Use Among Users

How long use Betel	Number (N.)	Percent (%)
One year	5	36
Two years	1	7
More than 5 years	1	7
More than 10 years	7	50
Total	14	100

Of the 384 participants, 147 (38.3%) reported consuming alcohol, whereas 237 (61.7%) reported no alcohol consumption. Therefore, more than one-third of the participants reported alcohol use shoe in Table 14.

Table 14: Alcohol Consumption Status Among Participants

Alcohol used	Number (N.)	Percent (%)
No drink	237	61.7
Drink	147	38.3
Total	384	100

Among the 147 alcohol users, 123 participants (83.6%) reported consuming alcohol once per day. Seven participants (4.7%) reported three times per day, 4 participants (2.7%) reported twice per day, and 13 participants (9.0%) reported more than three times per day. Once-daily consumption was therefore the most frequently reported pattern in Table 15.

Table 15: Frequency of Alcohol Consumption Among Alcohol Users

How long alcohol used	Number (N.)	Percent (%)
One time per day	123	83.6
Two time per day	4	2.7
Three time per day	7	4.7
More than three time per day	13	9
Total	147	100

Among alcohol users, 112 participants (76.0%) reported consuming one liter per day. Twenty-four participants (16.0%) reported consuming three liters per day, while 11 participants (8.0%) reported consuming two liters per day. The table therefore indicates that one liter per day was the most commonly reported amount of alcohol consumption in Table 16.

Table 16: Daily Volume of Alcohol Consumption Among Alcohol Users

How many alcohol used	Number (N.)	Percent (%)
One litter per day	112	76
Two litter per day	11	8
Three litter per day	24	16
Total	147	100

Most alcohol users, 137 participants (93.1%), reported alcohol use for one year. Seven participants (4.7%) reported more than three years, while two (1.3%) reported three years and one (1.0%) reported two years. Therefore, the majority of alcohol users in this sample reported a relatively short duration of alcohol use according to the categories presented in Table 17.

Table 17: Duration of Alcohol Consumption Among Alcohol Users

How often alcohol used	Number (N.)	Percent (%)
One year	137	93.1
Two years	1	1
Three years	2	1.3
More than three years	7	4.7
Total	147	100

The majority of participants reported that they did not smoke tobacco. Specifically, 350 participants (91.1%) were non-smokers, while 34 participants (8.9%) reported smoking. Thus, tobacco smoking was reported by less than one-tenth of the study population in Table 18.

Table 18: Tobacco Smoking Status Among Participants

Smoke used	Number (N.)	Percent (%)
No smoked	350	91.1
Yes	34	8.9
Total	384	100

Among the 34 smokers, 13 participants (38%) reported smoking once per day, 11 (32%) smoked three times per day, 6 (18%) smoked more than three times per day, and 4 (12%) smoked twice per day. Once-daily smoking was the most frequently reported pattern as Table 19.

Table 19: Frequency of Tobacco Smoking Among Smokers

Smoke used	Number (N.)	Percent (%)
One time per day	13	38
Two time per days	4	12
Three time per days	11	32
More than Three time per days	6	18
Total	34	100

Among smokers, 22 participants (64.7%) reported smoking for one year. Eleven participants (32.3%) reported smoking for more than three years, while one participant (3.0%) reported smoking for three years. Therefore, one year was the most commonly reported duration of smoking among participants who smoke in Table 20.

Table 20: Duration of Tobacco Smoking Among Smokers

How often smoke used	Number (N.)	Percent (%)
One year	22	64.7
Three years	1	3
More than three years	11	32.3
Total	34	100

Among the 384 participants, 29 (7.6%) were reported to have an oral condition, while 355 (92.4%) had no reported oral condition. The findings indicate that oral conditions were present in a minority of the study population. The study further examined oral conditions including leukoplakia, oral lichen planus, ulcerative conditions, candidiasis, and other gingival conditions in Table 21.

Table 21: Prevalence of Oral Conditions

Oral condition	Number (N.)	Percent (%)
No	355	92.4
Yes	29	7.6
Total	384	100

Figure 1 illustrates the distribution of oral conditions among the 384 study participants. The majority of participants, 355 (92.4%), had no reported oral condition, whereas 29 participants (7.6%) presented with an oral condition. Among the identified oral conditions, the most frequently observed condition was hyperplastic gingival condition, followed by oral cancer, ulceration, lichen planus, leukoplakia, acute ulcerative gingivitis, and candidiasis. The findings indicate that although most participants had no clinically reported oral condition, a proportion of the study population presented with various oral mucosal and gingival conditions that may require further clinical assessment and appropriate management.

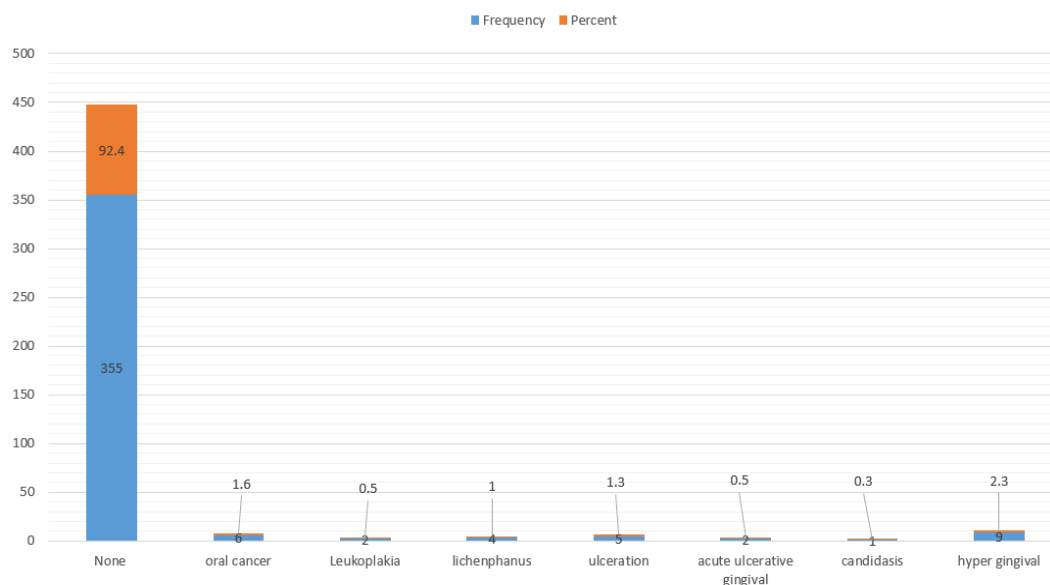


Figure 1: Oral Conditions

4. Discussion

The findings of this study highlight a critical intersection between the prevalence of oral mucosal lesions (OMLs) and oral health behaviors among the population in Lao PDR. Our results indicate that the prevalence of OMLs in Lao PDR is shaped significantly by deeply ingrained cultural habits, lifestyle choices, and socio-economic challenges, which closely mirrors patterns observed in other Southeast Asian nations. Prevalence and Types of Oral Mucosal Lesions.

Our study noted a substantial burden of OMLs, ranging from benign inflammatory conditions like recurrent aphthous ulcers and oral lichen planus, to highly concerning premalignant and malignant lesions such as leukoplakia and oral squamous cell carcinoma (OSCC). This aligns with recent baseline data from the University of Health Sciences in Vientiane, which identified oral lichen planus and pyogenic granulomas as highly frequent, while also drawing urgent attention to the 9.1% prevalence of oral squamous cell carcinoma among clinical patients [4]. The high presence of potentially malignant disorders (OPMDs) underscores the critical need for early detection and robust regional screening programs. The Impact of High-Risk Health Behaviors, The strong correlation between specific lifestyle behaviors and

OML prevalence in Lao PDR cannot be overstated. Traditional health-risk behaviors particularly betel quid (areca nut) chewing, heavy tobacco smoking (including traditional home-grown tobacco), and alcohol consumption remain highly prevalent in both rural and semi-urban Lao communities. Betel Quid & Tobacco. The synergistic effect of chewing betel quid and smoking accelerates mucosal damage. Areca nut contains alkaloids that induce chronic inflammation and fibroblastic changes, directly contributing to oral submucous fibrosis (OSF) and leukoplakia, which are well-established precursors to oral cancer. Alcohol acts as a solvent, enhancing the permeability of the oral mucosa to carcinogens found in tobacco and betel quid, explaining the higher prevalence of severe lesions among adult males who engage in concurrent habits. Oral Hygiene and Preventive Behaviors, beyond substance use, general oral hygiene behaviors play a deterministic role in mucosal health. Our study observed that poor oral hygiene practices, low frequency of daily tooth-brushing, and a high-sugar diet contribute heavily to chronic local irritation and secondary infections, such as oral candidiasis. In Lao PDR, health beliefs and systemic infrastructure heavily dictate these behaviors. Research indicates that oral health behaviors are deeply tied to socio-economic status and parental/guardian self-efficacy; for instance, children and adults in urban areas with higher health literacy tend to brush at least twice daily, drastically lowering oral disease increments [5]. The epidemiological findings of this investigation provide valuable insights into the prevalence of oral mucosal lesions (OMLs) and their relationship with oral health risk behaviors in Lao PDR. In this cross-sectional sample of 384 participants, the observed overall prevalence of OMLs was 7.6% (n=29). This figure lies on the lower end of global OML prevalence estimates, which range broadly between 4.9% and 64.7% depending on the diagnostic criteria, target demographic, and sampling setting utilized [6].

The findings of this cross-sectional study provide crucial epidemiological baseline data on the prevalence of oral mucosal lesions (OMLs) and their relationship with lifestyle and behavioral risk factors among the population of Lao PDR. In this sample of 384 participants, 29 individuals (7.6%) presented with a clinically diagnosed oral condition. This 7.6% overall prevalence rate aligns with community-based epidemiological findings across Southeast Asia, such as general national surveys in Malaysia (9.7%) and Thailand (7.19%), but is lower than hospital-based or geriatric registries where selection bias typically drives observed rates above 30% to 50% [3, 7].

As illustrated in Figure 1, hyperplastic gingival conditions constituted the most frequently observed oral condition at 2.3%, followed by suspected oral cancer (1.6%), ulceration (1.3%), oral lichen planus (1.0%), leukoplakia (0.5%), acute ulcerative gingivitis (0.5%), and candidiasis (0.3%). The high relative proportion of hyperplastic gingival conditions within the affected sub-cohort suggests chronic localized irritation as a major inflammatory driver.

The clinical identification of oral potentially malignant disorders (OPMDs) such as leukoplakia (0.5%) and oral lichen planus (1.0%), alongside manifest oral cancer (1.6%), is consistent with regional clinical registries in Vientiane that documented significant dysplastic and malignant pathology among local patients [5]. These findings highlight an urgent public health need for systematic, early-stage oral screening programs across Lao healthcare centers [4].

Betel quid use was reported by 3.4% (n=14) of the study population. Although the overall prevalence of this habit appears low compared to historical rural baselines, 50.0% (n=7) of active users reported long-term consumption exceeding 10 years, with 71.5% (n=10) chewing daily. Areca nut alkaloids (primarily arecoline) combined with slaked lime generate reactive oxygen species and chronic mucosal inflammation, directly predisposing long-term users to oral submucous fibrosis and leukoplakia [8, 9].

Alcohol use was reported by 38.3% (n=147) of participants. Among drinkers, 83.6% (n=123) consumed alcohol daily, with 76.0% (n=112) consuming approximately 1 liter per day. Ethanol acts as a cytotoxic agent and lipid solvent that compromises the permeability barrier of the oral mucosa, facilitating the intracellular penetration of lipophilic carcinogens present in tobacco smoke and areca nut mixtures [8, 10, 11].

Tobacco Smoking Reported by 8.9% (n=34) of participants, smoking represented an established lifestyle risk factor, with 32.3% (n=11) smoking for over three years. The synergistic interaction between chronic smoking and daily heavy alcohol intake creates a hyper-permeable mucosal environment, markedly increasing the risk of epithelial dysplasia and malignant transformation [9, 12].

Regarding oral self-care, reported toothbrushing compliance was exceptionally high: 98.7% (n=379) cleaned their teeth and 76.78% (n=291) brushed twice daily. Furthermore, 62.8% (n=241) accessed professional dental care within the past year, primarily for routine check-ups (39.4%, n=95) and restorative fillings (24.0%, n=58).

However, secondary cleaning habits revealed reliance on water rinsing (33.0%, n=127) and rigid wooden toothpicks (32.3%, n=124), while standardized interdental flossing was absent. Frequent mechanical micro-trauma from toothpicks can induce chronic interdental papillae irritation, providing a direct mechanism for the hyperplastic gingival conditions observed in 2.3% of the sample. Additionally, as noted in previous health literacy surveys in Lao PDR, oral health care remains heavily influenced by socioeconomic status and localized access to fluoridated resources [5].

5. Conclusion

The study focuses on the prevalence of oral mucosal lesions and their relationship with oral health behaviors in Lao PDR. The findings emphasize the importance of oral health education, prevention, early detection, and screening, particularly in relation to risk behaviors such as betel quid chewing, tobacco use, and alcohol consumption.

Limitations and Future Directions

A primary limitation of this study is its cross-sectional nature, which limits our ability to establish a direct causal timeline between behavioral shifts and lesion resolution. Additionally, relying on hospital-based data may overrepresent severe cases compared to the general public. Nevertheless, these findings demonstrate an urgent need for the Ministry of Health of Lao PDR to scale up community based interventions. Integrating oral mucosal screenings into the national non-communicable disease (NCD) framework, expanding school based hygiene initiatives and launching public awareness campaigns targeting the dangers of betel nut and tobacco usage are vital steps to reducing the oral cancer burden in Lao PDR.

Article Information

Ethical Approval: The study was approved by the ethic committee of University of Health Sciences Laos, under approval number 757/2024.

Informed Consent: The informed consent was obtained from all participants.

Data Availability Statement: The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Author Contributions: M.S. - Conceptualization; P.P. - Methodology; P.S. - Methodology; P.L.S. - Methodology; A.P. - Methodology; V.B. - Methodology; F.D. - Methodology; P.S. - Methodology; V.K. - Methodology; B.B. - Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing; T.V. - Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing; A.H. - Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review; H.V. - Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review, Supervision; V.I. - Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review, Supervision.

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