ACTA SCIENTIFIC DENTAL SCIENCES

Volume 9 Issue 3 March 2025

Research Article

Prevalence of Oral Mucosal Lesions in Removable Dentures Wearers at the Cheddi Jagan Dental Centre. Prosthodontics Department

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DOI: 10.31080/ASDS.2025.09.1992

Received: February 10, 2025

Published: February 26, 2025

Abstract

Patients who wear removable dentures are often associated with various denture-related oral mucosal lesions (OMLs). The purpose of this study was to evaluate the prevalence of these lesions in removable denture patients. The study consisted of 122 patients with various denture-induced oral mucosal lesions, selected from a total of 187 removable denture wearers who attended the Department of Prosthodontics in 2023 and met the inclusion/exclusion criteria. Secondary data sources were used to obtain demographics and clinical features of the participants, while additional data were collected via telephone interviews after obtaining consent. Data on gender, age, duration of denture use, and hygiene care were obtained. All data were tabulated and analyzed. The findings were presented using statistical analyses, including percentages and chi-square test p-values, through the Statistical Package for the Social Sciences (SPSS 20.0).

The results showed a high prevalence of oral mucosal lesions among denture wearers, with 65.2% (122 out of 187 individuals) affected. Denture stomatitis was the most common lesion, found in 68.0% of patients, followed by traumatic ulcers (6.55%) and flabby ridge (5.73%). Denture-induced oral mucosal lesions were most prevalent in patients aged 46–55 years (36.0%) and were more common among female complete denture wearers (68.0%).

This study highlights the prevalence of various denture-induced oral mucosal lesions in removable denture patients and underscores the need for greater attention to the oral health of these patients, as their needs increase with changes in oral environment conditions.

Keywords: Prevalence of Oral Mucosal Lesions; Denture-Related Lesions; Denture Stomatitis

Abbreviations

CJDC: Cheddi Jagan Dental Centre; EBD: East Bank Demerara; ECD: East Coast Demerara; IRB: Institutional Review Board; OML: Oral Mucosal Lesion; RDW: Removable Denture Wearer; RPD: Removable Partial Denture; RCD: Removable Complete Denture; SD: Standard Deviation; SPSS: Statistical Package for the Social Sciences

Introduction

The global perspective on oral health often relegates it to a lower priority compared to general health, and Guyana is no exception to this trend. This is evident not only in patients visiting the main referral dental facility, the Cheddi Jagan Dental Centre (CJDC), for extractions but also in those seeking services at the Prosthodontics Department within the same facility.

Within the Prosthodontics Department, monthly production of approximately 45-50 removable dentures is indicative of a high demand for this service. The fabrication process involves five essential steps, from admission to patient discharge. A considerable list of patients awaits their turn, having been referred from the Adult

Department after General Dental Care. This demand starkly contrasts with the predicted output of other dental offices, estimated to fabricate only about two appliances within the same period, according to the Prosthodontics Department's annual report [1].

The combination of a high demand for dentures, primarily for aesthetic reasons, coupled with poor infrastructure and a shortage of qualified Dental Technicians in the Prosthodontics Department at CJDC, leads individuals to seek unprofessional aid. This, in turn, contributes to the development of detrimental habits driven by factors such as low self-esteem.

These variables collectively play a role in the development of oral mucosal lesions, a well-known consequence for removable denture wearers. These lesions can result from reactions to microbial denture plaque, constituents of the denture base material, or mechanical denture injuries, constituting a heterogeneous group with varying pathogenesis. Conditions such as denture stomatitis, angular cheilitis, traumatic ulcers, Frictional Keratosis, denture irritation hyperplasia, flabby ridges, and oral carcinomas are encompassed within this group [2-5].

Risk factors, including unfitting dentures, nocturnal denture use, denture hygiene, extension of the denture, and the type of dentures, interfere with the biological health or integrity of the oral mucosa [6-9]. Additionally, partial or complete edentulism, an irreversible stage following oral health diseases like caries and periodontal disease, serves as a prerequisite for wearing these prostheses.

In the Guyanese population, partial or complete edentulism is a common condition affecting both older and younger individuals. While it is believed that younger adults may exhibit fewer oral mucosal lesions, the prevalence of these conditions increases with age, aligning with global trends [10,11].

Internationally, the prevalence of edentulous patients varies significantly, with rates ranging from 19% in Italy to 58% in Canada [12-14]. Similarly, denture-induced oral lesions show varying prevalence across different countries, with reported rates ranging from 10.8% to 62% [6-8,11,15-18].

Despite limited studies on denture-related oral lesions in the Guyanese population, previous research conducted at CJDC by former students has shed light on the prevalence of these conditions [19,20]. The World Health Organization has also emphasized the need for action in investigating tooth loss and denture-related conditions [21].

This study seeks to accurately assess the prevalence of oral lesions among denture wearers at CJDC's Department of Prosthodontics and explore potential associations between these lesions and various denture types. By expanding on prior research, this investigation aims to provide valuable insights that can help improve oral healthcare strategies tailored to the specific needs of denture wearers in Guyana.

Materials and Methods

Description of study site

Guyana is a small country on the northern coast of South America, sharing borders with Venezuela, Brazil, and Suriname. The Cheddi Jagan Dental Centre is located in Georgetown, the capital city, which lies within the country's fourth administrative region. Georgetown is bordered to the north by the Atlantic Ocean and to the west by the Demerara River. Its southern boundary is marked by an independence arch along the East Bank Highway between Eccles and Agricola (EBD), while another independence arch on the Rupert Craig Highway in Atlantic Ville (ECD) defines its eastern limit.

- **Study Design:** A retrospective quantitative study design was chosen for the research due to its appropriateness in answering the study's question and facilitating its objectives.
- **Study Participants:** The total number of patients recruited included all removable denture wearers who attended the Department of Prosthodontics in 2023 and met the inclusion/exclusion criteria, amounting to a total of 187 denture wearers

Data Collection

Secondary sources of data were used to obtain demographics and clinical features of the participants, while the remaining data was sought through a telephone interview after consent was granted. The patients' records, available in the department, in a soft copy format, were accessed and properly used once the proper permission was granted. Confidentiality was ensured by omitting the names of the participants in the data form; an identifier code was used instead. A questionnaire was designed for obtaining data related to oral hygiene practices and other specific information that does not present in the patient's records.

As part of the clinic visit, a comprehensive oral examination was conducted. The assessment took place on a dental chair using a mouth mirror and a gloved hand. Denture-induced oral mucosal lesions were diagnosed based on the clinical appearance of the oral mucosa. Denture stomatitis was identified by the presence of inflamed palatal mucosa, while ulcerations were diagnosed when

lacerations or tears were observed on the oral mucosa in relation to the denture. Patients presenting with nodular mucosal swelling were to be referred to the Maxillofacial Department for surgical treatment. Additionally, during the consultation, patients' dentures were examined, and cleanliness was assessed based on the amount of plaque or calculus present. Dentures were classified as clean if no plaque or only a few spots were observed, whereas they were considered dirty if plaque or calculus covered approximately half or more of the denture base.

Data management

The researchers managed all data collected throughout the study. Each questionnaire was assigned a code and reviewed to ensure all sections were properly completed. Fully completed questionnaires were placed in an envelope labeled "Completed," while those with missing sections were stored in a folder labeled "Incomplete."

Data Analysis

The Statistical Package for Social Sciences (SPSS) version 20.0 was used for both data entry and analysis. Descriptive statistics, including mean, standard deviation, and frequency distributions, were utilized to characterize the dataset. The relationship between the dependent variable (OMLs) and independent variables (demographics, denture type, denture cleanliness, denture overnight wearing, duration of denture use, etc.) was assessed using the Chi-square test, with a significance level set at $p < 0.05$.

Ethical considerations

Ethical approval was granted from the Ministry of Health Institutional Review Board (IRB) before initiating the research, Protocol #043/2024. Permission was granted by the Director of the Dental School and the Head of the Prosthodontics department to access the departmental records database. The research did not cause any harm to the participants, as all clinical data was obtained from a secondary source. The researchers assume that both the oral examination and the treatment were performed under the strictest privacy measures and in the best interest of the patients. Informed consent was obtained from all participants via telephone to provide the outstanding information necessary to accomplish the objectives. Their confidentiality and anonymity were safeguarded throughout the study.

Results

A total of 669 patients were treated at the Cheddi Jagan Dental Centre, Department of Prosthodontics, during 2023. Of these, 187 met the inclusion criteria and constituted the study population. Among these patients, 122 were diagnosed with oral mucosal lesions, resulting in a prevalence rate of 65.2%. Table 1 presents the prevalence of OML by demographic factors.

Demographics	Total patients(n = 187)	% of Total patients	Patients with OML (n = 122)	Prevalence x 100	Chi square p-value
Age Groups in years					
18 - 25	8	4.3	5	62.5	0.382
26 - 35	18	9.6	11	61.1	
36 - 45	49	26.2	32	65.3	
46 - 55	65	34.8	44	67.7	
56 - 65	16	8.6	10	62.5	
66 - 75	23	12.3	12	52.2	
Older than 75	8	4.3	8	100	
Gender					
Male	63	33.7	39	61.9	0.495
Female	124	66.3	83	66.9	
Ethnicity					
African	96	51.3	67	69.8	0.073
East Indian	58	31.0	39	67.2	
Amerindian	12	6.4	4	33.3	
Mixed	21	11.2	12	57.1	

Table 1: Prevalence of OML by Demographic Characteristics of the Studied Population.

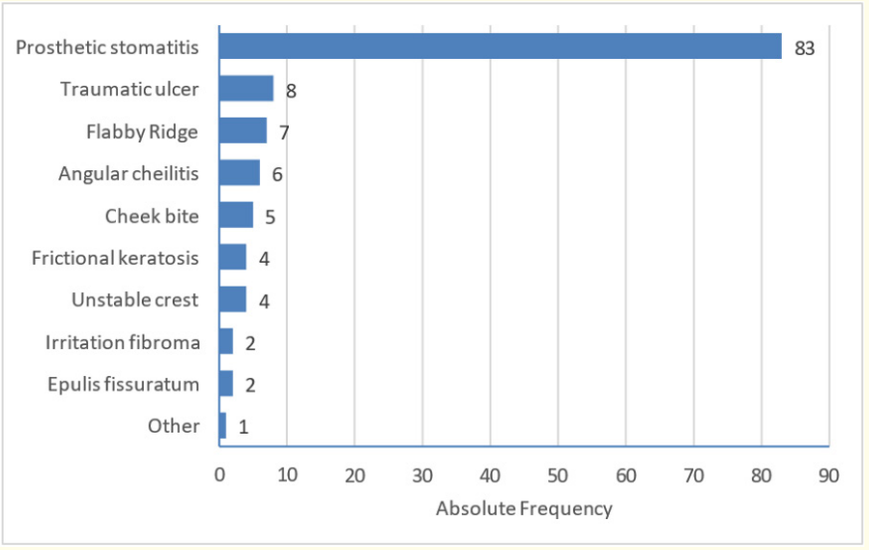
The age of the patients in the study ranged from 18 to 82 years, with a mean age of 53 years (SD = 6.8 years). The age distribution was fairly clustered around the mean, indicating a relatively uniform age spread among the study participants.

The age group 46-55 has the highest number of patients (65), representing 34.8% of the total, with a prevalence rate of 67.7% for oral mucosal lesions. Notably, patients older than 75 exhibit the highest prevalence rate at 100%, despite constituting only 4.3% of the total patient population. Conversely, the age group 66-75 has the lowest prevalence of lesions at 52.2%. The overall distribution indicates a varied occurrence of mucosal lesions across different age groups, yet the chi-square p-value of 0.382 suggests no statistically significant association between age and the prevalence of these lesions. This implies that while certain age groups may show higher prevalence rates, age alone may not be a determining factor in the likelihood of developing oral mucosal lesions.

Gender analysis shows that females (66.9%) have a slightly higher prevalence of OML compared to males (61.9%), but the difference is not statistically significant (p = 0.495).

Ethnicity analysis reveals that the African group has the highest prevalence of OML (69.8%), followed by East Indian (67.2%) and Mixed (57.1%), with the Amerindian group showing the lowest prevalence (33.3%). The p-value (0.073) suggests a marginal association between ethnicity and OML prevalence.

Graph 1 illustrates the frequency of various types of mucosal lesions found among patients. Prosthetic stomatitis is the most common lesion, comprising 68% of the cases. Traumatic ulcer (6.6%), Flabby Ridge (5.7%), angular cheilitis (4.9%), and cheek bite (4.1%) are less common. Epulis fissuratum, unstable crest, frictional keratosis, and irritation fibroma each make up a small percentage (1.6% to 3.3%) of the cases. The 'Others' category accounts for the remaining 0.8%.



Graph 1: Type of Mucosal Lesions Found.

Table 2 presents the prevalence of OML among the studied patients, categorized by various prosthesis characteristics, including the duration of wearing dentures, type of dentures, presence of a metal framework in prostheses, whether the patient's denture has been changed, and the condition of the dentures. Chi-square p-values indicate the statistical significance of the associations. The table reveals several important findings. The duration of wearing dentures shows a slight increase in OML prevalence with longer usage, from 63.9% in those with dentures for less than a year to 68.8% for those wearing them for over ten years, though this is not statistically significant (p = 0.987).

The type of denture does not significantly affect OML prevalence, with similar rates for partial (65.8%) and complete dentures (64.2%) (p = 0.819). Notably, patients with a metal framework in their prostheses exhibit a 100% prevalence of OML, but this group is very small (n = 2) and the association is not significant (p = 0.294). Patients who had their dentures changed show a higher prevalence of OML (70.5%) compared to those who did not (62.7%), although this difference is also not statistically significant (p = 0.294). The condition of the dentures significantly impacts OML prevalence (p < 0.0001), with the highest prevalence observed in patients with unfitting dentures (93.2%) and the lowest in those with dentures

Prosthesis Characteristics	Total patients (n = 187)	% of Total patients	Patients with OML (n = 122)	Prevalence x 100	Chi square p-value
Time Wearing Dentures					
Less than one year	36	19.2	23	63.9	
1-5 years	88	47.1	57	64.8	
6 - 10 years	47	25.1	31	66.0	
More than 10 years	16	8.6	11	68.8	0.987
Type of dentures					
Partial Denture	120	64.2	79	65.8	0.819
Complete denture	67	35.8	43	64.2	
Metal framework in prosthesis					
Yes	2	1.1	2	100	0.294
No	185	98.9	120	64.9	
Patient denture changed					
Yes	61	32.6	43	70.5	0.294
No	126	67.4	79	62.7	
Condition of the dentures					
Satisfactory appearance	18	9.6	5	27.8	
Unfitting Denture	73	39.0	68	93.2	
Presence of stains	30	16.0	21	70.0	< 0.0001
Plaque/Calculus present	37	19.8	16	43.2	
Worn out denture teeth	21	11.2	9	42.9	
Worn out denture base	8	4.3	3	37.5	

Table 2: Prevalence of OML by Prosthesis Characteristics.

of satisfactory appearance (27.8%). Other denture conditions like the presence of stains, plaque/calculus, worn-out teeth, and worn-out bases also show varied levels of OML prevalence. These findings highlight the critical role of proper denture fit and maintenance in reducing the risk of OML.

Table 3 presents data on the prevalence of oral mucosal lesions among the patients studied, categorized by the type of prosthesis used in the lower and upper jaws. It also includes chi-square p-values to indicate the statistical significance of the associations.

Prosthesis Characteristics	Total patients (n = 187)	% of Total patients	Patients with OML (n = 122)	Prevalence x 100	Chi square p-value
Jaw with Prosthesis					
Lower and Upper Complete	30	16.0	21	70.0	
Lower and Upper Partial	63	33.7	42	66.7	
Lower Partial and Upper Complete	25	13.4	12	48.0	
Lower Complete and Upper Partial	16	8.6	9	56.3	0.368
Lower Complete prosthesis	4	2.1	3	75.0	
Upper Complete prosthesis	13	7.0	7	53.8	
Lower Partial prosthesis	9	4.8	7	77.8	
Upper Partial prosthesis	27	14.4	21	77.8	
Type of Upper Dentures					
Acrylic Upper Complete	67	35.8	40	59.7	
Acrylic Upper Partial	95	50.8	72	75.8	0.002
No Upper Denture	25	13.4	10	40.0	
Type of Lower Dentures					
Acrylic Lower Complete	42	22.4	33	78.6	
Acrylic Lower Partial	94	50.3	61	64.9	0.058
No Lower Denture	51	27.3	28	54.9	

Table 3: Prevalence of OML Related to Type of Prosthesis by Jaw.

The table indicates that the type and location of prostheses significantly impact the prevalence of OML. The prevalence of OML is highest in patients with lower partial prostheses and upper partial prostheses (both 77.8%). Other notable prevalence rates include lower complete prosthesis (75.0%) and lower & upper complete prosthesis (70.0%). The chi-square p- value of 0.368 indicates no significant association between the type of jaw prosthesis and the prevalence of OML.

The prevalence of OML is highest in patients with lower partial prostheses and upper partial prostheses (both 77.8%). Other notable prevalence rates include lower complete prosthesis (75.0%) and lower & upper complete prosthesis (70.0%). The chi-square p-value of 0.368 indicates no significant association between the type of jaw prosthesis and the prevalence of OML. Additionally, the material and extent of the dentures (complete vs. partial) influence the prevalence. Acrylic upper partial dentures are associated with a significantly higher prevalence of OML (75.8%) compared to acrylic upper complete dentures (59.7%) and no upper dentures (40.0%), with a statistically significant association (p = 0.002). Acrylic lower complete dentures show the highest prevalence of OML (78.6%), followed by acrylic lower partial dentures (64.9%) and no lower dentures (54.9%). The association is marginally significant (p = 0.058). These findings highlight the importance of considering the type and material of prostheses in the management and prevention of OML.

Table 4 presents the prevalence of oral mucosal lesions among the studied patients, categorized by their oral hygiene practices, with chi-square p-values included to indicate the statistical significance of the associations. The table highlights significant associations between oral hygiene practices and the prevalence of OML. Frequent denture cleaning, especially daily cleaning, is associated with a lower prevalence of OML. The prevalence of OML increases with less frequent denture cleaning. Patients who clean their dentures every day have a prevalence of 60.8%, compared to 81.6% for those who clean every other day and 100% for those who clean once a week. This association is statistically significant (p = 0.043).

Oral Hygiene Factors	Total patients (n = 187)	% of Total patients	Patients with OML (n = 122)	Prevalence x 100	Chi square p-value
Frequency of Denture Cleaning					
Everyday	148	79.1	90	60.8	0.043
Every other day	38	20.3	31	81.6	
Once a week	1	0.5	1	100	
Method of Denture Cleaning					
Brushing with Toothpaste	112	59.9	65	58.0	0.001
Rinsing/Soaking in hot W.	33	17.6	21	63.6	
Soaking in Solution*	4	2.1	2	50.0	
Brushing with Toothpaste & Soaking in Solution	36	19.3	32	88.9	
Soaping and Rinsing	2	1.1	2	100	
Overnight Denture Removal					
Yes	76	40.6	50	65.8	0.896
No	111	59.4	72	64.9	
Frequency of Denture Wear at Night					
Always	54	28.9	36	66.7	< 0.0001
Often	61	32.6	34	55.7	
Rarely	10	5.3	2	20.0	
Never	62	33.2	50	80.6	

Table 4: Prevalence of OML Related to Oral Hygiene Practices.

* Bleach, Denture cleaning, etc.

The method of cleaning also impacts OML prevalence, with simple brushing showing better outcomes than combined methods or soaping and rinsing. Brushing with toothpaste alone has the lowest prevalence (58.0%), while brushing with toothpaste and soaking in a solution has a significantly higher prevalence (88.9%). The use of soaping and rinsing also shows a high prevalence (100%), with a statistically significant association ($p = 0.001$).

Overnight denture removal does not significantly affect OML prevalence, while the frequency of wearing dentures at night shows a complex relationship. The prevalence of OML is similar between patients who remove their dentures overnight (65.8%) and those who do not (64.9%), with no significant difference ($p = 0.896$). Patients who never wear their dentures at night have the highest prevalence of OML (80.6%), while those who rarely wear them at night have the lowest prevalence (20.0%). This association is highly significant ($p < 0.0001$). These findings underscore the importance of proper and frequent denture hygiene practices to reduce the risk of OML.

Regarding the impact of patients' medical history on the prevalence of oral mucosal lesions, as shown in Table 5, the presence of chronic diseases affects the prevalence of OML among denture users. Regular medication does not significantly impact OML prevalence. The prevalence of OML is slightly lower among patients who regularly take medication (60.9%) compared to those who do not (71.4%), though this difference is not statistically significant ($p = 0.137$). Patients without comorbidities have a significantly higher prevalence of OML (82.1%) compared to those with specific chronic diseases. The prevalence is 52.2% among patients with diabetes mellitus, 57.6% among those with hypertension, 50.0% among those with cardiovascular diseases, and 66.7% among those with rheumatic diseases. The association between the absence of comorbidities and higher prevalence of OML is statistically significant ($p = 0.008$). This highlights the complex interplay between general health conditions and the occurrence of OML, suggesting that the presence of chronic diseases might be associated with better overall management of oral health, or possibly lower reporting/identification of OML in these patients.

In summary, the prevalence of oral mucosal lesions among prosthesis users is influenced by various factors including demographics, prosthesis characteristics, oral hygiene practices, and medical history. Notably, poor denture condition, infrequent and inadequate cleaning methods, and the absence of comorbidities are linked to higher OML prevalence. Despite the high prevalence of OML found, awareness among patients is alarmingly low, with only 17.2% acknowledging the presence of these lesions, while 82.8% remain unaware. This highlights a substantial gap in patient knowledge and underscores the need for improved patient education and regular dental check-ups to facilitate early detection and effective management of OML.

Discussion

The results from the collected data highlighted a high prevalence (65%) of Oral Mucosal Lesions in denture wearers among patients attending the Cheddi Jagan Dental Centre in 2023. Studies conducted in several countries have reported a prevalence of approximately 60%, which is consistent with our findings.

Rizvi, Syed Hammad Azeem., *et al*. [6] found that 60% of the studied population in Lahore, Pakistan, had some form of OML, with traumatic ulcers being the most frequently observed (45%). Similarly, Cheruvathoor, Dimla Denny., *et al*. [7] reported that 59.6% of the geriatric population of denture wearers in Kerala, India, had OML. In a cohort of elderly individuals attending the Lebanese School of Dentistry, El Toum, Sami., *et al*. [8] reported an OML prevalence of 62%. Another study conducted among complete denture wearers in Lucknow, Uttar Pradesh, India [16], found a prevalence of 59.5%, while in Thailand [22], a prevalence of 61.6% was reported among elderly individuals.

In contrast, studies conducted in Saudi Arabia [11], Nigeria [17], and China [18] found a lower prevalence compared to our findings, with reported rates of 20.5%, 13.5%, and 10.8%, respectively. Conversely, other authors, such as Bozdemir, Esin., *et al*. [23] and Pavicic, Daniela Kovačević., *et al*. [26], reported significantly higher prevalence rates compared to our findings-87.6% in Turkey and 74.4% in Croatia, respectively.

The prevalence of OML among denture wearers was influenced by demographic factors, prosthesis attributes, oral hygiene practices, and medical history.

Ethnicity showed a marginally significant association, with African patients exhibiting the highest prevalence of OML. While prevalence varied across different age groups and genders, the highest prevalence was observed in patients over 75 years. Although females had a slightly higher prevalence (66.9%) compared to males (61.9%), the difference was not statistically significant.

Several studies reported an increase in the prevalence of OMLs with age [5,7,15,23,24]. One plausible explanation offered by Müller, Frauke., *et al*. [14] is related to the higher frequency of tooth loss as age increases leading to the use of a removable partial denture

(RPD) that would be replaced by a complete one as the individual become older. It is well demonstrated that denture use increases as age increases, and elderly people are often unwilling to replace old dentures, contributing to oral lesions [7,23,25].

While some studies report higher OML prevalence in females due to prolonged denture wear for aesthetic reasons [15,16], others have found a significantly higher prevalence among males. Pavicic, Daniela Kovačević., *et al*. [24] reported that males had an approximately four times higher risk (OR 3.72, 95% CI: 1.03–13.39), and Wang, Li-Li., *et al*. [26] found a significantly higher prevalence in males (54.17% vs. 35.40%).

The condition of dentures significantly impacted the prevalence of OML. Poorly fitting dentures had the highest prevalence, while well-fitting dentures were the lowest, with this association being highly significant ($p < 0.0001$). Additionally, the prevalence of OML increased with denture use duration, and partial dentures showed a slightly higher prevalence than complete dentures, though this difference was not significant.

Denture-related OMLs can result from acute or chronic reactions to factors such as denture plaque, yeast, denture base material, poor retention, and mechanical injury [2,3,27]. Defective or ill-fitting dentures can cause chronic irritation, leading to mucosal injury [5,11]. More than one-third (39%) of patients in this study had OMLs associated with ill-fitting dentures, consistent with previous research showing the highest prevalence in those with poorly fitting dentures [7].

The chi-square p-value of 0.368 indicated no significant association between the type of jaw prosthesis and OML prevalence. However, the analysis showed higher prevalence of OML in patients with lower partial prostheses and upper partial prostheses (both 77.8%). It also showed a high prevalence in patients with acrylic complete upper dentures (78.6%) with a marginally significant association ($p = 0.058$). Due to limited variability in denture materials, this study could not confirm an association between denture material and OML prevalence. The extent of denture is another important factor, as it may influence oral hygiene and tissue coverage.

Furthermore, overnight denture removal did not significantly affect OML prevalence. The rates were similar among those who removed their dentures overnight (65.8%) and those who did not (64.9%), contradicting previous studies emphasizing the importance of nighttime denture removal [2,6].

The frequency and method of denture cleaning play a crucial role in OML prevalence. Daily denture cleaning was associated with a lower prevalence of OML, with a significant difference compared to less frequent cleaning ($p = 0.043$). However, prevalence varied depending on cleaning methods: brushing with toothpaste alone resulted in lower OML rates, while combining brushing with soaking in a solution led to higher rates ($p = 0.001$).

Interestingly, overnight denture removal did not significantly impact OML prevalence ($p = 0.896$). However, patients who never wore their dentures at night exhibited the highest OML prevalence, while those who rarely did had the lowest prevalence, showing a highly significant association ($p < 0.0001$).

Previous research also supports the role of oral hygiene in reducing OML risk [5,25,28,29]. Patients who cleaned their dentures daily had lower OML prevalence compared to those who cleaned them every other day. The cleaning method was also found to be a relevant factor in OML development [25].

Medical history also influenced OML prevalence. Patients taking regular medication had a slightly lower prevalence than those who did not, though this difference was not statistically significant ($p = 0.137$). In contrast, patients without chronic diseases exhibited a significantly higher prevalence of OML (82.1%) compared to those with conditions such as diabetes mellitus (52.2%), hypertension (57.6%), cardiovascular diseases (50.0%), and rheumatic diseases (66.7%), with this association being statistically significant ($p = 0.008$). This finding suggests that chronic disease management may contribute to better oral health or lower OML risk.

Pathmashri, Abirami VP., *et al*. [5] and Bozdemir, Esin., *et al*. [23] identified diabetes mellitus as a risk factor for denture stomatitis and denture hyperplasia.

In summary, the prevalence of oral mucosal lesions (OML) among prosthesis particularly those attending Cheddi Jagan Dental Centre is influenced by various factors including demographics, prosthesis characteristics, oral hygiene practices, and medical history. Notably, poor denture condition, infrequent and inadequate cleaning methods, and the absence of comorbidities are linked to higher OML prevalence. Despite the high prevalence of OML found, awareness among patients is alarmingly low, with only 17.2% acknowledging the presence of these lesions, while 82.8% remain unaware. This highlights a substantial gap in patient knowledge and increases the need for improvement in patient education and

regular dental check-ups to facilitate early detection and effective management of OML.

Limitations

An equal amount of both Denture type patients was not obtained in this research, so there was inadequacy in the parameter for one of the hypotheses. Due to the data collected used the result was biased. However, this higher frequency of partial denture is indicative of the population, more people have partial denture.

Conclusion

The findings of this study suggest that there is a high prevalence of oral mucosal lesions in denture wearers attending the Cheddi Jagan Dental Centre. The study highlighted the predisposing factors influencing the prevalence of oral mucosal lesions in denture wearers. Poor oral hygiene and the frequency in which the patients comprising the study populations wore their dentures showed to be directly linked to the presence of oral mucosal lesions or yeast and food accumulation, further leading to oral mucosal lesions. The hypothesis of a high prevalence in those denture wearers that sleep with dentures was not proven due to limitations in some parameters including sample size and oral hygiene awareness.

The results of the study showed increased prevalence of oral mucosal lesions in the elderly population, especially those older than 75 at a rate of 100% despite constituting only 4.3% of the total patient population. Conversely, the age group 66-75 has the lowest prevalence of lesions at 52.2%. The overall distribution indicates a varied occurrence of mucosal lesions across different age groups, yet the chi-square test suggests no statistically significant association between age and the prevalence of these lesions. This implies that while certain age groups may show higher prevalence rates, age alone may not be a determining factor in the likelihood of developing oral mucosal lesions.

The study showed a high prevalence of oral mucosal lesion in complete upper acrylic denture wearers compared to upper and lower acrylic partial denture wearers, despite the p-value being ´´marginally significant ´´ partially due to limitations in sample size the hypothesis of this variable was partially proven.

Denture stomatitis was the most prevalent oral mucosal lesion among the study population 83 out of 187 denture wearers representing 68% of the total with a marked difference compared to other oral mucosal lesions. The hypotheses of this variable were proven in this study.

As this study highlights the high prevalence of oral mucosal lesions in denture wearers, the need for creating awareness through oral health education programs and follow up on the population of denture wearers who attend the Cheddi Jagan Dental Centre should be established.

Author Contributions

Both authors (CBV and MOP) contributed substantially to the conception and design of the work, as well as the acquisition, analysis, and interpretation of data. Both authors reviewed the final submission. They also agreed to be accountable for all aspects of the work, ensuring that any questions related to its accuracy or integrity are properly addressed.

Funding

This research received no external funding.

Institutional Review Board Statement

Approval to conduct the study was granted by the IRB of the Ministry of Public Health of Guyana (New Protocol No: 043/2024).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data is available on reasonable requests from the corresponding Author.

Acknowledgments

The authors sincerely thank the dentists from the CJDS prosthodontic department who accurately collected the data regarding oral examination.

Conflicts of Interest

The authors declare no conflicts of Interests.

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