Pattern of Distribution of Biopsy Confirmed Oral and Maxillofacial Lesions in Adult and Geriatric Age Groups of Central Kerala Population – An Institutional Retrospective Study of 11 Years

Indu M[1], Latha Mary Cherian[1], Aishwarya Menon P[1], Swathi Sanil[1], Deepthi PV[1], Sajitha PS[2]

Abstract

Introduction: Oral health reflects overall health of an individual. Oral lesions can vary according to sociodemographic features and individual genetic make-up.

Aim and Objective: The present study was aimed to evaluate and compare the distribution of biopsy confirmed oral and maxillofacial lesions in adult and geriatric population in Central Kerala region.

Materials and Methods: This retrospective study was conducted using past 11 year biopsy records of oral lesions of patients who were treated at Government Dental College, Kottayam. The data was retrieved, categorized into those of adult group and elderly group and was retrospectively analyzed and compared. Descriptive statistical analysis was performed using Statistical Package for Social Sciences (SPSS).

Results: Out of 2289 cases analyzed, 1339 (58.5%) cases belonged to adult group and 950 (41.5%) belonged to elderly group. Malignant lesions and potentially malignant disorders were most common in the elderly group in a significant way (P< 0.001) while reactive lesions, benign lesions and odontogenic cysts and tumors were more common in adult group. Prevalence of moderately differentiated squamous cell carcinoma cases was significantly higher in both age groups (P< 0.001).

Conclusion: The present study assessed prevalence of biopsy confirmed oral lesions in adult and geriatric population in a tertiary dental health care center. This study noticed a change in trends in the prevalence of oral lesions in different age groups and a higher prevalence of oral cancer among elderly population. Knowledge about patterns of oral lesions in different age groups will be useful for proper oral health care preventive planning.

Keywords: Age Group, Geriatrics, Gerodontology, Oral health, Oral Mucosa, Oral squamous cell carcinoma

Oral and Maxillofacial Pathology Journal (2023): *https://www.ompj.org/archives.*

Introduction

Oral health, according to the World Health Organization (WHO) is considered as an important factor that determines the overall health and well-being.[1] Oral diseases have great impact on quality of life of an individual.[2]

Aging is an irreversible and universal process. WHO defined aging as "The lifelong process of growing older at cellular, organ or whole- body level throughout the life span".[3] According to the Ministry of Home Affairs of the Indian Government, life expectancy in India will be roughly 71 years old in 2025 and 77 years old in 2050.[4] 'National Policy on Older Persons' Government of India defines 'elderly' as a person who is of age 60 years or above.[5] According to WHO, individuals older than 19 years can be considered as "adults" and those of age range 10 to 19 as adolescent.[6]

According to Census 2011, India's geriatric population comprised of 104 million people which constituted 8.6% of

[1]Department of Oral Pathology and Microbiology, Government Dental College Kottayam, Kerala 686008; [2]Department of Public Health Dentistry, Government Dental College, Kottayam, Kerala 686008.

Corresponding Author: Dr Indu M, Department of Oral Pathology, Goverment Dental College Kottayam, Kerala 686008. Email: indumohan2011@gmail.com

total population.[7] In Kerala, one out of every eight people is above 60 with highest proportion of elderly population (12.6%) in India.[8]

The geriatric population has several complex health states. There are differences in disease patterns in both adult and elderly population. As age advances, an individual might become vulnerable to certain diseases including oral diseases.[9] Pattern of distribution of lesions may vary according to many factors. Interaction between genetic, epigenetic and environmental factors leads to the formation of oral mucosal lesions.[10] Gerodontology is a specialized branch of dentistry which deals with the diagnosis, management and treatment of dental conditions relating to older adults and is aimed to improve oral health of the same.[11]

Habits and life style adopted in adult age may get reflected in health status of old age. It is important to assess oral lesions and associated factors in adult population to make effective tailor-made preventive programs for geriatric population.[12] Only limited information is available about biopsy confirmed oral and maxillofacial lesions in adult and geriatric population in Central Kerala. Histopathological studies may differ from studies based on clinical examinations and the former is more accurate since biopsy is the paradigm of diagnosis. Therefore, this retrospective study tried to evaluate and compare distribution of biopsy confirmed oral and maxillofacial lesions specifically to adult and elderly population in Central Kerala region. This study is expected to be helpful in planning preventive programs especially among the adult and elderly population.

MATERIALS AND METHODS

This retrospective descriptive research was carried out at Department of Oral Pathology, Government Dental College, Kottayam, Kerala. Approval to conduct this study was obtained from the Institutional Ethics Committee and Review Board of Government Dental College Kottayam. (IEC/M/19/2020/DCK). All reports of biopsies performed in the department in the time period of 2011 to 2021 were retrieved.Biopsy records with incomplete data or inconclusive diagnosis was excluded. A total of 2289 patient's biopsy reports were selected and analysed. The collected data were divided into two groups: A) adult 20-59 years) and B) elderly age group (60 years and above).[5, 6]

Demographic, clinical and histopathological details were retrieved and were segregated. Medical history and habit history were not mentioned in the biopsy report in most of the cases and hence such parameters were not included in this study. The stained slides were retrieved and examined and the retrieved data was cross checked with histopathological diagnosis.

The lesions were categorized based on age of patient, type of biopsy, anatomical site and histopathologic type of lesions. Histopathologically, the lesions were grouped under 8 categories like reactive/inflammatory lesions, benign lesions, Oral potentially malignant disorders (OPMDs)/ dysplastic lesions, malignant lesions, odontogenic lesions, bone lesions, autoimmune diseases, infectious diseases. Distribution of biopsy confirmed lesions among adult and geriatric groups were assessed. Distribution of Oral Squamous Cell Carcinoma (OSCC) and Odontogenic lesions were assessed independently

on both groups as these lesions are commonly encountered and need proper diagnosis for surgical intervention.

Data were recorded and analysed by descriptive statistics using IBM SPSS (Social Sciences statistical package for Social Sciences) for Windows, Version 25 (IBM Corp., Armonk, N.Y., USA). Chi-square test was used to evaluate differences in the frequency of the different groups and $P \leq 0.05$ was considered to establish statistical significance.

RESULTS

Out of 2289 patients studied, 58.5% (1339) patients belonged to adult group and 41.5% (950) patients belonged to the elderly group. 60.2% (1379) patients were males and 39.8% (910) patients were females.The mean age of the adult group was 44.16 ± 10 and geriatric group was 68.6 ± 6 years. The male-to-female ratio for adult and geriatric population was 1.4:1 and 1.5:1 respectively. Out of the total cases, majority of the patients were from Kottayam district. Incision biopsies (64%) were the most common type of biopsies. Buccal mucosa (28.5%) was the most common site of lesions. (Table 1)

Maximum number of lesions were noted in lining mucosa in both adult and elderly group. In both age groups, maximum numbers of lesions were noted on buccal mucosa followed by tongue and gingiva. There was a significant association between the age group and the site of lesion with P value < 0.001 as shown in Table 2.

With reference to the histopathologic types, malignant lesions were most common (47.9%) followed by reactive/

Table 1: Demographic and clinical details

Age	20-59 years (adult)	58.5 % (1339)
	>60 years (elderly)	41.5 % (950)
Gender	Male	60.2% (1379)
	Female	39.8 % (910)
Location (Districts)	Kottayam	68.5%(1569)
	Idukki	9.3% (212)
	Alappuzha	8.9 % (203)
	Pathanamthitta	6.4% (146)
	Ernakulam	5.3% (122)
	Kollam	1.6 % (37)
Type of biopsy	Incision	64 % (1464)
	Excision	36 % (825)
Site distribution of biopsy	Buccal mucosa	28.5% (653)
	Tongue	21.9% (502)
	Gingiva/alveolus	14.3% (328)
	Mandibular bone	11% (252)
	Maxillary bone	6.4% (147)
	Palate	7.4% (170)
	Floor of the mouth	3.2% (73)
	Lip	4.5% (103)
	Retromolar region	2.7% (61)

inflammatory lesions (26.8%) in the study population. (Graph 1)

Regarding the histopathologic types, malignant lesions (59.5%) and potentially malignant disorders (8.4%) were most common in the elderly group whereas reactive lesions (29.9%), benign lesions (6.5%) and odontogenic cysts and tumors (12.2%) were more common among adult group. There was a significant association between the age group and histopathologic type of lesions. Age wise distributions of lesions are summarized in Graph 2.

Moderately differentiated Squamous Cell Carcinomas (MDSCC) was found to be the most common type of OSCC in both groups. Odontogenic cysts outnumbered odontogenic tumors in both groups. (Table 3)

When prevalence of OSCC was compared to demographic data, it was noticed that OSCC was more common among elderly population (52.1%). OSCC was more common among males (67.6%) compared to females (32.4%) and more common in lining mucosa in both groups in a significant way. The data is summarized in Table 4.

There was a significant association between the type of lesion and the time period of reporting. There was a significant increase reported in malignant lesions during the period of 2016-2021. Prevalence of malignant lesions increased in 2016–2021 time period when compared to 2011–2015 period. Association between timeline and prevalence of lesions are summarized in Table 5.

DISCUSSION

As per United Nations Department of Economic and Social Affairs, 2008, elderly population in India may out number younger population by 2050.[13] National Sample Survey shows that elderly people experience a greater level of morbidity compared to other age groups.[14] Most of the geriatric population in India lives in villages and approximately half of them are of poor socioeconomic status which adds complexity for accessibility to health care systems.[15] These scenarios make it essential to address status of oral lesions of geriatric population and change in trends of oral lesions of people from younger and older age groups. In this study we analyzed 2289 patients of which 1339 (58.5%) patients belonged to adult group and 950

Table 2: Association between age group and site of lesion

Variables		Adult group	Elderly group	P value
Location	Specialized mucosa	19.2% (257)	25.8% (245)	<0.001
	Lining mucosa	36.1% (483)	42.8% (407)	
	Masticatory mucosa	22.9% (307)	20.1% (191)	
	Jaw Bone	21.8% (292)	11.3% (107)	
Specific site	Buccal mucosa	25.6% (343)	32.6% (310)	<0.001
	Tongue	19.2 % (257)	25.8% (245)	
	Gingiva/alveolus	13.5 % (181)	15.5% (147)	
	Mandibular bone	13.1% (175)	8.1% (77)	
	Palate	9.4% (126)	4.6% (44)	
	Maxillary bone	8.7% (117)	3.2% (30)	
	Lip	6.1% (81)	2.3% (22)	
	Floor of the mouth	2.4% (32)	4.3% (41)	
	Retromolar region	2.0% (27)	3.6% (34)	
Type of biopsy	Incision	55.6 % (744)	75.8 % (720)	<0.001
	Excision	44.4% (595)	24.2% (230)	

Table 3: Percentage distribution of different types of OSCC and odontogenic lesions age wise

Variable		Adult group	Elderly group	P value
OSCC	WDSCC	17.7% (89)	24.5% (134)	< 0.001
	MDSCC	77.7% (392)	71.2% (390)	
	PDSCC	4.6% (23)	4.3% (24)	
Odontogenic cysts and tumors	Odontogenic cysts	77.6% (128)	75.9% (41)	< 0.001
	Odontogenic tumors	22.4% (37)	24.1% (13)	

(OSCC: Oral Squamous Cell Carcinomas, MDSCC: Moderately differentiated Squamous Cell Carcinomas, WDSCC: Well differentiated Squamous Cell Carcinomas, PDSCC: Poorly differentiated Squamous Cell Carcinomas).

(41.5%) patients belonged to the elderly group. In a multicentric retrospective study on oral lesions conducted by Dhanuthai et al in Thailand, 14.92% of patients were elderly compared to other age groups.[16] In an Institutional study conducted by Uma Mohan et al, 796 (19.8%) patients were above 60 years.[10]

The mean age of the adult group was 44.16 ± 10 and geriatric group was 68.6±6 years. In developing countries age of 60 years or over defines the geriatric population while it is 65 years and above in many developed countries and there is a difference in the mean age in developing and developed countries. Silva LP et al reported mean age of elderly population as 69 years according to their multicentric study in Brazil while Dhanuthai et al in Thailand reported it as 72.9 years.[16,17]

In this study, many oral lesions showed increased occurrence in elderly group which is in accordance to the study conducted by Patil S et al (2015) where oral lesions showed high prevalence in older age group of 60-98 years.[18] The increase in the occurrence of oral lesions among elderly group may be due to poor general and oral health, altered genetic makeup etc. Studies suggest that as age advances oral mucosa becomes thin, smooth which can lead to increased susceptibility to infections.[18,19]

In this study, the male-to-female ratio for adult and geriatric population was 1.4:1 and 1.5:1 respectively. This shows a higher incidence of oral lesions in males compared to females in the Central Kerala region. Similarly, higher incidences of oral lesions were observed in males in studies conducted at South Kerala and North Kerala region.[10,20] Increased number of biopsy confirmed lesions in male patients may be due to high prevalence of deleterious habits like tobacco chewing, smoking and alcoholism. Another plausible reason is socioeconomic barriers in developing countries which may prevent females to seek medical aids for oral health conditions and are less likely to be diagnosed. But some studies from North India, Brazil and Saudi Arabia showed contrary results with a higher female predilection for oral lesions.[17,21,22]

In the current study, incision biopsies (64%) were more common when compared to the excision biopsies (36%). In our institute, most of the malignancy cases are referred to cancer-care centers after initial diagnosis, so that the number of excision biopsies are less.This study noted that buccal mucosa (28.5%) was the most common site of biopsied oral lesions followed by tongue (21.9%), gingiva (14.3%) and mandibular bone (11%) in both age groups which is in accordance with many studies

Table 4: Comparison of distribution of OSCC and OPMD with regards to age, gender and site

Variables		OSCC		P value
		Present	**Absent**	
Age	Adult group	47.9% (504)	67.5% (835)	<0.001
	Elderly group	52.1% (548)	32.5% (402)	
Gender	Male	67.6% (711)	54% (668)	<0.001
	Female	32.4% (341)	46% (569)	
Site	Specialized mucosa	29.1% (280)	23.9% (222)	<0.001
	Lining mucosa	46.5% (447)	47.7% (443)	
	Masticatory mucosa	24.4% (235)	28.4% (263)	
Variables		OPMD/Dysplasia		P value
		Present	**Absent**	
Age	Adult group	53.2% (91)	58.9% (1248)	0.145
	Elderly group	46.8% (80)	41.1% (870)	
Gender	Male	70.2% (120)	59.4% (1259)	0.006
	Female	29.8% (51)	40.6% (859)	
Site	Specialized mucosa	36.9% (62)	25.5% (440)	0.000
	Lining mucosa	51.2% (86)	46.7% (804)	
	Masticatory mucosa	11.9% (20)	27.8% (478)	

(OSCC: Oral Squamous Cell Carcinomas, OPMD: Oral potentially malignant disorders)

Table 5: Year wise distribution of biopsy confirmed lesions

Year	Reactive / Inflammatory	Benign lesions	Dysplasia/ OPMD	Malignant lesions	Odonto-genic cysts and tumors	Bone lesions	Autoim-mune diseases	Infec-tions	P value
2011-2015	34.2% (313)	6.5% (60)	8.8% (81)	36.4% (334)	9.2% (84)	0.2% (2)	4.4% (40)	0.3% (3)	0.000
2016-2021	21.9% (301)	3.5% (47)	6.6% (90)	55.6% (763)	9.5% (130)	0.4% (6)	2.4% (33)	0.1% (2)	

conducted in Indian population.[10,18] Dhanuthai et al also reported the labial/ buccal mucosa (18.8%) as most common site followed by gingiva (16.0%), mandibular bone (15.0%), and tongue (13.7%) respectively.[16] The higher prevalence of lesions in the buccal/labial mucosa may be due to frequent exposure by deleterious agents such as tobacco and also due to the non-keratinized mucosa in this region which may get traumatized easily.

Lip lesions were higher on adult population while lesions on floor of mouth and retromolar areas were higher for elderly population.Mandible was the most common site for bony lesions (11% [n=252]) compared to maxilla (6.4% [n=147]) in the current study.We received less number of bony lesions in elderly group (38.4%) compared to adult group which is in accordance with findings of Dhanuthai et al.[16] Similarly, Alhindi et al reported that most of lesions they received were soft tissue lesions (62.8%) compared to hard tissue lesions (37.2%).[22]

According to our results, in general, malignant lesions (47.9%) were most common followed by reactive/inflammatory lesions (26.8%). This is in accordance with the study from South Kerala population.[10] Modi et al (2013) also reported similar results with higher percentage of neoplastic lesions (61.4%).[21] We also noted that malignant lesions and OPMDs were most common in the elderly group whereas reactive lesions, benign lesions, odontogenic cysts and tumors were more common among adult group. Silva LP et al., noted that incidence of oral lesions increased as the age increased in Brazilian population.[17] Dhanuthai et al reported that most prevalent oral lesions in the Thailand geriatric population was squamous cell carcinoma followed by focal fibrous hyperplasia (irritation fibroma), radicular cyst, osteomyelitis and epithelial dysplasia.[16] In contrary to present study, several other studies noticed that reactive/inflammatory lesions were the most prevalent in the older population.[22,23-25]

At the same time, some studies have showed that malignant lesions were more common in more advanced age.[22] Correa et al stated on the basis of oral biopsy records that the incidences of epithelial malignant neoplasms, premalignant lesions, and autoimmune diseases in older patients were statistically higher than those of the non-elderly group.[26]

The current study noticed that OSCC cases were higher in older patients, compared to other group in a statistically significant way (P =<0.001). Also oral cancer is more prevalent in male patients (67.6%) compared to females (P=<0.001). Increased incidence in elderly male population may be due to increased habits among those groups. Silva et al noted that Oral squamous cell carcinoma was the most prevalent oral neoplasm among Brazilian geriatric population.[17] The findings were similar to a study conducted by Uma Mohan et al from South Kerala population.[10] In a study conducted by Sarini J et al (2001), 59.5% of elderly people and 39.7% of adult population were affected by oral cancer.[27]

In the present study we noticed that maximum number of OSCC cases was reported in 61-70 year age group. The study also noted that incidence of moderately differentiated squamous cell carcinoma was statistically higher than other histopathologic variants (P< 0.001). This is in accordance with a study conducted by Cheruvathoor et al from North Kerala population.[20]

The variation in the prevalence of oral lesions reflects differences in socioeconomic, cultural, behavioral and genetic patterns between different populations. The extend of study population vary in different projects like studies based on national profile, institutional studies etc. which can also contribute to variations in disease prevalence rate.[22]

Strengths and limitations of the study

The current study provides an estimate of the disease prevalence, pattern, and distribution of different oral mucosal lesions in Central Kerala's adult and elderly population. This study has the potential to identify the health requirements of patients for future policy development. This hospital-based retrospective study was based on retrieved data of 11 years biopsy confirmed lesions in a tertiary health care center in Central Kerala. Hence, the study population may not accurately represent the community.

CONCLUSION

Population aging in our country, especially in Kerala demands a comprehensive oral health response plan according to needs of the older people. Oral health status of aged get affected by nutritional deficiencies, altered salivary secretion, changes in oral mucosa, periodontium and teeth along with chronic exposure to risk factors and genetic alteration. Our
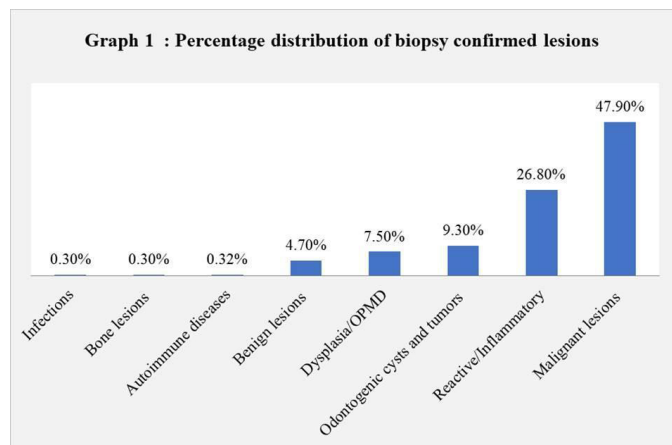
Graph 1: Percentage distribution of biopsied lesions
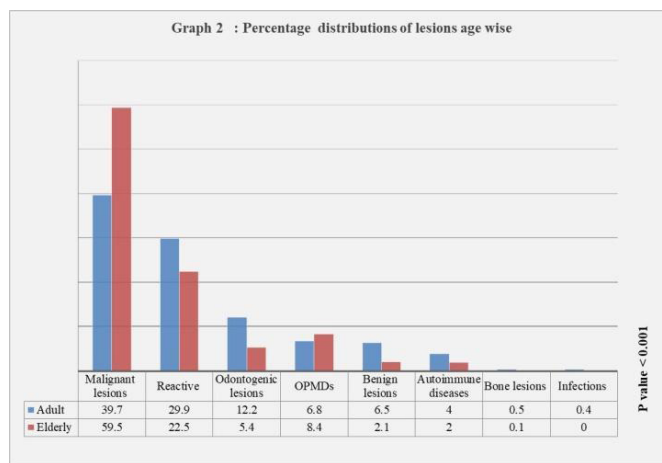
Graph 2 : Percentage distributions of lesions age wise

study provides information regarding the type of oral lesions found in adult and geriatric age groups. This study noticed high prevalence of oral cancer in elderly male patients. Therefore, it is important to initiate more effective public health policy to handle the concerned morbidity.

REFERENCES

1. The World Oral Health Report 2003. Continuous improvement of oral health in the 21st Century: the approach of the WHO Global Oral Health Programme. Geneva, Switzerland: WHO; 2003.

2. RM Baiju, Elbe Peter, NO Varghese, Remadevi Sivaram. Oral Health and Quality of Life: Current Concepts. Journal of Clinical and Diagnostic Research 2017 ;11(6): 21-26.

3. WHO Centre for Health Development (Kobe, Japan) A glossary of terms for community health care and services for older persons. Kobe, Japan: WHO Centre for Health Development; 2004

4. Government of India: Ministry of Home Affairs 2011, Office of the Registrar General and Census Commissioner, India. Available from: http://censusindia.gov.in [Last accessed on 12.08.2022]

5. National Policy for senior citizens 2011. Available: https://socialjustice.gov.in/writereaddata/UploadFile/dnpsc.pdf

6. WHO Definition of key terms in consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection 2013. Available from: http://www.who.int/hiv/pub/guidelines/arv2013/intro/keyterms/en/.

7. Government of India. National Programme for the Health Care of the Elderly (NPHCE), Operational guidelines. New Delhi: Government of India; 2011.

8. Barik D, Agrawal T, Desai S. After the dividend: Caring for a Greying India. Econ Polit Wkly. 2015;50:108–112.

9. Fonseca MFL, Kato CNAO, Pereira MJC, Gomes LTF, Abreu LG, Fonseca FP, Mesquita RA. Oral and maxillofacial lesions in older individuals and associated factors: A retrospective analysis of cases retrieved in two different services. J Clin Exp Dent. 2019;11(10):e921-9.

10. Heera R, Uma Mohan, Rohini P.V, S.K Padmakumar, Rajeev. R. Pattern of Distribution of Biopsied oral Lesions In A Tertiary Health Care Centre – A 10 Year Retrospective Study. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.9 (2017): 77-83

11. R Patel, Mian M, Robertson C, Pitts NB, Gallagher JE. Crisis in care homes: the dentists don't come. BDJ Open (2021) 7:20.

12. Dovigi EA, Kwok EYL, Eversole LR, Dovigi AJ. A retrospective study of 51,781adult oral and maxillofacial biopsies. The Journal of the American DentalAssociation 2016;147 (3): 170 -176.

13. Raju S. Ageing in India in the 21st Century: A Research Agenda. Mumbai: The Harmony Initiative; 2006. Available: http://harmonyindia.org/hdownloads/Monograph_FINAL.pdf.

14. National Sample Survey Organization. National Sample Survey, 60th Round, Report no. 507 (60/25.0/1). New Delhi: Ministry of Statistics and Programme Implementation, Government of India; 2006. Morbidity, Health Care and the Condition of the Aged.

15. Lena A, Ashok K, Padma M, Kamath V, Kamath A. Health and social problems of the elderly: A cross-sectional study in Udupi Taluk, Karnataka. Indian Journal of Community Medicine. 2009;34:131–134.

16. Dhanuthai K, Rojanawatsirivej S, Somkotra T, Shin HI, Hong SP, Darling M, Ledderhof N, Khalili M, Thosaporn W, Rattana-Arpha P, Saku T. Geriatric oral lesions: A multicentric study. GeriatrGerontol Int. 2016 Feb;16(2):237-43.

17. Silva LP, Leite RB, Sobral APV, Arruda JA, Oliveira LV, Noronha MS et al. Oral and Maxillofacial Lesions Diagnosed in Older People of a Brazilian Population: A Multicentric Study. Journal of the American Geriatrics Society 2017; 65 (7): 1 -5.

18. Patil S, Doni B, Maheshwari S. Prevalence and distribution of oral mucosal lesions in a geriatric Indian population. Can Geriatr J. 2015 Mar 31;18(1):11-4.

19. Razak PA, Richard KM, Thankachan RP, Hafiz KA, Kumar KN, Sameer KM. Geriatric oral health: A review article. J Int Oral Health 2014;6(6):110-6.

20. Cheruvathoor DD, Thomas V, Kumar NR, Jose M. High prevalence of oral mucosal lesions in elderly: Call for revolutionizing geriatric dental care strategies. J Family Med Prim Care 2020;9:4375-80.

21. Modi D, Laishram RS, Sharma LD, Debnath K. Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. J Med Soc 2013;27:199-202.

22. Alhindi NA, Sindi AM, Binmadi NO, Elias WY. A retrospective study of oral and maxillofacial pathology lesions diagnosed at the Faculty of Dentistry, King Abdulaziz University. Clinical, Cosmetic and Investigational Dentistry 2019; 11:45 – 52.

23. Jones AV, Franklin CD. An analysis of oral and maxillofacial pathology found in adults over a 30-year period. J Oral Pathol Med 2006;35:392–401.

24. Barnes L, Eveson JW, Reichart P et al., eds. Pathology and Genetics of Head and Neck Tumours. Lyon: IARC Press, 2005.

25. Mujica V, Rivera H, Carrero M. Prevalence of oral soft tissue lesions in an elderly venezuelan population. Med Oral Patol Oral Cir Bucal. 2008 May1;13(5):E270-4

26. Correa L, Frigerio ML, Sousa SC et al. Oral lesions in elderly population: A biopsy survey using 2250 histopathological records. Gerodontology 2006;23:48–54

27. Sarini, J.; Fournier, C.; Lefebvre, J.L.; Bonafos, G.; Van, J.T.; Coche-Dequéant, B. Head and Neck Squamous Cell Carcinoma in Elderly Patients: A Long-Term Retrospective Review of 273 Cases. Arch. Otolaryngol. Head Neck Surg. 2001, 127, 1089–1092