

Assessment of Oral Health Status and its Correlates in Coastal Region of Kollam District, Kerala

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ABSTRACT

Introduction: Oral health status is affected by various socioeconomic factors like age, residential area, income, level of education, knowledge of oral health and practice of good oral health and behavioral factors such as tobacco use, alcohol consumption, poor diet, and exercise. Coastal community have lower socioeconomic status, literacy level and poor access to dental health care. They are also found to be associated with higher risk of adverse habits such as tobacco and alcohol use. There have been not much broad population based epidemiological studies about the oral lesions and its correlates in coastal areas of south Kerala. Hence, the present study was conducted with an objective to assess the oral health status and their associated factors among the coastal community in Kollam district, Kerala.

Materials and methods: A descriptive cross-sectional survey was conducted in 329 individuals residing in the coastal areas of 2 wards in Kollam district. The proforma included information on demographic details, habits (tobacco, alcohol), oral hygiene practices, periodontal and dental status, health seeking behaviour of the participants and the presence, and location of oral mucosal lesions using WHO Oral Health Assessment Form (2013).

Results: Major population (69.3%) were residing in the periurban area of Kollam corporation. Most of them were skilled fishery and agricultural workers. About 59% of individuals were grouped under lower socioeconomic status. Among the study participants, more than half of the participants had of habit of tobacco use in any form- smoking/smokeless tobacco and drinking alcohol. Most of them had sought dental aid in the last one year. There is a significant association found between the level of socioeconomic status and dentition status, community periodontal index and incidence of oral mucosal lesions with a p value of $P < 0.01$. Moreover, a strong association was also found between deleterious oral habits and oral health factors. Among the study participants 31.4% of individuals had recorded oral mucosal lesions such as leukoplakia, lichen planus, candidiasis, oral squamous cell carcinoma and ulcerative/aphthous lesions, of which 30.1% of participants had lichen planus, and 20.4% had leukoplakia.

Conclusion: The present study suggested that the study population had moderately high prevalence of oral mucosal lesions, periodontal diseases which is strongly associated with inadequate oral hygiene practices and adverse habits. Extensive dental treatments and effective oral health education and awareness programs are needed to improve the general and oral health of the coastal community.

Key words: oral health, coastal community, oral mucosal lesions

INTRODUCTION

Oral health is essential to general health and quality of life. It is affected by various socioeconomic factors like age, residential area, income, level of education, knowledge of oral health and practice of good oral health and behavioral factors such as tobacco use, alcohol consumption, poor diet, and exercise.¹ Tobacco use and alcohol consumption are positively associated with oral mucosal lesions such as OSMF, leukoplakia, oral lichen planus, which have the potential for malignant transformation.²

Kerala has achieved significant improvement in social indicators like literacy and health. Still there exists certain marginalized communities such as coastal community with lower socioeconomic status, literacy level and poor access to dental health care.³ Fishermen in particular are at higher risk due to high prevalence of tobacco use and alcohol consumption which doubles the risk of illness.^{6,11,12} The oral health status of the coastal population in south Kerala is generally poor, with high prevalence of dental caries, periodontal diseases and oral mucosal lesions^{6,9}. To the best of our knowl-

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edge, population- based studies focusing solely on coastal areas of Kollam district are limited. Hence the present study was conducted with an objective to assess the prevalence of oral lesions and their association with sociodemographic, deleterious habits and oral health factors among the coastal community in Kollam district.

Table 1: Age Group, Gender, Location, Educational Status, Occupation, Income And Socioeconomic Status of The Participants

Age	age group	percentage
	20-30	17.6
	31-40	21.9
	41-50	21.9
	51-60	20.1
	61-70	11.6
	71-80	6.9
Gender	Gender	percentage
	Male	51.1
	Female	48.9
Location	Location	percentage
	urban	21.9
	Periurban	69.3
	Rural	8.8
Educational status	Educational status	percentage
	Professional	0.3
	Graduate	6.4
	Diploma	9.4
	high school certificate	36.2
	middle school certificate	11.6
	primary school certificate	34.3
Occupation	Occupation	Percentage
	Technicians	0.9
	Clerks	2.1
	Skilled Workers	7.9
	Skilled Fishery And Agricultural Workers	38.3
	Trade Workers	7.6
	Machine Operators	5.8
Income	Income	percentage
	29,200 –39,032 (6)	0.9
	19,516–29,199 (4)	9.4
	11,708–19,515 (3)	27.9
	3,908–11,707 (2)	43.5
	≤ 3,907 (1)	18.2
Socioeconomic status level	Socioeconomic status level	percentage
	Upper (I)	0.6
	Upper Middle (II)	1.2
	Lower Middle (III)	37.1
	Upper Lower (IV)	59
	Lower (V)	2.1

MATERIALS AND METHODS

A cross sectional study was conducted among individuals residing in coastal areas of Pallithottam (ward no.47) and Port (ward no.48) of Kollam Corporation after obtaining Ethical approval from the Institutional Ethics committee (AEC/REV/2020/10). Permission for the data collection was obtained from the Kollam Corporation. Informed consent was obtained from the study participants. The household list of two wards constituted the sampling frame. A sample population of 329 was selected by systematic random sampling using a sample size formula of $4pq/I^2$.⁶ Around 83 households were selected from each ward, considering 2 individuals each from a household. The sample interval was estimated by dividing the total number of households in the population and number of households needed for sample which was calculated to be 4. The first household was randomly selected between 1 and 4 and then every 4th household is selected. Subjects above 18 years of age with dental caries, periodontal diseases and oral mucosal lesions residing in Port and Pallithottam wards of Kollam Corporation residing in 2 coastal wards were included in the study.

Personal data, details regarding oral health status and its correlates were recorded using structured questionnaire. Oral examination to assess the oral health status was performed in a systematic manner by a dental professional using WHO Oral Health Assessment Form (2013).⁴ The study assessed the socioeconomic status level using modified Kuppuswamy socio-economic status scale by including index parameters like education, occupation, and total monthly income of the participants.⁵

DATA ANALYSIS

Data was analyzed using R software. Frequency, percentage, and prevalence were analyzed from the data collected. The

Table 2: Dietary Habits of The Participants

Do you eat vegetables (other than roots and tubers) daily?	percentage
Yes	44.7
No	55.3
Do you eat fish daily?	percentage
Yes	66.3
No	33.7
How spicy is the food that you consume?	percentage
Less	29.1
Normal	57.4
High	13.3
How often do you consume sweets/sweetened food or drinks(other than tea or coffee)	percentage
Daily	39.8
Atleast once a week	33.4
Less than once weekly	26.7



association of sociodemographic and deleterious habits with oral health factors among the coastal community was proved using Chi-square test. P value < 0.05 was considered as statistically significant.

RESULTS

The present study assessed the oral health status and prevalence of periodontal diseases and oral mucosal lesions among the coastal community and the association of oral health factors with sociodemographic and deleterious habits.

Characteristics of the sample

Majority of the study population (69.3%) were residing in the periurban area of Kollam corporation. Among them 38.3%

Table 3: Deleterious Habit of Chewing, Smoking and Drinking Alcohol

Deleterious habit of chewing tobacco	Percentage	Chewing	Percentage
with chewing	58.6	Pan with tobacco	49.7
without chewing	41.3	Pan without tobacco	0.5
Lime plus tobacco Pan Masala		Areca nut plus tobacco	26.4
		8.3	
		15.0	
Deleterious habit of smoking	Percentage	Smoking	percentage
with habit	55.9	Bidi	25.5
		Cigarette	72.4
		44.1	
without habit			
Alcohol Drinking	percentage	Toddy	40.5
with alcohol drinking	57.8	Foreign liquor	43.2
without alcohol drinking	42.2	Beer	16.3

Table 3A: Oral Hygiene Practices

1. How often do you brush/clean your teeth?	1. Once daily- 77.2% 2. Twice daily- 22.8%
2. What you use to clean your teeth ?	Toothbrush- 90.3% Others- 9.8%
3. What is the cleaning agent that you use to clean your teeth?	1. Tooth paste- 52.6% 2. tooth powder- 32% 3. ash/salt- 14%

were skilled fishery and agricultural workers. About 59% of them were under lower socioeconomic status [table 1].

The dietary habits such as consumption of sweetened food/drinks, frequency of intake of vegetables and fish in their routine diet, oral hygiene practices such as frequency and mode of cleaning teeth and the type of cleaning agents, deleterious habits such as smoking, chewing and alcohol consumption were assessed and are given in table 2 and 3. More than half of the study population had the habit of chewing tobacco in various forms and alcohol consumption. Majority of the participants (72.4%) had the habit of smoking cigarettes. Most of the study participants brushes/clean their teeth once daily, of which 90.3% uses toothbrush for cleaning their teeth. The perception of the participants regarding oral health and their associated dental problems and the health seeking behavior of the participants for medical and dental assistance given in Table 4. About 52.9% of individuals had dental health problem in the last one year and of which 57.4% of them sought dental aid.

Oral health status

The oral health factors such as dentition status, periodontal status assessed using community periodontal index and oral mucosal lesions assessed. Association of sociodemographic status and deleterious habits with oral health factors such as dentition status, periodontal diseases and oral mucosal lesions done using chi square test. There is a significant association found between the level of socioeconomic status, community periodontal index and incidence of oral mucosal lesions with a p value of $P < 0.01$. Moreover, a strong association was also found between deleterious oral habits and oral health factors such as dentition status, periodontal diseases and oral mucosal lesions with a p value of $P < 0.01$ [table 5]. Out the 329 participants, 24.6% and 23.4% of them had missing teeth due to caries

Table 4: Health Seeking Behaviour

Health seeking behaviour	Percentage
1. Did you visit any health care professional in the last one year?	
Yes	67.1
No	32.9
2. yes, was it a	
Medical doctor	53.4
Dentist	33
Others	13.6
3. Did you have any dental health problem in the last one year?	
yes	52.9
No	47.1
4. For that did you visit a dentist in the last one year?	
Yes	57.4
No	42.6



and periodontal diseases respectively (Graph 1), 44.7% of individuals had periodontal pocket of 4-5mm depth with a community periodontal index score of 3 (Graph 2) of which, 35.9% had recorded an attachment loss of 4-5mm (graph 3). 31.4% of individuals had oral mucosal lesions such as leukoplakia, lichen planus, candidiasis, oral squamous cell carcinoma and ulcerative/aphthous lesions, of which 30.1% of participants had lichen planus and 20.4% had leukoplakia (Graph 4). Half of the oral mucosal lesions were found on buccal mucosa.

Graph 1: DENTITION STATUS

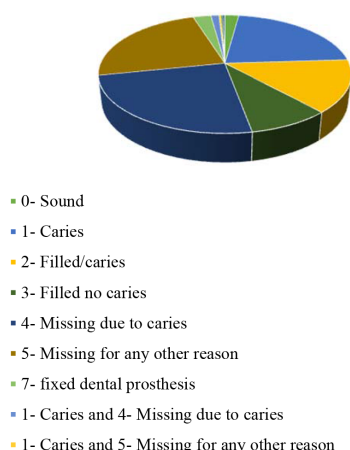


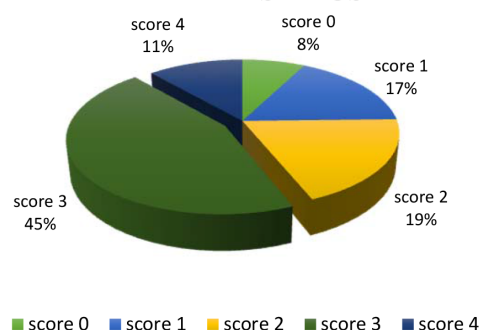
Table 5: Association of socioeconomic status and deleterious habits with oral health status

VAR IABLES	CHI-SQUARE	P-VAL-UE	Contin-gency coefficient
SES v/s dentition status	71.92	<0.01	0.42
SES v/s Community peri-odontal index	48.47	<0.01	0.36
SES v/s Oral mucosal lesions	49.90	<0.01	0.36
Smoking v/s dentition status	137.06	<0.01	0.54
Smoking v/s Community periodontal index	38.18	<0.01	0.32
Smoking v/s Oral mucosal lesions	69.79	<0.01	0.42
Chewing v/s dentition status	85.79	<0.01	0.46
Chewing v/s Community periodontal index	115.87	<0.01	0.51
Chewing v/s Oral mucosal lesions	198.24	<0.01	0.61

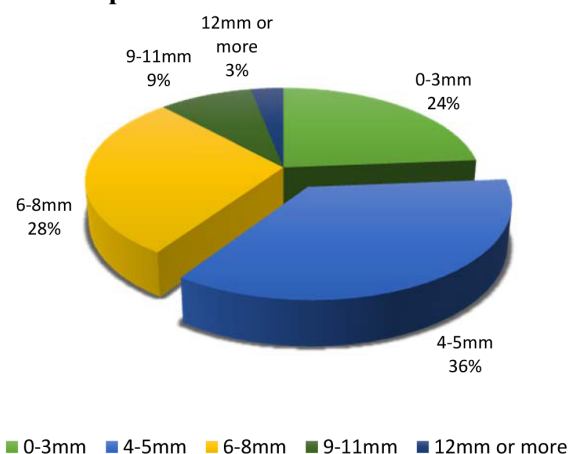
DISCUSSION

Fishing is a hazardous blue collar occupation involving stress, irregular diet, tobacco use, alcoholism, and deleterious habits. Coastal community has lower socioeconomic status which results in poor oral hygiene that may influence general and oral health.⁶ The discrepancy in oral health status is highly dependent on factors like social work, educational status, income and geographic location.⁷ The present study assessed the oral health status and their association with sociodemographic and deleterious habits among the coastal community.

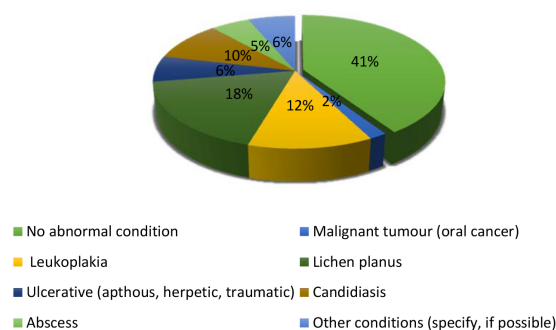
Graph 2: COMMUNITY PERIODONTAL STATUS



Graph 3: LOSS OF ATTACHMENT



Graph 4: ORAL MUCOSAL LESIONS



The study assessed the socioeconomic status of the study participants, out of which 59% of individuals were grouped under lower socioeconomic status which is in accordance with the study conducted by Susan et al⁹ that may influence their oral hygiene practices. The study showed higher prevalence of tobacco chewing (58.6%), alcohol consumption (57.8%) and habit of smoking (55.9%) in comparison to the study by Anzil et al (2016) which found an overall prevalence of smoking, alcohol consumption, and gutka chewing to be 24.3, 48.85, and 32.4% respectively¹⁰. Pan masala usage is prevailing inspite of ban on the usage in this part of the country. The prevalence of pan masala uses in the study by Sandhya et al was 28.3%; and about 40.4% of the study population was aware about the fact that pan masala causes oral cancer.¹¹ Rani Catherine et al (2020) analyzed health problems encountered by alcoholic fishermen in south Kerala and found 88% had habit of alcohol consumption among which 66% of them experienced health problems.¹² Hence tobacco use, and alcohol consumption adversely influences the oral health status of coastal community.^{11,12,13}

The study also assessed the awareness, perception and health seeking behavior of the participants. Majority of the participants visited dental care professionals and sought dental aid which is in accordance to study by Neethiselvan et al which (2021) assessed health seeking behavior among fishermen community and found that more than half of fishermen community approached health care facility during illness. The study suggested to strengthen the public health care services in coastal community to promote health seeking behavior.¹⁴

The present study had also observed a significant association found between the level of socioeconomic status and dentition status, community periodontal index and incidence of oral mucosal lesions. Varkey et al observed a significantly higher caries prevalence (82%) and poor oral hygiene status (46%) among fishermen population and they were found 2.08 times more prone to dental caries than non-fishermen.¹⁵ This may be attributed to better health seeking behavior of the coastal community studied. A study by Lodagala et al observed a strong association between tobacco usage and dental caries (46.5% of tobacco users had dental caries) among fishermen community of south Indian states.¹⁶ Several authors have assessed the oral health status and sociodemographic parameters among the coastal community and found a significant association between the two.^{17, 18, 19, 20}

The study found that periodontal health status was relatively poor with higher prevalence of periodontal diseases. Kailash Asawa et al assessed the oral health status of fishermen community of Kutch district, Gujarat and found poor periodontal health with a relatively lower prevalence of periodontal pocket (26.5%) and attachment loss (29.2%) when compared to the present study.¹⁷ A study by Anzil et al found periodontal disease is highly prevalent in coastal community and lack of knowledge regarding the oral health practices ends in poor oral health conditions among the community.²¹ Sreedhar A et al (2018) found a very high prevalence of periodontal diseases (66.3%) among fishermen of Marad Unit- Kozhikode, Kerala and concluded that lack of oral hygiene awareness and excessive consumption of tobacco and smoking resulted in poor

periodontal health status of the fisherman population.²² The previous studies have concluded that there is a constant need to improve the periodontal health of fishermen community and oral health education and awareness programmes about the ill effects of the deleterious habits had to be planned and implemented.^{21,23,24} Chandroth et al assessed the prevalence of oral mucosal lesions among fishermen in Kutch coast, Gujarat and oral leukoplakia (13.8%) was found to be the most prevalent lesion and the most affected site were lips (53.4%) and vermilion border (23.5%).²⁵ There is a significant association found between the level of socioeconomic status and incidence of oral mucosal lesions.^{10, 25, 26}

CONCLUSION

Hence present study showed a significant association between the socioeconomic status, deleterious habits and oral health factors among the coastal population. This indicates the need for enhancing oral screening and oral health awareness program among the coastal community. The necessity for regular dental checkup and dental treatment to be provided through established health centres in the coastal region is emphasized. Individuals residing in coastal areas of only two wards of Kollam corporation were included in the present study. The study did not assess the treatment needs of the study participants. Larger population including all wards in the coastal area in Kollam corporation need to be studied for the better improvement of oral health status. Extensive dental treatments and effective oral health education and awareness programs are needed to improve the general and oral health of the study population.

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