

# EXPLORING ORAL HYGIENE PRACTICES AND PERIODONTAL STATUS OF FISHERMEN POPULATION OF MAHE- A CROSS SECTIONAL STUDY

## ABSTRACT

**Background:** Oral Health Status of humanity is largely reliant on factors like social status, cultural values, standard of living, habits etc. Poor oral hygiene paired with disturbances in social environment can incline to various oral health problems. Fishermen are people living in isolation with their traditional values, practices, beliefs and myth intact. The fisher folk community of our country belongs to lower socioeconomic class, they reside in defined geographic area along the coastline. Objectives: The objectives of the study were to assess the oral hygiene practices and periodontal status of the fisher folk communities of Mahe.

**Methods:** The study was conducted among a proportionate sample of 362 fishermen population in 15 wards of entire Mahe municipality. Prior permission was obtained from secretary of fishermen co-operative society. The oral health practices were measured using a pretested questionnaire. The periodontal status was recorded on the WHO oral health assessment form 1997 (modified) and the examination was carried out under natural light by using mouth mirrors and CPI probe.

**Results:** Among the study participants, only 37.84% had healthy periodontal status, 45.3% used tooth brush and tooth paste for cleaning their teeth, 53.3% brushed once daily, 79.2% had mouth rinsing habit after eating, 91.9% had tongue cleaning habit, 39.7% used tooth picks as oral hygiene aids, 45.2% brushed their teeth both at morning and night.

**Conclusion:** Periodontal disease which is highly prevalent in the community can be minimized by appropriate interventions such as oral health education and oral prophylaxis. Regarding oral hygiene practices, the use of toothbrush and toothpaste was reported by the majority, but there is a lack of knowledge among them about the proper hygiene practices.

**Keywords:** Fishermen, Oral hygiene, Periodontitis, Mahe

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## INTRODUCTION

Oral health status is the cumulative result of the progressive and relatively restful phases of oral diseases during a life time. The variations in oral health status of mankind is largely dependent on factors like social status, cultural values, standard of living habits and geographic location.<sup>[1]</sup>

In India, various surveys conducted have revealed an increasing trend of dental caries in the past four decades. It is said that every second person above the age of 35 years has gum pockets. In India 85% of total teeth extracted after 30 years are due to periodontal diseases.<sup>[2]</sup>

Almost eighty per cent of the Indian population reside in rural areas and have no access to dental care and the majorities are illiterate.<sup>[3]</sup>

One such group, which belongs to lower socio-economic class in India, is the fisher folk community. The fisher folk community of our country belongs to lower socioeconomic class, they reside in defined geographic area along the coastline. Fishing is still a sizable industry and one of the most dangerous occupations. It is said that fisher folk use tobacco products to avoid sea sickness and to stay awake during the night, while working at sea and have the habit of consuming alcohol after a day's hard work. Tobacco use in various forms including smoking

and chewing has been an integral part of the community life in Kerala for centuries.<sup>[4]</sup>

Most of the people in this community have only minimal education, low income and are unaware of the effects of risk factors like tobacco and alcohol use on oral health. The diet of fisher folk usually lacks in fruits and vegetables and meals are eaten at very erratic intervals. Their unusual working patterns involving long periods of time at sea and only short period of time on shore make fishermen difficult to contact thereby making them a challenging study population. So, very few studies have been conducted in this community.

Mahe, also known as Mayyazhi is one of the region of the Union Territory of Pondicherry, is having a coastal line of 1.37 Km. and 15 Sq.Kms. stretches on the West Coast with fishermen population of about 6000.<sup>[5]</sup>

Hence, this study is undertaken to assess the periodontal status and oral mucosal conditions of fishermen population of Mahe and to provide a baseline data for planning oral health programmes.

## Materials and Methods

The present epidemiologic survey was conducted to find out the oral hygiene practices and to assess the periodontal status of fishermen population of Mahe.

### Profile of study area

Mahe (Mayyazhi) is a land titled as the eye brow of Arabian sea, which is very small and situated on the estuary of the Mayyazhi river and Arabian Sea. The district satiates an intelligent tourist, Indian, as well as foreign. Mahe is a tiny point in the Geographical map of Kerala, the million earner for the distant Pondicherry Government, 630 kms away from Pondicherry.

In 2011, Mahe had population of 41,934 of which male and female were 19,269 and 22,665 respectively. In 2001 census, Mahe had a population of 36,828 of which males were 17,153 and remaining 19,675 were females.<sup>[6]</sup>

Dental needs of the population are met by one private institution, one community health centre and private practitioners. The study was conducted in selected villages of Mahe.

### Study population

The study population consists of individuals of age group 15-24, 25-34, 35-44, 45-54. All households of fisher folk communities residing at defined geographic area of Mahe seafront, were included in the study.

### Method of Collection of Data:

The study was conducted on September 2012. Participants were members of the rural fishing population in Mahe, Union territory of Pondicherry, India who were present and agreed to examination at their homes or places of work (on the sea side). Thirty three subjects, mostly aged people, refused to participate in the study due to the fear of being examined by a dentist. All the fishermen were contacted at their houses by a house to house survey. Each one was explained about the investigator's visit. After getting consent, each person was interviewed using

a pretested proforma. After the interview they were examined by using mouth mirror, periodontal probe and torch light. For each person separate mouth mirror and periodontal probe were used. After the day's interview the Instruments were collected separately and sterilized in a steam sterilizer.

The WHO Oral Health Assessment Form (1997)<sup>[6]</sup> was reproduced from the "Oral Health Survey-Basic Methods 4th Edition and was printed. Clinical examination was done to assess periodontal status.. Informed consent was obtained prior to examination of each subject. One member of the community who was well versed in conversing with the members of the community and also in locating the areas where the community was situated was also present during the period of the study. Ethical clearance was obtained prior to conducting the study from the Institutional review board, Coorg Institute of Dental Sciences Virajpet, Karnataka, India.

### Sampling method

The sampling technique followed is stratified sampling with pro-Portional allocation. Total number of fishermen in Mahe is 6000.<sup>[7]</sup> Entire Mahe region is a single municipal corporation consist of 15 wards. A

proportionate sample of 362 was taken from these 15 wards, Parakal (22), Choodikotta(14), Valvil(5), Mundock(10), Manjakkal (12), Chalakkara-South)(18), Cherukallayi(18), Chalakkara-North)(38), Palloor- South-West(16), Palloor-South-East(50), Palloor-North-East(79), Palloor-North-West(25), Pandakal-South(12), Pandakal - Central(36), Pandakal-North(7)

### Questionnaire

A questionnaire consisting of 9 questions were used in the survey. The first part of questionnaire was about the personal data and second part collected information regarding oral hygiene practices. The questionnaire was constructed and administered in local language (Malayalam). The content validity and face validity of the questionnaire was assessed by a panel of six experts, 4 of dental educators and 2 of the legal representatives. The reliability analysis of the final questionnaire yielded a Cronbach's alpha of 0.75. The survey data so obtained were analyzed using SPSS software (Version17) for windows. Descriptive statistics were used to summarize the results.

**Table-1: Distribution of study subjects by age and sex**

Age In years	GENDER				Total	%
	Male		Female			
	N	%	N	%		%
15-24	66	18.2	21	5.8	87	24.3
25-34	87	24	34	9.3	121	33.4
35-44	64	17.6	26	7.1	90	24.8
45-54	49	13.5	15	4.1	64	17.6
Total	266	73.3	96	26.3	362	100

Among the 362 fishermen, 87(24.3%) belonged to the age group 15-24 years, 121(33.4%) were in the age group 25-34 years, 90(24.8%) were in the age group 35-44 years and 64(17.6%) belonged to the age group 45-54 years.

**Table-2 Distribution of study subjects by level of education**

Level of education	Number of subjects	%
Illiterate	78	21.5
Primary school	55	15.1
Middle school	56	15.4
High school	49	13.5
Pre University	43	11.8
Diploma	57	15.8
Degree	24	6.9

Among the 362 subjects, 78(21.5%) were illiterate, 55(15.1%) had primary school education, 56(15.4%) had middle school education, 49(13.5%) had high school education, 43(11.8%) studied upto high school, 57(15.8%) had a diploma and 24(6.9%) possessed a degree.

**Table-3: Distribution of study subjects by material used and frequency of cleaning teeth**

Mode of cleaning of teeth	Number of subjects (%)	Frequency of cleaning teeth	Number of subjects (%)
Tooth brush and tooth paste	164(45.3)	Once daily	193 (53.3)
Tooth brush and tooth powder	69(19.6)	Twice daily	90(24.8)
Finger and Tooth Powder	77(21.2)	More than twice daily	21 (5.8)
Neem sticks	43(11.8)	After every meal	41 (11.3)
Other methods (charcoal)	9(2.4)	Don't clean every day	17 (4.6)

Among the study participants, 164(45.3%) used tooth brush and tooth paste for cleaning their teeth, 69(19.6%) used tooth brush and tooth powder, 77(21.2%) used finger and tooth powder, 43(11.8%) used neem sticks and 9(2.4%) used charcoal as their oral cleansing aids. Among the study subjects, 193(53.3%) brushed once daily, 90(24.8%) brushed twice daily, 21(5.8%) brushed more than twice daily. 41(11.3%) of the participants brushed their teeth after every meal and 17(4.6%) of the participants didn't have the habit of cleaning their teeth daily.

**Table-4: Distribution of study subjects (using tooth brush) by frequency of changing their tooth brush**

Frequency of changing toothbrush	Number of subjects (%)
Once in 3 months	0(0)
Once in 6 months	73(31.3)
Yearly once	89(38.1)
When bristles get frayed up	60(25.7)
Don't know exactly	11(4.7)
Total	233(64.3)

Among the study participants using tooth brush for cleaning their teeth, none of them changed their brush within 3 months, 73(31.3%) changed their brush once in six months, 89(38.1%) changed their brush yearly once. 60(25.7%) changed their brush only when its bristles get frayed up and 11(4.7%) didn't know exactly the frequency of changing their brush.

**Table- 5 :Distribution of study subjects (using tooth brush) by frequency of changing their tooth brush**

Frequency of changing toothbrush	Number of subjects (%)	(%)
Once in 3 months	0	0
Once in 6 months	73	31.3
Yearly once	89	38.1
When bristles get frayed up	60	25.7
Don't know exactly	11	4.7
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**Table 6: Distribution of study subjects (using tooth paste) according to the application of paste on brush**

Quantity of paste applied	Number of subjects (%)
Full length of bristles	32(19.5)
Half-length of bristles	98(59.7)
Pea sized amount	34(20.7)
Total	164(45.3)

Among the study subjects using tooth paste, majority of them about 98(59.7%) applied tooth paste in half length of bristles, 32(19.5%) applied tooth paste in full length of bristles and 34(20.7%) used a pea sized amount of tooth paste.

**Table-7: Distribution of study subjects by mouth rinsing and tongue cleaning habit after eating**

Mouth rinsing habit	Number of subjects (%)	Tongue cleaning habit	Number of subjects (%)
Yes	287(79.2)	Yes	333(91.9)
No	75(20.7)	No	29(8.1)

Among the fishermen, 287(79.2%) had mouth rinsing habit after eating against 75(20.7%) with no such habit. Among the fishermen, 333(91.9%) had tongue cleaning habit against 29(8.1%) with no such habit.

**Table-8: Distribution of study subjects according to use of other oral hygiene aids**

Other oral hygiene aids used	Number of subjects	%
Mouth wash	29	8.1
Dental floss	47	12.9
Tooth picks	144	39.7
None	142	39.2

Among the study subjects, 144(39.7%) used tooth picks, 47(12.9%) used dental floss, 29(8.1%) used mouth wash as oral hygiene aids. About 142(39.2%) of the subjects did not use any of these oral hygiene aids.

Table-9: Distribution of study subjects according to the brushing time and duration of brushing.

Brushing time	Number of subjects (%)	Duration of brushing	Number of subjects (%)
Morning	101(27.9)	Less than one minute	29(8.1)
Noon(after lunch)	11(3.3)	One minute	132(36.4)
Before going to bed	87(24.3)	Two minutes	93(25.6)
Morning and night	163(45.2)	More than two minutes	108(29.8)

Majority of the fishermen 163(45.2%) brushed their teeth both at morning and night, 101(27.9%) of the subjects brushed their teeth during morning, 87(24.3%) brushed their teeth before going to bed and 11(3.3%) brushed their teeth after lunch. Among the study subjects, 132(36.4%) brushed their teeth for a minute, 108(29.8%) brushed their teeth for more than two minutes and 93(25.6%) of the subjects brushed their teeth for two minutes. 29(8.1%) of the subjects brushed for less than a minute.

Table-10: Age wise distribution of Study Population Based on the Periodontal Status

Age Groups in Years	Healthy periodontal tissue		Bleeding		Calculus		Pocket 4-5 mm		Pocket 6 mm or more		Excluded sextant	
	N	%	N	%	N	%	N	%	N	%	N	%
15-24	56	64.3	6	6.8	25	28.7	0	0	0	0	0	0
25-34	48	39.6	18	14.8	40	33.5	15	12.3	0	0	0	0
35-44	28	31.1	20	22.2	24	26.6	10	11.1	4	4.4	4	4.4
45-54	5	7.8	15	23.4	25	39.6	7	10.9	5	7.8	7	10.9

Among the study participants aged 15-24 years, fifty six (64.3%) had healthy periodontal tissue, six (6.8%) had bleeding and twenty five (28.7%) had detectable calculus. None of the participants had shallow or deep pockets. Among study participants aged 25-34 years, forty eight (39.6%) had healthy periodontal tissue, eighteen (14.8%) had bleeding and forty had detectable calculus (33.5%). Fifteen participants (12.3%) showed the presence of shallow pockets (4-5mm). None of them had deep pockets. Among study participants of aged 35-44 years, twenty eight (31.1%) had healthy periodontal

tissue, twenty (22.2%) had bleeding, twenty four showed the presence of detectable calculus (26.6%). Ten (11.1%) had shallow pockets (4-5mm), four (4.4%) had deep pockets (6mm or more) and four (4.4%) sextants were excluded. Among study participants aged 45-54 years, five (7.8%) had healthy periodontal tissue, fifteen (23.4%) had bleeding and twenty five (39.6%) had detectable calculus. Seven (10.9%) had shallow pockets (4-5mm), five (7.8%) had deep pockets (6mm or more) and seven (10.9%) sextants were excluded.

TABLE 11: Age wise distribution of the Study Population Based on the Loss of Attachment (LOA)

Age Groups in Years	0-3 mm		4-5 mm		6-8mm		9-11 mm		12 mm or more		Excluded sextant	
	N	%	N	%	N	%	N	%	N	%	N	%
15-24	79	90.8	68	9.1	0	0	0	0	0	0	0	0
25-34	110	90.9	10	8.2	1	0.8	0	0	0	0	0	0
35-44	73	81.1	11	12.2	1	1.1	1	1.1	0	0	45	4.4
45-54	37	57.8	16	25	3	4.6	1	1.5	2	3.1		7.8

Among the study participants of age group 15-24, seventy nine (90.8%) had 0-3mm deep pockets, eight (9.1%) had 4-5mm deep pockets and none of them had pockets of 6-8mm, 9-11mm,12mm or more deep and no sextants were excluded. Among the study participants of age group 25-34, one hundred and ten (90.9%) had 0-3mm deep pockets, ten (8.2%) had 4-5mm deep pockets, one(0.8%) had 6-8mm deep pockets and none of them had pockets of 9-11mm,12mm or more deep and no sextants were excluded. Among the study participants of age group 35-44, seventy three (81.1%) had 0-3mm

deep pockets, eleven (12.2%) had 4-5mm deep pockets, one(1.1%) had 6-8mm deep pockets, one(1.1%) had 9-11mm deep pockets and none of them had pockets of 12mm or more and four(4.4%) sextants were excluded. Among the study participants of age group 45-54, thirty seven(57.8%) had 0-3mm deep pockets, sixteen(25%) had 4-5mm deep pockets, three(4.6%) had 6-8mm deep pockets, one(1.5%) had 9-11mm deep pockets, two(3.1%) had 12mm or more deep pockets and five(7.8%) sextants were excluded.

## RESULTS

The population consisted of 266 males and 96 females. The population under study consisted of a majority of illiterates living in isolated settlements away from the general population. Most of the people in the elderly age groups neither remembered their exact date of birth nor were they clear about their chronological age. Since ages reported by the elderly were not found to be reliable, no further stratification in age groups were done for those above 55 years in this study. Among the study participants of age group 15-24, seventy nine (90.8%) had 0-3mm deep pockets, eight (9.1%) had 4-5mm deep pockets and none of them had pockets of 6-8mm, 9-11mm,12mm or more deep and no sextants were excluded. Among the study participants of age group 25-34, one hundred and ten (90.9%) had 0-3mm deep pockets, ten (8.2%) had 4-5mm deep

pockets, one(0.8%) had 6-8mm deep pockets and none of them had pockets of 9-11mm,12mm or more deep and no sextants were excluded. Among the study participants of age group 35-44, seventy three (81.1%) had 0-3mm deep pockets, eleven (12.2%) had 4-5mm deep pockets, one(1.1%) had 6-8mm deep pockets, one(1.1%) had 9-11mm deep pockets and none of them had pockets of 12mm or more and four(4.4%) sextants were excluded. Among the study participants of age group 45-54, thirty seven(57.8%) had 0-3mm deep pockets, sixteen(25%) had 4-5mm deep pockets, three(4.6%) had 6-8mm deep pockets, one(1.5%) had 9-11mm deep pockets, two(3.1%) had 12mm or more deep pockets and five(7.8%) sextants were excluded.

## DISCUSSION

Many studies have been undertaken to assess the

oral health status of various communities across the world, but there is a lacunae in literature on studies among fisher folk communities. This study was done to assess the oral hygiene practices and periodontal status as per CPI, loss of attachment. As of 2001 India census, Mahe had a population of 36,823, predominantly Malayalis. Males constitute 47% of the population and females 53%. Mahe has an average literacy rate of 85%, higher than the national average of 59.5%, with male literacy at 86% and female literacy at 85%.<sup>[4]</sup> But this study among fishermen shows that most of them were illiterate and only few possess a degree or a diploma.

A total of 362 subjects (266 males and 96 females) were examined according to the WHO, 1997, 'Basic oral health survey methods'. The study population was divided into four groups according to age. Totally valid comparisons of the present study with other studies is difficult due to scarcity of the studies reported in the similar population. However, an attempt has been made to compare with similar studies conducted in other population groups.

Oral hygiene practices are an important determinant of oral health and oral health is an important aspect of community health. In the present study, tooth brush was used as oral hygiene aids by 64.3% of the population. This was similar to the results of the survey conducted by Dental council of India, where nearly three- fourths reported the use of a tooth brush for cleaning teeth.<sup>[9]</sup> However, a study conducted by N. Saravanan et al to assess the oral health status and treatment needs of fishermen population in coastal region of Kerala showed fishermen about 88.7% use toothbrush as their oral hygiene aids.<sup>[10]</sup> Toothpowder was used as an oral hygiene aid by 40.3% of the subjects, which is similar to the findings of the survey conducted by Dental council of India<sup>[9]</sup>. Widespread availability of oral health care products, influence of mass media and better levels of education could all be reasons for increased use of toothbrush and toothpaste by the fisher folk community. Among the fishermen, 79.2% had mouth rinsing habit after eating. This is higher than the results of the survey conducted by Dental council of India, where half the respondents in the country, across ages and more in rural areas, always rinsed the mouth after eating.<sup>[9]</sup>

When the periodontal status of the subjects was considered, it was observed that the maximum number of subjects scoring 'healthy periodontal tissue' were found in the younger age groups and the value gradually increased as the age increases which is in accordance with the study conducted by M. Jagadeesan et al and Bhat M.<sup>[2,3]</sup>

Life style factors such as tobacco, alcohol consumption and pan chewing are found to influence periodontal health. The term "lifestyle" is taken to mean a general way of living based on the interplay between living conditions in the wide sense and individual patterns of behavior as determined by sociocultural factors and personal characteristics. People with an unhealthy lifestyle have a poor periodontal status because of their aberrant brushing habits and detrimental effects of smoking.<sup>[10]</sup> Further investigation is required to confirm the association of these factors with the poor periodontal health of the fisher folk community.

#### CONCLUSION

The present study had a validated measuring instrument but was limited by the illiteracy of subjects. Recommendations for future research include ensuring a larger sample size to allow for a better representation of the target population and to improve external validity of results in future study. It is recommended that young persons from the same community could be selected and trained to deliver dental health education to this community. Voluntary organizations need to render care to this rural depressed community. Periodontal disease which is highly prevalent in the community can be minimized by appropriate interventions such as oral health education and oral prophylaxis. Oral care should be available at their door steps by arranging frequent health care programmes. Oral health education should be given to the fishermen population about the oral health problems and also ill effects of pernicious habits like alcoholism, smoking, and chewing habits by the available public media such as FM Radio, and advertisements because of their isolation from the shore. The fishery departments may consider distribution of toothbrushes, fluoridated toothpaste, and mouth rinses at a subsidized rate for the fishermen population.



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