

Research Article

Oral Health Status and Treatment Needs of Fishermen Community of Kutch District, Gujarat, India.

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Abstract

Background: Fishing is one such hazardous occupation, which involves irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socioeconomic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health.

Objective: To assess the oral health status and treatment needs among fishermen population of Kutch District, Gujarat, India.

Methods: A descriptive cross-sectional survey was conducted to assess the oral health status of the Fishermen community of Mundra taluka of Kutch district, Gujarat, India from January 2013 to June 2013. An interview on the demographic profile followed a clinical examination for recording the oral health status, based on the World Health Organization guidelines. The Chi-square test, t-test, one-way Analysis of Variance and a Stepwise multiple linear regression analyses were used for the statistical analysis.

Results: Females had a significantly ($p=0.001$) greater prevalence of dental caries (87.6%) as compared to males. The mean number of healthy sextants (3.03 ± 2.65) and the mean DT (2.57 ± 1.63) were also significantly higher in females as compared to those in males ($p=0.001$). Extraction (66%) was the most prevalent treatment need followed by pulp care and restoration (63.9%). Oral Hygiene Practices and educational status for dental caries and periodontal disease were respectively identified as the best predictors.

Conclusion: The findings of the present study suggest that oral health status of fishermen population was relatively poor with high caries prevalence and poor periodontal health. In light of the high treatment needs of the study population, the health policy that emphasizes oral health promotion and prevention would seem more advantageous in addition to traditional curative care.

Key Words: Cross-sectional, fishermen, India, and oral health.

1. Introduction

Health implies to the relative absence of pain and discomfort and a continuous adaptation and adjustment to the environment to ensure optimal function. Health is multi-factorial, the factors which influence health lie both within the individual and externally in the society in which he or she lives. It is a truism to say that what man is and to what disease he may fall, victim depends on a combination of two sets of factors, his genetic and environmental factors to which he is exposed [1].

Each disease has its unique natural history, which is not necessarily the same in all individuals. Disease results from a complex interaction between man, agent and the environment. Disease arises when there is maladjustment of the individual with his environment. The health of workers on

a large measure will also be influenced by conditions prevailing at their work place. Example of one such occupation in which environment plays a major role is fishing. Fishing still remains a hazardous and stressful occupation as it presents difficult physical conditions, dislocation, isolation and less than ideal personal habits. Fishermen have prolonged hours of continuous work, which are found to be correlated with high cigarette and alcohol consumption.⁴ Diet is lacking in fruits and vegetables, and meals are eaten at very erratic intervals [3- 5].

Fishermen are prone to excess ultraviolet radiation due to constant exposure to sun. Statistical studies in the past have shown that fishermen are prone to develop skin and lip cancer. Previous studies have shown that subjective symptoms from the muscular-skeletal system] are common among fish-

ermen. Crepitations in the shoulder tend to be more common among the fishermen. This indicates the heavy dynamic work and prolonged static work.⁹ Osteoarthritis of the knee, among them may result from working and living in the vertical environment of a moving ship [6-10].

Various Studies have showed that high incidence of hypertension may be related to ischemic heart disease and cerebrovascular illness. This may be influenced by poor eating habits which includes higher sodium intake, accompanying high consumption of salted fish or to the higher prevalence of tobacco smoking, poor health awareness and other social and environmental factors which are common to Fishermen. Fluoride level is also high in some coastal areas excessive exposure of which can give rise number of adverse effects. These may range from mild dental fluorosis to crippling skeletal fluorosis as the level and period of exposure increases. Apart from this, there are reports that excess fluoride consumption promotes cancer, hip fracture, leads to still birth or birth defects and has detrimental neurological effects [11,12].

Fishing is one such hazardous occupation, which involves irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socioeconomic status and their illiteracy adds to their poor oral hygiene, which may influence general and oral health. Access of Fishermen to dental services is very limited making regular checkups and treatment of caries is difficult.¹³ Fishermen have poor oral health when compared with that of general population [10- 14].

Kutch is the largest District in India with a total area of 45652 sq. km. Kutch has 400 km coastline that constitute one-fourth of the Gujarat coastline and one-twentieth of India's coastline. The Kutch coast and fishing community are not well known in India. The relative remoteness of the Kutch coast and the low social, economic and political power of the fishing community have contributed to this state of affairs [15].

Despite of the dangerous nature of the fishing occupation, very little research has been conducted and reported on fishermen's health and safety. Even in India, research on this group of population is limited. So, the present study was executed to assess the oral health status and treatment needs of fishermen population in the coastal region of Kutch, Gujarat, India.

2. Material and Methods

2.1 Study Design, Study Population and Study Duration

A descriptive cross-sectional survey was conducted to assess the oral health status and treatment needs of the Fishermen community of Mundra taluka of Kutch district, Gujarat, India from January 2013 to June 2013.

2.2 Official Permission and Ethical clearance:

The study protocol was reviewed by the Ethical Committee of Pacific Dental College and Hospital and was granted ethical clearance. An official permission was obtained from the Chairman of Fisherfolk community of Kutch District, Gujarat, India.

2.3 Informed consent:

After explaining the purpose and details of the study, a written informed consent was obtained from all the subjects who were willing to participate.

2.4 Training and Calibration

Before the commencement of the study, single examiner was standardized and calibrated in the Department of Public Health Dentistry by the Head of Department to ensure uniform interpretations, understanding, and application of the codes and criteria for the diseases to be observed and recorded and to ensure consistent examination. The examiner first practiced the examination on a group of 10 subjects with a wide range of levels of disease conditions. Then the examiner applied the diagnostic criteria by examining a group of 20 subjects, with full range of disease condition, twice on successive days. The intra examiner reliability for DMFT (Decayed Missing Filled Teeth) and CPI (Community Periodontal Index) was assessed using Kappa statistics, which were found to be 0.71 and 0.75 respectively.

2.5 Inclusion Criteria

- Natives belonging to that area/community
- Those who were willing to participate.

2.6 Exclusion Criteria

- Those who were not willing to participate
- Those who had systemic diseases.

2.7 Proforma details

The proforma consisted of 3 sections

- General information
- Information about oral hygiene practices and adverse habits.
- Clinical parameters. (WHO 1997 'Oral Health Assessment form') [16].

General Information: Demographic data including name, age, gender, date of birth, education and marital status. Information on oral hygiene practices included type of cleaning and materials used for cleaning teeth. Adverse habits included smoking habits and tobacco chewing habits.

Clinical parameters assessed were Extra oral examination, Temporomandibular joint assessment, Oral mucosal lesions, Enamel opacities/Hypoplasia, Dental fluorosis, community periodontal Index, Loss of attachment, Dentition status and Treatment needs, Prosthetic status and needs, Dentofacial anomalies and Need for immediate care and referral.

2.8 Pilot Survey

A pilot study was carried out among 50 Fishermen subjects to determine the feasibility and practicability of the study and the time required for examination of each subject. It helped to know the practical difficulties while conducting the survey. It took around 15-20 minutes to assess each subject. The prevalence of dental caries, periodontal disease and dentofacial anomalies were found to be 70%, 88% and 40% respectively for Fishermen group. Based on the results of the pilot study sample size was found to be 1050 which was rounded off to 1100 for Fishermen group.

2.9 Sampling Design

Multi-stage simple random sampling was employed to select the study population.

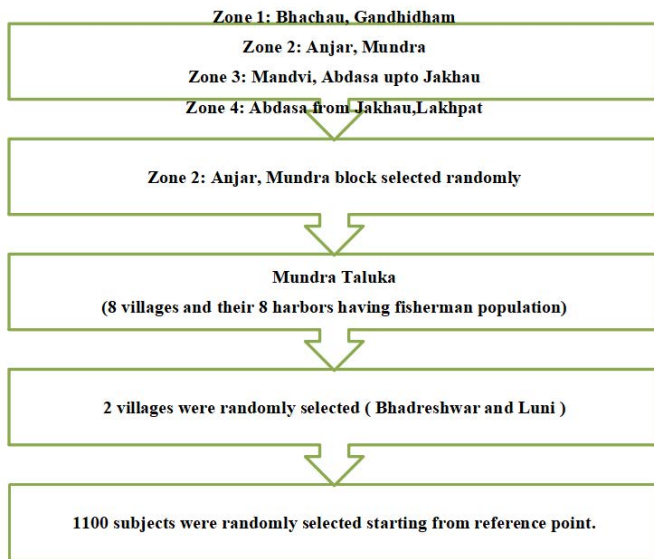


Figure 1: The four zones of the Kutch coast are divided as follows.

2.10 Clinical assessment and data collection

Clinical examination of subjects was carried out by the investigator himself. The oral health examination of subjects was

made as described by W.H.O. Oral Health Survey basic methods 1997 by using community periodontal probe and plane mouth mirror. Type III clinical examination was followed. The clinical examination was carried under the adequate natural broad day light in open premises of houses. On each day 30-35 subjects were examined. A recording clerk who was trained in the recording procedures, assisted in recruiting subjects for the clinical examination and completion of questionnaire. The recording clerk was seated close enough to the examiner so that instruction and codes could be easily heard and the examiner could see that findings were being recorded correctly. The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations. The statistical tests applied for the analysis were Pearson's chi-square test (2), t-test, One-way Analysis of Variance and Stepwise multiple linear Regression analysis. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

3. Results

Of the total 1100 fisherman subjects, 675 (61.3%) were males and 425 (38.6%) were females. Age range of fisherman population was 5-74 years and mean age was found to be 33.56 ± 13.40 years.

Table 1: Distribution of study population by age and gender

Age	Male		Female		Total	
	No.	%	No.	%	No.	%
5-14	92	65.2	49	34.7	141	12.8
15-24	17	40.4	25	59.5	42	3.8
25-34	262	62	160	37.9	422	38.3
35-44	185	61.2	117	38.7	302	27.4
45-54	78	66.6	39	33.3	117	10.6
55-64	16	59.2	11	40.7	27	2.4
65-74	25	51	24	48.9	49	4.4
Total	675	61.3	425	38.6	1100	100
Mean age \pm SD	33.35 ± 13.38		33.89 ± 13.44		33.56 ± 13.40	

SD; standard deviation

Ninety six percent subjects in fisherman population were Muslims. A higher proportion of participants were married (71%). Most of the participants have education up to middle level. 24% subjects used tooth brush and tooth paste/tooth powder. Majority (43.1%) of the subjects used chew sticks for cleaning their teeth. Males (50.5%) reported a significantly higher prevalence of adverse oral habits than females (49.2%).

Subjects with ulceration, sores, erosions or fissures, in the head, neck and limb region were found to be 13.7%. Mild fluorosis was the most prevalent ($n=275$; 25%) form of dental fluorosis followed by severe fluorosis ($n=251$; 22.8%). A sig-

nificant augmentation in dental fluorosis was seen up to 64 years of age.

Calculus and Shallow pockets (4-5 mm) were demonstrated among 25% and 26.5% of the study subjects respectively. Study subjects evidenced highest prevalence of deep pockets (6-8 mm) among older age groups (28.5%). Bleeding, shallow pockets and calculus were reported, with the highest prevalence among the 15-24 years, 5-14 years and the 35-44 years age groups respectively ($p=0.001$). Six to eight mm and 9-11 mm of loss of attachment was evidenced by 27.8% and 25.8% of the subjects respectively. Loss of attachment of 6-8 mm and 9-11 mm was significantly higher in prevalence among males ($p=0.01$).

The overall mean number of the sextants for bleeding was 0.38 ± 0.16 , that for the calculus was 2.28 ± 0.08 , that for the shallow pockets (4-5 mm) was 2.31 ± 0.51 and that for the deep pockets (6 mm or more) was 1.28 ± 0.06 respectively. The mean numbers of sextants of periodontal diseases were significantly higher among males than among females. The

mean numbers of the sextants which were affected by losses of attachment of 4-5 mm, 6-8 mm and 9-11 mm were 2.83 ± 1.73 , 1.39 ± 1.41 and 0.56 ± 0.43 respectively. The loss of attachment of 4-5 mm (3.15 ± 1.23) and 9-11 mm (1.56 ± 0.25) was highest among the 65-74 years age groups.

Table 2: Mean Number of Sextants Affected by Periodontal Disease According to Gender.

Variables	Community Periodontal Index score n (%)					
	Healthy	Bleeding	Calculus	Pocket (4-5 mm)	Pocket (6 mm or more)	Excluded sextant
Age group (years)						
5-14	0	1.10 ± 0.06	2.38 ± 1.46	1.38 ± 0.70	$.24 \pm 0.08$	0
15-24	0.25 ± 0.06	0.81 ± 0.03	2.21 ± 1.50	1.12 ± 0.43	0.33 ± 0.08	0
25-34	0.68 ± 0.02	0.76 ± 0.04	2.61 ± 1.43	1.89 ± 0.13	0.20 ± 0.08	0
35-44	0.79 ± 0.03	0.91 ± 0.06	2.24 ± 0.38	2.45 ± 0.68	0.48 ± 0.12	0
45-54	0.89 ± 0.05	1.00 ± 0.03	3.10 ± 0.23	2.95 ± 0.68	1.99 ± 0.12	0.74 ± 0.05
55-64	0.65 ± 0.06	0	2.11 ± 1.48	3.45 ± 0.45	3.33 ± 1.98	0.82 ± 0.06
65-74	0.94 ± 0.07	0.84 ± 0.07	2.89 ± 1.23	2.38 ± 0.70	3.76 ± 0.98	0.97 ± 0.08
p-value	0.001*	0.001*	0.03*	0.001*	0.001*	0.001*
Gender						
Male	0.21 ± 0.07	0.40 ± 0.26	2.47 ± 0.46	2.33 ± 0.61	1.35 ± 0.01	0.21 ± 0.09
Female	0.32 ± 0.09	0.37 ± 0.03	2.07 ± 0.05	2.19 ± 0.41	1.21 ± 0.07	0.11 ± 0.04
P value	0.001*	0.001*	0.013*	0.01*	0.05*	0.78
Total	0.23 ± 0.01	0.38 ± 0.16	2.28 ± 0.08	2.31 ± 0.51	1.28 ± 0.06	0.18 ± 0.08

Test applied: One way ANOVA, t- test, * $p \leq 0.05$ statistically significant.

Table 3: Distribution of mean number of sextants affected by loss of attachment according to age and gender

Variables	Loss of attachment score (Mean \pm Standard deviation)						
	0-3 mm	4-5 mm	6-8 mm	9-11 mm	12 mm or more	Excluded sextant	Not recorded
Age group (years)							
5-14	2.81 ± 2.6	2.16 ± 2.54	0.43 ± 0.09	0.29 ± 0.70	0	0	0
15-24	2.23 ± 1.21	1.82 ± 1.94	1.12 ± 1.4	0.59 ± 0.95	0	0	0
25-34	2.07 ± 1.08	2.86 ± 2.15	1.23 ± 0.65	1.34 ± 0.75	0	0	0
35-44	1.83 ± 2.10	2.92 ± 1.50	2.84 ± 1.8	1.16 ± 0.54	0	0	0
45-54	1.70 ± 1.03	3.10 ± 1.04	2.35 ± 0.23	0.29 ± 0.70	0	0.10 ± 0.09	0
55-64	1.61 ± 1.12	2.86 ± 1.54	1.99 ± 1.09	1.27 ± 0.71	0	0.10 ± 0.09	0
65-74	1.46 ± 1.10	3.15 ± 1.23	2.02 ± 1.4	1.56 ± 0.25	0.09 ± 0.01	0.23 ± 0.11	0
P value	0.001*	0.001*	0.001*	0.001*	0.13	0.04*	-
Gender							
Male	2.40 ± 1.64	2.96 ± 1.62	1.69 ± 1.6	0.85 ± 0.23	0.06 ± 0.03	0.10 ± 0.09	0
Female	3.03 ± 2.65	2.24 ± 1.97	0.95 ± 1.1	0.32 ± 0.56	0.02 ± 0.01	0.07 ± 0.05	0
p value							
	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	-
Total	2.78 ± 2.37	2.83 ± 1.73	1.39 ± 1.41	0.56 ± 0.43	0.03 ± 0.02	0.08 ± 0.10	0

Test applied: One way ANOVA, t- test, * $p \leq 0.05$ statistically significant

The mean DMFT of the study population was found to be 2.86 ± 1.44 . The mean numbers of decayed, missing and filled teeth per person were observed as 2.49 ± 1.72 , 1.03 ± 0.42 and 0.29 ± 0.35 respectively. The significantly lowest and highest DMFTs were depicted among the age groups of 55–64 years and 25–34 years respectively ($p=0.001$). Males had significantly higher mean DMFT, missing and filled teeth as compared to females.

Table 4: Mean Dt, Mt, Ft and Dmft According to Age Groups and Gender.

Variables	Mean \pm Standard deviation			
	DT	MT	FT	DMFT
Age group (years)				
5-14	1.7 ± 1.50	1.09 ± 0.54	0.24 ± 0.12	2.26 ± 0.86
15-24	1.36 ± 0.82	1.12 ± 0.68	0.39 ± 0.10	2.57 ± 1.78
25-34	3.09 ± 2.32	1.30 ± 0.87	0.36 ± 0.15	3.65 ± 2.12
35-44	2.46 ± 1.52	0.87 ± 0.39	0.24 ± 0.10	2.94 ± 2.18
45-54	2.05 ± 1.05	0.96 ± 0.51	0.30 ± 0.06	2.99 ± 1.54
55-64	2.48 ± 1.52	1.54 ± 0.63	0.12 ± 0.09	1.59 ± 1.12
65-74	1.71 ± 0.79	1.02 ± 0.43	0.27 ± 0.09	2.11 ± 1.23
p-value	0.001*	0.001*	0.001*	0.001*
Gender				
Male	2.43 ± 1.78	1.14 ± 0.52	0.31 ± 0.16	2.92 ± 1.89
Female	2.57 ± 1.63	0.92 ± 0.30	0.19 ± 0.57	2.76 ± 2.11
p-value	0.001*	0.001*	0.001*	0.001*
Total	2.49 ± 1.72	1.03 ± 0.42	0.29 ± 0.35	2.86 ± 1.44

Test applied: One way ANOVA, t- test, * $p \leq 0.05$ statistically significant.

Extraction was the most prevalent treatment need ($n=726$; 66.2%) followed by pulp care and restoration, one surface filling, and two surface filling.

Table 5: Prevalence of treatment needs among study population.

Treatment needs	n	%
Preventive care	58	5.3
Fissure sealant	93	8.5
One surface filling	307	27.9
Two surface filling	292	26.5
Crown for any reason	107	9.7
Veneer and laminate	70	6.3
Pulp care and restoration	703	63.9
Extraction	726	66
Need for other care	323	29.4

Around 62.9% fisherman subjects had no abnormality or minor malocclusion with no or slight orthodontic treatment need. Very severe malocclusion was significantly higher ($p=0.001$) in 5-14 years age groups.

Table 6: Dental Aesthetic Index Scores and Orthodontic Treatment Needs Among Study Subjects by Age and Gender.

Variables	Malocclusion and orthodontic treatment needs n (%)			
	No abnormality or minor malocclusion	Definite malocclusion	Severe malocclusion	Very severe or hand-capping malocclusion
	No/ slight need	Elective treatment	Highly Desirable	Mandatory
Age (Years)				
5-14	66 (46.8)	19 (13.4)	6 (4.2)	49 (34.7)
15-24	19 (45.2)	15(35.7)	8(19.4)	0
25-34	296(70.1)	39(9.2)	25(5.9)	63(14.9)
Gender				
Male	252 (67.9)	44(11.8)	9(2.4)	66(17.7)
Female	130 (55.5)	29(12.3)	30(12.8)	46(19.6)
Total	381 (62.9)	73(12)	39(6.4)	112(18.5)

Test used: Chi square test

For age groups: $\chi^2 = 76.79$, $df = 9$, $p=0.001^*$ (Statistically significant)

For gender groups: $\chi^2 = 28.08$, $df = 3$ $p=0.07$ (Statistically non-significant)

The best variables in the descending order for DMFT were Oral hygiene practices Educational status, Age, and marital status with variances of 39.9%, 40.3%, 40.6% and 40.8% re-

spectively. The best variables in the descending order for CPI were Oral Hygiene Practices, Educational status, and Gender with variances of 13.2%, 13.7%, and 14.2%, and respectively.

Table 7: Stepwise Multiple Linear Regression Analysis with Dmft And Cpi As A Dependent Variable

Model	R	R ²	F	P
Dental Caries				
1	0.631 (b)	0.399	711.73	0.000(b)
2	0.635 (c)	0.403	481.97	0.000(c)
3	0.637 (d)	0.406	366.31	0.000 (d)
4	0.638 (e)	0.408	294.82	0.000 (e)
A Predictors: (Constant), Oral hygiene practices				
B Predictors: (Constant), Oral hygiene practices, Educational status				
C Predictors: (Constant), Oral hygiene practices, Educational status, Age				
D Predictors: (Constant), , Oral hygiene practices Educational status, Age, , marital status				
Community Periodontal Index				
1	0.364 (a)	0.132	326.99	0.000(a)
2	0.370 (b)	0.137	170.08	0.000(b)
3	0.377 (c)	0.142	118.57	0.000(c)
A Predictors: (Constant), Oral Hygiene Practices,				
B Predictors: (Constant), Oral Hygiene Practices, Educational status,				
C Predictors: (Constant), Oral Hygiene Practices, Educational status, Gender				

5. Discussion

Use of tooth brush was limited to 24% of the Fishermen population. This finding is in concordance with the findings of Kumar TS et al (2009) but is analogous to the results reported by Sakthi et al (2011) at Chennai, India where 76.9% of building construction workers used toothbrush and tooth paste for cleaning their teeth [17,18].

The present study demonstrated prevalence of tobacco usage was increasing subsequently with age Townsend et al

(1994)also portrayed a similar pattern and attributed this finding to the fact that young people generally have relatively low incomes with a high proportion of it available for discretionary expenditure, so that changes in income are more likely to affect their tobacco consuming patterns. The extra oral clinical conditions depicted in the present study were ulcerations, sores, erosions and fissures, the highest prevalence being depicted in head, neck and limbs region (13.7%). This is in accordance with the results of the study conducted by Bhat M (2008) on rural Indian fishing community resid-

ing in coastal areas of Karnataka. This relatively high prevalence of ulceration may be attributed to excess ultraviolet radiation due to constant exposure to sun [19,20].

The present study elicited the absence of dental fluorosis among 16.1% of the subjects revealing 76% subjects with dental fluorosis and rest were excluded. This high prevalence of fluorosis is attributed to high water fluoride level in Kutch district.21 As demonstrated in a previous study, the prevalence and severity of dental fluorosis is directly related to the amount of fluoride ingested, age at the time of exposure and duration of exposure; the present study population need further investigation in this aspect [18-22].

In the present study, subjects showed 85.4% prevalence of periodontal disease with only 0.23 ± 0.01 healthy sextants per person. Prevalence of periodontal disease in Fishermen group was similar than that obtained in National Oral Health Survey and Fluoride mapping 2002-03 of India (89.6% in 35-44 years) and Gujarat (83.7% in 35-44 years age groups) respectively. The variables for periodontal disease as identified by stepwise linear regression were Oral Hygiene Practices Educational status, Gender [23 ,24].

In the present study, prevalence of dental caries was 82.6% among the subjects which was higher to those studies conducted by Kumar TS et al in 2009 (78.6%) and Bhat M in 2008 (78%). A probable explanation to this may be barriers related with Fishermen group like poor oral hygiene practices, lack of awareness, affordability and lack of oral health care. In spite of better oral hygiene; mean DT was found to be higher among females. Lukacs (2011) cited in his meta-analysis that in addition to the negative influences of female sex hormones and changes in physiology and behavior associated with pregnancy, multiple social and religious factors may contribute to the sex difference in oral health in South Asia. The variables for dental caries as observed in the present study were oral hygiene practices, educational status, age, and marital status. These findings may be attributed to facts like, the isolation of the villages, lack of transportation, irregular diet, stress, alcoholism, tobacco and pernicious habits impose limitations on the availability of health professionals to provide dental services as well as the unavailability of oral hygiene maintenance materials [20-26].

The most required treatment was extraction (66%) followed by pulp care and restoration (63.9%) and one surface filling (27.9%). These findings are similar to studies conducted by Kumar TS et al (2009). Bhat M (2008) and Bali RK et al (2004) in the state of Gujarat. It has been seen that people in developing countries usually have limited access to dental care, more periodontal disease and higher levels of plaque and calculus than people in more economically developed societies. This was certainly true for the present study group for whom dental health services were virtually non-existent [17-24].

Malocclusion was prevalent among 27.1% of the study population. The prevalence lower than that reported in National oral health survey and fluoride mapping of India [43.1%

in 35-44 years age group] (2002-03). The difference in DAI scores and orthodontic treatment needs may be ascribed to racial variation, different age ranges, genetic predisposition, cross cultural differences in living standards and variations in growth and facial skeleton development and occlusion. The workplace environment of individuals has an influence on their oral health status through their behavior and habits exerted by their personal and work characteristics. The cumulative lifetime exposure to oral health promoting or oral health damaging environments are most accurate explanations for observed oral health differences between population groups [20-27].

Nature of this study was cross-sectional study, thus precluding the ability to draw inferences about causal relationships. Secondly, duration of exposure of adverse habits was not assessed in the present study. So further research is required involving longitudinal study on the same target population impinging the risk factors involved in the causation of oral disease. The findings of the present study suggest that oral health status of fishermen population was relatively poor with high caries prevalence and poor periodontal health. In light of the high treatment needs of the study population, the health policy that emphasizes oral health promotion and prevention would seem more advantageous in addition to traditional curative care.

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Nil.

Conflict of Interest

None declared.

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