# Oral Health Status and Treatment Needs of a Rural Indian Fishing Community

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***ABSTRACT***

*A study was conducted to assess the oral health status and treatment needs of a rural Indian fishing community. The fishing community had poor access to dental care. The survey was carried out using the WHO 1997 criteria in natural daylight. Convenience sampling method was employed and all the subjects available were examined. The results of this survey revealed that a large percentage of the population was afflicted with dental caries and periodontal disease. The unmet treatment need was found to be high in the study population. Appropriate oral health education and treatment is needed for this rural community.*

# Estado de la Salud oral y Necesidades de Tratamiento en una Comunidad Rural Pesquera India

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***RESUMEN***

*Se llevó a cabo un estudio con el objeto de evaluar el estado de la salud oral y las necesidades de tratamiento en la comunidad rural pesquera India. El acceso de la comunidad pesquera al cuidado dental era pobre. La encuesta se llevó acabo con los criterios de la OMS 1997 a la luz natural del día. Se empleó el método de muestreo por conveniencia y se examinaron todos los sujetos disponibles. Los resultados de este estudio revelaron que un gran porcentaje de la población padece de caries dentales y enfermedades periodontales. Se halló que la necesidad de tratamiento sin atención era alta en la población bajo estudio. Se necesita tanto tratamiento como educación para la salud oral adecuada en esta comunidad rural.*

## INTRODUCTION

Almost eighty per cent of the Indian population reside in rural areas and have no access to dental care and the majority are illiterate. The Harikantra fishing community belongs to the lower socio-economic status and the majority are illiterate. There traditional occupation is fishing. There are no data on the oral health status of this deprived community.

## OBJECTIVES

To assess the oral health status and treatment needs of the Harikantra rural fishing community and to suggest measures for improving oral health status.

## SUBJECTS AND METHODS

The study was a non-probability population based survey to assess the oral health status and treatment needs of persons in the Harikantra fishing community.

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Participants were members of the Harikantra rural fishing community in Uttara Kannada District, Karnataka State, India, who were present and agreed to examination at their homes or places of work (on the sea side). Thirteen subjects, mostly children, refused to participate in the study due to the fear of being examined by a dentist. We used non-random or the convenience sampling as the exact demographic profile of the community was not available from any relevant sources. This community was scattered and it was not possible to get the exact number of subjects at a single place. The population of the community, approximately 4500, was known to be distributed quite unevenly on the rural parts of the coastal region of northern Karnataka.

**Data collection:** The WHO Oral Health Assessment Form (1997) (1) was reproduced from the "Oral Health Survey-Basic Methods 4$^{th}$ Edition (1) and was printed. This format is designed for the assessment of Oral Health Status and Treatment Needs. It provides data as required for planning comprehensive oral healthcare programmes. General information and information related to the subjects oral hygiene practices and habits were collected by interview. Clinical

examination was done to assess oral mucosal conditions, temporomandibular joint disorders, developmental enamel defects, fluorosis, periodontal conditions, dental caries status, prosthetic status, malocclusion status and treatment needs. All the required information regarding the community like the routine work, cultural practices, location *etc* was obtained from the president. The time limit set for collection of data was three months. The data were collected by means of "Shoe leather epidemiology' or a door-to door survey and at places of work. 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.

**Training and calibration of the examiner:** The clinical examination of all the one thousand study subjects constituting the sample was solely done by the author. Prior to conducting the survey, the calibration of the examiner was done in the Department of Preventive and Community Dentistry, KLE's Institute of Dental sciences, Belgaum, India. The guidance of the professor was sought in order to limit the inter examiner variability. The calibration was done by assigning to the investigator fifty subjects on whom he applied the WHO Oral Health Assessment criteria and recorded the findings. Some of these subjects were randomly called later and the examiner repeated the examination. The results obtained were subjected to the kappa variability test, kappa co-efficient was found to be 0.8 reflecting a high degree of conformity in the observations.

The quantity and weight of instruments and supplies used in the survey was kept to a minimum.and were: plane mouth mirrors, CPI probe, chip blower, tweezers, kidney trays, containers, steel tumblers, chemical sterilizing solution, cold sterilization (Korsolex solution), autoclave, cloth and towels, gauze and cotton, gloves and face mask and torch.

Almost all examinations were carried out by making the patient sit on a wooden chair with a high back rest, the examiner standing behind the chair. The recorder was made to sit close to the examiner so that instructions and codes could be easily heard and the examiner could see that the findings were being recorded correctly. This enabled the recorder to check that the score recorded related to the region or the tooth that had just been examined. The subjects were positioned so as to receive maximum illumination while avoiding discomfort from direct sunlight on either the subject or the examiner. Artificial illumination was used when required.

Ethical clearance was obtained prior to conducting the study from the KLE's Institute of Dental Sciences Belgaum, Karnataka, India. Approval from authorities: permission to examine the population groups were obtained from the District Commissioner, District Health officer and the President of the Community before starting the survey.

## RESULTS

The population consisted of 599 males and 401 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. Age was assessed by asking them questions like, how many years before or after the independence of the country were they born. Since ages reported by the elderly were not found to be reliable, no further stratification in age groups were done for those above 50 years in this study. The percentage of the population exhibiting extra oral lesions, TMJ disorders, oral mucosal lesions and dental fluorosis was negligible.

### Periodontal Status

As per, CPI, Table 1–2, the maximum number of subjects scoring healthy periodontal status was found to be in the younger age groups and the number gradually decreased as age increased. The highest number 67 (69.79%) out of the 96 subjects scoring healthy were found in the 5–9-year age group. In the 40–44-year age groups, only 3 (2.48%) out of the 86 subjects examined scored healthy sextants. In the 50 years and above age group, 2.66 mean sextants had pockets of infection 6mm or deeper.

### Dental Caries Status

The distribution of study subjects by deciduous tooth decay showed that 75% of the study subjects in the 0–4-year age group had decayed teeth and this was found to increase to 86 (45%) in the 5–9-year age group, Table 3–4. When the DMFT score was taken into consideration, it was seen that 78% of the subjects were affected by dental decay, the mean DMFT score was found to reach 9.91 in the 50 years and above age group. Dental fillings were virtually non- existent in the study population. The mean treatment need was found to be very high in the population (Table 5).

### Prosthetic status

Only two subjects (0.2%) in the 50 years and above age group wore a prosthesis (upper and lower complete dentures).

### Dentofacial Anomalies

The Dental Aesthetic Index (DAI) scores showed that most *ie* 711 (85.04%) out of 836 subjects scored less than or equal to 25 which indicated that there was no need or minimal need for treatment.

## DISCUSSION

The findings of the present study are in conformity with the findings of the National Oral Health survey (2) conducted by

Table 1: Distribution of study population based on the periodontal status (as per hightest CPI scores obtained)

| Age groups (years) | n | Healthy (0) | % | Bleeding (1) | % | Calculus (2) | % | Shallow pockets (3) | % | Deep pockets (4) | % | Excluded (X) | % | Not recorded (9) | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 – 9 | 96 | 67 | 69.79 | 20 | 20.83 | 9 | 9.38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 – 14 | 155 | 81 | 52.25 | 66 | 42.58 | 8 | 5.16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 – 19 | 101 | 62 | 61.38 | 20 | 19.80 | 11 | 10.89 | 8 | 7.92 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 – 24 | 65 | 32 | 49.23 | 8 | 12.30 | 17 | 26.15 | 8 | 12.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 – 29 | 104 | 50 | 48.07 | 11 | 10.57 | 13 | 12.5 | 27 | 25.96 | 1 | 0.96 | 2 | 1.92 | 0 | 0 |
| 30 – 34 | 78 | 15 | 19.23 | 1 | 1.28 | 7 | 8.97 | 50 | 64.1 | 5 | 6.41 | 0 | 0 | 0 | 0 |
| 35 – 39 | 138 | 21 | 15.21 | 3 | 2.17 | 6 | 4.34 | 93 | 67.39 | 15 | 10.86 | 0 | 0 | 0 | 0 |
| 40 – 44 | 86 | 3 | 3.48 | 2 | 2.32 | 1 | 1.16 | 44 | 51.16 | 36 | 41.86 | 0 | 0 | 0 | 0 |
| 45 – 49 | 29 | 2 | 6.89 | 0 | 0 | 0 | 0 | 15 | 51.72 | 12 | 41.37 | 0 | 0 | 0 | 0 |
| 50 & above | 132 | 2 | 1.51 | 0 | 0 | 0 | 0 | 23 | 17.4 | 89 | 67.4 | 16 | 12.12 | 2 | 1.51 |
| Proportions | 984 | 335 | 0.340 | 131 | 0.133 | 72 | 0.073 | 268 | 0.272 | 158 | 0.161 | 180 | 0.018 | 2 | 0.002 |
| 95% CI | | 0.3108 | 0.3700 | 0.1119 | 0.1544 | 0.0569 | 0.0894 | 0.2445 | 0.3002 | 0.1376 | 0.1835 | 0.0099 | 0.0267 | -0.0008 | 0.0048 |

Table 2: Distribution of mean sextants showing specific CPI scores in each age group

| Age groups (years) | Total No. of subjects | Healthy (0) | Bleeding (1) | Calculus (2) | Pockets 4-5 mm (3) | Pockets 6mm or more (4) | Excluded sextant (X) | Not recorded (9) |
|---|---|---|---|---|---|---|---|---|
| 5 – 9 | 96 | 5.45 | 0.44 | 0.093 | 0 | 0 | 0 | 0 |
| 10 – 14 | 155 | 4.78 | 1.05 | 0.16 | 0 | 0 | 0 | 0 |
| 15 – 19 | 101 | 5.16 | 0.51 | 0.21 | 0.09 | 0 | 0 | 0 |
| 20 – 24 | 65 | 5.01 | 0.29 | 0.47 | 0.21 | 0 | 0 | 0 |
| 25 – 29 | 104 | 4.59 | 0.31 | 0.35 | 0.70 | 0.009 | 0.019 | 0 |
| 30 – 34 | 78 | 3.76 | 0.17 | 0.44 | 1.51 | 0.089 | 0 | 0 |
| 35 – 39 | 138 | 2.94 | 0.23 | 0.35 | 2.15 | 0.24 | 0.05 | 0 |
| 40 – 44 | 86 | 1.41 | 0.11 | 0.38 | 2.53 | 1.5 | 0.04 | 0 |
| 45 – 49 | 29 | 1.06 | 0.03 | 0.31 | 3.06 | 1.51 | 0 | 0 |
| 50 & above | 132 | 0.39 | 0.02 | 0.18 | 1.39 | 2.66 | 1.242 | 0.09 |
| 95% CI | | 0.0239, 0.0470 | 0.0001, 0.0075 | 0.0002, 0.0060 | 0.0039, 0.0164 | 0.0010, 0.0105 | -0.0009, 0.0044 | -0.0006, 0.0008 |

Table 3: Distribution of the population based on presence of caries in the permanent dentition

| Age group (years) | Total No. of subjects | Affected by dental caries (D) | % |
|---|---|---|---|
| 5 – 9 | 96 | 11 | 11.45 |
| 10 – 14 | 155 | 99 | 63.87 |
| 15 – 19 | 101 | 77 | 76.23 |
| 20 – 24 | 65 | 52 | 80.0 |
| 25 – 29 | 104 | 97 | 93.26 |
| 30 – 34 | 78 | 75 | 96.15 |
| 35 – 39 | 138 | 137 | 99.27 |
| 40 – 44 | 86 | 84 | 97.67 |
| 45 – 49 | 29 | 27 | 93.10 |
| 50 & above | 132 | 122 | 92.4 |
| 95% CI | | 0.7684 | 0.8190 |

No. = number

the DCI 2002–03 where caries was high in almost all age groups and increased as age advanced. The findings of the present study are not similar with certain Indian studies conducted on rural populations by Rao (3) Bhowate *et al* (4) and Suneetha *et al* (5) where the dental caries prevalence was found to be lower. The findings of the present study was also not similar to studies conducted by Sgan Cohen et al (6) and Leung (7). However, the study showed similarity in the findings to the study conducted by Lang et al, (8) and Maupome et al (9) where the mean DMFT was very high. Manji *et al* (10) in their study found that caries activity continues throughout life and is not a phenomenon confined to any one period in life. Further studies are indicated to explore the reasons for the high prevalence of dental caries in the present study population.

The unmet treatment need was found to be very high in the study population and these findings are in conformity with the findings of the National Oral Health survey (2) conducted in India. It could be due to the fact that almost 80% of the Indian population reside in rural areas and have no access to oral and general healthcare. Prosthetic status and prosthetic needs were high. In the present study, the distribution of subjects according to the Dental Aesthetic Index showed that need for treatment for malocclusion was very low in the study subjects, similar findings were reported in the National Oral Health survey conducted in India (2), the study showed similarity with the findings of the study conducted by Esa *et al* (11) and Otuyemi *et al* (12).

Table 4: Mean decayed, missing and filled teeth (DMFT) distribution in the population

| Age group (years) | Total No. of subjects | Decayed teeth (D) | Missing teeth (M) | Filled teeth (F) | Decayed + missing + filled teeth (DMFT) |
|---|---|---|---|---|---|
| 5 – 9 | 96 | 0.239 | 0 | 0 | 0.239 |
| 10 – 14 | 155 | 1.864 | 0.019 | 0.012 | 1.896 |
| 15 – 19 | 101 | 3.306 | 0.0198 | 0.0792 | 3.405 |
| 20 – 24 | 65 | 3.753 | 0.4 | 0.030 | 4.184 |
| 25 – 29 | 104 | 5.221 | 0.067 | 0.076 | 5.36 |
| 30 – 34 | 78 | 8.0 | 0.166 | 0.089 | 8.25 |
| 35 – 39 | 138 | 7.65 | 0.340 | 0.115 | 8.1 |
| 40 – 44 | 86 | 8.41 | 0.418 | 0 | 8.83 |
| 45 – 49 | 29 | 7.655 | 0.344 | 0 | 8 |
| 50 & above | 132 | 8.75 | 1.15 | 0.01 | 9.91 |
| Mean | | 5.4848 | 0.2924 | 0.0411 | 5.8174 |
| SD | | 3.0439 | 0.3447 | 0.0440 | 3.2814 |
| 95% CI | | 3.5982 7.3714 | 0.0788 0.5060 | 0.0138 0.0684 | 3.7836 7.8512 |

Table 5: Mean distribution of teeth according to the treatment need

| Age group (years) | Total No. of subjects | One surface filling | Two surface filling | Pulp care | Extraction |
|---|---|---|---|---|---|
| 0 – 4 | 16 | 1.06 | 0.687 | 1.63 | 1.3 |
| 5 – 9 | 96 | 0.989 | 1.187 | 2.06 | 1.089 |
| 10 – 14 | 155 | 0.625 | 0.464 | 0.335 | 0.439 |
| 15 – 19 | 101 | 0.851 | 0.9 | 0.584 | 0.972 |
| 20 – 24 | 65 | 1.06 | 1.0 | 0.707 | 0.986 |
| 25 – 29 | 104 | 1.02 | 1.125 | 1.240 | 1.831 |
| 30 – 34 | 78 | 1.32 | 1.52 | 2.26 | 2.89 |
| 35 – 39 | 138 | 0.88 | 1.20 | 2.139 | 3.423 |
| 40 – 44 | 86 | 0.674 | 1.058 | 2.21 | 4.47 |
| 45 – 49 | 29 | 0.517 | 0.724 | 1.38 | 5.03 |
| 50 & above | 132 | 0.522 | 0.780 | 1.51 | 5.94 |
| Mean | | 0.8653 | 0.9677 | 1.4595 | 2.5791 |
| SD | | 0.2561 | 0.2954 | 0.6863 | 1.8922 |
| | | 0.7139 1.0166 | 0.7931 1.1423 | 1.0540 1.8651 | 1.4609 3.6973 |

The present study had a validated measuring instrument but was limited by the illiteracy of subjects and by non-random sampling.

It is recommended that young persons from the same community could be selected and trained to deliver Dental Health Education to this community, implement atraumatic restorative treatment (ART) and preventive resin restorations (PRR), pit and fissure sealant application and topical fluoride application programmes. Voluntary organizations need to render care to this rural depressed community.

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