

Oral Hygiene status of Leprosy Patients from Raichur district, South India

SR Kungsi¹, AK Acharya², Shrikanth M³, R Gupta⁴, N Patil⁵

Received : 10.10.2017 Accepted : 16.09.2018

Patients with leprosy may not be commonly reporting to the dental professionals. This study describes the oral hygiene status of the leprosy patients from a developing district of South India. A descriptive cross-sectional study was conducted to assess the oral hygiene status of leprosy patients in Raichur district, Karnataka. A total of 225 patients were examined during 2012 as a part of the study. These are patients who registered at Raichur and Mudgal leprosy centres during this period for leprosy treatment. Oral Hygiene Index – Simplified was recorded according to the criteria given by Greene and Vermillion in 1964. Data was analyzed using SPSS version 16.0 software package. Male : female ratio was 2:1 and age of these patients ranged from 6-80 years, mean 33.25 ± 15.49 years. The mean Debris Index-Simplified score was 1.94 ± 0.66; mean Calculus Index-Simplified score 2.08 ± 0.64 and the mean Oral Hygiene Index-Simplified score was 4.02 ± 1.22. Percentage of leprosy patients with poor oral hygiene increased with increasing age. There was also association with habits of pan chewing, smoking, alcohol use and cleaning practice of not using tooth brush or neemstick. No relationship could be found with broader classification of leprosy, socio-economic status and other parameters. Patients with good and fair oral hygiene reported of lower dental problems than those with a poor oral hygiene. Lack of association with socioeconomic status and type of leprosy suggests a general awareness problem but this issue deserves in depth studies. The current study among leprosy patients in Raichur district is the first kind of study from this area which highlights the poor plight of these patients with respect to their oral hygiene status. Periodic surveys and interventions in terms of awareness campaigns among the leprosy patients as well as care providers and community in general will be useful. Orientation of health systems accordingly will be required to bring desired changes in the situation.

Key words: Oral hygiene status, leprosy patients, Raichur, South India

Department of Public Health Dentistry, Navodaya Dental College and Hospital, Raichur, Karnataka, India-584103

¹ Dr SR Kungsi, MDS, Senior Lecturer, Department of Public Health Dentistry, Navodaya Dental College and Hospital, Raichur, Karnataka, India. 584103 E mail: drsumupcd@gmail.com

² Dr AK Acharya, BSc, MDS, Professor and Head, Department of Public Health Dentistry, Navodaya Dental College and Hospital, Raichur, Karnataka, India. 584103 E mail: arunsdental@yahoo.co.in

³ Dr Shrikanth M, MDS, Senior Lecturer, Department of Public Health Dentistry, MA Department of Public Health Dentistry, MA Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India.411001 E mail: shrikanthmuralidharan23@gmail.com.*

⁴ Dr R Gupta, MDS, Senior Lecturer, Department of Public Health Dentistry, DJ College of Dental Sciences and Research, Modinagar, Uttar Pradesh 201204, India. E mail: drritupcd@gmail.com*

⁵ Dr N Patil, MDS, Reader, Department of Orthodontics, AME's Dental College, Raichur, Karnataka, India. 584103. E mail: nielortho1981@rediffmail.com*

* Current affiliations of these authors

Correspondence : Dr AK Acharya, BSc, MDS, Professor and Head, Department of Public Health Dentistry, Navodaya Dental College and Hospital, Raichur, Karnataka, India-584103. E mail: arunsdental@yahoo.co.in

Introduction

Historically leprosy has been a disease that has dreaded mankind to the brim. *Aretaeus of Cappadocia* in the middle of the second century AD was the first to give a description of Leprosy (Prasad 2005). This disease is of Public Health importance because it causes disability in a proportion of affected persons which has been a root cause for social stigma and discrimination (NLEP Training Manual for Medical Officers 2009). The oral manifestations include - involvement of the trigeminal nerve the face, lips, gingival, palate, tongue, cheeks. Salivary gland involvement may also be involved. Oral health involvement has been less extensively studied. Since care is related mainly to decrease mortality and morbidity, oral health is not concentrated upon regularly among these patients. Although no concrete literature evidence are available presently regarding the dental health and leprosy, the reflection of the underlying systemic disease is sooner or later visible in the oral cavity. Most of the dentists have little information when they see leprosy patients and some may be unaware of the oral manifestations of leprosy; also professionals who work at Leprosy Control Programmes are not involved with their patient's oral condition (van Brakel et al 2012). There is comprehensive description of the oral and perioral manifestation of the disease (Costa et al 2003, Rawalani et al 2008) and, a few studies on oral health status of these patients like dental caries, periodontal disease and oral hygiene status been reported from parts of central and south India (Rawalani et al 2011, Raja et al 2016), Spain (Nunez-Marti et al 2004) and Brazil (Souza et al 2009). Physical impairment like loss of digits of the hands, nerve injury etc (Souza et al 2009) can result in decreased muscular dexterity and a poor oral hygiene. There is sparse data on oral hygiene practices of leprosy patients and their

effect on the oral hygiene status. As leprosy cases are entitled to good oral health like other strata of society, we need to know the magnitude and type of problems pertaining to their oral health. For this reason this study has been carried out to assess the oral hygiene status of the leprosy patients from a neglected and one of the underdeveloped sections of South India.

Patients and Methods

A descriptive cross-sectional study was conducted to assess the oral hygiene status of leprosy patients in Raichur district, Karnataka. The study protocol was approved by the Institutional Ethical Committee, Navodaya Dental College and Hospital, Raichur and permission was also obtained from the District Leprosy Officer. The Raichur district has two leprosy centers at Raichur and Mudgal. Those patients who were registered from January 1st to December 31st 2012 at these two leprosy centers were examined. The leprosy patients were classified according to the classification proposed by World Health Organization for therapeutic purpose of grouping of leprosy as Paucibacillary and multibacillary leprosy based on number of skin and nerve lesions (WHO 1994, NLEP 2009). These cases were already undergoing the treatment for leprosy when they were approached to participate in the present study. Oral hygiene status was assessed according to Oral Hygiene Index - Simplified (Greene & Vermillion 1964) [Good- 0-1.2, Fair- 1.3 to 3, Poor- 3.1 to 6]. Data was analyzed using SPSS version 16.0 software package. Cohen's kappa statistics was used to assess the inter-examiner reliability (0.90).

Results

In the present study 225 leprosy patients aged 6-80 years, with a mean age of 33.25 ± 15.49 years were examined. There were 136 (60.4%) males and 89(39.6%) females. In all, 2.2% belonging to

upper middle class, 8.9% belonging to lower middle class, 73.3% belonging to upper lower class and 15.6% belonging to lower class based upon Kuppaswamy scale (Bairwa et al 2013).

Fig. 1 shows the distribution of the patients based on their oral hygiene status. A total of 166 (73.8%) patients had poor oral hygiene. Fourteen patients were excluded from measuring oral hygiene by this index because 5 patients were completely edentulous and 9 patients were below 12 years.

The mean Debris Index - Simplified score was 1.94 ± 0.66 , mean Calculus Index-Simplified score 2.08 ± 0.64 and the mean Oral Hygiene Index-Simplified score was 4.02 ± 1.22 . Percentage of leprosy patients with poor oral hygiene increased with increasing age and this was statistically significant ($\chi^2=24.32$, $df=5$, $p<0.001$). There was no association between the socio economic status ($\chi^2=1.56$, $df=2$, $p>0.05$), type of leprosy (either multibacillary or paucibacillary; $\chi^2=1.47$,

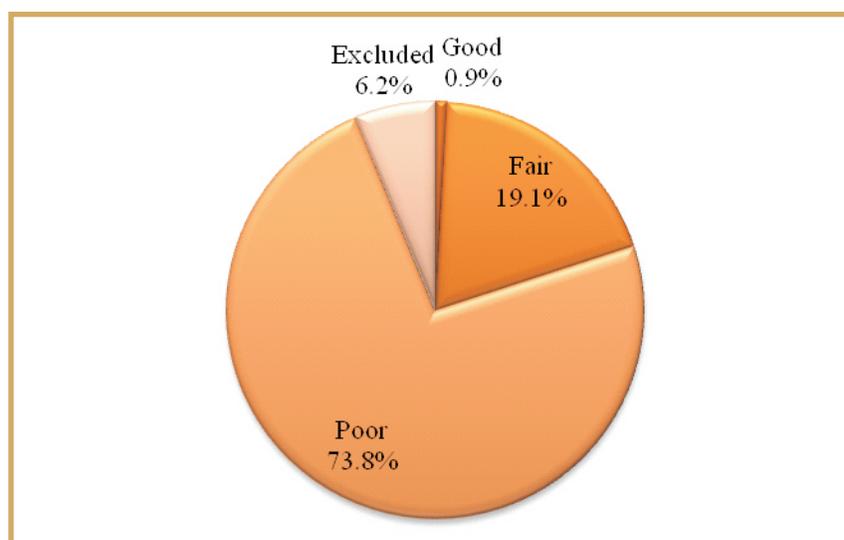


Fig 1 : Distribution of the Leprosy patients based on their Oral Hygiene Status

Table 1 : Association of Oral Hygiene status with aids used to clean teeth by leprosy patients

| Aids used to clean teeth | Oral Hygiene Status | | | Total n(%) |
|--------------------------|---------------------|--------------|--------------|---------------|
| | Good n(%) | Fair n(%) | Poor n(%) | |
| Toothbrush | 2(1.8) | 31(27.7) | 79(70.5) | 112(100.0) |
| Finger | 0(0.0) | 8(11.9) | 59(88.1) | 67(100.0) |
| Neem stick | 0(0.0) | 4(12.5) | 28(87.5) | 32(100.0) |
| Total | 2(0.9) | 43(20.4) | 166(78.7) | 211*(100.0) |

$\chi^2=8.99$, $df=2$, $p=0.001$ Significant

*Fourteen patients were excluded due to complete edentulousness and age below 12 years.

df=1, $p>0.05$); type of diet (either mixed or pure vegetarian diet; $\chi^2=0.33$, df=1, $p>0.05$) and their oral hygiene status. The pan chewing habit was most prevalent than smoking or alcohol consumption (Fig. 2). A statistically significant results have seen in percentage of patients with poor oral hygiene higher among those with pan chewing habit than those without pan chewing habit ($\chi^2=7.43$, df=1, $p<0.01$). Similar results were seen in patients with smoking habit ($\chi^2=5.27$, df=1, $p<0.01$) and patients with alcohol habits ($\chi^2=4.22$, df=1, $p<0.01$). Out of 220 dentate patients 120 (54.6%) patients used tooth brush and 68(30.9%) patients used finger to clean the teeth. Poor oral hygiene was also associated with the use of finger to clean teeth, than those who

used either toothbrush or neemstick and was statistically significant (Table 1).

Among 225 patients 46 patients were excluded for material used to clean their teeth because of complete edentulousness (n=5), below 12 years of age (n=9) and those used neemstick only (n=32). Out of 179 patients, the percentage patients using charcoal/salt/sand having poor oral hygiene was higher than those patients using tooth paste/powder (Table 2). There was no association found between the frequency of changing the tooth brush ($p>0.05$), method of cleaning teeth (horizontal/vertical/circular) ($p>0.05$) and the oral hygiene status of the leprosy patients (Table 3, components A, B). A higher

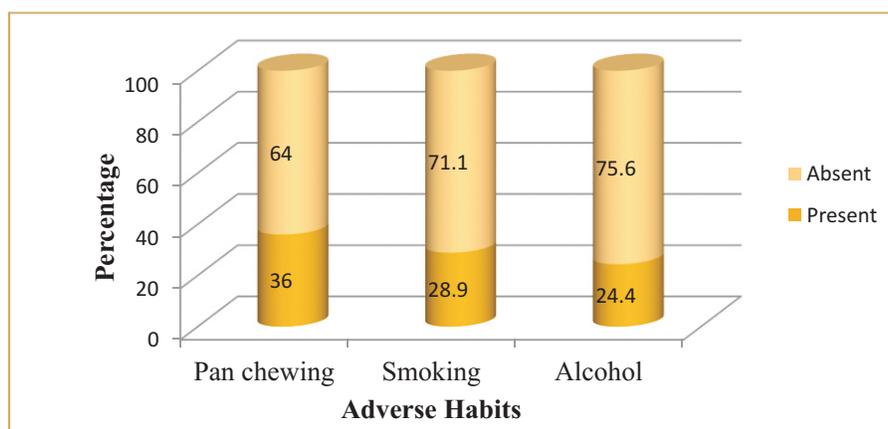


Fig 2 : Distribution of the Patients based on their unhealthy habits

Table 2 : Association of oral hygiene status with material used to clean teeth by leprosy patients

| Materials used | Oral Hygiene Status | | | Total n(%) |
|--------------------|---------------------|----------|-----------|------------|
| | Good | Fair | Poor | |
| Toothpaste/powder | 2(1.7) | 31(27.2) | 81(70.1) | 114(100) |
| Charcoal/salt/sand | 0(0.0) | 8(12.3) | 57(87.7) | 65(100) |
| Total | 2(1.1) | 39(21.8) | 138(77.1) | 179(100) |

$\chi^2=6.49$, df=1, $p<0.01$ Significant

Table 3 : Association of Oral Hygiene Status with A). Frequency of changing toothbrush, B) Method of cleaning teeth, C) Perceiving the dental problem and D) Visiting the dentist

| Association | Items | Oral Hygiene Status | | | Total | |
|-------------------------------------|----------------------|---------------------|--------------|--------------|------------|---|
| | | Good n(%) | Fair n(%) | Poor n(%) | | |
| A. Frequency of changing toothbrush | 0-3 months | 1(7.7) | 5(38.4) | 7(53.9) | 13(100.0) | $\chi^2=5.64$, df=3, p>0.05 Non significant |
| | 4-6 months | 1(2.6) | 12(30.7) | 26(66.7) | 39(100.0) | |
| | 7 months - 1 year | 0(0.0) | 2(100.0) | 0(0.0) | 2(100.0) | |
| | More than 1 year | 0(0.0) | 6(20.7) | 23(79.3) | 29(100.0) | |
| | When bristles flared | 0(0.0) | 6(20.7) | 23(79.3) | 29(100.0) | |
| | Total | 2(1.8) | 31(27.7) | 79(70.5) | 112(100.0) | |
| B. Method used for cleaning teeth | Horizontal | 2(1.3) | 27(17.2) | 128(81.5) | 157(100.0) | $\chi^2=2.91$, df=1, p>0.05 Non significant |
| | Vertical | 0(0.0) | 14(29.8) | 33(70.2) | 47(100.0) | |
| | Circular | 0(0.0) | 2(28.6) | 5(71.4) | 7(100.0) | |
| | Total | 2(0.9) | 43(20.4) | 166(78.7) | 211(100.0) | |
| C. Dental problem | Yes | 1(0.8) | 29(24.0) | 91(75.2) | 121(100.0) | $\chi^2=2.03$, df=1, p>0.05 Non significant |
| | No | 1(1.1) | 14(15.6) | 75(83.3) | 90(100.0) | |
| | Total | 2(0.9) | 43(20.4) | 166(78.7) | 211(100.0) | |
| D. Visit a dentist before | Yes | 2(1.1) | 34(18.4) | 149(80.5) | 185(100.0) | $\chi^2=3.12$, df=1, p>0.05 Non significant |
| | No | 0(0.0) | 9(34.6) | 17(65.4) | 26(100.0) | |
| | Total | 2(0.9) | 43(20.4) | 166(78.7) | 211(100.0) | |

percentage of leprosy patients shown poor oral hygiene who had perceived to have no dental problem than those who had perceived to have dental problem ($\chi^2=2.03$, df=1, p>0.05; Table 3, component C). Leprosy patients with poor oral hygiene reported to the dentist before than the

rest of them and this was statistically not significant ($\chi^2=3.12$, df=1, p>0.05; Table 3, component D).

Discussion

Leprosy is the oldest disease known to mankind affecting the body of the patients and the mind of

the people those who are not affected. The present study comprised of 136 (60.4%) males and 89 (39.6%) females, similarly percentage of males were higher than female leprosy patients in the studies reported from Bangalore, India (Chaluvaraj & Hiremath 2003) and Japan (Ohyama et al 2010) whereas almost equal percentage of males and females were present in Brazil (Souza et al 2009). All the dentate patients in the present study practiced oral hygiene daily. The Oral Hygiene Status of leprosy patients of the present study (OHI-S score 4.02 ± 1.22) was poor, similar to the leprosy patients of central India (OHI-S score 3.50, Rawlani et al 2011). The percentage of leprosy patients who used tooth brush to clean their teeth was (54.6%), less than that reported from Bangalore (63.9%) (Chaluvaraj & Hiremath 2003). In our study 30.9% used finger, similar to the findings of the study done on leprosy patients in Bangalore (Chaluvaraj & Hiremath 2003). Patients often present themselves for dental care and perceive dental problem at the later stages of dental disease when onset symptoms such as pain and extreme discomfort are more severe. They tend to neglect their oral health and avail dental reviews only at later stages of dental diseases. This study shows that there is a high burden of poor oral hygiene among the leprosy patients in Raichur district and there is a need for improving oral hygiene. As data is a few years old, it will be important to assess the situation afresh. As leprosy leaves an impact on the minds of the affected people, treating them with a human touch is essential. Oral health should be an integral part of the general health for the overall health of the leprosy patients. There is also a need for the basic package for oral health for these people. Those with the need for dental treatment (oral prophylaxis) could be reached out through the leprosy centers wherein they report for the drugs and other types of treatment.

The current study carried out among leprosy patients in Raichur district is the first kind of study in this area that highlights the poor plight of these patients with respect to their oral hygiene status. There was also lack of proper oral hygiene measures seen among these leprosy patients which contributed to poor oral health. There is clear need to create mass awareness among leprosy affected persons, leprosy workers and doctors so that oral hygiene gets its due attention. Periodic surveys to know the impact of various preventive and curative measures can help in achieving desired results. As the status of oral health in the community in general in the area is not known, that should be part of epidemiological studies in future. Lack of association with socio-economic status and type of leprosy suggests a general awareness problem but deserves in depth studies. The present study implies the pivotal role that a dentist could play in providing oral health care in association with health care providers involved in leprosy programme.

Acknowledgement

The authors would like to thank the work of statistician, Mr RS Patil, for his analysis work, the leprosy center staff and the participants for their co-operation.

References

1. Bairwa M, Rajput M, Sachdeva S (2013). Modified Kuppaswamy's Socioeconomic Scale: Social Researcher Should Include Updated Income Criteria, 2012. *Indian J Commun Med.* 38: 185-186.
2. Chaluvaraj R, Hiremath SS (2003). Assessment of oral health status and treatment needs of leprosy afflicted patients in central leprosorium and rehabilitation centres in Bangalore city. *J Indian Assoc Publ Health Dent.* 3: 9-13.
3. Costa A, Nery J, Oliveira M et al (2003). Oral lesions in leprosy. *Indian J Dermatol Venereol.* 69: 381-385

4. Greene JC, Vermillion JR (1964). The Simplified Oral Hygiene Index. *JADA*. **68**: 7-13.
5. National Leprosy Eradication Programme (NLEP). Training Manual for Medical Officers (2009). Ministry of Health and Family Welfare, Nirman Bhavan, New Delhi: 1-87.
6. Nunez-Marti JM, Bagan JV, Scully C et al (2004). Leprosy: dental and periodontal status of the anterior maxilla in 76 patients. *Oral Dis*. **10**: 19-21.
7. Ohyama H, Hongyo H, Shimizu N et al (2010). Clinical and immunological assessment of periodontal disease in Japanese leprosy patients. *Jpn J Infect Dis*. **63**: 427-432.
8. Prasad PVS (2005). Historical aspects. In: All about Leprosy, First Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi: pp1-4.
9. Raja SAJ, Raja JJ, Vijayashree R et al (2016). Evaluation of oral and periodontal status of patients in Dindigal District. *J Pharma Bioallied Sci*. **8**(Suppl): S119-S121.
10. Rawalani SM, Gummadapu S, Motwani M et al (2008). Orofacial lesions in treated central Indian leprosy patients: a cross sectional study with review of literature. *Indian J Lepr*. **80**: 161-165.
11. Rawlani SM, Rawlani S, Degwekar S et al (2011). Oral health status and alveolar bone loss in treated leprosy patients of central India. *Indian J Lepr*. **83**: 215-224.
12. Souza VA, Emmerich A, Coutinho EM et al (2009). Dental and oral condition in leprosy patients from Serra, Brazil. *Lepr Rev*. **80**: 156-163.
13. van Brakel WH, Sihombing B, Djarir H et al (2012). Disability in people affected by leprosy: the role of impairment, activity, social participation, stigma and discrimination. *Glob Health Action*; **5**: 18394-<http://dx.doi.org/10.3402/gha.v5i0.18394>.
14. World Health Organization (1994). Chemotherapy of leprosy. *Tech Rep Series 847*, WHO, Geneva, Switzerland.

How to cite this article : Kungsi SR, Acharya AK, M Shrikanth et al (2018). Oral Hygiene status of Leprosy Patients from Raichur district, South India. *Indian J Lepr*. **90** : 261-267.