

Oral Health Status and Treatment Needs of Tuberculosis in patients at Government Hospital, Raichur, Karnataka

Abstract

Introduction: Tuberculosis, caused by *Mycobacterium tuberculosis*, an acid fast bacillus that is transmitted primarily through the respiratory route through inhalation of infected airborne droplets containing the bacillus *Mycobacterium tuberculosis*, can affect even the mouth. **Aim:** This study was conducted to assess the oral health status and treatment needs of tuberculosis in patients at Government Hospital, Raichur, Karnataka. **Material and methods:** A cross sectional study was carried out among 220 inpatients attending the Tuberculosis Ward, District Government Hospital, Raichur. Oral Health Status was assessed by using WHO assessment form 1997. Oral Hygiene Index-Simplified (1964) was used to assess the Oral Hygiene Status. **Results:** The mean age of the patients was 41.2 ± 14.0 years and the mean DT, MT, FT and DMFT was 2.94 ± 2.25 , 3.06 ± 6.75 , 0.0 and 6.00 ± 6.46 respectively. The prevalence of dental caries was 95.0%. Calculus was seen in 73.2% of the patients. The oral hygiene status was poor in 36.4% of patients. **Conclusion:** This special population has high prevalence of dental caries and poor oral hygiene which needs periodic oral health education and intervention.

Key Words

Tuberculosis patients; CPI; dental caries; oral hygiene; treatment needs

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INTRODUCTION

Tuberculosis is a chronic granulomatous infectious disease caused by *Mycobacterium tuberculosis*, an acid fast bacillus that is transmitted primarily through the respiratory route through inhalation of infected airborne droplets containing the bacillus *Mycobacterium tuberculosis* and it remains a major cause of morbidity and mortality in developing countries, especially in the Indian subcontinent.^[1] Tuberculosis remains worldwide public health problem, the causative organism was discovered more than 100 years ago and highly effective drugs and vaccine are available making tuberculosis a preventable and curable disease. Tuberculosis causes ill-health among millions of people each year and ranks as second leading cause of death from an infectious disease worldwide. Most of the tuberculosis cases and deaths occur among men, but the burden of disease among women is also high. In 2012 there were an estimated 2.9 million cases and

410,000 tuberculosis deaths among women, as well as an estimated 530,000 cases and 74,000 deaths among children. The number of tuberculosis deaths is unacceptably large given that most are preventable if people can access health care for a diagnosis and the right treatment is provided. Short course regimens of first-line drugs that can cure around 90% of cases have been available for decades.^[2] The global burden of tuberculosis remains enormous (according to WHO). Though India is the second most populous country in the world, India has more new tuberculosis cases annually than any other country. In July 2011 out of the estimated global annual incidence of 9 million tuberculosis cases, 2.3 million were estimated to have occurred in India.^[3,4] Oral lesions seen in 0.005 to 5% patient with tuberculosis and may be either primary or secondary lesions. Primary forms generally are uncommon and occur in younger patient with frequently associated caseation of the

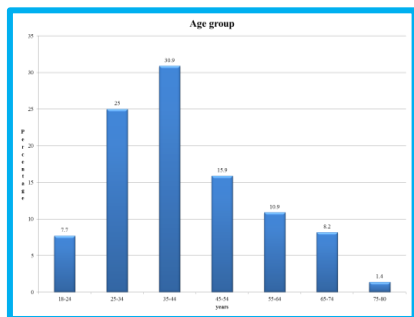


Fig. 1: Distribution of Tuberculosis patients according to age

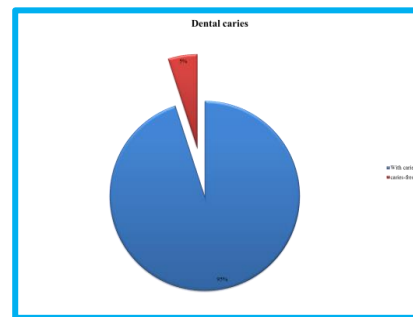


Fig. 2: Prevalence of dental caries among tuberculosis patients

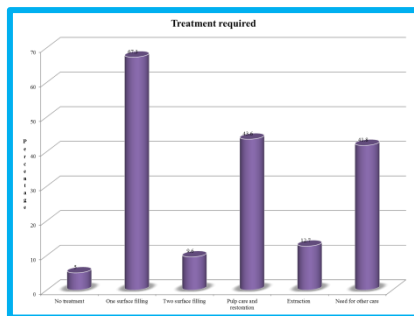


Fig. 3: Number and percentage of subjects according to treatment required

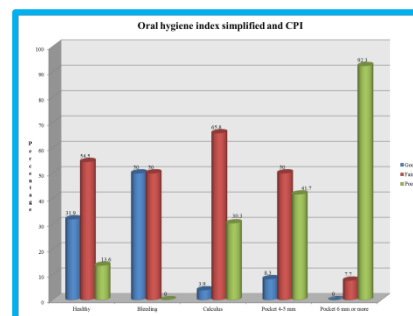


Fig. 4: Number and percentage of subjects with oral hygiene status with periodontal condition

draining lymph nodes. Secondary lesions are more common and are seen mostly in older persons.^[5] There are no studies regarding oral health status and treatment needs of tuberculosis patients in Karnataka, and very few all over India. Hence this study was conducted to assess the oral health status and treatment needs of these patients.

MATERIAL AND METHODS

The study protocol was approved by the Institutional Ethical Committee, Navodaya Dental College and Hospital, Raichur. A prior permission was obtained from Medical Director of Hospital. A pilot study was conducted on 30 tuberculosis inpatients of Government Hospital of Raichur. Sample size was calculated at 95% confidence interval to be 220. Convenience sampling was used to select the patients and the study was carried out from 01st July to 25th October 2013. Pulmonary tuberculosis patients, and who gave written consent were included in the study. Other chest diseases like extra pulmonary tuberculosis and tuberculosis with HIV infection were excluded from the study. All the questions were explained in their local language and the answers were recorded by the examiner. Oral health status and treatment need was recorded according to World Health Organization, Oral health survey - basic methods (1997).^[6] Oral hygiene status was assessed according to Oral Hygiene Index-Simplified (1964).^[7] Examination of

the tuberculosis patients was done by single examiner using sterilized instruments.

STATISTICAL ANALYSIS

Data was analyzed using SPSS 16.0. Cohen’s Kappa statistics was used to assess the examiner reliability (0.96). Descriptive statistics such as mean, standard deviation and percentage was used. Association was evaluated by using chi-square test. A p-value ≤ 0.05 was considered as statistically significant.

RESULTS

Among 220 patients, majority of subjects were belonged to 35-44 years of age group (30.9%), followed by 25-34 years of age group (25.0%) (Fig. 1). In the present study 64.5% were males and 35.5% were females. A total 84.1% were free from oral mucosal condition, 3.2% had traumatic ulceration, 0.9% had acute necrotizing gingivitis, 0.5% had candidiasis, 3.6% had abscess and 7.7% were had other condition such as pigmentation. Out of 35 patients, majority of subjects were had pigmentation on tongue (25.6%), gingiva (20.0%), followed by abscess on gingiva (17.1%) (Table 1). There were 95.9% patients free from dental fluorosis, 1.4% patients had very mild fluorosis, 0.9% patients had mild fluorosis, 0.4% had moderate fluorosis. In the study, majority of subjects were had calculus (73.2%) followed by deep pockets of 6mm or more (11.8%) (Table 2). There were 85.9% had loss of attachment 0-3mm,

Table 1: Number and percentage of subjects with oral mucosal condition by location

Oral mucosal condition by location	Number	Percentage
Traumatic ulceration on buccal mucosa	02	5.7
Traumatic ulceration on lips	01	2.9
Traumatic ulceration on floor of the mouth	02	5.7
Traumatic ulceration on tongue	01	2.9
Traumatic ulceration on gingiva	01	2.9
Acute necrotizing gingivitis	02	5.7
Candidiasis	01	2.9
Abscess on gingiva	06	17.1
Other conditions such as pigmentation on tongue	09	25.6
Pigmentation on gingiva	07	20.0
Pigmentation on floor of the mouth	01	2.9
Both abscess and pigmentation on gingiva and tongue	02	5.7
Total	35	100.0

Table 2: Number and percentage of subjects with healthy periodontal tissues, bleeding only calculus, shallow and deep pockets

Condition	Number	Percentage
Healthy	16	7.3
Bleeding only	01	0.4
Calculus	161	73.2
Shallow Pockets(4-5 mm)	13	5.9
Deep Pockets (6mm or more)	26	11.8
Not recorded	03	1.4
Total	220	100.0

Table 3: Mean number of decayed permanent teeth per person; mean number of filled permanent teeth with decay per person; mean number of filled permanent teeth per person; mean number of missing permanent teeth per person; mean number of DMFT per person

Teeth	Number	Mean ± SD
Decayed Teeth (DT)	647	2.94 ± 2.25
Missing Teeth (MT)	674	3.06 ± 6.75
Filled Teeth (FT)	00	0.00 ± 0.00
DMFT	1321	6.00 ± 6.46

Table 4: Number and percentage of subjects with and without caries according to age group

Age group	With caries n (%)	Without caries n (%)	Total n (%)
18-24	14 (82.4)	03 (17.6)	17 (100.0)
25-34	51 (92.7)	04 (7.3)	55 (100.0)
35-44	66 (97.1)	02 (2.9)	68 (100.0)
45-54	35 (100.0)	0 (0.0)	35 (100.0)
55-64	22 (91.7)	02 (8.3)	24 (100.0)
65-74	18 (100.0)	0 (0.0)	18 (100.0)
75-84	03 (100.0)	0 (0.0)	03 (100.0)
Total	209 (95.0)	11 (5.0)	220 (100.0)

12.7% patients had loss of attachment 4-5mm, none of the patients had loss of attachment 6-8mm, 9-11mm and 12mm or more and three (1.4%) of patients were not recorded due to complete edentulousness. No abnormality or minor

malocclusion seen in 51.3%, 21.4% patients had definite malocclusion, 8.2% patients had severe malocclusion and 19.1% patients had very severe or handicapping malocclusion. The prevalence of dental caries among the tuberculosis patients was

Table 5: Number and percentage of subjects with oral hygiene status according to age group

Age group	Good n (%)	Fair n (%)	Poor n (%)	Total n (%)
18-24	0 (0.0)	15 (88.2)	02 (11.8)	17 (100.0)
25-34	01 (1.8)	29 (52.7)	25 (45.5)	55 (100.0)
35-44	03 (4.4)	41 (60.3)	24 (35.3)	68 (100.0)
45-54	05 (15.2)	14 (42.4)	14 (42.4)	33 (100.0)
55-64	02 (8.7)	15 (65.2)	06 (26.1)	23 (100.0)
65-74	02 (11.1)	09 (50.0)	07 (38.9)	18 (100.0)
75-84	02 (66.7)	0 (0.0)	01 (33.3)	03 (100.0)
Total	15 (6.9)	123 (56.7)	79 (36.4)	217 (100.0)

95.0% and 05.0% of patients were caries-free (Fig. 2). The mean number of DMFT per person in the present study was 6.0 ± 6.46 (Table 3). In the study 5.0% of patients not required treatment and 95.0% of them required one or the other dental treatment. Majority of patients required one surface filling (67.3%), followed by need for other care like replacement of teeth (41.8%) (Fig. 3). The oral hygiene status in the present study was assessed by using Oral Hygiene Index-Simplified. Three tuberculosis patients were completely edentulous. Among 217 tuberculosis patients, 6.9% patients had good oral hygiene, 56.7% patients had fair oral hygiene, and 36.4% patients had poor oral hygiene. In all the age group percentage of patients with dental caries was higher than those who were caries-free. The association between dental caries and age group was found to be statistically significant ($p=0.02$) (Table 4). The percentage of patients with poor oral hygiene was higher in 25-35 years age group followed by 45-54 years age group. The association between Oral Hygiene status and age group was found to be statistically significant ($p=0.004$) (Table 5). As the oral hygiene status decreases periodontal tissue were found to be adversely effected. Higher percentage of deep pockets was seen among patients with poor oral hygiene. The association between Oral Hygiene status and periodontal condition (Community Periodontal Index-CPI) was found to be statistically significant ($p=0.0001$) (Fig. 4).

DISCUSSION

Among 220 tuberculosis patients, 30.9% of patients suffering from tuberculosis in the age group of 35-44 years, followed by 25-34 years age group (25.0%) because of lack of literature data comparison with other studies cannot be done. In our study, there were more males (64.5%) than females (35.5%). This was similar to the other study done in Anantagiri, Andhra Pradesh, India had more

males (80.45%) than females (19.54%).^[8] Among the tuberculosis patients 35(15.9%) of them had oral mucosal lesions. Majority of them had abscess on gingiva (17.1%), pigmentation on tongue (25.6%) and pigmentation on gingiva (20.0%). Among the tuberculosis patients 9 (4.1%) had fluorosis. Because of lack of literature, comparison with the other studies cannot be done. In the present study, majority of them had calculus (73.2%), followed by deep and shallow pocket respectively (11.8%, 5.9%), whereas study conducted in Anantagiri, Andhra Pradesh, India showed that 57.47% of calculus, followed by shallow and deep pockets respectively (32.18%, 8.02%).^[8] The prevalence of dental caries among the subjects was 95.0%. This was higher than the study done in Anantagiri, Andhra Pradesh, India (79.3%).^[8] The higher dental caries could be due to lack of awareness and poor oral hygiene because of the presence of this chronic debilitating illness. The association between dental caries and age group was found to be statistically significant ($p=0.02$) because of lack of literature data comparison with other studies cannot be done. Among 220 tuberculosis patients, majority (67.3%) of them required one surface filling, followed by pulp care and restoration (43.6%) and need for other care (removable denture) respectively (41.8%) because of lack of literature data comparison with other studies cannot be done. Studies have shown that the oral health status was very much poor in immune-compromised patients like HIV and Tuberculosis (TB).^[9] In the present study, 56.7% of patients had fair oral hygiene followed by poor oral hygiene (36.4%). There was a significant relationship between Oral Hygiene Index-Simplified and age group of these patients i.e., the percentage of patients with poor oral hygiene increased from those who had presence of bleeding of gingiva to those who had depth of the pockets more than 6mm ($p=0.004$). There was a statistically

significant difference found between oral hygiene status and periodontal conditions ($p=0.0001$). These subjects, suffering from a chronic debilitating illness such as tuberculosis, it is possible that oral health would have taken a back seat when compared to the general health.

CONCLUSION

The result of the present study showed that dental caries and periodontal diseases are more prevalent among tuberculosis patients of Raichur. Dental diseases may be more common among these patients due to the compromised health, medications, lack of knowledge and the inadequate oral hygiene practices. Tuberculosis remains a devastating disease throughout the world. Efforts should be made to eradicate it have been thwarted by poverty, lack of healthcare access, drug resistance, immune-compromised populations. Although there were dental personnel at the dental department of the Hospital, where the study was carried out, they failed to cater to the oral health care needs to the Tuberculosis patients. This sorry state implies for the need of self – evaluation on the part of the dental professionals. The role of Public Health Dentist to compensate for this lack of awareness and serve these people is of utmost importance. Apart from this also none of the general physicians and the paramedical staff was concerned about the oral health problems of these patients, in spite of them being highly educated. With the advent of powerful anti-tubercular drugs, it is quite understood that it would definitely lead to an improvement of the general health of the patients within matter of few weeks. Thus it will be of a great help if the oral health is taken care of simultaneously for these patients. It is up to the dental professionals to take up this matter at the highest level and fight for these patients; after all we are the guardians of the oral health in our country. The next step could also be to educate the paramedical staff about dental infections and the ways to prevent them.

Recommendation

1. Mobilization and sensitization of the medical and paramedical staff regarding the importance of oral health among this special group of patients.
2. Prevention is the most important factor playing a pivotal role in achieving an optimum oral health for all.

3. Stressing the importance of regular dental check up to improve the oral health problems of these patients
4. As technology and medicine advance, dentists increasingly will have to treat these patients. Every effort should be made to emphasize the importance of early intervention in dental health and to encourage the physicians and paramedical staff to make the dental referral as early as possible, if needed. Oral health education and awareness would help to motivate these patients and their care takers to maintain oral hygiene procedures and follow dietary advice.

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