

# Assessment of Oral Health Status and Treatment Needs among Sugali Tribes in Telangana Region: A Cross-Sectional Study

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## ABSTRACT

**Introduction:** The present study was done to determine the oral health status and treatment needs among sugali tribes in Telangana. **Methodology:** A descriptive cross-sectional study was conducted among 820 sugali tribes residing in Narayanpur mandal. Multi-stage simple random sampling was done to obtain the sample size. An intra-oral examination was performed by a single calibrated examiner to assess the Oral Health Status of the sugali tribes using WHO Oral Health assessment form (1997). The recorded data was statistically analyzed using the Statistical Package for the Social Sciences version 15. **Results:** In the present study majority of the study population, i.e., 80% had tobacco habits. On TMJ examination, 37.7% had clicking of TMJ, and 18.6% had tenderness on palpation. 18.9% of the study population had leukoplakia, and 3.94% had ulceration. Among the study population, 49% had dental fluorosis. Periodontal status showed that 10% of the study population had periodontal pocket 4-5mm and 13% had periodontal pocket more than 6mm. The mean DMFT for males was  $6.03 \pm 2.35$  and for females was  $5.78 \pm 2.55$ . Treatment needs showed that 50.24% of the study population needed one surface restoration, 10.36% needed two surface restorations, 26.34% needed pulp care, and 47.43% needed extraction. **Conclusion:** In this study, the tribes were characterized by a lack of awareness about oral health, deep-rooted dental beliefs, high prevalence of dental fluorosis, periodontal disease, dental caries and lack of previous dental care, high treatment needs, and limited access to oral health services. Hence it is recommended to focus on improving the oral health status and treatment needs of this community.

**KEYWORDS:** Oral health, treatment needs, tribal people

## INTRODUCTION

Health is important not only for the individual but also for the population to lead a productive life.<sup>1</sup> Oral health is a functional, structural, aesthetic, physiologic and psychological state of well being and is essential to an individual's general health and quality of life.<sup>2</sup> Even though there is progress in diagnostic, curative and preventive health, there are people to whom these services are not available as they still live in isolation away from the civilization and have their own beliefs and myths<sup>3</sup> and have inadequacy of modern transport and which make them depend only upon the local natural resources. These people are known as tribals.<sup>4</sup> The beliefs and attitudes towards health practices are affected by the culture.<sup>5</sup> In India, there are many communities which are backward in terms of social, economic, political and educational considerations. Tribal community is one among them constituting 8.14% of the total population of India, with 84.51 million population (2001 census) they cover about 15% of the country's area. Andhra Pradesh, before the state division, comprised three cultural regions namely Coastal Andhra, Telangana, and Rayalaseema

and has different historical backgrounds. The scheduled Tribes (ST) orders (Amendment) Act, 1976 have notified 33 STs in the state with 41.4 percent of the state's ST population.<sup>6</sup> Out of the 33 STs, Sugalis are numerically the largest ST in Andhra Pradesh. Rayalaseema and Telangana are the principal areas in which their concentration is high. Sugali tribes live in exclusive settlements of their own called Tandas, usually setting apart, persevering their culture and ethnicity.<sup>7</sup>

In District Chhatrapur of Madhya Pradesh; many tribal and rural people of villages significantly rely on the local plant resources for their primary healthcare needs. For improving and promoting oral hygiene, they use a large number of plants.<sup>8</sup> An individual's willingness to seek care is influenced by health attitudes, knowledge about health, and the social and cultural definitions of health and illness that have been learned. The literacy level and socioeconomic status of the tribes is less compared to general population.<sup>9</sup> They have an array of health problems due to the discrepancy in their geographical,

How to cite this article:

Vijayakumar N, Rohini.C, Reddy C, Sunkari M, Kumar MS, Malar. CI. Assessment of Oral Health Status and Treatment Needs among Sugali Tribes in Telangana Region: A Cross-Sectional Study. *Int J Oral Health Med Res* 2017;3(6):21-26.

Socio-economic development and cultural characteristics. The oral health of tribal communities is at variance in contrast to the general population. It has been observed that tribes are malnourished with many practicing unhealthy habits like tobacco and alcohol use. Tobacco use is a significant factor that increases risk of lung cancer, cancer of oral cavity and pharynx, esophagus and carcinomas of organs of gastrointestinal tract and cervix.<sup>10</sup> Such behaviours can affect their general health, as well as contributing to their oral health, especially the periodontal tissues and Oral mucosa.<sup>11</sup>

In a study done on physical growth and nutritional status of the 417 sugali children who had been screened for spongy gums, which is a sign of the deficiency of vitamin C it was found that higher proportion of children had spongy gums, thus denoting vitamin C deficiency among them. Mottling of enamel and dental caries was also found in higher proportion among them.<sup>12</sup>

A number of studies have documented on the health status of the sugali tribes, but finite literature and data is available on the studies conducted on the oral health status of these communities. So, this study is directed to assess the Oral health status and treatment needs in sugali tribes in Telangana region.

The proposed objectives to accomplish the aim were:

- To determine the oral health status and treatment needs in sugali tribe using the 1997 WHO Proforma.
- To assess the oral hygiene practices and perceptions towards oral health among the sugali tribe, Telangana.
- To recommend various preventive and treatment procedures which will be beneficial to the tribes.

## MATERIALS AND METHODS

**Study Population:** The sugali tribes of all the 14-gram Panchayats of Narayanpur mandal, who have been residing for more than 15years, were included in the study.

**Ethical approval:** The ethical approval was obtained from the Institution Board of Dr. Syamala Reddy dental college, hospital and research center, Bangalore. Further, permission was also obtained from the District tribal welfare officer, Nalgonda district, Telangana.

**Pilot study:** A pilot study was conducted on 40 sugali tribes before the commencement of the study. It served as a preliminary study to identify any organizational and technical problems, to check the feasibility and relevance of the questionnaire, and to calculate the sample size. All examinations were conducted by a single examiner.

### Sampling Procedure:

- a) Study design: A Cross Sectional study
- b) Sampling unit: Sugali tribes of Narayanpur mandal.
- c) Sampling method: Multi-stage simple random sampling
- d) Sampling technique:
  - Stage -1: Out of 9 districts of Telangana, one district is selected by simple random sampling.
  - Stage-2: Amongst 49 Mandals one mandal i.e., narayanpur was selected by simple random sampling.
  - Stage-3: List of all the Gram Panchayats of the Narayanpur mandal is taken. Keeping sample size into consideration, the number of sugalis were selected from all the gram Panchayats of Narayanpur Mandal till the sample size is reached.

e) Sample size: A pilot study was undertaken in narayanpur mandal which served as a preliminary study to identify any organizational and technical problems, to check the feasibility and relevance of the questionnaire and to calculate the sample size.

Considering the population size (for finite population correction factor) (N) of 41,000, the % frequency of outcome factor in the population (p) of 48.7% +/-5, 95% Confidence Levels (Standard value of 1.96) and keeping the design effect for multistage sampling as 1.5, the sample size was calculated using OpenEpi software version 3,<sup>13</sup> with  $\alpha$ -error considered at 5% and  $\beta$  error 20% and 10% margin of error final sample size will be taken as 820.

Inhabitants aged 15 to 75 years who were residing for at least 15years and present on the day of examination and willing to participate in the study were included in the study.

Individuals who have migrated to Narayanpur mandal, inhabitants who were reluctant to participate in the study and inhabitants who had a history of any systemic illness like diabetes mellitus, hypertension, etc. were excluded from the study.

### Organizing the Survey:

a. Obtaining approval from the authorities: Earlier to the start of the study, acceptance for conducting the study was taken from the Tribal Welfare officer of Nalgonda district and the permission was also taken from the Mandal development officer of Narayanpur mandal. A copy of permission letter from mandal development officer and tribal development officer were submitted to the concerned incharge of each gram Panchayat.

b. Preparing a survey protocol: A written protocol for the survey was prepared to provide provisional time table of main activities.

c. Planning: The study was performed in the month of June and July 2016 (period of one month). The tribal people were targeted during the afternoon and evening hours for the data collection considering not interfering with their normal routine functioning.

**Implementation of the Study:** Data was collected from a cross-sectional survey, using a Survey Proforma which comprised of a Questionnaire, and Clinical examination.

**1. Questionnaire And Demographic Data:** A modified WHO oral health questionnaire for adults was used which included Demographic data, tobacco habits, questions to assess utilization of dental care services, beliefs and oral

hygiene practices were collected from the individuals prior to the clinical examination of the oral cavity.

**Consent:** A written consent was taken from all the subjects before the beginning of intra oral examination for the participants who were willing to participate in the study.

**2.Method Of Intra Oral Examination:** An intra-oral examination was carried out by a single calibrated examiner to assess the Oral Health Status of the Sugali tribes using WHO Oral Health Assessment Form 1997. Type III clinical examination was carried out under adequate natural day light.

### Statistical Analysis:

The statistical procedures were carried out in 2 steps:

1. Data compilation and organization
2. Statistical analysis

The recorded data was assembled and entered into Microsoft Excel sheet (2007) and data analysis was done using SPSS Statistical software 15. 95% confidence limit was set for the above analysis. Chi-square test and Mann-Whitney U test were the statistical tests used to compare the prevalence of oral diseases between males and females.

## RESULTS

This study was conducted on a population of 820. The study population was obtained from Narayanpur Mandal, Nalgonda district, Telangana.

The study showed the following results:

**Demographic distribution:** The study population consisted of 427 males and 393 females and the age group of the study population was between 30-50 years. Among 820 study population, majority 502(61.2%) had no formal education, 201(24.5%) had primary education, 89(10.9%) had secondary education and 27(3.3%) had higher secondary education. [Table 1]

Education	Male n= 427(%)	Female n= 393(%)	Total n = 820(%)
No formal education	271 (63.46)	231 (58.77)	502 (61.2)
Primary education	94 (22.01)	107 (27.22)	201 (24.5)
Secondary education	74 (17.33)	15 (3.81)	89 (10.9)
Higher secondary education	25 (5.85)	2 (0.5)	27 (3.3)

Table 1: Frequency distribution of Study population based on Education

Among the total study population 656 (80%) had the habit of tobacco usage. 425(61%) had the habit of smoking beedi, 131 (20%) had the habit of smoking cigarette. The habit of chewing raw tobacco was seen in 59(9%) and 66(10%) had a combination of smoking and smokeless tobacco usage.

Majority of the study population 576(65%) used brick powder for brushing their teeth. 82(10%) used Neem stick, 78(9.5%) used tooth paste and tooth brush for brushing of which, 43(5.3%) used tooth powder and finger for brushing, 41(5%) used charcoal to clean their

teeth, 41(5%) used toothpaste and finger for brushing their teeth.

Out of 820 study subjects, 309(37.7%) had clicking of TMJ, 153(18.6%) had tenderness on palpation of TMJ and 462(56.36%) had no signs out of which 227(53.16%) were males and 235(59.79%) were females.

Majority of the population, 533 (65%) had no abnormal condition of oral mucosa, there were 101(18.9%) cases of leukoplakia, 21(3.94%) subjects had ulcerations, 27(5%) subjects had leukoplakia along with ulcerations. 5(1%) cases of malignant tumors were present. [Table 2]

Oral mucosal condition	Male n=427(%)	Female n=393(%)	Total n= 820(%)
No abnormal condition	311(72.83)	222(56.48)	533(65)
Malignant tumor	4(0.93)	1(0.25)	5(1)
Leukoplakia	80(18.73)	21(5.34)	101(18.9)
Ulceration	11(2.57)	10(2.5)	21(3.94)
Leukoplakia+ ulceration	20(4.68)	7(1.78)	27(5)
Other conditions	27(6.32)	24(6.10)	51(6.16)

Table 2: Frequency distribution of study population based on the oral mucosa condition

**Prevalence of dental fluorosis:** Among the population, 402 (49%) of the population had dental fluorosis. 80(9.75%) of them had mild fluorosis, 116(19.63%) of them showed moderate fluorosis and 20 (2.43%) of them showed severe fluorosis, 418(51%) had no Fluorosis. [Table 3]

Dental Fluorosis	Male n=427(%)	Female n=393(%)	Total n= 820(%)
Normal	215(50.35)	203(51.65)	418(51)
Mild	47(11)	33(8.39)	80(9.75)
Moderate	89(20.84)	72(18.32)	161(19.63)
Severe	9(2.1)	11(2.79)	20(2.43)

Table 3: Frequency Distribution of Study population based on dental fluorosis

Among the total study population 123(15%) had bleeding of which 70(16.39%) were males and 53(13.48%) were females, majority 492(60%) had calculus, of which 148(34.66%) were males and 344(87.53%) were females. 82(10%) had pocket 4-5mm of which 25(5.85%) were males and 57(14.50%) were females., 107(13%) had pocket 6 mm or more of which 27(6.32%) were males and 80(20.35%) were females. None (0%) were normal and 16(2%) were not recorded out of which 9(2.10%) were male and 7(1.78%) were females. Statistical tests showed a significant difference between CPI index and gender (Mann Whitney U test;  $p=0.000^*$ ). [Table 4]

Among the study population, 672(82%) had 0-3mm loss of attachment, of which 350(82%) were males and 322(81.93%) were females. 21(2.5%) had 4-5mm loss of attachment, of which 8(1.9%) were males and 13(3.30%) were females, 80(9.8%) had 6-8mm loss of attachment, of which 42(9.9%) were males and 38(9.66%) were females. 12(1.5%) had 9-11mm loss of attachment of which 6(1.5%) were males and 6(1.52%) were females and 21(2.6%) subjects had loss of attachment 12 mm or more of which 11(3.6%) were males and 10(2.54%) were

CPI	Male n=427(%)	Female n=393(%)	Total n= 820(%)	P value
Healthy	0(0)	0(0)	0(0)	p=0.001*
Bleeding	70(16.39)	53(13.48)	123(15)	
Calculus	148(34.66)	344(87.53)	492(60)	
Pocket 4-5mm	25(5.85)	57(14.50)	82(10)	
Pocket 6mm or more	27(6.32)	80(20.35)	107(13)	
Not recorded	9(2.10)	7(1.78)	16(2)	

Table 4: Association between Gender and CPI scores in the study subjects. Mann-Whitney U test; p=0.001\* shows high statistical significance

females and in 4(0.48%) subjects loss of attachment was not recorded of which 2(0.46%) were males and 2(0.5%) were females. Statistical test showed significant difference between loss of attachment and gender. (Mann Whitney U test; p=0.000\*). [Table 5]

LOA	Male n=427(%)	Female n=393(%)	Total n= 820(%)	P value
0-3mm	350(82)	322(81.93)	672(82)	p =0.001*
4-5mm	8(1.9)	13(3.30)	21(2.5)	
6-8mm	42(9.9)	38(9.66)	80(9.8)	
9-11mm	6(1.5)	6(1.52)	12(1.5)	
12mm or more	11(3.6)	10(2.54)	21(2.6)	
Not recorded	2(0.46)	2(0.5)	4(0.48)	

Table 5: Association between Gender and LOA scores in the study subjects. Mann-Whitney U test; p =0.001\* shows high statistical significance

**Study population based on mean DMFT according to gender:** The mean DMFT for males was  $6.03 \pm 2.35$  and for  $5.78 \pm 2.55$  females.

Among the study population 668(50.6%) needed one surface restoration, of which 290(46.2%) were males and 378(54.6%) were females. One hundred and thirty four (10.2%) subjects needed two surface restoration of which 78(12.4%) were males and 56(8.1%) were females and 344(26.1%) needed pulp care, of which 184(29.3%) were males and 160(23.1%) were females. Six hundred and thirty (47.7%) needed extraction of which 280(44.6%) were males and 350(50.6%) were females. [Table 6]

Treatment needs	Male n=427(%)	Female n=393(%)	Total n= 820(%)
<b>One surface restoration</b>			
Yes	197(46.2)	215(54.6)	412(50.24)
No	230(53.86)	178(45.29)	408(49.75)
<b>Two surface restoration</b>			
Yes	53(12.4)	32(8.1)	85(10.36)
No	374(87.58)	361(91.85)	735(89.63)
<b>Pulp care</b>			
Yes	125(29.3)	91(23.1)	216(26.34)
No	302(70.72)	302(76.84)	604(73.65)
<b>Extraction</b>			
Yes	190(44.6)	199(50.6)	389(47.43)
No	237(55.50)	194(49.36)	431(52.56)

Table 6: Distribution of study population based on treatment needs

Among the total population none (0%) had a full prosthesis, 2(0.24%) had multi-unit prosthesis and no prosthesis was seen in 810(98.78%).

Among the total population, 102(19.51%) required one unit prosthesis of which 69(16.2%) were males and 33(8.3%) were females. 112(13.65%) required multiunit prosthesis of which 94(22%) were males and 18(4.6%)

were females. 48(5.85%) required combination prosthesis of which 24(5.7%) were males and 24(6.1%) were females. 10(1.21%) of which 3(0.6%) males and 7(1.7%) females required full prosthesis in lower arch. Statistical tests showed a significant difference between prosthetic need and gender (Chi-square test; p=0.238\*). [Table 7]

Prosthetic need	No prosthesis	One-unit prosthesis	Multiunit prosthesis	Combination of one and/or Multiunit prosthesis	Full prosthesis	P value
Male	237(55.4)	69(16.2)	94(22)	24(5.7)	3(0.6)	p=0.569
Female	311(79.1)	33(8.3)	18(4.6)	24(6.1)	7(1.7)	
Total	548(66.82)	102(19.51)	112(13.65)	48(5.85)	10(1.21)	

Table 7: Association between Gender and prosthetic needs in the study subjects. Chi-square test; p=0.569 shows no statistical significance

## DISCUSSION

Assessment of the oral health status is necessary for preparing suitable and satisfactory oral health services and oral health education programs in order to upgrade the dental health of this population. Therefore, the present study aimed to assess the oral health status and treatment needs of sugali tribes. It is recognized that because of the specific nature of the study sample, the findings from this study are not representative of the other ethnic groups in India. As there is scarcity in literature on oral health status among this particular tribal population in India, effort has been made to compare the findings of the present study with studies done on other groups and with general population.<sup>4</sup>

The information regarding the Sociodemographic factors recorded showed that among the sugali tribal population, majority of them were illiterate. Tribes gave very little importance to education. Most of them are not yet conscious of the benefits of education and consequent economic gains. This low literacy is considered to be the root cause of their socio-economic backwardness. The results from the present study showed that majority of them belong to lower socioeconomic status and the same was found with other studies on the tribal population done by authors.<sup>4,11,14,15,16,17</sup>

It was observed in the present study that, in considering the material used for cleaning, brick powder was predominantly used, followed by Neem stick, tooth powder, Charcoal and only few used tooth paste and tooth brush. The lack of awareness in maintaining oral health is the reason for the use of the indigenous brushing practices and the same was found in other studies.<sup>11,18,19,20,21,22</sup>

In the present study, the percentage of oral mucosal lesions observed were as follows: 101(18.9%) leukoplakia, 21(3.94%) ulceration and 5(1%) malignant tumor. 51(6.16%) of the study populations had other pathological conditions like candidiasis and OSMF. The higher percentage of oral mucosal lesions in the study population was due to harmful habits like tobacco usage and alcohol consumption and lack of awareness regarding

the ill effects of these habits. The results were similar to the previous study by authors.<sup>23,24,25,26,27</sup>

The present study showed that majority 492(60%) had calculus, 82(10%) had pocket 4-5mm, 123(15%) had bleeding, 107(13%) had pocket 6mm or more. Universally the oral hygiene was poor with widespread hard and soft deposits evident. The etiology and pathogenesis of periodontal disease involves a complicated interplay between the plaque etiological agents and various risk factors. However, in the present study the increase in prevalence of periodontal disease might be due to lack of proper oral hygiene practices, tobacco habits, lack of awareness about oral health and probably indigenous brushing habits. The results in the present study were similar to the studies done by authors.<sup>9,11,22,24</sup>

Mean DMFT: The mean DMFT in the present study was  $5.90 \pm 2.28$ . Similar high values are found in a study conducted by authors.<sup>29,30</sup>

Among the study population dental fluorosis prevalence was 49%. This increase might be due to the high mean fluoride level of the samples of ground water in the study area which was 2.9 ppm (ranging from 1.6 to 4.7 ppm). Excess amount of fluoride in water leading to the high prevalence of dental fluorosis was also found in studies done by Nirgude AS et al<sup>31</sup> who found that fluorosis prevalence was 55%, dental fluorosis was 30.6% and skeletal fluorosis to be 24.9%. Bharati P et al<sup>32</sup> in their study on fluorosis in Gadag and Bagalkot districts of Karnataka observed that the prevalence of dental fluorosis was 35%.

Dentition Status: It was observed from the present study that 654(79.75%) had decayed crown, 501(80.80%) had missing teeth, 8(0.97%) had filled crown, 8(0.97%) had abutment, 72(8.78%) had unerupted crown and 21(2.56%) had trauma. 225(27.43%) had decayed roots, 119(14.51%) roots were exposed and 501(61.09%) roots were not recorded. The high figures for untreated dental decay and for missing teeth indicate a less frequent visit to the dentist, lack of practicing dentist in their locality, inspite of availability of dentist treatment is expensive for them to afford, lack of awareness in maintaining oral hygiene. The results of the present study were similar to the studies done by authors.<sup>28</sup>

The poor oral hygiene, chronic periodontitis with gingival recession and exposed root surfaces are the main reasons for root surface caries. The decay usually progresses slowly and painlessly and was not noticed by the sufferer because they usually are filled with food debris and located at or below the gingival margin. This was similar to the study done by Newell PL<sup>33</sup> among a rural highland community in New South Wales, Australia, where 60% of the total sample were affected by dental and root caries. The reason for untreated dental decay given was poor access to dentist, even if dentists are available the cost of treatment is too high for them to afford.

Treatment Needs: The present study showed 412(50.24%) needed one surface restoration, 85(10.36%) needed two surface restoration, 216(26.34%) needed pulp care and 389(47.43%) needed extraction. The reason for the accumulated treatment needs may be due to their beliefs about the dental treatment, lack of awareness, least importance to tooth and lack of dentist nearby. This was similar to the study conducted by Kumar ST et al. (2009)<sup>11</sup> on the Bhil tribes of Rajasthan, where Extraction was the most required treatment followed by one surface filling. Two surface fillings were the lowest needed treatment when compared to the other needs. According to the study done by Newell PL<sup>33</sup> among a rural highland community in New South Wales, Australia, 60% of the total sample needed restoration of teeth and 36% needed extractions of teeth.

Prosthetic Status And Treatment Needs: The present study showed 102(19.51%) had one or more missing teeth in the upper and lower arch. Of which 10(1.21%) needed complete denture in upper arch and 10(1.21%) needed full removable denture in lower arch. This was due to early loss of teeth and lack of awareness about the need to replace their lost teeth timely.

A study conducted by Doughan B, Kassak K, and Bourgois DM<sup>34</sup> among Lebanese adults was in agreement with the present study which can be concluded that due to lack of awareness to replace the lost tooth, the study subjects were in greater need of prosthesis. The minimal utilization of prosthetic service by the community may be due to less positive attitude towards oral health.

## CONCLUSION

The present study was done to determine the oral health status and treatment needs of Sugali tribes of Telangana. The study showed that a majority of Sugali tribes used brick powder and neem stick to brush their teeth. The use of toothbrush and tooth paste is relatively less than other materials used for brushing the teeth. The tribes were characterized by a lack of awareness about oral health, deep-rooted dental beliefs; high prevalence of dental fluorosis, periodontal disease, dental caries and lack of previous dental care, high treatment needs, and limited access to oral health services. Hence it is recommended to focus on improving the oral health status and treatment needs of this community.

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Source of Support: Nil  
Conflict of Interest: Nil