



Assessment Of Oral Health Status And Prosthetic Treatment Needs Amongst The Tribals Residing In Bhopal, Madhya Pradesh.

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Abstract

Introduction: Bhopal is home to a significant tribal population in India. This study aimed to assess the oral health status and prosthetic treatment needs of the tribal population residing in Bhopal, MP.

Material and Methods: To conduct this cross-sectional household survey, the modified WHO Oral Health Assessment Form (2013) was utilized. Cluster random sampling was employed, and type III clinical examinations were performed. Statistical analysis involved the use of Chi-square test, t-test, and ANOVA.

Results: A total of 577 participants (389 males and 188 females) aged between 2 and 74 years were examined. The mean dmft score was 4.13 ± 0.73 among 2–5-year-old participants, while the scores for the age groups of 35–44 years and 65–74 years were 5.32 ± 2.36 and 7.56 ± 4.29 , respectively. Significant differences were observed in the presence of healthy gums, bleeding gums, and shallow pockets, requirements of prostheses 65-74 required more in prosthetic consideration across different age groups. The age group of 13-15 years had the highest need for preventive treatment.

Conclusion: The study revealed a high prevalence of dental caries and periodontal disease among the tribal population. Notably, the age group of 13-15 years required the most preventive treatment and 35-44, 65-74 years age group required more consideration in prosthetic treatment.

Keywords: DMFT, Dental Diseases ,Periodontitis, Prosthetic Treatment need, Tribal people, Prosthesis

Introduction-

Oral health plays a crucial role in overall well-being and encompasses functional, structural, aesthetic, physiologic, and psychological aspects. Dental diseases, including periodontitis , pose significant challenges particularly in developing countries. In India, several communities face social, economic, political, and educational disadvantages. Among these communities are the tribes, and Bhopal stands out for its rich and diverse tribal population. Despite advancements in global oral health, many communities, especially the underprivileged, continue to experience oral health problems. While several studies have focused on the tribal population of Bhopal, limited research addresses the oral health status and treatment needs of the tribal's in the region. Thus, this study aimed to evaluate the oral health status and treatment needs of the tribal population residing in Bhopal, MP.

Material and Methods-

A cross- sectional was conducted between July and September 2022. The population list was obtained from the Statistical wing of the Scheduled Caste & Scheduled Tribes Welfare Department, Bhopal. Cluster random sampling was used to select two wards (Ward 1 and 2) out of the 85 wards , 19 zones in the randomly chosen zone of Bhopal. The sample size was calculated using the formula: $n = z^2 pq/d^2$, where n is sample size, P prevalence of disease, q free from disease, d allowable error and z is point on the normal deviation. The sample size thus arrived at was 577 participants. Written informed consent was obtained from all participants. Ethical approval was granted by the Panchayat Bhawan/Nagar Palika/Nagar Nigam, Bhopal. Data related to oral health was recorded using a modified World Health Organization (WHO) Oral Health Assessment Form (2013). A single examiner underwent training and calibration in the department to ensure consistency in diagnosis. The principal investigator conducted clinical examinations, aided by recording assistants and diagnostic pictures sent to the specialty department for the consideration.

Clinical examinations were performed using a Community Periodontal Index (CPI) probe and a plane mouth mirror under adequate natural light. All participants present on the examination day were included. The recorded data was analyzed using the Statistical Package for the Social Sciences version 25 (SPSS Inc., Chicago, Illinois, USA). The analysis involved calculating descriptive statistics such as percentages, means, and standard deviations. To assess the significance of the findings, several statistical tests were employed, including the Chi-square test, Student's t-test, and one-way analysis of variance (ANOVA). The level of significance was set at 0.05, corresponding to a 95% confidence interval.

Results:

In the study, a total of 577 participants were included, comprising 389 males and 188 females. The age range of the participants varied from 2 to 74 years. Among the participants, 259 (44%) were engaged in daily wage labor, and 101 (17.50%) worked as drivers. It was observed that a significant number of participants consumed more than one form of tobacco, with the majority of them consuming paan.

The average decayed, missing, and filled tooth (DMFT) score for participants aged 2 to 5 was 3.9 ± 0.63 . For the older age groups of 35 to 44 and 65 to 74 years, the scores were 4.52 ± 2.48 and 7.56 ± 4.29 , respectively. A significant correlation was observed among all age groups, except for the 65 to 74 age group.

In this study presents the average number of sextants with various periodontal disease conditions, as assessed by CPI. The age group of 35-44 years had a higher prevalence of participants with bleeding gums (1.03 ± 0.08). Shallow pockets were more frequently observed in the same age group (1.64 ± 0.11), while deep pockets were predominantly found in the age group of 65-74 years (0.65 ± 0.17). Notably, statistically significant variations were noted in the occurrence of healthy gums, bleeding gums, and the presence of shallow pockets across the different age groups.

Table 1 : Mean number of sextants as scored by CPI across age groups

Age group	Healthy	Bleeding	Calculus	Pocket (4-5 mm)	Pocket (± 6 mm)
35-44 years	1.18 \pm 0.07	1.34 \pm 0.06	1.43 \pm 0.56	1.41 \pm 0.15	0.64 \pm 0.32
65-74 years	0.0	0.15 \pm 0.03	1.23 \pm 0.71	1.25 \pm 0.12	0.35 \pm 0.17

Approximately participants aged 2-5 years did not require any treatment. The age group of 13-15 years predominantly required preventive or routine treatment. Among the participants aged 35-44 years, a significant number needed prompt treatment, including scaling, endodontic and prosthetic treatment in some. Individuals in the age group of 65-74 years required prosthetic treatment and referral for comprehensive care.

Table -2 :-Distribution of age groups according to treatment needs

Age group	No treatment needed n; %	Preventive or routine treatment needed n; %	Prompt treatment including scaling, endodontic and prosthetic treatment needed n; %	Prosthetic treatment needed n; %	Referred for comprehensive evaluation n; %
35-44 years	12; 5.15%	45; 27.14%	82; 40.81%	4; 7.25%	37; 19.6%
65-74 years	0	4; 5.04%	9; 8.09%	40; 42.43%	46; 44.43%

The distribution of study participants based on prosthetic need is presented. Out of the total participants, 202 (35%) required a one-unit prosthesis. Additionally, 21 (2.39%) participants required a full prosthesis in the upper jaw, while 23 (2.62%) participants needed a full prosthesis in the lower jaw.

The majority of the participants 48; (8.3%) exhibited various oral mucosal lesions such as smokers melanosis, hyperpigmentation, dry mouth, and tobacco pouch keratosis. Furthermore, approximately 230 participants showed a loss of attachment ranging from 0 to 3 mm, while 150 participants had a loss of attachment measuring 4 to 5 mm.

Discussion-The present study focused on the tribal population residing in Bhopal, MP. A total of 577 tribals participated in the study, with the majority being males and belonging to the 35-44 age groups. Daily wage work was identified as the primary source of income for the participants. In a study conducted on tribes in Dhanbad, Jharkhand, agriculture was reported as the main source of income for the tribal population [2]. Interestingly, most of the tribal participants in this study used twigs for cleaning their teeth, which contrasts with the findings of Vijayakumar et al. [4], where a majority of the study population (35%) used brick powder for brushing, while only 5% used neem sticks. The consumption of various forms of tobacco was prevalent among the participants, similar to the findings of a study conducted among the Narikurvans or "gypsies" of The othukudi district, which revealed that 64.55% of the adult population were tobacco users, with smokeless tobacco being the most common form used [5].

The mean decayed, missing, and filled tooth (DMFT) score was 3.54 ± 0.81 in participants aged 2-5 years and higher DMFT scores were observed in the 65-74 age group. These findings align with previous studies conducted by Maurya et al. [6], Lang et al. [7], Mandal et al. [8], and others. For instance, Mandal et al. reported average decayed, extracted, and filled teeth (deft)/DMFT values of 1.32, 1.11, and 0.99, respectively, in deciduous, mixed, and permanent dentition. Additionally, a similar study found mean dmft/DMFT values of 6.13 ± 4.90 and 1.15 ± 1.62 for 5- and 12-year-olds,

respectively [9]. Bleeding gums were predominantly observed in the age group of 35-44 years (1.03 ± 0.08), consistent with studies on the Todas tribe and the Kotas tribe [10]. Shallow pockets were more commonly seen in the 35-44 age group, while deep pockets were predominant in the 65-74 age group, which is in agreement with studies conducted by Kumar VK et al. [11] and Singh et al. [12]. However, a study on the Birhor tribe showed that bleeding gums were more prevalent in the 2-5 age group, and shallow pockets were predominant in the 16-34 age group [13]. Singh A et al. [9] found that bleeding on probing and calculus were common in both the 5- and 12-year age groups, and the mean number of healthy sextants decreased with age.

Preventive or routine treatment was primarily required by participants in the 13-15 age group, while individuals in the 35-44 age group often needed prompt treatment, including scaling. Participants in the 65-74 age group required immediate treatment and referral for comprehensive care. Similar findings were reported by Naidu et al. [14], Vijayakumar N et al. [4], and Kumar TS et al. [15]. For example, Vijayakumar N et al. reported that 50.24% of the study population among the Sugali tribe needed one surface restoration, 10.36% needed two surface restorations, 26.34% needed pulp care, and 47.43% needed extraction. Extraction was the most required treatment, followed by one surface filling, among the Bhil adult tribe of Rajasthan

Around 31.93% of the participants in the study required a one-unit prosthesis, with the majority (19.51%) needing this type of prosthesis, as reported by Vijayakumar N et al. [4]. The majority of the participants exhibited oral mucosal lesions such as smokers melanosis, hyperpigmentation, dry mouth, and tobacco pouch keratosis. However, Vijayakumar N et al. [4] reported that in their study, the majority of the population (65%) did not show any abnormal conditions of the oral mucosa.

Among the participants, approximately 230 individuals had a loss of attachment measuring 0-3 mm, while 150 participants had a loss of attachment ranging from 4-5 mm. A similar study by Kumar, Dileep, Sethi, and Gupta (2019) found that around 298 subjects (74.5%) had periodontal loss of attachment (LOA) in the range of 0-3 mm [13]. Consistent findings were also reported by Das D et al. [16] in their study on the Juang tribe.

Conclusion- The results of this study can serve as baseline data for health administrators in Bhopal to plan oral health programs that cater to the specific needs of the tribal population across the state of Madhya Pradesh. However, it should be noted that the findings of this study cannot be generalized to other development blocks in the district due to significant variations in socio-demographic factors. To overcome this limitation, future studies with larger sample sizes drawn from across the district and employing longitudinal designs would be beneficial.

References

1. Yewe-Dyer M. The definition of oral health. *Br Dent J*. 1993;174:224–5. [PubMed] [Google Scholar]
2. Kumar G, Tripathi RM, Dileep CL, Trehan M, Malhotra S, Singh P. Assessment of oral health status and treatment needs of Santhal tribes of Dhanbad District, Jharkhand. *J Int Soc Prev Community Dent*. 2016;6:338–43. [PMC free article] [PubMed] [Google Scholar]
3. *Scheduled Castes and Scheduled Tribes Research and Training Institute. The Tribes of Odisha*. [[cited 2020 October 12]]. Available from: <http://www.scstrti.in/index.php/communities/tribes> .
4. 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;3:21–6. [Google Scholar]
5. Chellappa LR, Leelavathi L, Indiran MA, Rathinavelu PK. Prevalence and dependency of tobacco use among tribal gypsies in Thoothukudi district-A cross sectional study. *J Family Med Prim Care*. 2021;10:738–44. [PMC free article] [PubMed] [Google Scholar]
6. Maurya R, Kundu D, Singh H, Mishra H. Oral health status, dental caries experience and treatment needs of population of Jammu city. *Int J Oral Health Dent*. 2015;1:164–7. [Google Scholar]
7. Lang WP, Hamard MA, MacKenzie RC. Rural dental program in Haiti. *Community Dent Oral Epidemiol*. 1984;12:233–6. [PubMed] [Google Scholar]
8. Mandal S, Ghosh C, Sarkar S, Pal J, Kar S, Bazmi BA. Assessment of oral health status of Santal (tribal) children of West Bengal. *J Indian Soc Pedod Prev Dent*. 2015;33:44–7. [PubMed] [Google Scholar]
9. Singh A, Bharathi MP, Sequeira P, Acharya S, Bhat M. Oral health status and practices of 5 and 12 year old Indian tribal children. *J Clin Pediatr Dent*. 2011;35:325–30. [PubMed] [Google Scholar]
10. Loyola D, Pandian D, Surraj S. Assessment of oral health status of the Toda & the Kota tribes in the Nilgiri District, India-A comparative study. *IOSR J Dent Med Sci*. 2020;19:20–6. [Google Scholar]
11. Kumar VK, Agarwal V, Khatri M, Singh G, Sunny. Prevalence of periodontitis in rural and urban population. *Indian J community Health*. 2015;27:366–71. [Google Scholar]
12. Singh K, Bhandari SB, Anandani C, Pani P, Kansal S, Chaudhary H. Prevalence of periodontal diseases and oral hygiene practices among drug addicted inmates. *J Oral Health Dent Manag*. 2014;13:911–4. [Google Scholar]
13. Kumar G, Dileep CL, Sethi AK, Gupta B. The Birhor tribes of Ramgarh District, Jharkhand-A ferret into their oral health status and treatment needs. *Med Pharm Rep*. 2019;92:178–84. [PMC free article] [PubMed] [Google Scholar]
14. Naidu R, Prevatt I, Simeon D. The oral health and treatment needs of schoolchildren in Trinidad and Tobago: Findings of a national survey. *Int J Paediatr Dent*. 2006;16:412–8. [PubMed] [Google Scholar]

15. Kumar TS, Dagli RJ, Mathur A, Jain M, Balasubramanyam G, Prabu D, et al. Oral health status and practices of dentate Bhil adult tribes of southern Rajasthan, India. *Int Dent J.* 2009;59:133–40. [PubMed] [Google Scholar]
16. Das D, Suresan V, Jnaneswar A, Khurana C, Bhadauria US, Saha D. Oral health status and treatment needs among the Juang tribe-A particularly vulnerable tribal group residing in Northern Odisha, India: A cross-sectional study. *Health Soc Care Community.* 2019;27:e752–9. [PubMed] [Google Scholar]