Original Article

Oral health assessment and treatment needs of 12- and 15-year-old children residing in tribal welfare and private hostels – A comparative study

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Abstract

Background and Objectives: Oral health is an integral part of general health. Providing oral health care facilities and creating awareness about the oral health problem in under-served children and communities may lead to a better oral-health-related quality of life of the individual. The present study aims to assess and compare the oral health status and treatment needs of 12- and 15-year-old children residing in tribal welfare hostels and other private hostels of Bhopal district, Madhya Pradesh. **Materials and Methods:** The present descriptive cross-sectional study consisted of a total sample size of 800 children, 400 in each group (tribal welfare hostel and private hostel groups). Oral health status and treatment needs were assessed using World Health Organization proforma 1997. Oral health behavior including health of teeth and gums, oral hygiene aids, brushing frequency, consumption of sweets in between meals, and present general and oral health was assessed. Utilization of dental services was also assessed using a pre-designed questionnaire, which was completed by the study participants. **Results:** Statistical analysis was carried out using Chi-square test. Significant differences were noted between the groups in regarding oral health behaviors and visit to a dentist during the past 12 months ($P = 0.002$*), which were lower in tribal children. Tribal children were having higher dental fluorosis as compared to the private hostel children ($P = 0.043$*). Decay in permanent teeth ($P = 0.006$*) and missing of permanent teeth ($P = 0.05$*) were higher among tribal children. **Conclusion:** The present study revealed a poor oral health status and treatment needs of tribal children. Tribal children were having higher dental fluorosis as compared to the private hostel children. Decay in permanent teeth and missing of permanent teeth were higher among tribal children. Oral health behaviors and utilization of dental services were lower in tribal children. Good oral health has a definitive influence on general health and thus contributes to self-image and social interaction.

Keywords: Children, oral health status, treatment needs, tribal welfare hostels

Introduction

India is a home for several religious communities, among which tribal community is one of the important population groups, comprising approximately 8.6% of the total population (according to census 2011).[1]

Tribal communities in India form the largest proportion of the total population in Lakshadweep and Mizoram, followed by Nagaland and Meghalaya. Madhya Pradesh has the largest number of scheduled tribes, followed by Bihar. There are more

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than 50 tribal groups in India. Madhya Pradesh has the largest tribal population of all the states. There are 48 communities of schedules caste and 46 communities of scheduled tribes in Madhya Pradesh.[2,3]

The Government of India and the state government have opened separate hostels for boys and girls for the purpose of providing accommodation to students of the tribal category coming from remote locations or areas. In the state of Madhya Pradesh, there are 1014 pre-metric and 61 post-metric boys hostels and 289 pre-metric and 45 post-metric girls hostels.[4] Students who are studying in the 6th to 12th classes may reside in pre-metric hostels, and the students studying in higher classes may reside in post-metric hostels. Tribal children residing at various tribal welfare hostels are deprived of basic and quality dental care because of lack of awareness and limited resources. The significance of this study was to understand the oral health status of these under-served communities in order to promote oral health among the population and in order to plan, implement, and evaluate various oral health care programs for these under-served populations.

On the other hand, there is no literature available about the oral health status of tribal children residing in tribal welfare hostels of Bhopal district, Madhya Pradesh. Therefore, the present study was conducted with the following objectives:

- To assess and compare the oral health status and treatment needs of 12- and 15-year-old children residing in tribal welfare hostels as well as other private hostels of Bhopal district.
- To obtain base line data and recommend to concerned authorities for planning and implementation of oral health services for these communities.

Materials and Methods

Study design

A descriptive cross-sectional study was conducted on children aged 12 and 15 years residing in tribal welfare hostels and other private hostels from similar geographical areas of Bhopal district, Madhya Pradesh.

Sampling method

The list of tribal hostels in Bhopal district was obtained from the Tribal Welfare Development Office of Bhopal District, Madhya Pradesh. There were 65 hostels listed, with the following eight hostels from different geographical locations: Berasia, Professor Colony new market, Gandhinagar, E-8 arera colony, Chitragupt Nagar, Bhadbhada road, Panchvati airport road, and Nehru Nagar were selected by the lottery simple random sampling method. Fifty children were examined from each hostel.

Sample size

According to National Oral Health Survey and Fluoride Mapping 2002–2003 India, the estimated prevalence of dental caries was 52.5% among 12-year-olds and 61.4% among 15-year-olds.[5] An average value of 56% was substituted in the following formula to calculate the final sample size.

$n = Z^2PQ/d^2$, where

$Z = 1.97$, $P = 56\%$ (0.056), $Q = (1-P)$, $d = 0.05$.

The sample size obtained was 382 and was rounded off to the nearest 100, giving a final sample size of 400. To compare the findings, 400 children were included from private schools belonging to similar geographical areas and socio-economic statuses. Hence, the total number of children who participated in the study was 800.

Study participants and duration

The total number of children who participated in the study was 800. The study duration and schedule for visits were planned based on the sample size and children present in tribal welfare hostels and schools. Accordingly, the duration of the study was 6 months, from September 30, 2016 to March 31, 2017. On an average, 50 subjects were examined each day. The control group was selected from the school belonging to a similar geographical area and socio-economic status.

Study variables

Socio-demographic statuses including age, gender, occupation, geographical location, and ethnic group were recorded for all the participants.

Inclusion criteria

Children aged 12 and 15 years, children present on the day of examination, and children who gave consent were included.

Exclusion criteria

Medically compromised children where examination is contra-indicated without antibiotic prophylaxis, children not willing to participate in the study, and uncooperative children were excluded.

Training and calibration of the examiner

A single examiner performed all the examinations throughout the study. The investigator was trained and calibrated in the Department of Public Health Dentistry according to the calibration processes suggested by the World Health Organization's (WHO's) Basic Oral Health Survey.[6] The children were examined in the tribal welfare hostels and school campus, and the observations were recorded in the pre-designed proforma. A recording assistant was trained to assist in recording the study findings during the examination process. Since the study was performed by a single examiner inter-examiner variability was eliminated. However, in the case of multiple examiners, Kappa statistics is one of the most standardized method for reducing inter-examiner variability.[7] All the children in the study were examined for both extra-oral and intra-oral findings using WHO proforma (1997)[8] [Figures 1 and 2].

Examination of the subjects

Examination was done in the tribal hostels and school campus with the aid of a kidney tray, mouth mirror, probe, Williams periodontal probe, tweezer, and explorer under adequate natural light. Tribal hostel children were examined in the hostel premises, and private hostel children were examined in the school premises, with the examiner standing in 10 o' clock position, under natural day light. The children were positioned so as to receive maximum illumination, while avoiding discomfort to the participant from direct sunlight. A table was kept, and instruments were placed within easy reach of the examiner. Oral examination was conducted by a single calibrated examiner and was done in uniform manner. A recording assistant was seated close enough to the examiner so that instructions and codes could be easily heard and the examiner could see that findings were being recorded carefully and correctly.

Extra-oral examination included temporomandibular joint assessment and examination for extra-oral swelling. Intra-oral examination included oral mucosal conditions, enamel opacities, dental fluorosis, community periodontal index and loss of attachment, dentition status and treatment needs, and prosthetic needs. Children requiring the need for immediate care and referral for life-threatening conditions, pain or infection, and other condition were referred to People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, for the needful treatment.

A pre-designed questionnaire [Figure 3] including questions on health of teeth and gums, frequency of cleaning teeth, aids to clean teeth, toothpaste containing fluoride, toothache during the past 12 months, visit to a dentist during the past 12 months, reasons to visit a dentist during the past 12 months, consumption of sweets in between meals, and rating of overall general health and oral health was provided.

Ethical considerations

The study protocol was approved by the Institutional Ethical Committee of People's College of Dental Sciences and Research Centre, People's University, Bhopal, Madhya Pradesh, India (Ref/PCDS/ACAD/8/2015/55). Official permission was also obtained from Tribal Welfare Development Office and private school authorities of Bhopal, Madhya Pradesh. Written informed consent was obtained from study participants before examination. Written permission was obtained from the respective authorities, and only those children with written informed consent and satisfying the inclusion and exclusion criteria were recruited in the study.

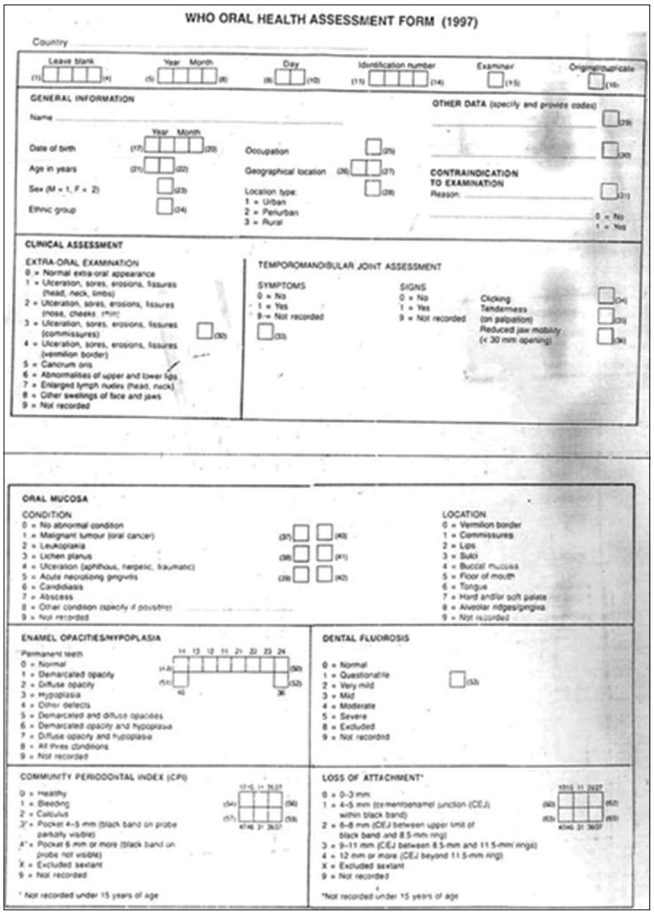


Figure 1: WHO proforma (1997) Part1

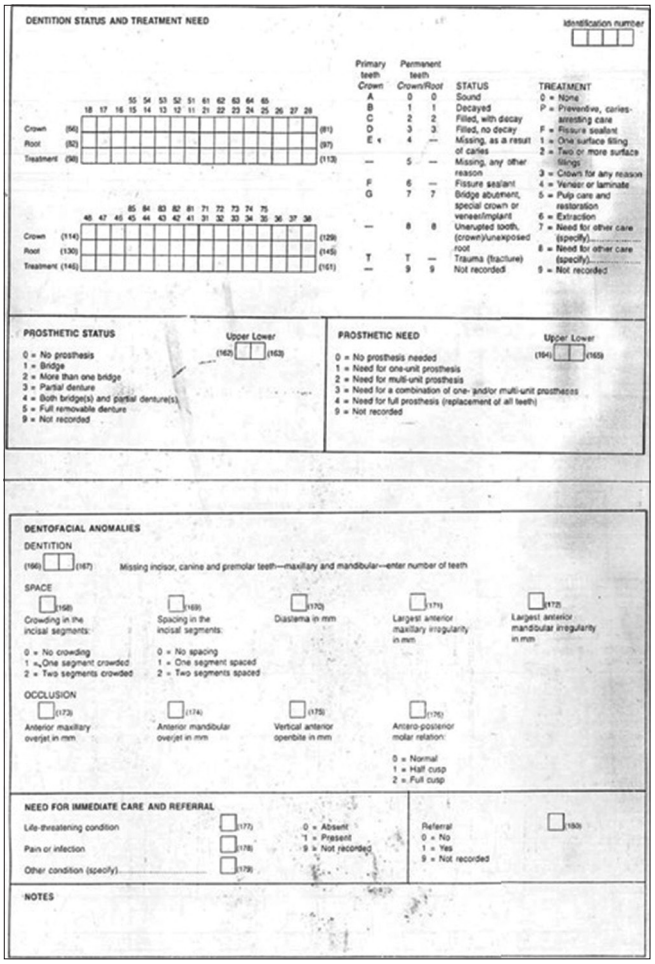
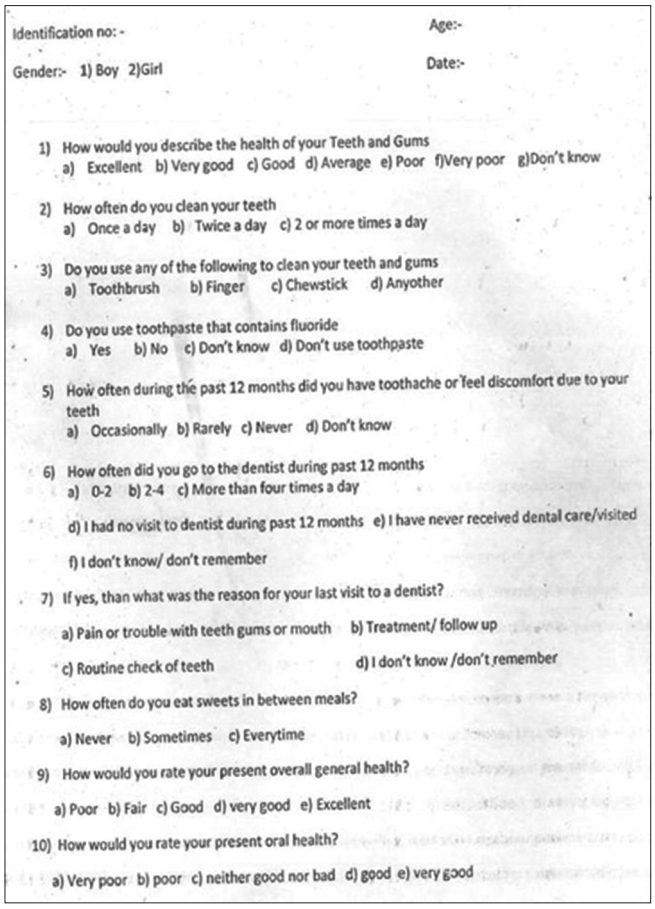


Figure 2: WHO proforma (1997) Part2



Identification no: -

Age:-

Gender:- 1) Boy 2)Girl

Date:-

1) How would you describe the health of your Teeth and Gums
a) Excellent b) Very good c) Good d) Average e) Poor f)Very poor g)Don't know

2) How often do you clean your teeth
a) Once a day b) Twice a day c) 2 or more times a day

3) Do you use any of the following to clean your teeth and gums
a) Toothbrush b) Finger c) Chewstick d) Anyother

4) Do you use toothpaste that contains fluoride
a) Yes b) No c) Don't know d) Don't use toothpaste

5) How often during the past 12 months did you have toothache or feel discomfort due to your teeth
a) Occasionally b) Rarely c) Never d) Don't know

6) How often did you go to the dentist during past 12 months
a) 0-2 b) 2-4 c) More than four times a day
d) I had no visit to dentist during past 12 months e) I have never received dental care/visited
f) I don't know/ don't remember

7) If yes, than what was the reason for your last visit to a dentist?
a) Pain or trouble with teeth gums or mouth b) Treatment/ follow up
c) Routine check of teeth d) I don't know /don't remember

8) How often do you eat sweets in between meals?
a) Never b) Sometimes c) Everytime

9) How would you rate your present overall general health?
a) Poor b) Fair c) Good d) very good e) Excellent

10) How would you rate your present oral health?
a) Very poor b) poor c) neither good nor bad d) good e) very good

Figure 3: A pre designed questionnaire

Statistical analysis

Data were analyzed using IBM SPSS (Statistical Package for the Social Sciences) for Windows, Version 22.0 Armonk, NY: IBM Corp. for the generation of descriptive and inferential statistics. The statistically significant difference among groups was determined by the Chi-square test, and the level of significance was set at $P < 0.05$.

Results

Table 1 Comparison of oral health behaviors among the study population

Among tribal hostel versus private hostel children, 18.8% (75) versus 21.3% (85) rated the health of their teeth and gums as excellent, 29% (116) versus 31.5% (126) rated it as very good, 35% (140) versus 33.3% (133) rated it as good, 11% (44) versus 10.3% (41) rated it as average, 3.3% (13) versus 2.5% (10) rated it as poor, 0.3% (1) versus 0.5% (2) rated it as very poor, and 2.8% (11) versus 0.8% (3) subjects do not know about the health of their teeth and gums.

Among tribal hostel versus private hostel children, 75.3% (301) versus 49.5% (198) brushed their teeth once a day, 23.5% (94) versus 41.8% (167) brushed their teeth twice a day, and 1.3% (5) versus 8.8% (35) brushed their teeth two or more times a day.

Among tribal hostel versus private hostel children, 97.8% (391) versus 98% (392) used a toothbrush to clean their teeth, 1% (4) used a finger to clean their teeth, 1% (4) versus 1 child used a chewstick to clean their teeth, and 1 child versus 1.5% (6) used other means of cleaning teeth.

Among tribal hostel versus private hostel children, 31% (124) versus 34.5% (138) used toothpaste that contains fluoride, 9.3% (37) versus 9.5% (38) used toothpaste that does not contain fluoride, 59.3% (237) versus 52.3% (209) had no knowledge about the toothpaste containing fluoride, and 0.5% (2) versus 3.8% (15) do not use toothpaste.

Among tribal hostel versus private hostel children, 40.5% (162) versus 26.8% (107) experienced toothache during the past 12 months, 9.8% (39) versus 10% (40) rarely experienced any toothache during the past 12 months, 44.8% (179) versus 52.5% (210) never experienced any toothache during the past 12 months, and 5% (20) versus 10.8% (43) do not know about the toothache during the past 12 months.

Among tribal hostel versus private hostel children, 28% (112) versus 31% (124) never consumed sweets in between meals, 71% (284) versus 63.5% (254) consumed sweets sometimes in between meals, and 1% (4) versus 5.5% (22) consumed sweets every time in between meals.

Among tribal hostel versus private hostel children, 9.3% (37) versus 3.8% (15) rated their overall general health as poor, 3% (12) versus 5.5% (22) rated it as fair, 56.5% (226) versus 45.8% (183) rated it as good, 21.3% (85) versus 31% (124) rated it as very good, and 10% (40) versus 14% (56) rated it as excellent.

Among tribal hostel versus private hostel children, 1% (4) versus 1.3% (5) rated their overall oral health as very poor, 5.5% (22) versus 5% (20) rated it as poor, 12.5% (50) versus 21.3% (85) rated it as neither good nor bad, 56.3% (225) versus 50% (200) rated it as good, and 24.8% (99) versus 22.5% (90) rated it as very good.

When we compared the frequencies of oral health behavior between the groups, a significant difference was noted for brushing frequency, aids used to clean teeth, usage of toothpaste containing fluoride, toothache experienced in the past 12 months, consumption of sweets in between meals, and self-assessment of overall general health and oral health ($P < 0.05$*).

Table 2 Comparison of utilization of dental services among the study population

Among tribal hostel children versus private hostel children, 29.3% (117) versus 30.3% (121) visited a dentist two times during the past 12 months, 2% (8) versus 3.8% (15) visited a dentist two to four times during the past 12 months, 0.3% (1) versus 1.8% (7) visited a dentist more than four times during the past 12 months, 18% (72) versus 23% (92) had not visited a dentist, 33.3% (133) versus 32.3% (129) children never visited a dentist, 17.3% (69)

Table 1: Comparison of oral health behavior characteristics among the study population

	Tribal hostel children *n* (%)	Private hostel children *n* (%)	Total *n* (%)	Chi-square value	*P*
Health of teeth and gums					
Excellent	75 (18.8)	85 (21.3)	160 (20)	6.620	0.0357
Very good	116 (29.0)	126 (31.5)	242 (30.3)		
Good	140 (35.0)	133 (33.3)	273 (34.1)		
Average	44 (11.0)	41 (10.3)	85 (10.6)		
Poor	13 (3.3)	10 (2.5)	23 (2.9)		
Very poor	1 (0.3)	2 (0.5)	3 (0.4)		
Don't know	11 (2.8)	3 (0.8)	14 (1.8)		
How often do you clean teeth					
Once a day	301 (75.3)	198 (49.5)	499 (62.4)	64.178	0.000*
Twice a day	94 (23.5)	167 (41.8)	261 (32.6)		
2 or more times a day	5 (1.3)	35 (8.8)	40 (5.0)		
Aids used to clean teeth					
Toothbrush	391 (97.8)	392 (98.0)	783 (97.9)	10.373	0.035*
Finger	4 (1.0)	1 (0.3)	5 (0.6)		
Chew stick	4 (1.0)	1 (0.3)	5 (0.6)		
Any other	1 (0.3)	6 (1.5)	7 (0.9)		
Use of Toothpaste that contains fluoride					
Yes	124 (31.0)	138 (34.5)	262 (32.8)	12.460	0.006*
No	37 (9.3)	38 (9.5)	75 (9.4)		
Don't know	237 (59.3)	209 (52.3)	446 (55.8)		
Don't use toothpaste	2 (0.5)	15 (3.8)	17 (2.1)		
Toothache during past 12 months					
Occasionally	162 (40.5)	107 (26.8)	269 (33.6)	22.125	0.000*
Rarely	39 (9.8)	40 (10.0)	79 (9.9)		
Never	179 (44.8)	210 (52.5)	389 (48.6)		
Don't know	20 (5.0)	43 (10.8)	63 (7.9)		
	Tribal hostels children *n* (%)	**Private hostels children *n* (%)**	**Chi square value**		***P***
Consumption of sweets in between meals					
Never	112 (28.0)	124 (31.0)	14.745		0.001*
Sometimes	284 (71.0)	254 (63.5)			
Every time	4 (1.0)	22 (5.5)			
Rating of present overall general health					
Poor	37 (9.3)	15 (3.8)	28.089		0.000*
Fair	12 (3.0)	22 (5.5)			
Good	226 (56.5)	183 (45.8)			
Very good	85 (21.3)	124 (31.0)			
Excellent	40 (10)	56 (14.0)			
Rating of present overall oral health					
Very poor	4 (1)	5 (1.3)	11.180		0.025*
Poor	22 (5.5)	20 (5.0)			
Neither good nor bad	50 (12.5)	85 (21.3)			
Good	225 (56.3)	200 (50.0)			
Very good	99 (24.8)	90 (22.5)			

*Chi-square value; $P<0.05$

versus 9% (36) children do not know/remember their visit during the past 12 months. When we compared the frequency of utilization of dental services, children from private hostels showed significantly higher dental visits in the past 12 months compared to tribal hostel residents ($P = 0.002$*).

Table 3 Comparison of enamel opacities among the study population

Among children belonging to tribal hostels versus private hostels, 92.8% (371) versus 93.5% (374) of them had absence of enamel opacities/hypoplasia, 1.5% (6) versus 0.5% (2) of them had demarcated opacities, 2% (8) versus 2.5% (10) of them had diffuse opacities, 3.3% (13) versus 3.5% (14) of them had hypoplasia, and only 2 (0.5%) versus 0 children had diffuse opacity and hypoplasia. When we compared the frequencies of enamel opacities between the groups, there was a significant difference with respect to absence of enamel opacities among the children ($P = 0.041$, $P < 0.05$). There was no significant difference noted with respect to demarcated opacity, diffuse opacity, hypoplasia, and presence of both diffuse opacity and hypoplasia.

Table 2: Comparison of utilization of dental services among the study population

	Tribal hostel children *n* (%)	Private hostel children *n* (%)	Total *n* (%)	Chi-square value	*P*
Visit to a dentist during past 12 months					
0-2 times	117 (29.3)	121 (30.3)	238 (29.8)	19.569	0.002*
2-4 times	8 (2.0)	15 (3.8)	23 (2.9)		
More than 4 times	1 (0.3)	7 (1.8)	8 (1.0)		
No visit during	72 (18.0)	92 (23.0)	164 (20.5)		
Never visited a dentist	133 (33.3)	129 (32.3)	262 (32.8)		
Don't Know/remember	69 (17.3)	36 (9.0)	105 (13.1)		
Reason for last visit to a dentist					
Pain or trouble with teeth and gums	37 (9.3)	31 (7.8)	68 (8.5)	6.942	0.074
Treatment/follow-up	35 (8.8)	27 (6.8)	62 (7.8)		
Routine check of teeth	39 (9.8)	62 (15.5)	101 (12.6)		
Don't Know/remember	289 (72.3)	280 (70.0)	569 (71.1)		

*Chi-square value; $P<0.05$

Table 3: Comparison of enamel opacities among the study population

Enamel opacities/hypoplasia	Tribal hostel children *n* (%)	Private hostel children *n* (%)	Total *n* (%)	Pearson Chi-square value	*P*
Normal/absent	371 (92.8)	374 (93.5)	745 (93.1)	18.919	0.041*
Demarcated opacity	6 (1.5)	2 (0.5)	8 (1)	5.354	0.069
Diffuse opacity	8 (2.0)	10 (2.5)	18 (2.3)	9.672	0.289
Hypoplasia	13 (3.3)	14 (3.5)	27 (3.3)	12.400	0.088
Diffuse opacity and hypoplasia	2 (0.5)	0	2 (0.3)	2.005	0.157

*Chi-square value; $P<0.05$

Table 4 Comparison of dental fluorosis among the study population

Among children examined in tribal hostels versus private hostels, 328 versus 351 children had no fluorosis, 21 versus 15 of them had questionable fluorosis, 18 children versus 19 had very mild fluorosis, 13 versus 10 children had mild fluorosis, 18 versus 4 children were having moderate dental fluorosis, and 2 versus 1 of them had severe dental fluorosis. When we have compared the frequencies, a significant difference was noted between the groups ($P = 0.043$*).

Table 5 Comparison of community periodontal index scores among the study population

Among children examined in tribal hostels versus private hostels, 22.3% (89) versus 25.8% (103) of the children complained of bleeding gums and 17.25% (69) versus 20.5% (82) of them showed the presence of calculus. When we compared the frequencies, significant differences were noted for the presence of calculus between the groups. In either of the groups, there were no children having periodontal pockets and the community periodontal index was not recorded in children aged 12 years ($P = 0.055$*).

Table 6 Comparison of dentition status among the study population

Among children examined in tribal hostels versus private hostels, 4.3% (17) versus 5.8% (23) of the children had decayed primary teeth, 42% (168) versus 31% (124) of them had decayed permanent teeth, six children (1.5%) versus one children had permanent teeth missing, and in 3.8% (15) versus 27 children (6.8%), there was trauma/fracture in permanent teeth. Significant differences ($P < 0.05$) were obtained when we compared the frequencies of dentition status with respect to decay in primary teeth, decay in permanent teeth, and missing permanent teeth ($P = 0.031$*).

Table 7 Comparison of treatment needs among the study population

Among children examined in tribal hostels versus private hostels, 2% (8) versus 3.3% (13) required preventive or caries arresting care, 43.5% (174) versus 35.3% (141) children required one surface filling, 10.8% (43) versus 10.8% (43) children required two surface fillings, 1.5% (6) versus 1% (4) children required crown for any reason, 4% (16) versus 4.5% (18) children required pulp care and restoration, and 0.8% (3) versus 0.5% (2) children required extraction. When we compared the frequencies, a significant difference was noted for one surface filling between the groups ($P = 0.000$*).

Discussion

Tables 1 and 2 show that significant differences were noted between the groups in regarding oral health behaviors, utilization of dental services, and parents' education level, which was lower in tribal children. Our results are consistent with Abhinav Singh *et al.* in 2011,[9] who conducted a study on oral health status and practices of 5- and 12-year-old Indian tribal children. Study revealed high sugar consumption, dental fluorosis, poor oral hygiene, and untreated dental disease among tribal children.

Table 3 shows that the prevalence of enamel defects in the present study population [Table 3] was similar to the findings of National Oral Health Survey and Fluoride Mapping 2002–2003.[6]

Table 4 shows that tribal children were having higher dental fluorosis as compared to the private hostel children, which implies tribal children living in high-fluoridated belt areas [Table 4]. The results are consistent with the study reported by Vijayakumar. N *et al.*,[10] regarding the prevalence of dental fluorosis among Sugali tribes, and found that 402 (49%) of the population had dental fluorosis, with 20 (2.43%) of them showing severe dental fluorosis and 418 (51%) having no dental fluorosis. In the present study, the prevalence of dental fluorosis was 15.1%, with 3 (0.4%) children having severe dental fluorosis.

Table 5 shows that among the children aged 15 years, there was no loss of attachment present (LOA = 0–3 mm) [Table 5]. The findings were similar to the study reported by Kirankumar B. Dhanappa *et al.*[11] done on Malayali tribes, where a majority of 15 years adolescents (n = 243, 96%) had no attachment loss (LOA = 0–3 mm), and another study reported similar findings by Gunjan Kumar *et al.*[12] done on Santhal tribes.

Table 4: Frequency distribution of dental fluorosis among the study population

Dental fluorosis score	Total *n* (%)	Chi-square value	*P*
Normal/absent	679 (84.9)	11.440	0.043*
Questionable	36 (4.5)		
Very mild	37 (4.6)		
Mild	23 (2.9)		
Moderate	22 (2.8)		
Severe	3 (0.4)		

*Chi-square value; *P*<0.05

Table 6 shows that decay in permanent teeth and missing of permanent teeth were higher among tribal children [Table 6]. In the present study, similar results were found for prevalence of permanent tooth decay, 36.6%. Our results are also in accordance with the study done by Fotedar Shailee *et al.*,[13] in which school children showed that the prevalence of dental caries among 12-year-old children was 32.6% and among 15-year-olds, it was 42.2%.

The present study revealed poor oral health status and treatment needs of tribal children [Table 7].

The present findings were due to the reason that 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 dental care, high treatment needs, and limited access to oral health services.

In the present study, none of the children had abnormal mucosal conditions or abnormal extra-oral lesions or TMJ disorders. In the present study, among both the groups, no child required any prosthesis and none of them had any prosthesis.

In the present study, oral health education was given to children of both the groups after completion of oral examination, and the children were referred to People's College of Dental Sciences and Research Centre, Bhopal, with a special discount card.

Under these circumstances, the implementation of preventive programs for the population is high priority. The program should include free emergency and low-cost basic dental treatment along

Table 5: Comparison of community periodontal index score among the study population

CPI scores	Tribal hostel children *n*(%)	Private hostel children *n* (%)	Total *n* (%)	Chi-square value	*P*
Presence of gingival bleeding	89 (22.3)	103 (25.8)	192 (24)	6.936	0.327
Presence of calculus	69 (17.25)	82 (20.5)	151 (18.8)	12.342	0.055*

*Chi-square value; *P*<0.05

Table 6: Comparison of dentition status among the study population

Dentition status	Tribal hostel children=400 *n* (%)	Private hostel children=400 *n* (%)	Total=800 *n* (%)	Chi-square value	*P*
Decayed (d)	17 (4.3)	23 (5.8)	40 (5.2)	12.270	0.031*
Trauma (primary)	0 (0)	3 (0.8)	3 (0.4)	3.004	0.083
Decayed (D)	168 (42)	124 (31)	292 (36.6)	21.599	0.006*
Missing (M)	6 (1.5)	1 (0.3)	7 (0.9)	3.603	0.058*
Trauma/Fracture (permanent)	15 (3.8)	27 (6.8)	42 (5.2)	4.179	0.124

*Chi-square value; *P*<0.05

Table 7: Comparison of treatment needs among the study population

Treatment needs	Tribal hostel children *n* (%)	Private hostel children *n* (%)	Total *n* (%)	Chi-square value	*P*
Preventive, caries arresting care	8 (2)	13 (3.3)	21 (2.6)	2.865	0.413
One surface filling	174 (43.5)	141 (35.3)	315 (39.3)	24.547	0.000*
Two surface fillings	43 (1.5)	43 (10.8)	86 (10.8)	3.842	0.428
Crown for any reason	6 (1.5)	4 (1.0)	10 (1.3)	0.405	0.524
Pulp care and restoration	16 (4)	18 (4.5)	34 (4.3)	0.629	0.730
Extraction	3 (0.8)	2 (0.5)	5 (0.6)	0.201	0.654

*Chi-square value; *P*<0.05

with sweet and sweet beverage restriction within school premises. Appropriately trained tribal primary oral health care personnel could run the preventive programs. This would help to overcome the reluctance to accept dental services. Such programs should involve the help of local medicine and tribal heads.

Conclusion

To the best of our knowledge, no study or literature is available regarding the oral health status of tribal children residing in tribal welfare hostels in Bhopal area, making it a pioneer study in Madhya Pradesh. The present study provides baseline information on the tribal children oral health status, which may be useful for planning future dental health services.

1. The present study revealed poor oral health status and treatment needs of tribal children.
2. Tribal children were having higher dental fluorosis as compared to the private hostel children, which implies tribal children living in high-fluoridated belt areas.
3. Decay in permanent teeth and missing of permanent teeth were higher among tribal children. In the present study, significant differences were noted between the groups in regarding oral health behaviors and utilization of dental services, which were lower in tribal children.
4. In the present study, none of the children had abnormal mucosal conditions or abnormal extra-oral lesions or TMJ disorders.

Findings of the present study revealed that the oral health status of tribal children residing in various tribal welfare hostels is poor and it is a cause of concern. Despite adequate advancements in global oral health, problems still persist in many communities around the world, particularly among the underprivileged. To overcome this situation in our country, various oral health care programs have been implemented by both central and state governments for the children. Various community-level programs, Anganwadi programs, and school-level programs were developed, like mid-day meal schemes, fluoride programs, tooth brushing programs, nutrition programs, health-promoting schools, tobacco-free schools, and oral health care programs for special children like special smiles projects. Seal-it, Arogya Jagratha, and Ardram mission are some of the programs developed by state governments through primary health centers and through accredited social health activist (ASHA) workers.

Limitations of the present study

1. It is recognized that because of the nature of the study sample, the findings from this study are not representative of the other ethnic groups in India or other countries due to socio-demographic factors. The findings are only representative of tribal welfare and private hostel children residing in Bhopal area. However, this limitation can be overcome by a larger sample size drawn from across the state and undertaking studies of a longitudinal nature.
2. The nature of the study was cross-sectional, thus precluding the ability to draw inferences about causal relationships.
3. Study dietary status was not recorded as each tribal hostel has its own diet chart, so assessment of nutrient status was not done.

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Conflicts of interest

There are no conflicts of interest.

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