

Assessment of oral health status of Rabari tribal community residing in Gorwar Region, Rajasthan

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ABSTRACT:

Introduction: Determining the health needs of indigenous peoples in ways that are respectful of their culture & identity is a significant challenge for public health. The Rabari are a nomadic tribal caste who dwell in northwest India, mostly in the states of Gujarat, Punjab, & Rajasthan. The goal of the present research is “to assess oral health status of Rabari tribal community residing in gorwar region Rajasthan”. **Materials and Methods:** The present cross sectional research was conducted at Gorwar region for period of 1 year from March 2022 to April 2023 among 450 subjects (110 children and 340 adults). The demographic data was recorded through a pre-validated self-prepared questionnaire and oral health status was recorded using WHO oral health assessment form 2013 for adults and children. The results were analyzed using SPSS version 25.0 keeping level of significance at $p < 0.05$. **Results:** Maximum children were in the age of 5 to 12 years (52.7%). Among adults highest number of subjects belong to age group of 45 to 65 years (35.8%). Male subjects (60%) were higher as compared to females and mostly were from lower socioeconomic status. The number of decayed teeth (4.74 ± 1.6) were higher than missing & filled teeth both in children & adult. More than 50% of population had gingival bleeding and pocket formation leading to poor periodontal condition. The majority of the research population needed immediate treatment since they had poor hygiene practices & little understanding about oral health. **Conclusion:** Dental caries is very much common among this tribal community, also they had relatively high rates of gingival & periodontal diseases, which may be related to the underutilization of oral health services. Dental health education & improved accessibility to dental treatment are essential if the indigenous community is to have access to the greatest oral health facilities.

Keywords: assessment, dentition status, oral health, public health, rabari, tribes

INTRODUCTION:

Since the beginning of time, different medical systems around the world have defined health in different ways. According to books, being in good health goes beyond simply not being sick or disabled & includes the capacity to enjoy a fulfilling life on both a social & economic level¹. An individual's well-being depends on having good oral health, which is an important part of general health. Although there has been a great deal of global advancement in the fields of diagnosis, treatment, & prevention, people's beliefs, customs, & behaviors still

have a significant impact on oral health & can either encourage or discourage the use of health services.² Indigenous people are those members of ethnic groups who lived in a region before it became part of a nation-state & who continue to maintain a political & cultural identity distinct from that of the state's majority³ The Rabari are a nomadic tribal caste of indigenous people who dwell in northwest India, mostly in the states of Gujarat, Punjab, & Rajasthan. They are sometimes referred to as the Rewari or Desai. Pakistan is home to additional Rabari communities, particularly in the Sindh

Desert region. "Outsiders" is how the word "Rabari" translates, which accurately characterizes their main vocation & social standing in Indian society⁴. Determining the health needs of indigenous peoples in ways that are respectful of their culture & identity is a significant challenge for public health. Economic, social, cultural, environmental, & behavioral factors all contribute to dental & oral diseases. The oral & dental health of a person is affected by their dietary habits, their care-seeking behaviors, & their use of their home, all of which can be traced back to their underlying cultural beliefs & practices. Because of the widespread disregard for this population's health, it is absurd to assign any value to their oral health.⁵ The W.H.O. suggests that surveys for oral health are used to gather data regarding oral health, disease & management of needs of a community in order to track change in these variables' levels & pattern over time⁶. Therefore, data on disease prevalence, severity, & treatment needs of the tribal community are needed to regulate health administrators to wisely assign inadequate assets to oral health.

There is no data presented on Rabari tribal population & their oral health therefore the current research was done to assess the oral health status of Rabari tribal population in Gorwar region, Rajasthan.

MATERIAL AND METHODS:

The current cross-sectional research was conducted among Rabari tribal population residing in Gorwar region, Rajasthan for period of 1 year from March 2022 to April 2023 under the guidance of private dental institute. Ethical clearance was taken from institutional ethics committee before commencement of study. People who visited were asked to sign an informed consent form after explaining them the complete procedure.

Sample size was calculated by using formula:

$$n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$$

The estimated sample size at 95% confidence interval was 414 & with 10% attrition rate the sample was rounded off to 450 (110 children & 340 adults) using OpenEpi, Version 3. The selection of study participants was done by using probability proportional to size sampling technique (PPS). At first stage, the block was divided into four zones- East, West, North & South. Later at second stage, two panchayat from each zone was randomly selected. The final sample size (n) was then divided by the number of panchayat (4) making the number of observations per panchayat to be 52-53 subjects. Participants of index age groups i.e. 5, 12, 15, 35-44 & 65-74 years were selected on the basis of following inclusion and exclusion criteria.

Inclusion criteria:

1. The native belonging of Rabari tribe residing at Gorwar region, Rajasthan.
2. Participants who will be agreeable to sign consent

Exclusion criteria:

1. Migrants of further tribes living at gorwar Rajasthan
2. Participants who were chronically ill.

Data was recorded using a specially created and pretested proforma that was intended to gather all necessary and pertinent demographic information as well as clinical observations. Face-to-face interviews were used to collect the data, and a self-prepared questionnaire with questions about sociodemographic characteristics and the BG Prasad scale socioeconomic status measure 2023⁴⁰ was used. The pre – tested, pre – validated questionnaire which was converted to the local language & was used to assess the Rabari tribal subjects towards oral health & hygiene practices. Oral hygiene practices including tooth cleaning aids, tooth cleaning material, use of fluoridated toothpaste, frequency of cleaning/brushing, methods for brushing, methods for brushing, past dental visit, sugar score were also recorded. For clinical Examination, WHO proforma for children & adults(2013)⁷ were used. The questions within the proforma were first explained to the subjects in case they did not understand & was then asked to the subjects along with the clinical examination. The period of interview & examination lasted for 20 minutes for each individual.

The statistical analysis was carried out using the Statistical Package for Social Science (SPSS) (SPSS Version 25; Chicago Inc., USA). A number of statistical tests were performed on the data to determine the statistical significance of the comparisons. Mean values were used to compare quantitative variables, & proportions were utilized to compare qualitative aspects. A significant value of p less than 0.05 was established.

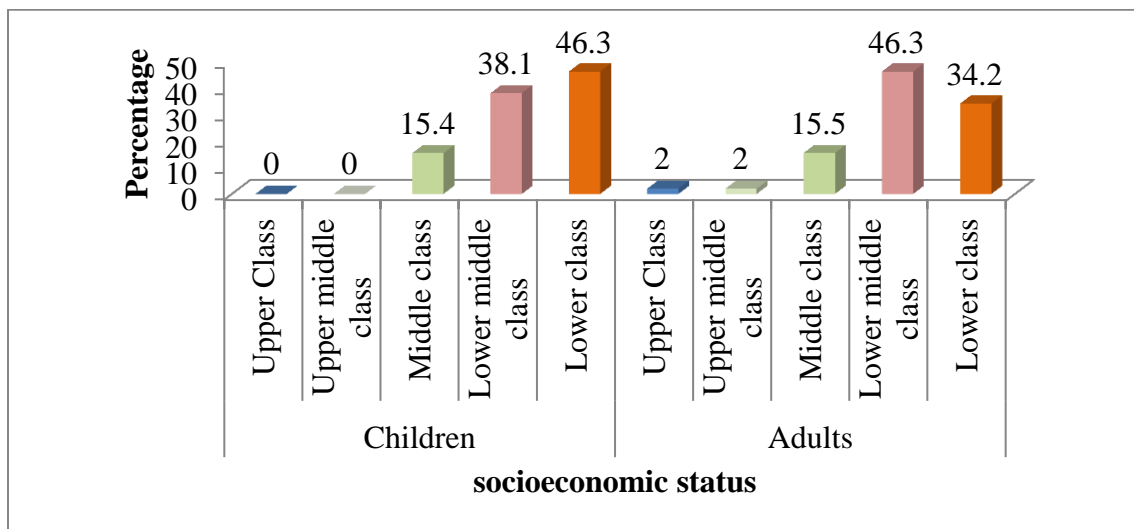
RESULTS:

Out 450 participants there were 110 children & 340 adults. Male subjects (56.8%, 59.6%) were higher as compared to females in children of 5 to 12 & 13 to 15 years but the results were non-significant with p value 0,847. Among adults male subjects (42.7%) were lower in 45 to 65 years age group. The results were significant with p value <0.01. In children group 15.4% belong to middle class, 38.1% were lower middle class & 46.3% were lower class & in adult population 2% were from upper & upper middle class, 15.5% were from middle class, 46.3% were from lower middle class & 34.2% were from lower class as shown in table 1, graph 1.

Table 1 Distribution of participants according to age and gender

Population	Age Groups	Male N (%)	Female N (%)	Total N (%)	p- value
Children	5-12 Years	33 (56.8)	25 (43.2)	58 (52.7)	.847
	13-15 Years	31 (59.6)	21 (40.4)	52 (47.3)	
Adults	16-34 Years	83 (75.5)	27 (24.5)	110 (32.3)	<0.01**
	35- 44 Years	40 (74.1)	14 (25.9)	54 (15.8)	
	45-65 Years	56 (42.7)	75 (57.3)	131 (38.5)	
	>65 Years	25 (55.6)	20 (44.4)	45 (13.2)	

Figure 1 Distribution of population according to socioeconomic status



Maximum children uses tooth brush as a medium of oral hygiene aid (34.5%) . 65.5% brushes once a day & 38.2% uses toothpaste as their cleaning material & results of three were significant with p value less than 0.05. maximum children (66.4%) uses horizontal method of brushing & results were non-significant (p value 0.419). Maximum adults uses treestick as a medium of oral hygiene aid (42.4%) . 83.8% brushes once a day & 46.2% uses toothpowder as their cleaning material. Maximum adult (55.3%) uses horizontal method of brushing & all results were significant (p value <0.01) as shown in table 2.

Table 2 Distribution of participants according to their Oral Hygiene Practices

Oral Hygiene Practices		Children Age Group N (%)			Adult Age Groups N (%)				P value
		5- 12 Years	13-15 Years	P value	16-34 Years	35-44 Years	45-64 Years	>65 Years	
Oral Hygiene Aids	Tooth brush	16 (27.6)	21 (19.1)	0.026*	7 (13)	7 (5.3)	7 (15.6)	42 (12.4)	<0.01**
	Finger	17 (29.3)	54 (49.1)		0	55 (42)	18 (40)	127 (37.4)	
	Treestick	25 (43.1)	35 (31.8)		47 (87)	55 (42)	7 (15.6)	144 (42.4)	
	Other	0	0		0	14 (10.7)	13 (28.9)	27 (7.9)	
Oral Hygiene Frequency	Once a day	43 (74.1)	82 (74.5)	0.048*	54 (100)	104 (79.4)	45 (100)	285 (83.8)	<0.01**
	Twice a day	15 (25.9)	28 (25.5)		0	27 (20.6)	0	55 (16.2)	
Material used	Toothpowder	16 (27.6)	63 (57.3)	0.038*	21 (38.9)	48 (36.6)	25 (55.6)	157 (46.2)	<0.01**
	Paste	23 (39.7)	7 (6.4)		7 (13)	28 (21.4)	0	42 (12.4)	
	Other	19 (32.8)	40 (36.4)		26 (48.1)	55 (42)	20 (44.4)	141 (41.5)	
Methods of brushing	Horizontal	36 (62.1)	47 (42.7)	0.419	33 (61.1)	89 (67.9)	19 (42.2)	188 (55.3)	<0.01**
	Vertical	22 (37.9)	42 (38.2)		21 (38.9)	42 (32.1)	26 (57.8)	131 (38.5)	
	Both	0	21 (19.1)		0	0	0	21 (6.2)	

Out of all the adults 36.5% had habit of taking smoked tobacco with frequency of less than 10 a day & duration of less than 5 years & results were significant with p value <0.01 & 0.017 as shown in table 3.

Table 3 Distribution of adults according to their adverse habits

Adverse habits		Adult Age Groups N (%)				p- value
		16-34 Years	35-44 Years	45-64 Years	>65 Years	
Type of adverse habit	Smokeless tobacco	41 (37.3)	7 (13)	55 (42)	6 (13.3)	<0.01**
	Smoked tobacco	35 (31.8)	27 (50)	48 (36.6)	14 (31.1)	
	Alcohol	7 (6.4)	7 (13)	0	0	
	All	20 (18.2)	6 (11.1)	21 (16)	19 (42.2)	
	None	7 (6.4)	7 (13)	7 (5.3)	6 (13.3)	
Frequency	Less than 10	14 (12.7)	33 (61.1)	91 (69.5)	20 (44.4)	<0.01**
	10 to 20	33 (30)	7 (13)	20 (15.3)	0	
	More than 20	63 (57.3)	14 (25.9)	20 (15.3)	25 (55.6)	
Duration	Less than 5 years	41 (37.3)	21 (38.9)	62 (47.3)	26 (57.8)	0.017*
	5 to 10 years	28 (25.5)	7 (13)	14 (10.7)	7 (15.6)	
	More than 10 years	41 (37.3)	26 (48.1)	55 (42)	12 (26.7)	

The mean±SD value of extracted teeth was 0.75±0.68 (5 to 12 years) & 1.21±0.97 (13 to 15 years) & outcome were significant (p=0.005). The mean±SD value of def was 2.65±1.4 (5 to 12 years) & 3.23±1.6 (13 to 15 years) & results were non significant (p=0.055). In 5 to 12 years of group gingival bleeding was present in 27.6% subjects & in 13 to 15 years group it was present in 65.4% subjects & results were significant (p=<0.01). In 5 to 12 years of group dental flurrosis

was present in 10.7% subjects & in 13 to 15 years group it was present in 57.7% subjects & results were significant ($p<0.01$) as shown in table 4.

Table 4 Distribution of children according to their oral health status

Variable	Children Age Groups		p- value
	5- 12 Years	13-15 Years	
Decayed Teeth	1.60±0.99	1.59±0.97	0.969
Extracted Teeth	0.75±0.68	1.21±0.97	0.005*
Filled Teeth	0.29±0.74	0.42±0.82	0.388
def	2.65±1.4	3.23±1.6	0.055
Gingival bleeding	16 (27.6)	34 (65.4)	<0.01**
Dental flurosis	10 (17.2)	30 (57.7)	<0.01**

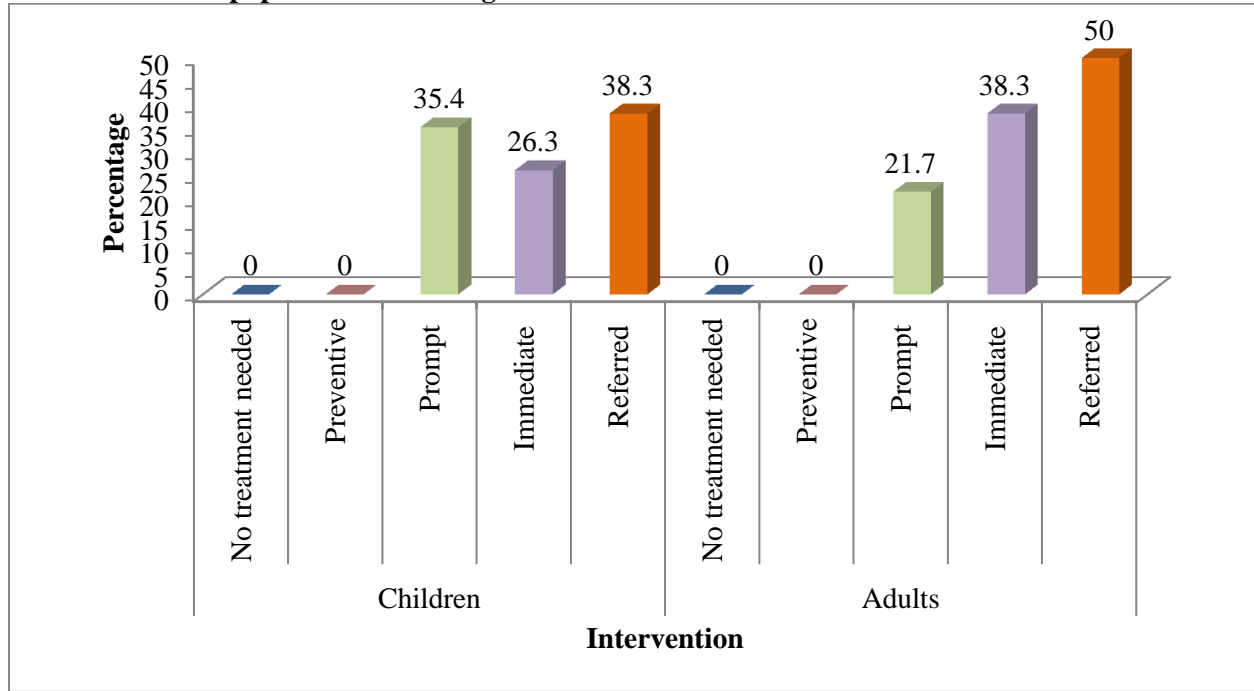
The outcomes of decayed were non significant ($p=0.022$) while that of missing, filled and DMFT was significant ($p<0.01$). In 16 to 34 years of group 81.8% in 35 to 44 years 75.9%, in 45 to 65 years 84% & in >65 years 100% subject shows the presence of gingival bleeding & results were significant ($p<0.009$). In 16 to 34 years of group 55.5% , in 35 to 44 years 48.1%, in 45 to 65 years 68.7% & in >65 years 77.1% subject shows the presence of pocket & results were significant ($p=0.016$). In 16 to 34 years of group 37.3% had LOA of 6-8mm, in 35 to 44 years 61.1% had LOA of 6 to 8 mm, in 45 to 65 years 37.4% had LOA of 9 to 11 mm & in >65 years 55.6% subject had LOA of 9 to 11 mm & results were significant ($p<0.01$). In 16 to 34 years of group 50% in 35 to 44 years 74.1%, in 45 to 65 years 57.3% & in >65 years 86.7% subject shows the presence of dental flurosis & results were significant ($p<0.01$) as shown in table 5.

Table 5 Distribution of adults according to their oral health status

Variable	Adults Age Groups				p- value
	16-34 Years	35-44 Years	45-64 Years	>65 Years	
Decayed Teeth	4.12±1.4	4.51±2.2	4.74±1.6	4.20±1.1	.022
Missing Teeth	2.00±1.07	2.68±1.5	2.64±1.0	2.02±0.7	<0.01**
Filled Teeth	0.563±0.49	0.75±0.98	0.95±0.9	1.15±0.6	<0.01**
DMFT	6.69±2.1	7.96±1.9	8.33±2.1	7.37±1.7	<0.01**
Gingival bleeding	90 (81.8)	41 (75.9)	110 (84)	45 (100)	.009*
Pocket	61 (55.5)	26 (48.1)	90 (68.7)	32 (71.1)	0.016*
LOA-0-3mm	7 (6.4)	0	0	0	<0.01**
4-5 mm	35 (31.8)	7 (13)	28 (21.4)	7 (15.6)	
6- 8 mm	41 (37.3)	33 (61.1)	48 (36.6)	13 (28.9)	
9-11 mm	27 (24.5)	7 (13)	49 (37.4)	25 (55.6)	
≥ 12 mm	0	7 (13)	6 (4.6)	0	
Dental flurosis	55 (50)	40 (74.1)	75 (57.3)	39 (86.7)	<0.01**

Among children group of 5 to 12 years maximum subjects need immediate or referred intervention (34.5%) & in 13 to 15 years maximum subjects (42.3%) needed referred treatment. In adults group among 16 to 34 years 55.5% needed referred treatment, 35 to 44 years 74.1% needed immediate treatment, 45 to 65 years 36.6% needed prompt & referred treatment & in above years 44.4% needed immediate treatment & results were significant ($p<0.01$) as shown in figure 2.

Figure 2- Distribution of population according to intervention needed



DISCUSSION:

Oral health & general health are closely intertwined. Maintaining good dental health is a habit that is essential to one's overall well-being. Periodontal diseases & dental cavities are two of the main consequences of inadequate oral hygiene. These disorders are commonly linked to health problems such as diabetes mellitus, cardiovascular disease, strokes, & complications during pregnancy. Therefore, keeping excellent oral health through appropriate oral hygiene habits can often minimise the risk of numerous infectious diseases. Oral hygiene is favourably correlated with general health.^{8,9}

Native to the Indian subcontinent, the Rabari tribe is also referred to as the Raika or Rewari. They are a nomadic or semi-nomadic group. The Rabari people have a distinctive way of life, characterised by their vivid rituals, peculiar traditions, & nomadic pastoral lifestyle that dates back generations. The socioeconomic challenges that the Rabari population faces are exacerbated by limited access to jobs, healthcare, & education¹⁰.

In the present study children were divided in the age group of 5 to 12 years & 13 to 15 years. Maximum children were in the age of 5 to 12 years. Among adults there were four groups made. Highest number of subjects belong to age group of 45 to 65 years & least were in the age group of above 65 years of age. The mean age of Kaingang adults & children was found to be similar in a research conducted among them¹¹. The Koya & Lambada peoples' mean ages, which were 40.52±14.69 & 39.34±13.77 years, respectively, were likewise comparable¹². Priyadarsi et al¹³ conducted a

different study in which the average age was 10.75 (±2.43) years.

In the current research the maximum number of subjects were male in both children & adult age group . The outcomes of our research were similar to the research carried out by Jayashantha et al¹⁴, Digumarthi et al¹⁵ , Humagain et al¹⁶, & Kumar et al¹⁷. On the other hand, investigations by Haque et al¹⁸, Gopalankutty et al¹⁹, Asif et al¹², Soares et al¹¹, Ikhar et al²⁰, & Agarwal et al²¹, where the majority of the participants were female, produced different results. These results signify that maximum tribal population belong to male community.

In our study it was found that maximum population from children & adult population belong to lower & lower middle class level. The study by Emerald et al. among the Yanadi tribes in the Gonepalli district of Andhra Pradesh, where 61.8% & 38.2% of the individuals belonged to the lower middle & lower classes, respectively, validated this conclusion²². Social backwardness of these communities is due to poor literacy rate & less job opportunities in their area.

Maximum adults use treestick as a medium of oral hygiene aid whereas children uses toothbrush & brushes once in a day with horizontal brushing technique. Children uses toothpaste while adult uses toothpowder as a cleaning aid in our study. This result was consistent with the findings of Kumar TS et al². Children were more likely than adults to use a toothbrush because the community's adults were less exposed to the outside world, held onto their long-standing view that datoon is a useful tool for oral hygiene, & were resistant to breaking with their daily routines. According to a study

by Singh et al²³ on a rural community, 60.8% of the participants regularly cleaned their teeth with their fingers. This contradicted the findings of the current investigation.

The present study revealed that the mean DMFT of children were lower than that of adults. The figure of decayed teeth were higher than missing & filled teeth both in children & adult. The outcomes matched those of the research conducted by Zhang Q et al²⁴, & Kumar TS² et al. The fact that adult teeth are more exposed to harmful habits & the oral environment than those of children may be the cause of the rise in mean DMFT. The usage of dental hygiene tools could be another explanation. The use of toothpaste & toothbrushes was more common among children & young people.

The results of the current research showed that tribes person suffer from many periodontal problems & results were similar to those of studies conducted on adults in Madagascar by Peterson et al²⁵, on Kondareddy tribes by Naheeda et al²⁶, on rural indigenous communities by Smith et al²⁷, & on Alsaka natives by Skrepcinski et al²⁸. When people used teeth brushes or datoons/twigs instead of their fingers, there was increased gingival bleeding. Similar findings were reported in a research by Bose AK et al²⁹. The current study's findings demonstrated that as people age, attachment loss increases in frequency & severity.

In our study more flurosis was found in children with age group above 12 years & results were in consistence to study done by Singh A et al³⁰ among indian tribal children & the reason might be the high level of fluoride content & its consumption in school as well as household water system.

The majority of the research population needed immediate treatment since they had poor hygiene practices & little understanding about oral health. A portion of the population needed extractions or RCTs right away. & because of the urgency, only a small number of patients needed to be referred to the adjacent health centre. The accumulation of treatment needs could be the result of dental neglect, a lack of awareness, or a shortage of dentists in the area. However, the outcomes did not match the Tiwari R et al³¹ study on indigenous people living in Northern Bhubaneswar, Odisha.

Limitations:

Convenience sampling was used to gather data from the study participants, & the sample size was likewise limited. The broader people cannot benefit from this. Based solely on clinical examination, the current study covered a small number of individuals, but many more required a thorough examination, including a biopsy.

CONCLUSION:

High treatment demands, a high frequency of dental issues, & limited access to dental care services are characteristics of the tribal people. The research population had high rates of dental caries, gingival & periodontal diseases, which may be related to the underutilization of oral health services. Dental health education & improved accessibility to dental treatment are essential if the indigenous community is to have access to the greatest oral health facilities. Planning for the tribal population's basic oral health needs is desperately needed, as this particular socially underprivileged community received very little attention. Even though the tribe's members don't give oral hygiene much thought, dental conditions & the consequences they cause could one day endanger their way of life.

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