



RESEARCH ARTICLE

ORAL HEALTH OF YANADI TRIBE OF GONEPALLI VILLAGE, NELLORE  
DISTRICT, A.P, INDIA: AN EPIDEMIOLOGICAL STUDY

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ABSTRACT

**Background:** The latter part of the twentieth century saw a transformation in both general health and oral health unmatched in history. Yet, despite the remarkable achievements in recent decades, millions of people worldwide have been excluded from the benefits of socioeconomic development and the scientific advances that have improved healthcare and quality of life. Inequalities in oral health persist worldwide, with mainly affected being the deprived population such as the tribals. Assessment of the oral health status and associated behaviours is an essential part of the process of planning appropriate and acceptable health services and dental health education programs in order to improve the dental health status of this population. Hence, an integrated multidisciplinary approach is required to study the tribal health problems.

**Aim:** To provide baseline data about oral health of Yanadi tribe inhabiting Gonepalli village

**Methodology:** This descriptive cross-sectional study was carried out in the month of December 2014. The data of all the tribal people in the village present during the time of examination was collected by a door to door survey. The data was collected using WHO proforma 1997 by Type III clinical examination. Significance between the variables was determined using Fisher's exact test.  $P < 0.05$  was taken as statistically significant. The data was analyzed using The Statistical Package for the Social Sciences, (SPSS) version 20.

**Results:** In a total sample of 233 (100%), males constitute 37.34% (87), females constitute 62.66% (146). Majority of the participants belonged to 35-50 year old age group, 31.3% (73). Decayed teeth (100%) and total DMFT scores (100%) were highest for the 16-24 year age group. Missing teeth were highest in the >50 year age group (56.4%). There were no filled teeth in all the age groups. Calculus was highest in the 25-34 age group (78.2%), shallow (46.2%) and deep pockets (33.3%) were highest in the >50 age group. As the age increased the number of missing teeth and loss of attachment increased. A significant correlation was seen with the method of cleaning i.e., if they use brush, finger or datun, with the material used for cleaning teeth, type of tooth paste used or if they aren't using tooth paste, with the frequency of changing brush and how often they rinse their mouth after eating ( $P < 0.05$ ).

**Conclusion:** Yanadi tribal population of Gonepalli village, Nellore district are characterized by lack of dental care and poor oral hygiene practices. There was high prevalence of periodontal diseases in adults and old people, decayed component of DMFT is high in children and adults whereas missing component of DMFT is high in older population.

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INTRODUCTION

The oral diseases make significant contributions to the global burden of disease. Cultural beliefs and practices among the illiterate and semi-literate populations are obviously to have strong bearing on their oral health practices. Every culture has its own conceptualization of health, sickness and health promotion based on values, beliefs, knowledge and practices shared by its people.

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Being a part of an ethnic minority group with low socio-economic background does not inevitably lead a person to have poor health. It does suggest, however, that there would be certain beliefs and practices common to the people in these groups. Alike all health problems, dental and oral diseases are products of economic, social, cultural, environmental and behavioural factors (Bhasin, 2004; Butani *et al.*, 2008; Petersen, 2011; Watt, 2002). In spite of great improvements in the oral health status of populations across the globe, oral diseases continue to be major public health problems which is particularly high in the underprivileged groups in both

developed and developing countries. The underlying cultural beliefs and practices influence the conditions of the teeth and mouth, through diet, care-seeking behaviours, or use of home remedies (Butani *et al.*, 2008). Andhra Pradesh state is the homeland for about 33 scheduled tribes ([http://shodhganga.inflibnet.ac.in/bitstream/10603/12694/10/1\\_0\\_chapter%203.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/12694/10/1_0_chapter%203.pdf)) living in 8 districts, which form about 6.6 per cent of the State's population. Koya, Banjara/Lambada, Konda reddy, Gond, Chenchu, Yerukala, Yanadi, Savara, and Jatavu are the major ones (Gajrani, 2004; [http://shodhganga.inflibnet.ac.in/bitstream/10603/8049/12/12\\_chapter%204.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/8049/12/12_chapter%204.pdf)). Yanadis are one of the under privileged scheduled tribes mainly lives in coastal part of Andhra Pradesh state. As per 2011 Census report, Yanadi population has increased from 3, 95,739 in 2001 to nearly 10 lakhs. Yanadis are living in isolation and are treated as lowest social group and placed just above the scheduled castes in social hierarchy and many rural areas in the Prakasam and Potti SriRamulu Nellore districts (Chandra, 2013). Nellore district has the highest population of Yanadi in the state. In the district they are highly concentrated in the southern mandals and hill ranges in Rapuru Mandal. This tribal community continues to live in its centuries old lifestyle, uninfluenced by modern civilization, and placed in isolated areas in Rapuru hilly forest with limited access to any means of transport. In a village called Gonepalli which is located between Rapuru and Penchalakona, there are about 500 Yanadis belonging to nearly 100 families distributed in four hamlets. Their chief occupation is forest wood cutting in addition to hunting small game, collection of tubers, roots and tubers of the forest and agriculture to a little extent.

Like any other tribe in the country Yanadi also depend on herbs, barks and roots for curative procedures and maintenance of health though occasionally they do visit nearby primary health centre and consult local RMP (Registered medical Practitioner). Due to poor means of communication, poverty, ignorance and lack of access to modern health facilities and affordability to medical management most people especially rural people are compelled to depend on traditional medicines and quacks for their common day ailments (Savithamma, 2012). Hence there is a need for information on disease prevalence and severity as well as treatment needs of such populations to monitor changes in levels and patterns of these variables over time and in order to judiciously allocate limited resources to oral health. Since Yanadi happens to be one such scheduled tribe inhabiting Andhra Pradesh, a study about the oral health of Yanadi tribe in the light of the above discussion would be enriching of the contemporary oral public health (Fig 1). Therefore, the present study aims to provide baseline data about oral health of Yanadi tribe inhabiting Gonepalli village near Penchalakona, Rapuru Mandal of Potti Sriramulu district and to determine the preventive and curative treatment needs of this population, which would yield valuable information for planning, implementation and monitoring of preventive and curative oral health services and help in improving the awareness and knowledge of this tribe about the preventive aspects of oral health.

## METHODOLOGY

A cross-sectional study was carried out among Yanadi tribal community living in Gonepalli village in December 2014. Subjects of all age groups were considered as study subjects. The subjects were selected from all hamlets by house to house survey.

Data collection was carried out using WHO proforma 1997. The type III clinical examination was carried out as per American dental association specification (1970). Subjects were made to sit on an ordinary chair and the examination was carried out under natural daylight. The oral conditions were recorded as per WHO proforma 1997, which included extra oral examination, oral mucosal lesions, temporo-mandibular joint assessment, enamel opacities, dental fluorosis, periodontal status, caries assessment, and prosthetic status using a plane mouth mirror and CPI probe. The Mean  $\pm$  SD of the CPI and LOA scores of the study population; Mean  $\pm$  SD of the decayed, missing, filled teeth and treatment needs of the study participants was determined. Correlation of age with the decayed missing filled teeth, prevalence of periodontal disease conditions and with the prevalence of loss of attachment was determined using Fisher's exact test.  $P < 0.05$  was taken as statistically significant. The data was analyzed using The Statistical Package for the Social Sciences, (SPSS) version 20.

## RESULTS

Table 1 shows the distribution of study participants according to their age and gender. In a total sample of 233 (100%), males constitute 37.34% (87), females constitute 62.66% (146). Majority of the participants belonged to 35-50 year old age group, 31.3% (73). All the participants belonged to either upper-lower class, 144 (61.8%) or lower class, 89 (38.2%) according to kuppaswamy socio-economic scale. Majority of the participants clean their teeth with brush 104 (44.6%), 70 (30.0%) use finger and 59 (25.4%) use datun. Many of them clean their teeth once a day 228 (97.9%), morning only 228 (97.9%) with either datun or salt or charcoal 117 (50.2%). Among them 127 (54.5%) do not use brush and 173 (74.3%) of the participants rinse their mouth sometimes. Table 2 shows the distribution of study participant's Oral hygiene status assessed by highest OHI-S (Oral Hygiene Index - Simplified) scores in each age group. The oral hygiene status worsened as the age increased. The frequency and distribution of extra-oral examination of study participants showed that only 17 (7.3%) of them had ulcers and 15 (6.4%) of them had abnormalities in temporo-mandibular joint. On intra-oral soft tissue examination 7 (3.0%) had abscess and 5 (2.2%) had ulcers 80 (34.4%) had periodontitis.

Enamel opacities were present in 11 (4.7%) subjects, dental fluorosis in 3 (1.3%) subjects of the study participants. Only one person had a removable partial denture but there was a need for prosthesis among the study participants. Need for one unit prosthesis in the upper arch was there for 3 (1.3%) subjects, need for multi unit prosthesis was there for 13 (5.6%) subjects and need for full prosthesis was there for 7 (3.0%) subjects. Need for one unit prosthesis in the lower arch was there for 11 (4.7%) subjects, need for multi unit prosthesis was there for 7 (3.0%) subjects and need for full prosthesis was there for 6 (2.6%) subjects. The dental caries experience among the study participants showed decayed teeth (100%) and total DMFT scores (100%) were highest for the 16-24 year age group. Missing teeth were highest in the >50 year age group (56.4%). There were no filled teeth in all the age groups. Highest number of one surface fillings needed were in the 16-24 age group (88.2%) where as the highest number of two surface fillings needed were in the 5-10 year age group (63.6%). Highest number of extracts were needed in the >50 age group (56.4%).

The periodontal status was assessed by highest CPI (Community Periodontal Index) scores in each age group. Bleeding on probing was highest in the 11-15 age group (70.4%), Calculus was highest in the 25-34 age group (78.2%), shallow (46.2%) and deep pockets (33.3%) were highest in the >50 age group. The 25-34 year age group showed the highest number of teeth with 0-3 mm loss of attachment (74.5%), 35-50 age group showed the highest number of teeth with 4-5 mm loss of attachment (32.9%), >50 year age group showed the highest number of teeth with 6-8 mm (38.6%) and 9-11 mm (17.9%) loss of attachment. Table 3 shows the Mean±SD of the CPI and LOA scores of the study population. Table 4 shows the Mean±SD of the decayed, missing, filled teeth and treatment needs of the study participants. Table 5 shows the correlation between oral hygiene status and cleaning practices of the study participants. A significant correlation was seen with the method of cleaning i.e., if they use brush, finger or datun, with the material used for cleaning teeth, type of tooth paste used or if they aren't using tooth paste, with the frequency of changing brush and how often they rinse their mouth after eating. Figure 2 shows the correlation of age with the decayed missing filled teeth. None of the study participants had filled teeth, as the age increased the number of missing teeth increased. Figure 3 shows the correlation of age with the prevalence of periodontal disease conditions. The prevalence of bleeding on probing was observed to be highest in the 11-15 year olds, calculus highest in the 25-34 year olds and pockets highest in the >50 year olds. Figure 4 shows the correlation of age with the prevalence of loss of attachment. It showed that as age increased the prevalence of loss of attachment increased.

**Table 1. Distribution of study participants according to age and gender**

Age group	Sex		Total
	Male	Female	
5-10 Years	12(5.15%)	10(4.25%)	22(9.4%)
11-15 Years	9(3.86%)	18(7.74%)	27(11.6%)
16-24 Years	5(2.14%)	12(5.16%)	17(7.3%)
25-34 Years	17(7.29%)	38(16.31%)	55(23.6%)
35-50 Years	29(12.44%)	44(18.86%)	73(31.3%)
>50 Years	15(6.43%)	24(10.27%)	39(16.7%)
Total	87(37.34%)	146(62.66%)	233(100.0%)

**Table 2. Distribution of study participant's Oral hygiene status assessed by highest OHI-S (Oral Hygiene Index - Simplified) scores in each age group**

Age group	OHI-S			
	Good	Fair	Poor	Not recorded
5-10 Years	0	0	0	22 (9.44%)
11-15 Years	17 (62.96%)	10 (37.04%)	0	0
16-24 Years	7 (41.17%)	10 (58.83%)	0	0
25-34 Years	7 (12.72%)	37 (67.27%)	11 (20.01%)	0
35-50 Years	5 (7.14%)	33 (47.14%)	35 (49.72%)	0
>50 Years	0	8 (20.51%)	29 (74.35%)	2 (5.14%)
Total	36 (15.45%)	98 (42.06%)	75 (32.18%)	24 (10.31%)

## DISCUSSION

Assessment of the oral health status and associated behaviours is an essential part of the process of planning appropriate and acceptable health services and dental health education programs in order to improve the dental health status of this population. Hence, an integrated multidisciplinary approach is required to study the tribal health problems (Naheeda *et al.*, 2015). Oral hygiene awareness and practices differ from country to country and community to community. Unfortunately little such epidemiological data is available for

India where villages still comprise more than two-thirds of the country (Singh *et al.*, 2013). Hence this current study was done among the Yanadi tribe of Gonepalli village of Nellore district, India to provide baseline data about oral health and to determine the preventive and curative treatment needs of this population, which would yield valuable information for planning, implementation and monitoring of preventive and curative oral health services and help in improving the awareness and knowledge of this tribe about the preventive aspects of oral health. In the present study females constituted 62.7% of the study population, it might be due to the fact that it is a door to door survey which was conducted in day time when most of the men in the households went out for work. All the study participants belonged to either upper lower class or lower class. Mandal S *et al* (2015) also found that the socioeconomic status of the Santal tribe children in West Bengal was poor (Mandal *et al.*, 2015). John JB *et al* (2015) showed the similar result that the parents of the tribal children had poor socioeconomic conditions when compared to the urban children (John *et al.*, 2015).

The younger age groups used tooth brush to clean their teeth whereas the older age group individuals used either finger or datum to clean their teeth. 88.9% of the 11-15 year age group individuals used tooth brush, only 5.1% of the >50 year age group used tooth brush. Dixit LP *et al* (2013) in their study among school children of remote chandibhanjyang village development committee, Chitwan district, Nepal found that 86% of the children used tooth brush (Dixit *et al.*, 2013). Kadanakuppe S and Bhat PK (2013) said that majority of Iruliga tribal community (79.8%) of Ramanagara district, Karnataka used chew sticks as an oral hygiene aid (Kadanakuppe, 2013). In the present study 34.2% of the 25-34 year olds and 53.8% of the >50 year age group individuals cleaned their teeth using a finger similar results were seen in a study conducted by Vivek S *et al* (2012) among Paniyan tribals in kerela where 55% of the 40-49 years subjects used finger for cleaning their teeth (Vivek *et al.*, 2012). In the present study only 0.9% used tooth powder similarly in the study conducted by Bhat PK and Kadanakuppe S (2010) among Iruliga tribal community of Ramanagara district, Karnataka showed that 0.19 % used powder/salt/charcoal (Bhat *et al.*, 2010).

In a study reported by Kumar TS *et al* (2009) only 55.8% of the Bhil tribal population of Southern Rajasthan clean their teeth once a day (Kumar, 2009) whereas in the present study nearly all of the study participants (97.9%) cleaned their teeth once a day and only 2.1% cleaned their teeth twice a day. In the study conducted by Vivek S *et al* (2012) among Paniyan tribals in kerela 57.2 % of the subjects brushed their teeth twice daily, 33.9% of the subjects brushed once daily and 8.9% of the subjects brushed once a week (Vivek *et al.*, 2012). Dixit *et al* (2013) in their study among school children of remote chandibhanjyang village development committee, Chitwan district, Nepal found that only 56% children reported having cleaned their teeth daily but 80% reported to rinse mouth with water after meals (Dixit *et al.*, 2013), only 18.9% of the study population in the present study reported to have the habit of rinsing their mouth after meals. In the present study the oral hygiene status was poor in 7.14%, fair in 47.14% and poor in 45.72% of the 35-50 year olds in the present study, these results are comparable to the oral hygiene status of 15-54 year old Bhil tribals of Southern Rajasthan [9.2% (good), 48.5% (fair), 35.1% (poor)] (Kumar *et al.*, 2009). Among the children of tribal population of Eastern Ghats of 5-12 year olds oral

Table 3. Mean±SD of the CPI and LOA scores of the study population

Age group	N	Mean±SD	Kruskall wallis test		
			Chi square value	p-value	
Healthy	5-10 year	22	0.0000±0	85.154	<0.001*
	11-15	27	3.1481±1.83		
	16-24	17	2.8235±2.24		
	25-34	55	1.1091±1.67		
	35-50	73	0.6164±.18		
	>50	39	0.1026±0.30		
Bleeding on probing	5-10 year	22	0.0000±0	75.488	<0.001*
	11-15	27	1.8889±1.55		
	16-24	17	0.7647±1.09		
	25-34	55	0.3273±0.96		
	35-50	73	0.2740±0.82		
	>50	39	0.0513±0.22		
Calculus	5-10 year	22	0.0000±0	100.111	<0.001*
	11-15	27	0.5556±1.50		
	16-24	17	2.4118±2.29		
	25-34	55	4.2000±2.03		
	35-50	73	3.4110±1.73		
	>50	39	2.1538±1.85		
Shallow pockets	5-10 year	22	0.0000±0	76.794	<0.001*
	11-15	27	0.0370±0.19		
	16-24	17	0.0000±0		
	25-34	55	0.3455±0.98		
	35-50	73	1.2877±1.51		
	>50	39	1.7179±1.48		
Deep pockets	5-10 year	22	0.0000±0	35.565	<0.001*
	11-15	27	0.1111±0.57		
	16-24	17	0.0000±0		
	25-34	55	0.0000±0		
	35-50	73	0.2192±0.58		
	>50	39	0.6923±1.07		
Not recorded	5-10 year	22	6.0000±0	184.809	<0.001*
	11-15	27	0.2222±1.15		
	16-24	17	0.0000±0		
	25-34	55	0.0182±0.13		
	35-50	73	0.0137±0.12		
	>50	39	0.2051±0.97		
Excluded	5-10 year	22	0.0000±0	52.106	<0.001*
	11-15	27	0.0370±0.19		
	16-24	17	0.0000±0		
	25-34	55	0.0000±0		
	35-50	73	0.1781±0.75		
	>50	39	1.0769±1.71		
LOA 0-3 mm	5-10 year	22	0.2727±1.27	144.923	<0.001*
	11-15	27	0.0000±0		
	16-24	17	0.3529±1.45		
	25-34	55	5.4364±1.30		
	35-50	73	3.8082±2.28		
	>50	39	1.1795±1.74		
LOA 4-5 mm	5-10 year	22	0.0000±0	66.392	<0.001*
	11-15	27	0.1111±0.57		
	16-24	17	0.0000±0		
	25-34	55	0.5091±1.24		
	35-50	73	1.6027±1.85		
	>50	39	1.8974±1.90		
LOA 6-8 mm	5-10 year	22	0.0000±0	54.155	<0.001*
	11-15	27	0.0741±0.38		
	16-24	17	0.0000±0		
	25-34	55	0.0364±0.18		
	35-50	73	0.3288±0.60		
	>50	39	1.0000±1.35		
LOA 9-11 mm	5-10 year	22	0.0000±0	29.587	<0.001*
	11-15	27	0.0000±0		
	16-24	17	0.0000±0		
	25-34	55	0.0000±0		
	35-50	73	0.0411±0.35		
	>50	39	.2308±0.53		
LOA >12 mm	5-10 year	22	0.0000±0	.000	1.00(NS)
	11-15	27	0.0000±0		
	16-24	17	0.0000±0		
	25-34	55	0.0000±0		
	35-50	73	0.0000±0		
	>50	39	0.0000±0		
LOA Not recorded	5-10 year	22	5.7273±1.27	192.536	<0.001*
	11-15	27	5.7778±1.15		
	16-24	17	5.6471±1.45		
	25-34	55	0.0182±0.13		
	35-50	73	0.0411±0.19		
	>50	39	0.6154±1.63		
LOA Excluded	5-10 year	22	0.0000±0	52.106	<0.001*
	11-15	27	0.0370±0.19		
	16-24	17	0.0000±0		
	25-34	55	0.0000±0		
	35-50	73	0.1781±0.75		
	>50	39	1.0769±1.71		

Fisher's exact test

\*P&lt;0.05 statistically significant

P&gt;0.05 Non significant, NS

**Table 4. Mean±SD of the decayed, missing, filled teeth and treatment needs of the study participants**

Age group	N	Mean±SD	Kruskall wallis test		
			Chi square	p-value	
D	5-10 year	22	2.95±1.676	11.001	.05(NS)
	11-15 years	27	2.00±1.209		
	16-24 years	17	2.24±1.091		
	25-34 years	55	2.44±1.873		
	35-50 years	73	3.29±2.674		
	>50 years	39	2.18±2.304		
M	5-10 years	22	0.00±0	69.555	<0.001*
	11-15 years	27	0.11±0.577		
	16-24 years	17	0.00±0		
	25-34 years	55	0.07±0.262		
	35-50 years	73	0.55±2.901		
	>50 years	39	5.85±8.893		
F	5-10 year	22	0.00±0	.000	1.00(NS)
	11-15	27	0.00±0		
	16-24 years	17	0.00±0		
	25-34 years	55	0.00±0		
	35-50 years	73	0.00±0		
	>50 years	39	0.00±0		
DMFT	5-10 years	22	2.95±1.676	16.212	.006*
	11-15 years	27	2.11±.502		
	16-24 years	17	2.24±1.091		
	25-34 years	55	2.51±1.904		
	35-50 years	73	3.84±3.866		
	>50 years	39	8.03±9.247		
T-1F	5-10 years	22	0.77±1.11	21.277	.001*
	11-15 years	27	1.56±1.121		
	16-24 years	17	1.65±1.169		
	25-34 years	55	1.49±1.345		
	35-50 years	73	1.73±2.155		
	>50 years	39	0.69±1.379		
T-2F	5-10 years	22	1.86±1.699	27.975	<0.001*
	11-15 years	27	0.30±0.724		
	16-24 years	17	0.53±0.874		
	25-34 years	55	0.33±0.695		
	35-50 years	73	0.47±0.851		
	>50 years	39	0.28±0.686		
T-CROWN	5-10 years	22	0.00±0	9.689	.08(NS)
	11-15 years	27	0.00±0		
	16-24 years	17	0.00±0		
	25-34 years	55	0.07±0.262		
	35-50 years	73	0.12±0.526		
	>50 years	39	0.28±0.759		
T-RCT	5-10 years	22	0.00±0	16.887	.005*
	11-15 years	27	0.00±0		
	16-24 years	17	0.00±0		
	25-34 years	55	0.18±0.475		
	35-50 years	73	0.21±0.552		
	>50 years	39	0.00±0		
T-EXT	5-10 years	22	0.32±0.78	29.967	<0.001*
	11-15 years	27	0.15±0.77		
	16-24 years	17	0.12±0.485		
	25-34 years	55	0.45±0.835		
	35-50 years	73	0.89±1.784		
	>50 years	39	2.13±3.488		

Fisher's exact test

\*P&lt;0.05 statistically significant

hygiene status was good in 34.27%, fair in 50.98% and poor in 14.7% (Raju PK *et al.*, 2015) which is in contradictory to the present study among the 11-15 year olds, 41.17% had good oral hygiene status and it was fair in 58.83%. Assessment of oral lesions in the present study showed ulceration in 2.2% and abscess in 3.0%. Iruligas at Ramanagara, Karnataka showed leukoplakia (0.12%), ulceration (0.08%) and acute necrotising gingivitis (0.23%) (Kadanakuppe, 2013). In the study conducted by Khanna S., 2012 among Baiga tribals of Central India showed leukoplakia (10.7%), OSMF (6.3%) and Burning Mouth Syndrome (11.4%) (Khanna, 2012), this is not comparable to the present study population because this study had a higher number of male study participants and higher rate of tobacco consumption

which are seen in association to oral mucosal lesions. Enamel opacities were present in 4.7% of the Yanadi study population. The percentage of the study subjects with dental fluorosis by the level of severity indicated that 1.28% had questionable, 2.14% had very mild, 4.29% had mild, 2.14% had moderate and 0.85% had severe levels. In the study Kadanakuppe S *et al.*, 2013 among the Iruliga tribals they showed that 27.03% of the study population had enamel opacities, questionable (10.06%), very mild (2.57%), moderate (0.42%) levels of dental fluorosis (Kadanakuppe, 2013). In the present study only one person had a removable partial denture (0.4%) where as only two had partial dentures among the Iruligas (0.08%) (Kadanakuppe, 2013).

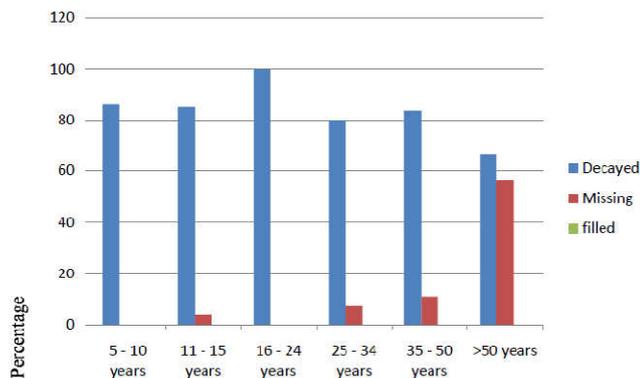


Fig 2: Correlation of age with the prevalence of Decayed Missing Filled teeth

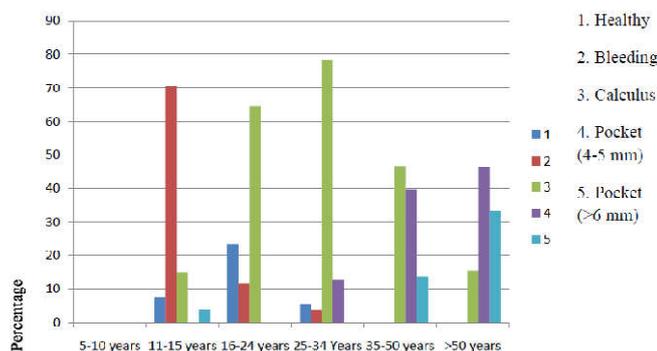


Fig 3: Correlation of age with the prevalence of Periodontal disease conditions

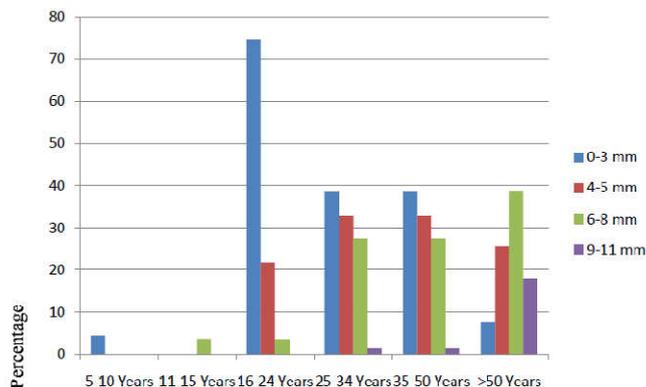


Fig 4: Correlation of age with the prevalence of loss of attachment

Among the Yanadis Prosthetic need for was; nil [Upper (90.1%), Lower (89.7%)] need for one unit [U (1.3%), L (4.7%)] need for multi unit [U (5.6%), L (3.0%)] need for full prosthesis [U (3.0%), L (2.6%)]. It is comparable to those of the Iruligas studied by Kadanakuppe S *et al.*, 2013, they showed no need [Upper (92.6%), Lower (92.8%)] need for one unit [U (1.2%), L (0.9%)] need for multi unit [U (0.3%), L (1.7%)] need for full prosthesis [U (3.7%), L (2.7%)] (Kadanakuppe, 2013). The mean±SD and prevalence of DMFT in the Yanadi study population according to different age groups is 5-10 year olds [2.95±1.67 (86.4%)], 11-15 year olds [2.11±0.50 (85.2%)], 16-24 year olds [2.24±1.09 (100%)], 25-34 year olds [2.51±1.90 (80%)], 35-50 year olds [3.84±3.86 (86.3%)] and >50 year olds [8.03±9.24 (82.1%)]. It is higher when compared to 7-11 year old children (0.51) of the primary schools of remote chandibhanjyang Village Development Committee (VDC) in Chitwan district of Nepal (Dixit *et al.*, 2013). Filled teeth were not found among the Yanadis studied, similarly no filled teeth were present among the Iruligas studied by (Kadanakuppe, 2013).

The mean±SD of the 15-24 year old (2.21±1.97) Bhil tribals of Rajasthan was comparable to the present study (Kumar *et al.*, 2009). The mean dmft and DMFT of the tribal children of 5-12 years age (2.64) studied by Singh A *et al.*, 2011 was comparable to the mean dmft and DMFT of the present study population of the 5-10 age group (Singh *et al.*, 2011). The mean DMFT of the Malayali tribal population of Javadhu hills studied by Kirankumar B *et al.*, 2012 of the age group 35-44 years (4.5) and 65-74 years (9.9) is comparable to the mean DMFT of the present study population of the age groups 35-50 year olds and >50 year olds (Dhanappa *et al.*, 2014).

In the present study 57.9% needed one surface filling, 24.9% needed two/more surface fillings and 29.2% needed extractions which is very high when compared to the Iruligas studied by Kadanakuppe *et al.*, 2013 where only 8.86% needed surface fillings and 3.22% needed extraction of teeth (Kadanakuppe, 2013). But the results of the present study were very comparable to the Bhil tribals studied by Kumar TS *et al.*, 2009 where 52.7% needed one surface filling and 29.9% needed extractions (Kumar *et al.*, 2009). The mean number of teeth requiring two surfaces filling among the 11-15 year olds (0.30) in the present study is comparable to the mean number of two surfaces filling in the 12 year olds (0.31) among Malayali tribal population of Javadhu hills (Dhanappa *et al.*, 2014). Dental caries and the frequency of periodontal disease of the oral cavity were high in the Bhil tribe of Rajasthan (Bhasin, 2004), similarly among the present studied Yanadis dental caries and frequency of periodontal disease is high. The mean number of sextants with healthy condition was 1.04±1.69; bleeding 0.44±1.04; calculus 2.66±2.24; shallow pockets 0.77±1.32; deep pockets 0.19±0.62. Similar results were seen among the Konda reddy tribe of Bhadrachalam in Khammam district, Telangana India [shallow pockets (0.91±0.91)] in a study conducted by Naheeda *et al.*, 2015 (Naheeda *et al.*, 2015).

The prevalence of shallow pockets (39.7%) and deep pockets (13.7%) among the 35-50 year olds in the present study is higher to the prevalence of shallow pockets (23.1%) and deep pockets (4.9%) among the Iruligas (Kadanakuppe, 2013). The mean number of sextants with bleeding (0.38±1.11), calculus (3.87±2.44) and shallow pockets (0.79±1.50) in the study done by Bhat Pk *et al.*, 2010 was similar to the results in the present study (Bhat *et al.*, 2010). The prevalence of calculus (45.1%) and shallow pockets (40%) among the 35-44 year olds Bhil adult tribes of Southern Rajasthan in the study done by Kumar *et al.*, 2009 is similar to the 35-50 year olds in the present study [calculus (46.6%), shallow pockets (39.7%)]. The distribution of mean sextants showing calculus (2.02) and shallow pockets (0.87) among the Malayali tribal population (Dhanappa, 2014) is similar to the present study [calculus (2.66) and shallow pockets (0.77)]. The prevalence of periodontal diseases among the adult tribal population in Nilgiris; 75.2% of the total population had presence of calculus; 15.8% had periodontal pocket 4-5 mm; 6.3% had periodontal pocket ≥6; 2% of the population had healthy periodontium (Philip, 2013) where as 42.1% of the present study population had the presence of calculus; 23.2% has shallow pockets; 10.3 % had deep pockets and 3.9% of them had healthy periodontium. The mean number of sextants with loss of attachment of 0-3mm was found to be 2.72±2.67; followed by 4-5 mm loss of attachment as 0.95±1.61; mean number of sextants with loss of attachment of 6-8mm was

Table 5. Correlation between oral hygiene status and cleaning practices

Cleaning Practices <sup>#</sup>		OHI-S				Total	Chi square test p-value
		Good	Fair	Poor	Not recorded		
A	1	1(2.8%)	26(26.5%)	38(50.7%)	5(20.8%)	70(30.0%)	<0.001*
	2	34(94.4%)	46(46.9%)	6(8.0%)	18(75.0%)	104(44.6%)	
	3	1(2.8%)	26(26.5%)	31(41.3%)	1(4.2%)	59(25.3%)	
B	1	33(91.7%)	98(100.0%)	74(98.7%)	23(95.8%)	228(97.9%)	.011
	2	3(8.3%)	0.0%	1(1.3%)	1(4.2%)	5(2.1%)	
C	1	33(91.7%)	98(100.0%)	74(98.7%)	23(95.8%)	228(97.9%)	.004
	2	0	0	0	1(4.2%)	1(0.4%)	
	3	3(8.3%)	0.0%	1(1.3%)	0.0%	4(1.7%)	
D	1	35(97.2%)	49(50.0%)	8(10.7%)	22(91.7%)	114(48.9%)	<0.001*
	2	0.0%	1(1.0%)	1(1.3%)	0.0%	2(0.9%)	
	3	1(2.8%)	48(49.0%)	66(88.0%)	2(8.3%)	117(50.2%)	
E	1	31(86.1%)	37(37.8%)	5(6.7%)	16(66.7%)	89(38.2%)	<0.001*
	2	4(11.1%)	13(13.3%)	4(5.3%)	6(25.0%)	27(11.6%)	
	3	1(2.8%)	48(49.0%)	66(88.0%)	2(8.3%)	117(50.2%)	
F	1	14(38.9%)	16(16.3%)	2(2.7%)	9(37.5%)	41(17.6%)	<0.001*
	2	20(55.6%)	32(32.7%)	4(5.3%)	9(37.5%)	65(27.9%)	
	3	2(5.6%)	50(51.0%)	69(92.0%)	6(25.0%)	127(54.5%)	
G	1	0.0%	1(1.0%)	0.0%	15(62.5%)	16(6.9%)	<0.001*
	2	32(88.9%)	73(74.5%)	61(81.3%)	7(29.2%)	173(74.2%)	
	3	4(11.1%)	24(24.5%)	14(18.7%)	2(8.3%)	44(18.9%)	

Fisher's exact test

\*P&lt;0.05 statistically significant

P&gt;0.05 Non significant, NS

<sup>#</sup> A1 – Clean with finger, A2 – Clean with tooth brush, A3 – Clean with datum

B1 – Clean teeth once a day, B2 – Clean teeth twice a day

C1 – Clean teeth in the morning, C2 – Clean teeth at night, C3 – Clean teeth morning and night

D1 – Use toothpaste, D2 – Use toothpowder, D3 – Others

E1 – Use fluoridated toothpaste, E2 – Use non-fluoridated toothpaste, E3 – Others

F1 – Change toothbrush every 4-6 months, F2 – Change toothbrush after 6+ months, F3 – Do not use toothbrush

G1 – Never rinse their mouth after eating, G2 – Rinse sometimes after eating, G3 – Always rinse their mouth after eating

0.28±0.74; 9-11 mm loss of attachment was found in 0.01±0.02 sextants and loss of attachment of 12 mm or more was not seen in any of the sextants. Similarly 9-11 mm loss of attachment was found in 0.01±0.09 sextants and loss of attachment of 12 mm or more was not seen in any of the sextants in a descriptive cross-sectional epidemiological study conducted to assess the periodontal status of Konda reddy tribe of Bhadrachalam in Khammam district (Naheeda *et al.*, 2015). The prevalence of loss of attachment (LOA) among the 15 year olds of Iruligas (2.63%) is comparable to the loss of attachment among the 11-15 year olds (3.7%) in the present study population and 0-3 mm LOA (71.0%) and 4-5 mm LOA (22.5%) among the 35-44 year old Iruligas (Kadanakuppe, 2013) is similar to the LOA among the 25-34 year olds in the present study [0-3 mm LOA (74.5%) and 4-5 mm LOA (21.8%)]. Controversially the prevalence of LOA among the Malayali tribal population is higher [0-3 mm (66.75%), 4-5 mm (24.76%), 6-8 mm (28.25%) and 9-11 mm (21.4%)] (Dhanappa *et al.*, 2014) when compared to the prevalence of LOA among the present study population [0-3 mm (31.8%), 4-5 mm (19.7%), 6-8 mm (16.3%) and 9-11 mm (3.4%)]. The prevalence of 4-5 mm LOA (18.5%) among the tribal population of Nilgiris which comprises of Paniyas, Mullakurumbas, Bettakurumbas, Irulas and Kattunayakans is comparable to the prevalence of 4-5 mm LOA (19.7%) in the present study population (Philip *et al.*, 2013). Although several studies have reported on the oral health status and treatment needs of children in urban and rural population from India there is scarce literature on the dental status of tribal population.

Hence, further research is needed to investigate the oral health of the various tribal populations of India. In addition, a longitudinal study in this population will aid in assessing the outcomes of interventions implemented by the government and other organisations, to improve the oral health of the population.

## Conclusion

In conclusion, Yanadi tribal population of Gonepalli village, Nellore district are characterized by lack of dental care and poor oral hygiene practices. There was high prevalence of periodontal diseases in adults and old people, decayed component of DMFT is high in children and adults whereas missing component of DMFT is high in older population. The population is characterized by high treatment needs. Free emergency and low cost basic dental treatment which could be provided by appropriately trained primary oral health care personnel and training camps for the anganwadi workers, health workers and school teachers who in turn will help for identification and referral of the population requiring treatment are recommended along with education programmes to educate and motivate population towards oral health and also to increase awareness of the available facilities.

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