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PERIODONTAL STATUS OF MALAYALI TRIBES AT JAVADU HILLS IN POLUR TALUKA OF THIRUVANNAMALAI DISTRICT, TAMILNADU

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ABSTRACT: AIM: The purpose of the study is to assess the Periodontal Health Status of Malayali tribes at Javadhu hills in Polur Taluk. **METHODOLOGY:** A descriptive cross sectional study was conducted to assess the periodontal health status of Malayali tribes in Javadhu hills of Polur Taluk. Totally 710 subjects in four different age groups of 12yrs, 15yrs, 35-44yrs, 65-74yrs old were assessed for the periodontal status using the Community Periodontal Index (CPI). **RESULTS:** The mean number of healthy sextant was found to be 3.36 in the 12 years age group. It was found to decrease with further in elderly age group of 65 years and above to reach mean sextant value of 0.00. **CONCLUSION:** This study reports a high prevalence of calculus in 12 &15 year old Malayali tribe children. The proportion of children with healthy periodontium ranged from 40 percent among 12-year-15 olds to nil of 65-74 year old. Pocket was the most prevalent condition, particularly among adults and geriatrics.
KEY WORDS: CPI, Malayali tribe, Periodontal health, Periodontitis, MeSH terms;

INTRODUCTION: Periodontal diseases are one of the major global oral health problems. The prevention of periodontal diseases is an important facet in a total preventive dentistry program. Although the critical role of dental plaque in the etiology of periodontal disease is well established, it does not explain the difference in susceptibility of given populations or individuals to periodontal diseases. The ever-changing demand of time has made the society to adapt to the changing environment such as industrialization, organization etc., which has led to the present or modern society. Despite remarkable worldwide progress in field of diagnostic, curative and preventive health, still a considerable fraction of mankind stay away from the mainstream, living in isolation in natural and unpopulated surrounding, and one such group of isolated population is known as tribals.[1] The tribal's live mostly in isolated villages or hamlets. The areas inhabited by the tribals constitute a significant part of the under-developed areas of the country. They live generally in inhospitable terrain and their hamlets are found in the interior forest areas along with the hill streams. There are no communication facilities between the various isolated tribal groups, as well as between the tribal and the world at large. [1, 2,3,4,5.]

Tribal populations are socio-economically disadvantaged compared to other population groups. They have different health problems owing to the variability in their geographical, socio-economic development and cultural characteristics.[2,3,6,7,8,9] The Oral Health of tribal communities living in isolated areas differs in comparison to general population. [1, 2]

Because of illiteracy, low income and also tribes living in isolated and inaccessible areas, it is hard to implement health care programs. Lack of medical, dental facilities may contribute to the high

prevalence of oral disease among these populations[3]. The World Health Organization (W.H.O) recommends that for the planning of dental services, surveys of oral health could be used to collect information about oral disease, oral health, and treatment needs of a population[10]. To monitor changes in levels and patterns of these variables over time[3] and in order for health administrators to judiciously allocate limited resources to oral health, there is need for information on disease prevalence and severity as well as treatment needs of the population.[6, 11]

Malayali / Malayai (Malai-hills, alu-person) community at Javadhu hills in Thiruvannamalai district of Tamilnadu state happens to be one such place secluded from the world outside. The tribal community, the Malayali, continue to live in their centuries old ways, uninfluenced by modern civilization, and placed in isolated areas in hilly forest with limited access to any means of transport. Hence, present study aims at providing baseline data which would yield valuable information for planning, implementation and curative oral health services. Such information is basic for the implementation of appropriate program to improve the awareness and knowledge of general public about the preventive aspects of oral health and to create the required services to meet these needs. With this background, the present study is an attempt to elucidate and assess the Periodontal Health Status of Malayali tribes at Javadhu hills in Polur Taluk.

MATERIALS AND METHODS: A 'Descriptive Study Design' using a 'Cross Sectional Survey Method' has been used in our study. The study population consisted of tribal people of 'Malayali tribes' residing in the 'Javadhu hills' in 'Polur Taluk' of 'Thiruvannamalai District'. The study was carried out in 'Kannamalai Panchayat' (one of the eleven Panchayats of 'Javadhu hills block') in 'Javadhu hills block' (one of 18 blocks of Thiruvannamalai District) in Polur Taluk of 'Thiruvannamalai District' of 'Tamilnadu state'. 'Kannamalai Panchayat' which is a part of the Javadhu hills block of Thiruvannamalai district, has 32 hamlets with the total Malayian population of 6950 spread over 1600 households. 'Stratified random sampling technique' was used for sample selection. Stratification was done according to age and the following 'Index Age Groups' were considered i.e. 12yrs, 15yrs, 35-44yrs, 65-74yrs (in consistent with W.H.O pathfinder methodology).

The Sample population was selected from the each of the hamlets by house to house survey and school survey. All the eligible persons from each of the households, in adult and geriatric population age groups i.e. 35-44yrs and 65-74 yrs old were included in the study. Samples from the age groups, 12yrs and 15 yrs were selected from schools. Non school going children/adolescents found in the selected households, in the age group 12yrs, 15yrs were also included in the study. The study protocol was reviewed and provided ethical clearance by the 'Institutional Review Board: IRB' of R.V. Dental college. Permission to conduct the population was obtained from the office Deputy Director of Health Services, Thiruvannamalai District and president of each hamlet. Oral consent was obtained prior to examination of each subject.

For the purpose of estimating sample size, the minimum expected prevalence of oral dental care need was considered as 50%. This was based on results obtained during pilot study conducted in one of the hamlet. The sample size was estimated to obtain the prevalence within 10 of the true value at 5% level of significance.

Sample size was estimated as follows:

Assuming→50% proportion having an oral health problem.
Confidence limit→95%

Relative Precision.→ 10%

Formula used for Calculating Sample size is as follows:

$$N = \frac{z^2_{1-\alpha/2} \times (1-p)}{p \times \varepsilon^2}$$

where, p: Expected prevalence at 95% confidence level = 2

ε: Relative precision = 10%

α: Level of significance=5%

It was estimated at 710 sample size. Estimated sample size allocated proportionally to strata size according to the proportion distribution in the population

STATISTICAL ANALYSIS: All the data was entered into the self designed Performa. The Performa were arranged systematically and information was transferred from the pre-coded survey Performa to a computer. A master chart was created in Microsoft excel (2003) for the purpose of data analysis. The χ^2 test with continuity correction was used to test the significant difference and comparing of proportions. Means were compared using Student't' test or one way ANOVA. Calculated values of the test criteria were compared with the tabular value at 95% confidence level to ascertain the significance of the test. The p value of 0.05 or less was for statistical significance.

RESULTS: The study population consisted of about 710 subjects stratified into four different   age group of 12 years, 15 years, 35- 44 years, and 65-74 years aged. Table1 show the distribution of the study population according to by age and sex. The agriculture was major occupation followed by wage labor. All the Malayali subjects consumed mixed diet. 70.5% study populations used the datum to clean their teeth. The toothpaste (13.1%) and toothpowder (7.2%) use which was very low as in comparison to other materials used for teeth cleaning (79%) as depicted in Table 2.

The distribution of the periodontal status of the subjects according to the mean sextants showed that the healthy sextants maximum in the younger age group and gradually decreased with age. The mean number of healthy sextant was found to be 3.36 in the 12 years age group. It was found to decrease with further in elderly age group of 65 years and above to reach mean sextant value of 0.00.The mean number of the bleeding sextant was 0.42 in the 12 years age group. It further decrease to 0.2 in 15 years age group, 0.25 in 35-44 years age group and least to 0.12 in 65 -74 years age group .The mean number of calculus sextant showed to increase from 2 in 12 year's age group and reached maximum of 2.42 in 35-44 years, 2.07 in 15 years age group. It was found to decrease and was least, 1.59 in 65-74 years age group. The mean sextant value of 0.04 for shallow pocket was noted in 15 years age group. The maximum mean sextant value 1.88 was seen in 65-74 years age group and 1.56 in 35-44 years age group. The mean number of excluded sextant was found to be 0.07 in 35-44 year's age group and increased to 1.47 in 65 -74 years age group. (Table 3).

Distribution of the study population according to the Periodontal Status (As per the highest CPI scores Obtained) shown in table 4. The highest number 78(31.6%) out of the 247subjects scoring healthy were found to be in the in the 12 years age group. In the 15 years age group, 68(26.9%) out of the 253 subjects examined. In the 35- 44 years age group, only 20(11.3%) out of the 176 subjects examined were healthy sextants. The subjects showing bleeding on probing as the highest scores were 17(6.8%) out of the 247 subjects. This increased to 20(7.9%) out of the 253

subjects in 15years age group. In the 35-44 years age groups, 30(17%) out of 78 subjects showed bleeding on probing as the highest score. In the 65- 74 years age group, none of the subjects were found to have bleeding as the highest score. The percentage of the subjects with calculus as highest score was in 152 (61.6 %) out of the 247 subjects showing calculus in the 12 years age group. 155(61.3%) out of 253 subjects in the 15 years age group and 43 (24.5%) out of the 176 subjects 35-44 year age group showed the calculus as the highest score. In 65-74 year age group 10 (29.4%) subjects showed the calculus as the highest score. The pockets of the 4-5 mm were first seen in 10 (3.9%) subjects in 15 years age groups. In the 35-44 years group, 75(42.7%) out of the 176 subjects presented with pocket of 4-5mm.The excluded category was highest in 65-74 years age group with 14(41.2%) and 8 (4.5%) subjects in 35-44 years falling under this category.

DISCUSSION: In the present study, the periodontal status of the subjects was examined as per CPI, it was seen that the maximum number scoring healthy was seen younger age group and the number gradually decreased as age increased. Philippus J. van Wyk and Candice van Wyk Pretoria[12] in their study results showed the less than 15% of the 15 years old children in South Africa presented with healthy periodontal tissues. The calculus dominates the most of common periodontal condition. These finding are not in accordance to the present study as in 15 years age group the percentages of healthy subjects were more and calculus scored subjects were dominated in all age group. Benoit Varenne, Poul Erik Petersen, Seydou Ouattara[13] in their study showed that in 5-6 year age group 75% of children had CPI score 1 i.e. gingival bleeding and calculus. CPI score 2 was evident in 58% of 6 years old , 57 % in 12 year old, 58% in 18 year old and 49% in 35-44 year age group. In 35-44 year olds 36% of the study population had score 3 and 10% had score 4. In our study also, higher age group were found to be more frequently affected by the pocket than lower age group. The percentages of the subjects scored for calculus in 12 years age group were in accordance to Benoit Varenne et al study.

Stjepan palj, Darije PlanEak[14] in their study showed that from the age of 20 years shallow periodontal pockets was evident in 11.76% of the study population in the littoral area and 14.26% in the mountain region. In 30 + age group 50% of the population of littoral and mountainous area had either deep or shallow pockets. In the 65+ age group of both populations, more than 4 sextants are excluded. These finding are not in similarity to our present study as the subjects in more or less similar age groups were to be affected by the periodontal disease in the form of bleeding and presence of calculus.

Olusegun K. Alonge and Sena Narendran[7] in their study observed that Subjects with healthy indicators i.e. CPI score 0 ranged from a low of 12 % among 15-19 year olds, to a high of 51 % among seven-year-olds. CPI score 2 was evident in 26-83% of study population aged 7 to 19 years old and bleeding (CPI score 1) was least evident. These finding are similar to our present study.
In the present study, the maximum mean numbers of the healthy sextant were found to be 3.36 in 12 years age group. It was found to decrease in elderly age group. Stjepan palj, Darije PlanEak[25] in their study on the subjects aged 15 years and older age group showed the mean number of healthy sextants (CPI 0) varied from three to five, and mean number of sextants (CPI 1) with bleeding or calculus (CPI 2) varied from one to three. The findings of our study are in accordance to Stjepan palj et al study except the mean number of the bleeding sextants.

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CONCLUSION: This study reports a high prevalence of calculus in 12 &15 year old Malayali tribe children. The proportion of children with healthy periodontium ranged from 40 percent among 12-year-15 olds to nil of 65-74 year old. Pocket was the most prevalent condition, particularly among adults and geriatrics. Oral hygiene instructions, however, was the most prevalent treatment needed followed by prophylaxis. This study recommends: Primary prevention programs in the form of health education and health promotion as the first step towards reducing the oral health problems, and secondary prevention programs are introduced later depending on the availability of resources for oral health especially dental manpower.

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Sex	Total				
	12 Yrs N=247	15 Yrs N=253	35-44 Yrs N =176	65-74 Yrs N =34	
Male	124 (29.8)	203 (48.9)	76 (18.4)	12 (2.9)	415 (58.5)
Female	123 (41.6)	50 (16.9)	100 (33.9)	22 (7.4)	295 (41.5)
Total	247 (34.8)	253 (35.6)	176 (24.8)	34 (4.8)	710 (100)
TABLE No 1: Distribution of the Study Population by Age Group and Sex					

(Values in parenthesis represent percentage)

Sl no	Variable	Options	Percentages
1	level of the education attained	Illiterate	77.3
		Primary	12.4
		High school	10.3
2	Main/Staple food in house	Rice	50.1
		Wheat	4.6
		Maize	10.1
		Others	35.3
3	Teeth Cleaning device	Fingers	10.4
		Brush	19.6
		Datun	70.4
4	Material used to Clean teeth	Tooth powder	7.2
		Tooth paste	13.1
		Others	79.7
Table No 2: Distribution of the Study Population according to the level of education, Food Habits and Oral Hygiene Practices.			

Age in Years	Healthy (0)	Bleeding (1)	Calculus (2)	Pockets 4-5mm (3)	Pockets 6mm or More (4)	Excluded Sextants (X)
12 Yrs N=247	3.36	0.42	2	0	0.0	0.0
15Yrs N=253	2.81	0.2	2.07	0.04	0.0	0.0
35-44 Yrs N=176	1.61	0.25	2.42	1.56	0.0	0.07
65-74 Yrs N=34	0.0	0.12	1.59	1.88	0.0	1.47
TABLE No 3: Distribution of Mean Sextant Showing Specific CPI Scores in Each Age Group						

Age in Years	Healthy (0)	Bleeding (1)	Calculus (2)	Pockets 4-5mm (3)	Pockets 6mm or more (4)	Excluded Sextants (X)
12 Yrs N=247	78 (31.6)	17 (6.8)	152 (61.6)	0 (0)	0 (0)	0 (0)
15Yrs N=253	47 (18.5)	75 (29.7)	121 (47.9)	10 (3.9)	0 (0)	0 (0)
35-44 Yrs N=176	20 (11.3)	30 (17)	43 (24.5)	75 (42.7)	0 (0)	8 (4.5)
65-74 Yrs N=34	0 (0)	0 (0)	10 (29.4)	10 (29.4)	0 (0)	14 (41.2)
	P<0.05 S	P<0.05 S	P>0.05 NS	P<0.05 S		P<0.05 S

Table No 4: Distribution of Study Population Based on the Periodontal Status

(As Per the Highest CPI Scores Obtained)
(Values in parenthesis represent Percentage) (NA* = Not Assessed) (S=Significant)

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