

Assessment of Oral Health Status of the Toda & the Kota Tribes in the Nilgiri District, India-A Comparative Study

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Abstract:

Objective: To assess and compare the oral health status and oral hygiene practices of the Toda and the Kota tribe in the Nilgiri district, Tamilnadu.

Materials and Methods: A comparative cross sectional study of 954 Toda and Kota tribe chosen by multi-stage random sampling was done. Oral health status was assessed with oral hygiene index simplified (OHI-S), caries status with decayed missing filled teeth index (DMFT) and periodontal status with community periodontal index (CPI).

Results: The overall mean DMFT score of Toda adult population was found to be 5.77 ± 6.033 and Toda children was 2.18 ± 2.667 ($n = 477$), whereas the DMFT score of Kota adult population was found to be 4.55 ± 5.773 and Kota children was 2.07 ± 2.282 ($n = 477$). According to community periodontal index in the Todas the mean number of gingival bleeding sextants was 2.63 ± 2.180 , mean number of sextants with shallow pocket was 0.93 ± 1.301 and deep pocket was 0.69 ± 1.193 , whereas in the Kotas the mean number of gingival bleeding sextants was 2.16 ± 1.914 , mean number of sextants with shallow pocket was 1.28 ± 1.444 and deep pocket was 0.70 ± 1.257 .

Conclusions: The study revealed that the Todas had better oral health status than the Kotas. This data could be used as base – line information for health authorities and dental professionals for planning strategies for oral health promotion, prevention and treatment for the Todas and the Kotas in the Nilgiri district.

Keywords: Oral health status, Oral hygiene practices, Tribes, Toda, Kota.

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I. Introduction

The Nilgiri district of Tamilnadu also called the “Nilgiris” means “Blue mountain” is one of the largest biosphere of southern India. The Nilgiris are a mountain range, part of the wider Western Ghats, situated at the junction of three states: Tamilnadu in the East, Kerala in the West and Karnataka in the North. There are six Primitive Tribal Groups (PTGs) that live in the Nilgiris out of 75 PTGs identified by the Ministry of Tribal Affairs, Government of India in the annual report 2004 - 2005¹.

1. Todas
2. Kotas
3. Kurumbas
4. Irulas
5. Paniyans
6. Kattunayakans

Among the six PTGs 4 of them live exclusively only in the Nilgiri district. The Todas and the Kotas are found in the higher altitudes of the Nilgiri hills whereas the Kurumbas and the Paniyans are found in the middle and the foothills of the Nilgiri hills. The Toda are known by several names like Todas, Tudavans, Toras, Todar distributed in 69 settlements and were lacto-vegetarians earlier. The Kota are known by several names like Koter, Kotharu, Kothewars, Kohatur distributed in 7 settlements and are non-vegetarians. W.H.R.Rivers² (1906) quotes “The Todas are a purely pastoral people, limiting their activities almost entirely to the care of their buffaloes; the Kotas are artisans and mechanics.

There is here a well - remarked instance of division of labor.” Little information regarding their oral health status and oral hygiene practices of both the tribes was available in the literature. Hence, the aim of the study was to assess and compare the oral health status and oral hygiene practices prevailing among the Todas and the Kotas.

II. Materials And Methods

The sample size for the study was detected to be 954 participants. It was calculated based on the prevalence of dental caries in the articles on hill tribal villagers in Thailand published by SroisiriThaweboon et al³ in 2010 and on Bhil tribes in India by Kumar TS et al⁴ in 2009. Prior to the field work the study was approved by the review board and ethical clearance was obtained from the Institutional ethical committee, Priyadarshini Dental College, Tiruvallur, India. The examination was done by two examiners who were trained at the department of Public Health Dentistry by certified dental faculty and the results were calibrated using kappa statistics as 0.8 (good agreement) to check for the reliability of the study. Information regarding the population of the Toda and the Kota tribes, and their settlement was obtained from the Director, Tribal Research Centre, M.Palada, Ooty.

The study was conducted in July 2013 in the Nilgiri district and a total of 954 people who were willing to participate was included in the examination after getting a written consent. The dental examination was done in the village where they lived. Study participants were made to sit comfortably in a chair opposite the examiner and examined under natural light with mouth mirror, CPITN probe and explorer. Dental caries status was measured using Decayed Missing Filled teeth (DMFT) index and periodontal status using Community Periodontal Index (CPI) according to criteria recommended by WHO, 1997⁵. Oral hygiene status was measured using Oral Hygiene Index - Simplified (OHI - S). The details of the oral hygiene practices were obtained by personal interview prior to the clinical examination. Mean, percentage, were calculated for all the values. SPSS software version 16 was used to analyze the data. Chi square test was done to compare if there is any significant difference in oral hygiene between males and females. Mann whitney U test was done to analyze any significant difference between males and females. T test was done to test the significance.

III. Results

Among the 954 study population, the male and the female participant percentage is shown in figure 1 and figure 2. The oral hygiene status as indicted by Oral Hygiene Index – Simplified of both the Toda and Kota adults is shown in figure 3 and of children in figure 4. The brushing frequency as reported among the Kota and the Toda adults (15 years and above) was that 77.9 % and 60.8% of them brush once daily, 21.4% and 38% brush twice daily and 0.7% and 0.6% brush occasionally with various brushing aids (figure 5) respectively. And as for the Toda and Kota children (below 15 years) 78.3% and 55.2% brush once, 18.3% and 43.8% twice, and 1.7% and 1% more than twice respectively with various brushing aids (figure 6). The mean DMFT score in the Kota adults is 4.55 ± 5.773 with mean prevalence of dental caries as 1.71 ± 1.822 , in the Toda adults is 5.77 ± 6.033 with mean prevalence of dental caries as 1.91 ± 2.114 and in the Kota children 2.07 ± 2.282 with mean prevalence of dental caries as 1.82 ± 2.054 , in the Toda children 2.18 ± 2.667 with mean prevalence of dental caries as 1.80 ± 2.154 . The age - wise split up of the decayed, missing and filled mean of the Todas and Kotas is depicted in table 1 and table 2. Periodontal status as indicated by Community Periodontal Index is shown in figure 7 and the loss of attachment in figure 8. The age - wise split up for the periodontal status of the Todas and the Kotas is shown in table 4 and table 5.

IV. Discussion

The study was conducted to assess and compare the oral health status and oral hygiene practices followed by the Toda and the Kota tribes of the Nilgiri district. The Todas are the oldest living tribe of Nilgiri region and both the Todas and the Kotas are well integrated with the surrounding non - tribe and tribe population yet live in their isolated area. Dental diseases, both caries and periodontal disease show universal prevalence. Dental diseases to a certain extent are also influenced by culture, habits and life styles and diet. The study showed that 83.4% and 97.6% of Kota and Toda adults, 93.3% and 95.2% of Kota and Toda children use toothbrush and tooth paste for brushing which is comparatively high to the findings of the study conducted by Thaweboon⁴ on hill tribes (11%) of Mae Sot, Thailand and the study conducted by Bhat Padma⁶ on the Iruliga tribe (0.03%) of Ramanagar district, Karnataka. But when comparing the usage of brushing aids among the Todas and the Kotas, Todas are a step ahead than the Kotas. Similarly 2.1% adults and 3.3% children of the Kota tribe use finger and charcoal which is low when compared to 14.9% of the Iruliga tribe⁷ but is high when compared to 0.6% of the Toda tribe. About 21.4% Kota adults and 18.3% Kota

children report that they brush twice daily compared to 27% of Mae Sot tribe⁴ in Thailand, both of which is low when comparing with 38% Toda adults and 43.2% Toda children who brush twice. This can be attributed to improved civilization in the Toda tribe of the Nilgiri district.

The mean DMFT score of the Kotas is 4.55 ± 5.773 which is comparatively low to 6.53 ± 6.32 of the Mae Sot tribes⁴, 5.34 ± 6.48 of the Bhil tribes⁵ of Rajasthan and 5.77 ± 6.033 of the Todas. The prevalence of dental caries is low among the Kota tribes when compared to other tribes which can be because of the traditional practice of using the herb '*Acmellapaniculata*' which is crushed and placed inside the mouth in case of tooth ache or gum pains. *A.paniculata* has been reported to demonstrate antibacterial activity against *Streptococcus mutans*⁷. The mean prevalence of filled teeth in the Kota adults and children is 0.02 ± 0.249 and 0, Toda adult and children 0.40 ± 1.866 and 0.01 ± 0.097 respectively, this can be attributed to the lack of awareness and motivation or can also be the geographic remoteness of these areas. Similar reports were given by Brennan⁸ who found geographic remoteness was a barrier for treatment in Australian tribes. The Todas, who are now being exposed to civilization, are found to consume more of the refined food stuff, a clear deviation from the primitive diet and this may be a reason for the high prevalence of caries.

The prevalence of shallow pocket in the Todas is 15.5% and deep pocket is 11.5% which is low when compared to 40% shallow pocket and 11.6% deep pocket of the Bhil tribe⁴ and also to 34% and 4.4% of the Mae Sot tribe³. Conversely the prevalence of shallow pocket is 55.9% and deep pocket is 31.7% which is high when compared to the Bhil tribe⁴ and the Mae Sot tribe³. When comparing the same with the findings (22% and 3.67%) of Iruliga tribe⁶ it shows that the prevalence of periodontal disease is high in both the Todas and the Kotas. The author relates this lower prevalence of periodontal disease in the Iruliga tribes to the fact that they use Chewsticks as brushing aid. And when comparing the findings of the Todas and the Kotas within each other, it reveals that Todas have a better periodontal status than the Kotas whereas the Kotas have a better caries status than the Todas. Although the Todas and the Kotas share the same geographical area, the dental diseases prevailing among them vary. This can be attributed to their lifestyle, culture, habits and diet.

V. Conclusion

This study revealed a relatively high prevalence of dental caries and a low prevalence of periodontal disease among the Todas also low prevalence of dental caries and a high prevalence of periodontal disease among the Kotas. This data could be used as base – line information for health authorities and dental professionals for planning strategies for oral health promotion, prevention and treatment plan specifically for the Todas and the Kotas in the Nilgiri district.

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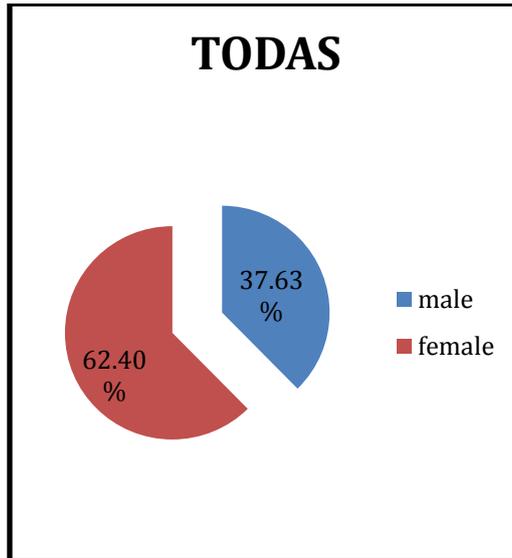


Figure 1: Population split up in the Todas.

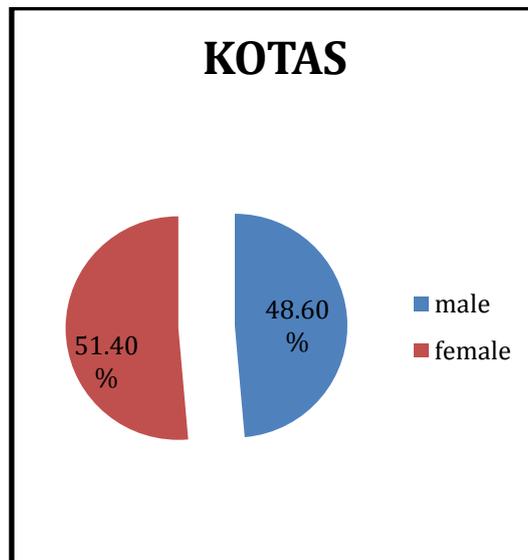


Figure 2: Population split up in the Kotas.

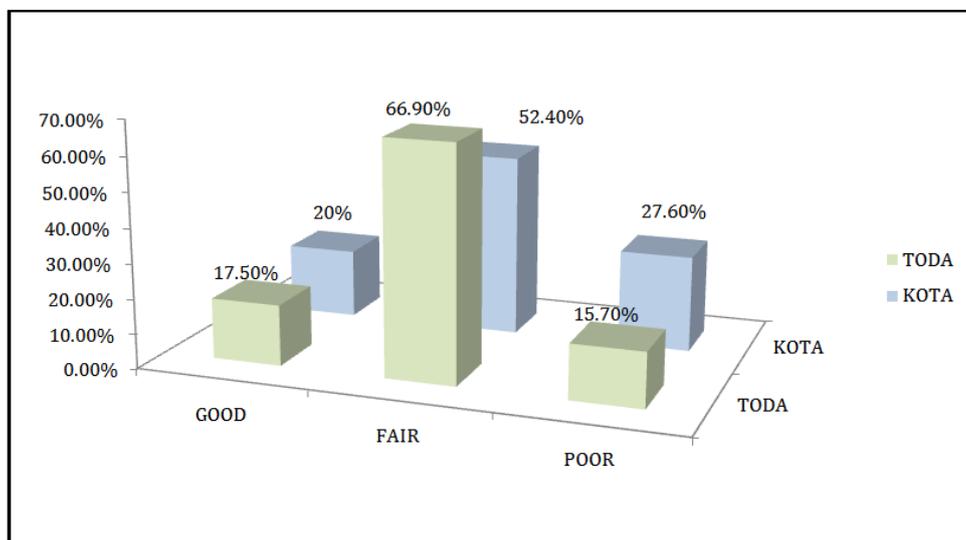


Figure 3 : Oral Hygiene Index - Simplified among the Toda and Kota adult population.

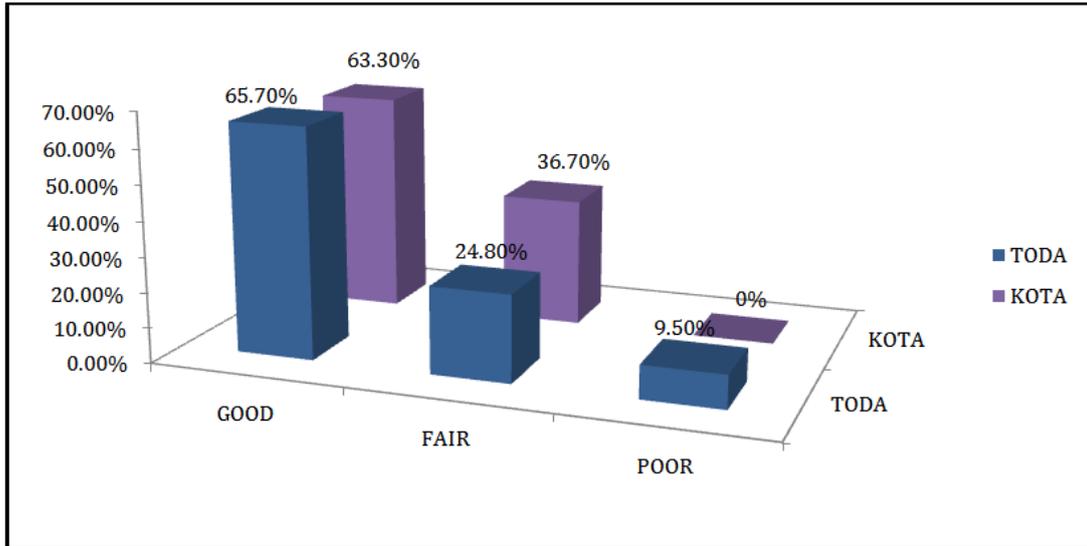


Figure 4 : Oral Hygiene Index - Simplified among the Toda and Kota children population.

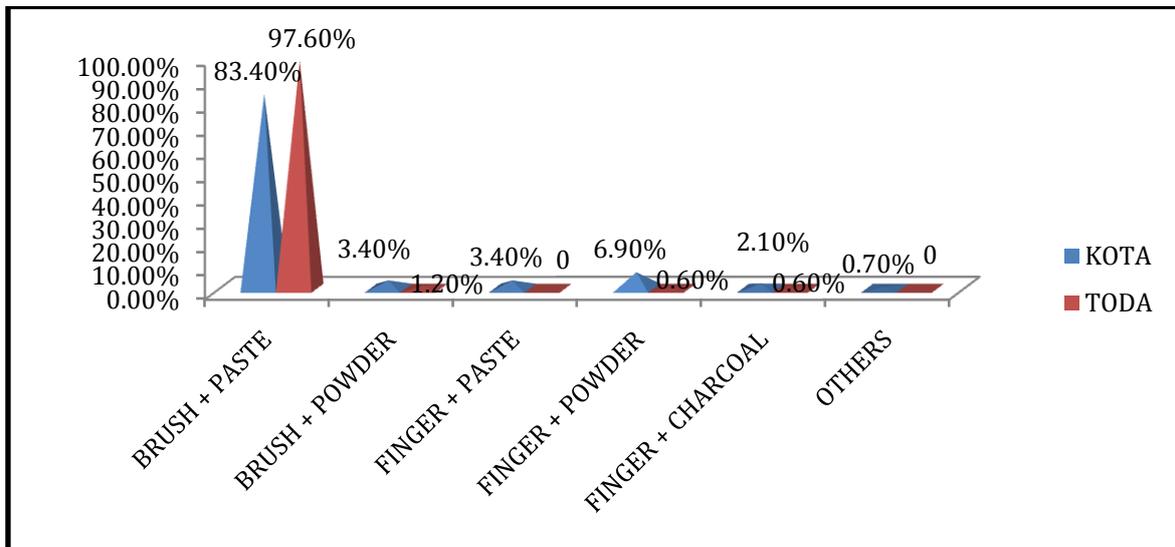


Figure 5 : Brushing aids used by the Toda and Kota adult population.

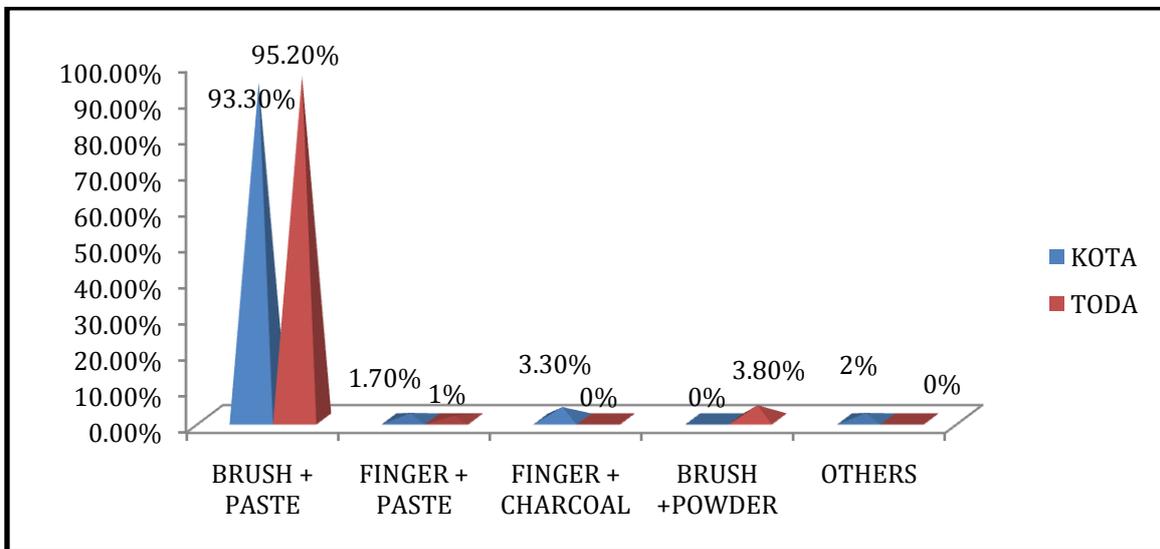


Figure 6 : Brushing aids used by the Toda and Kota children population.

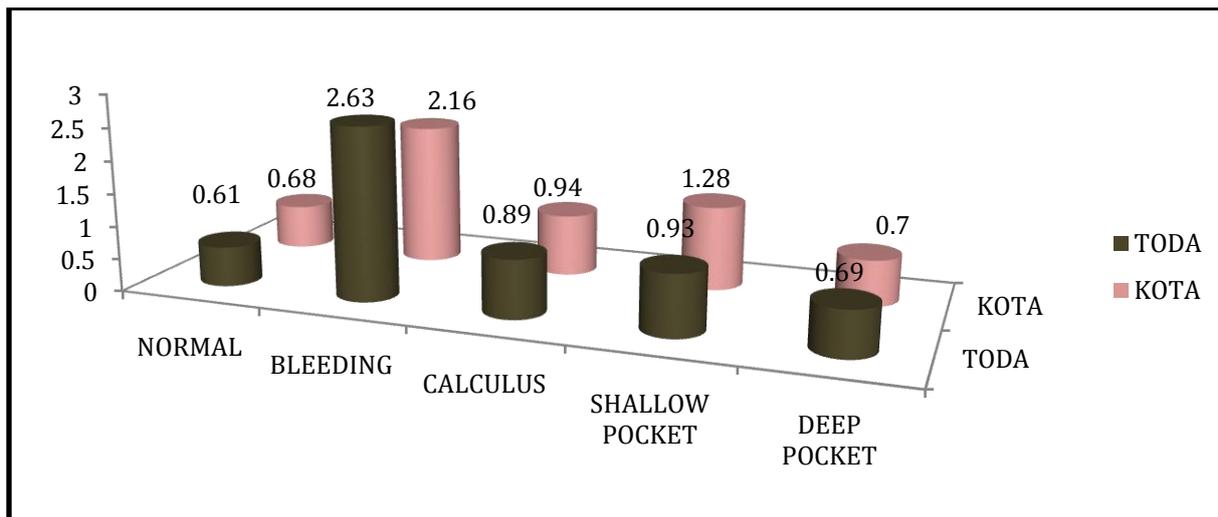


Figure 7 : Community Periodontal Index among the Toda and Kota adult population.

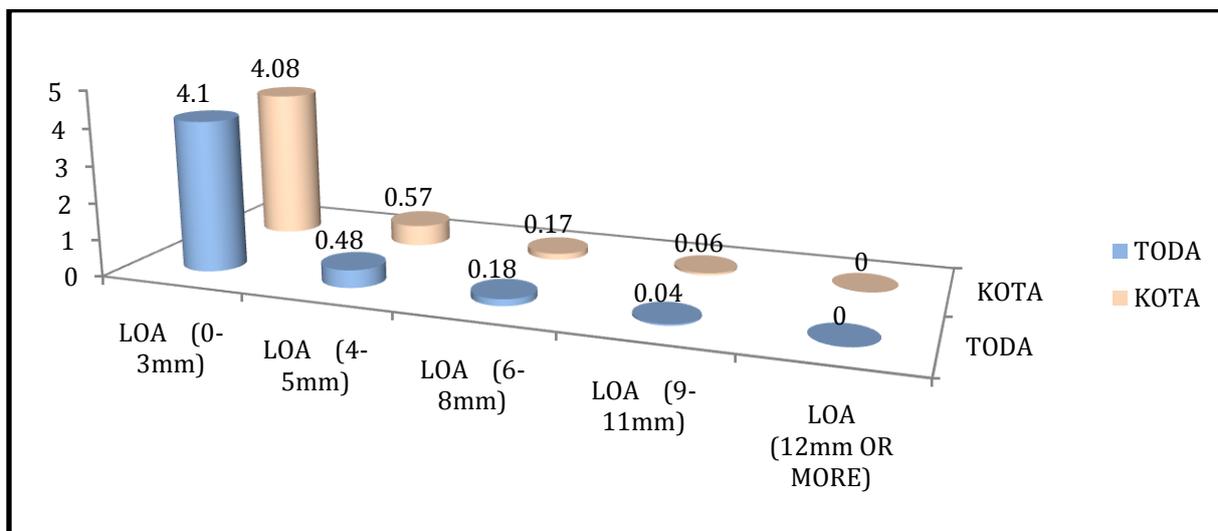


Figure 8 : Loss of Attachment among the Toda and Kota adult population.

AGE	DECAYED	MISSING	FILLED
5 - 14	1.8	0.35	0.01
15 - 24	1.66	1	0.03
25 - 34	2.10	3.56	0.28
35 - 44	2	4.10	0.76
45 - 54	2.57	5.43	0.33
55 - 64	2	4.47	1.53
65 - 74	0.83	16.67	0.83

Table 1 : Age wise split - up of prevalence of decayed, missing, filled teeth in the Todas.

AGE	DECAYED	MISSING	FILLED
5 - 14	1.82	0.25	0
15 - 24	1.45	0.53	0
25 - 34	1.13	1.74	0
35 - 44	2.44	2.29	0
45 - 54	1.14	0.86	0
55 - 64	2	7.59	0
65 - 74	2.27	10.82	0
75 - 84	2.5	1	0

Table 2 : Age split – up of prevalence decayed, missing and filled teeth in the Kotas.

AGE	BLEEDING	CALCULUS	SHALLOW POCKET	DEEP POCKET
15 - 24	3.72	0.60	0.28	0.16
25 - 34	3.76	0.90	1.48	0.41
35 - 44	1.80	1.24	1.66	1
45 - 54	1.19	0.95	1.29	1.80
55 - 64	2.21	0.79	1.07	1.36
65 - 74	0	2.33	0.67	0.5

Table 3 : Age split - up of the prevalence of periodontal conditions in the Todas.

AGE	BLEEDING	CALCULUS	SHALLOW POCKET	DEEP POCKET
15 - 24	3.5	0.37	0.34	0.21
25 - 34	2.79	1.06	1.52	0.42
35 - 44	1.88	1.31	1.44	0.65
45 - 54	1.93	1.14	2	0.43
55 - 64	0.6	1.24	1.77	1.65
65 - 74	1	0.73	1.55	1.37
75 - 84	0.5	1	2.5	2

Table 4 : Age wise split - up of the prevalence periodontal condition in the Kotas.

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