Oral Hygiene Practice and Oral Health Status among Tribal Children of Odisha, India

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Abstract

Objectives: The study aimed to assess the oral hygiene levels among tribal children belonging to a specific tribe in the state of Odisha, India and to correlate their teeth cleaning aids used for maintaining oral hygiene and the levels of oral hygiene.

Method: Oral hygiene status of a total of 1000 children between 8-13 years of age (boys 467, girls 533) were included in the study. A simplified oral hygiene index (OHI) developed by Greene and Vermillion consisting of two major components Debris index-simplified and calculus index-simplified was used for examining the OHI-S. Oral Hygiene Index- Simplified; the scores are as follows: Good: 0.0-1.2; Fair: 1.3-3.0; Poor: 3.1-6.0.

Results: The simplified debris index is good for 42.2% of children using toothpaste and toothbrush, 12% of children using indigenous powder with fingers, 3.4% of children using a twig and none of the children using gudakhu. The simplified calculus index is good for 66.1% of children using toothpaste and toothbrush, 12% of children using indigenous powder with fingers, 5.8% of children using a twig. The simplified oral hygiene index is good for 68.5% of children using toothpaste and toothbrush, 12% of children using indigenous powder with fingers, 4.5% of children using a twig and 38.9% of the children have good oral hygiene index who are using gudakhu.

Conclusions: Data showed that the oral hygiene index scores are mostly poor in the children using the indigenous method of oral hygiene practice. This data could be used as baseline information for health authorities and dental professionals for planning strategies for oral health programs in this tribal population as using addiction-prone tobacco pastes can lead to irreparable damage later in life.

Keywords: *Tribes, Oral hygiene Index Simplified, Tooth cleaning aids.*

Introduction

According to several studies diseases of periodontium had been prevailing since ages. There is a lot of effort made to combat those diseases but it is still prevailing among backward classes due to variations from normal oral hygiene routines and procedures.[1] Even in this contemporary world, some people are away from the civilization buried in their dark ignorant logic and tied to the misbeliefs and superstations following old and obsolete modes and modalities of lifestyle and health care practices. Among them are the "Tribes" of our country.[2] There are around 75 types of major tribal communities hailing in our country and they are again divided into many subgroups and clans. They have been mostly found in 15 states and union territories and are segregated into various clans depending upon their cultural practices.[3] From among those the state of Odisha nurtures about 36 different types of tribal populations

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including Kondha, Kolha, Munda, Bhumiya, Bonda, Mohali, Loharas, Sauras, Shantal, Gond, Gadava.[4] The vast repository of tribal population is found in the Mayurbhanj district of Odisha. Those population groups are characterized by lower-income and high treatment needs. Therefore, there is a need to access oral hygiene practice and oral health status among those tribes. The objective of this study was to assess the oral hygiene levels among tribal children and to correlate the teeth cleaning aids used for maintaining oral hygiene and the levels of oral health.

Methodology

A total of 1000 children between 8-13 years of age (boys 467, girls 533) were included in the study. The oral hygiene status of the children was examined using a simplified oral hygiene index (Oral Hygiene Index-Simplified).[4] OHI-S was developed in 1964 by Greene and Vermillion and has two components Debris index-simplified and calculus index-simplified. Oral Hygiene Index- Simplified; the scores are as follows: Good: 0.0-1.2; Fair: 1.3-3.0; Poor: 3.1-6.0.

Results

A total of 1000 school going tribal children were examined by a single examiner, among these children, 578 (57.8%) brushing their teeth with toothbrush and paste, 379 children (37.9%) with twigs, 25 Indigenous powders with finger (2.5%), 18 Gudakhu with fingers (1.8%) (Table 1).Association of oral hygiene levels among children using different teeth cleaning aids. The simplified debris index is good for 42.2% of children using toothpaste and toothbrush. It is good for 12% of children using indigenous powder with fingers, good for 3.4% of children using a twig and none of the children have good debris index who are using gudakhu. Thus better debris index is significantly associated with children using toothbrush and toothpaste (p=0.000) than the children using other method of teeth cleaning. Overall 260 (26%) children have good, 734 (73.4%) have fair and 6 (0.6%) have poor debris index. This is an area of concern.

The simplified calculus index is good for 66.1% of children using toothpaste and toothbrush. It is good for 12% of children using indigenous powder with fingers, good for 5.8% of children using a twig and 38.9% of the children have good calculus index who are using gudakhu. Thus better calculus index is significantly associated with children using toothbrush and toothpaste (p=0.000) than the children using other method of teeth cleaning. Overall 414 (41.4%) children have good, 192 (19.2%) have fair and 394 (39.4%) have poor calculus index. This is an area of concern and require intervention.

The simplified oral hygiene index is good for 68.5% of children using toothpaste and toothbrush. It is good for 12% of children using indigenous powder with fingers, good for 4.5% of children using a twig and 38.9% of the children have good oral hygiene index who are using gudakhu. Thus better calculus index is significantly associated with children using toothbrush and toothpaste followed by gudakhu (p=0.000) than the children using other method of teeth cleaning. Overall 423 (42.3%) children have good, 233 (23.3%) have fair and 344 (34.4%) have poor oral hygiene index. (Table 2), which is an area of concern and require intervention.

Table 1: Distribution of primary teeth cleaning aid

Primary teeth cleaning aid	No.	%
Toothbrush and toothpaste	578	57.8
Indigenous powders with finger	25	2.5
Twig	379	37.9
Gudakhu with fingers	18	1.8
Total	**1000**	**100**

Table 2: Association of primary teeth cleaning aid with oral hygiene level

Oral hygiene index parameters	Primary teeth cleaning aid	Good		Fair		Poor		Total		Fisher's Exact 'p' value
		No.	%	No.	%	No.	%	No.	%	
Debris index simplified	Tooth brush and tooth paste	244	42.2	334	57.8	0	0	578	100	0.000
	Indigenous powders with finger	3	12	22	88	0	0	25	100	
	Twig	13	3.4	360	95	6	1.6	379	100	
	Gudakhu with fingers	0	0	18	100	0	0	18	100	
	Total	260	26	734	73.4	6	0.6	1000	100	

Oral hygiene index parameters	Primary teeth cleaning aid	Good		Fair		Poor		Total		Fisher's Exact 'p' value
		No.	%	No.	%	No.	%	No.	%	
Calculus index simplified	Tooth brush and tooth paste	382	66.1	170	29.4	26	4.5	578	100	0.000
	Indigenous powders with finger	3	12	0	0	22	88	25	100	
	Twig	22	5.8	14	3.7	343	90.5	379	100	
	Gudakhu with fingers	7	38.9	8	44.4	3	16.7	18	100	
	Total	414	41.4	192	19.2	394	39.4	1000	100	
Oral hygiene index simplified	Tooth brush and tooth paste	396	68.5	161	27.9	21	3.6	578	100	0.000
	Indigenous powders with finger	3	12	2	8	20	80	25	100	
	Twig	17	4.5	62	16.4	300	79.2	379	100	
	Gudakhu with fingers	7	38.9	8	44.4	3	16.7	18	100	
	Total	423	42.3	233	23.3	344	34.4	1000	100	

Discussion

The oral hygiene index is found to be mostly good among the children using toothbrush and toothpaste, they have a fair debris index and a good calculus index whereas the children using twigs and various indigenous powders like charcoal, sand, clay, etc. have a poor oral hygiene index. The children using gudakhu have a fair oral hygiene index. This result is similar to the result found by P. Krishnam Raju et al, 12% of children using twigs have poor oral hygiene index score whereas only 3% of children using toothpaste and toothbrush have poor oral hygiene[5] according to a study by Rao and Bharambe the children using twigs and Manjans for cleaning teeth have higher calculus index along with gingival bleeding and periodontal abscess.[6] These results are governed by many factors such as socioeconomic status, awareness, attitude of the child, and the caregivers towards the oral hygiene. The children who belonged to a lower socio-economic background can't even afford for twigs those children mostly used charcoal, ash, etc. the oral hygiene condition of those children is very poor, they use charcoal with fingers so, they ought to have a poor oral hygiene. The children who use toothbrushes and toothpaste even if they don't know proper brushing techniques still due to swiping motion of toothbrush there is removal of debris and plaque which indeed prevents the calculus formation leading to good oral hygiene scores. In contradiction, certain other studies by Naheeda et al and Tanwar A. et al found the indigenous method to be more effective in oral hygiene maintenance than a toothbrush and toothpaste.[7] The reason of variation could be the use of different indices and use of twigs of different plants, as in the studies by Naheeda et al and Tanwar A. et al the participants mostly used meswak or neem twigs but in our study, the children mostly used twigs from Sal tree (*Shorea robusta*). Neem and Meshwak have antimicrobial properties as proved by certain studies such as a study by Al-Otaibi M et al where they found that *A. actinomycetemcomitans* were significantly more reduced by meswak ($p<0.05$) than by tooth brushing.[8] These results were supported by us in vitro results which, indicated that extracts from *Salvadora persica* might interfere with the growth and leukotoxicity of *A. actinomycetemcomitans*. Sal bark does not have any such antimicrobial properties.

Conclusion

The oral hygiene index scores are mostly poor in the children using the indigenous method of oral hygiene practice with the calculus index being significantly high, in children using toothpaste and toothbrush mostly had a fair to good oral hygiene score with low calculus index. From the above-mentioned result, it is quite clear that the entire tribal population not only children but also their caregivers need awareness programs, screening, and treatment camps to increase basic oral health knowledge. Anti-tobacco campaigns have also become a need of an hour among those populations. Hence, the oral hygiene behavior in children require emergency attention as coarse granular materials, addiction-prone tobacco pastes can lead to irreparable damage later in life.

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