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Original Research Article

Prevalence of oral health and treatment need of school going children in rural area of Bhandara district

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Abstract

Background: Oral health is an important health status indicator of an individual. In India poor economic group mostly accommodate in rural areas, where there is lack of facility. The present study was carried out to determine the oral health status of the school going children in rural area. We tried to assess the oral health habits know more about the type of treatment they may need to increase awareness and attention towards oral health.
Materials & Methods: The observational study was carried out in a school where a team of dentists examined the children and recorded their findings. Various study parameters like demographic profile, oral hygiene status, oral habits, dental caries, gingivitis, malocclusion etc. were assessed.
Results: In total 133 children were studied, majority of them were girls. Dental caries was seen in 33.1%, gingivitis in 12%, Malocclusion in 21% & Hypocalcificaion in 12.7%. Overall health hygiene was poor 64.66%. There was a definite correlation of poor oral hygiene & use of toothbrush with dental caries.
Conclusion: Poor oral hygiene is hazardous to oral health. Discoloration & poor oral hygiene warrants a complete dental examination. This can be achieved by educating the children as well as parents through school dental health program.
Keywords: Dental caries, School Children, Oral Health, OHIS Score.

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1. Introduction

Oral health is considered to be the most important health status of an individual. However it may influence with age, habits, type of diet, cleaning practices, eruption, and alignment of tooth. In India poor economic group mostly accommodate in rural areas, where there is lack of facility. [1, 2] The present study was carried out in rural area to determine the oral health status of the school going children, their oral habits and to have a specialized knowledge about the type of treatment they may need to increase awareness and attention towards oral health.

2. Materials and Method

The study was carried out in rural school at Palandur, Bhandara district. As such study has not been reported in past in that region. The general health status was recorded and oral examination of the subjects were carried out in school premise using disposal mouth mirror, dental explorer in torch light with subject seated comfortably on ordinary chair and examiner sitting in front of the child. A team of dentists examined the subject. Children from age group 11 to 17 years of age who had mixed dentition period were taken as subjects as this age is ideal age of growing, learning of self-care and understanding. Children with pure deciduous teeth, who did not give consent and who were absent from the school on the day of examination were excluded from the study.

The demographic information of the subject such as name, age, gender, oral hygiene practices of cleaning teeth, habits, type of diet were questioned and noted on the prepared format.

For diagnosis of dental caries DMFT index decayed, missing, filled teeth for mixed and permanent dentition was used. A tooth was considered decay when there was frank cavitation or black spot on any surface of tooth. A tooth was classified as missing if it was extracted due to caries. If tooth has restoration for carious lesion then it was classified as filled. Oral hygiene status was determined by simplified oral hygiene index (OHIS) values for each student from 0 to 6. Score 0-0.9 was termed good. When score was 1.0 – 1.9 it was termed "fair" and "poor" when it was between 2.0 and 6.0. For malocclusion Angle's classification was used for occlusal anomalies, crowding, spacing, anterior open bite, deviation of tooth were also recorded. Discoloration of teeth was classified as intrinsic discoloration when teeth were present in the form of brownish, chalky appearance of teeth (mottling of enamel). In such cases history was taken regarding drinking water and family history of students. For extrinsic discoloration questions regarding consumption of food, habits of Betel nut, ghutka chewing was taken. During soft tissue examination condition of gingiva its colour, consistency, and texture was recorded. Oral mucous membrane of lip, cheek, palate, tongue was also examined.

No intervention was carried out as it was only diagnostic assessment. Children who needed the treatment were referred to nearby higher centre. Data was collected and entered in Microsoft excel sheet for summarisation and results were tabulated.

Statistical analysis for sample size complete enumeration method has been used. However chi square test was used to find the relation between the study variables. Binary logistic regression analysis were performed for various factors responsible for development of caries

3. Results

A total of 133 children were evaluated. The age distribution of children is shown in figure 1 below. It can be observed that total number of boys is 45 & girls are 88. Regarding the technique of cleaning teeth, we observed that maximum number of children used toothbrush (57.9%) for cleaning of tooth while Manjan and finger was used in 33.8% (Table 1).

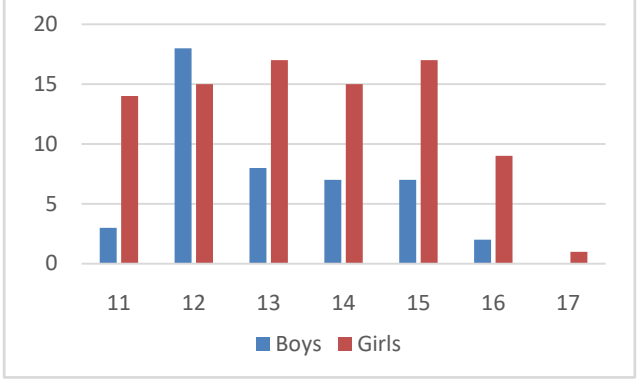

Fig. 1 showing Age & gender distribution of children

Table 1: Showing technique of cleaning of teeth employed by children

Technique of mouth cleaning	Number of students	Percentage
Tooth brush	**77**	**57.9%**
Manjan & Finger	**45**	**33.8%**
Charcoal	**7**	**5.26%**
Snuff & Finger	**1**	**0.75%**
Manjan & Brush	**3**	**2.25%**
Total	133	100%

The overall general health status of children was categorised by measuring their Body Mass Index (BMI). It was then compared with other children of same age against their percentile for children of the same sex and age. BMI less than 5th percentile was considered underweight, while above the 95th percentile was considered overweight. Table 2 below describes general health status of children observed during the study.

Table 2: Describes general health status of children observed during the study

Health status	Frequency	Percentage (%)
Underweight	22	16.5
Normal	109	82
Overweight	2	1.5

The diet consumed by students was analysed as it contributes to oral health. In our study 118 (88.7%) students consumed mixed type of diet, while 15 (11.3%) students were pure vegetarians. The type of dentition that was observed constituted mixed type of dentition in 51 (38.3%) students, while complete permanent dentition was observed in 82 (61.7%) of students. Eight students had excellent oral hygiene with no observed dental or oral pathology.

Dental caries, which is the commonest oral finding among students was observed in 44 (33.1%) of students, while no caries was seen in majority 89 (66.9%) of students. The DMFT index was calculated for the studied population which was 0.593 ± 1.007. Discoloration of teeth was present in 15(11.27%) of students, while no discoloration was observed in 118 (88.72%) students. Gingivitis was present in 16 (12%) students while, majority 117 (88%) students had no gingivitis. Malocclusion was seen in 28 (21.1%), while no malocclusion was seen in 105 (78.9%) students. Findings are shown in table 3.

Table 3: showing various variables observed in students

Variables observed in students; n= 133 (100%)		
Diet	Mixed 118 (88.7%)	Pure Vegetarian 15 (11.3%)
Dentition	Mixed 51 (38.3%)	Permanent 82 (61.7%)
Oral examination findings	**Present**	**Absent**
Dental caries	44 (33.1%)	89 (66.9%)
Gingivitis	16 (12%)	117 (88%)
Malocclusion	28 (21.1%)	105 (78.9%)
Hypocalcificaion (White spots)	17(12.78%)	116(87.21%)
Discoloration	15(11.27%)	118 (88.72%)
• Intrinsic • Extrinsic	9(6.76%) 6(4.51%)	
Overall oral hygiene	Satisfactory 47(35.33%)	Poor 86(64.66%)

On comparing the use of toothbrush with status of oral health hygiene, it is found that normal/satisfactory oral hygiene is significantly associated with use of toothbrush (P=0.048).

Comparing oral hygiene with dental caries, it is found that students with poor oral hygiene suffer from dental caries. (P=0.036).

On statistical evaluation and comparison of dental caries with the various modalities of teeth cleaning, we found the P value is 0.41 (>0.05) suggesting the association of dental caries with technique of teeth cleaning is not statistically significant.

On assessing the various risk factors for development of dental caries using the Binary logistic regression analysis, it has been found that students having discoloration and poor oral hygiene have more chances of developing dental caries.

4. Discussion

Oral diseases are common since childhood. If it remains untreated they may result in impairment of normal function as well as interfere routine daily activities. Sometimes it may lead to serious general health problems. Although there is scientific advancement for preventive aspects, still the oral diseases continue to be the major public health problem. [1]

In the present study an attempt has been made to evaluate the prevalence of oral diseases and treatment needs among school going children in rural area. This will help to increase awareness and attention towards oral health. The world health organization WHO has ranked dental caries as number three among all chronic non-communicable diseases that require world-wide attention for prevention and treatment. [2]

In the present study the overall prevalence of dental caries was found to be 44 (33.1%) out of which 28 were females and 16 were males. It was found that females have higher caries prevalence than males. Similar findings were reported by Mittal *et al* in 2014[3]. The various studies showing prevalence of caries is shown in table below.

Table 4: Studies showing prevalence of caries

Study	Prevalence of Caries
Dhar *et al* (2007)[4]	46.7%
Grewal H (2011)[5]	52.3%
Sudha P *et al* (2005)[6]	82.5%
NG Pai *et al* (2018)[7]	78.3%
Mittal *et al* (2014)[3]	37.5%
Giacaman *et al* (2018)[8]	64.59%
Grewal H *et al* (2009)[9]	77.7%
Present study (2019)	33.1%

Out of 133 subjects, 44 suffered from dental caries, that means 89 subjects were caries free. Which is less than the reported caries prevalence of India National oral health survey.[10-12] However 86 patients had poor oral hygiene, of them 23 had presence of caries and 63 did not had caries. It is evident that oral hygiene is significantly associated with dental caries (P=0.036)

During the oral examination, gingivitis was found in 16 (12%) in our study. Dhar *et al* [4] found the prevalence to be around 85%, Chrysanthakopoulos *et al* [13] had observed 72.8%, Elias-Boneta *et al* [14] found it around 80%, while Umar *et al* [15] found it to be 14.5%. The reason may be due to lack of awareness of oral hygiene and technique of brushing, which may result in accumulation of plaque which may have led to gingivitis in some studies while lower rate is seen in some other studies like us.

The malalignment/ malocclusion which are in the form of anterior spacing, open bite, crowding, and deviation of teeth contributes to oral health. Akbar *et al* [16] found its incidence as 54.6%, while de Souza *et al* [17] noted it as 47.6%, Guimaraes *et al* [18] found it as 78.7% and Retnakumara *et al* [19] had it at 83.3%. In the present study 28 subjects (21.05%) had malocclusion of them 19 were female and 9 were males. They were advised for the need of orthodontic treatment.

Hypocalcificaion, in the form of white spots was noticed in 17 subjects (12.78%) in our study, while Bardellini *et al* [20] noted it at 14.3%. Munjal *et al* [21] found white spots to be 49.6% in permanent molars without any treatment in children. In her study the incidence of white spot over permeant molars with some orthodontic treatment was 89.9% which was considerably higher. This may be due to hypo-mineralization post orthodontic treatment. We believe estimation of serum calcium level is necessary for further evaluation in such subjects.

In the present study, 15 patients had shown discoloration of teeth. The intrinsic discoloration was seen in 9 patients in the form of chalky white or brownish appearance i.e. mottled enamel. History revealed consumption of tube well water. Similar type of teeth colour was seen in the community who consumed water from the same water source nearby. We may say the cause of this intrinsic discoloration was due to the water source. The fluoride content of the tube well water could not be studied.

Extrinsic discoloration in the form of stains on teeth was noticed in 6 subjects. Their history revealed the habit of betel-nut and ghutka chewing along with the use of manjan during brushing. During oral examination of females of age group 13-16 years, black pigmentation was observed over the mucous membranes of soft palate & tongue. Their history revealed that they were receiving ferrous sulphate tablet since 4 months from school under Government scheme.

Statistical analysis showed that use of toothbrush is significantly associated with good oral hygiene. Also there is more prevalence of dental caries in persons with poor oral hygiene but, when comparing various modalities

of dental cleaning we found no association of teeth cleaning technique with dental caries. This proves a fact that daily regular cleaning of teeth is more important than the actual modality of cleaning. Subjects with discoloration and poor oral hygiene have more chances of developing dental caries

We suggest that any dental treatment should be tailored as per the needs of the person. During dental examination, patients should be evaluated thoroughly and the requirement of any prophylactic care along with higher restorative care should not be excluded from the advice chart. However, for effective management of a diagnosed dental disorder, treatment requires proper designing and planning with available facilities and affordability.

5. Conclusion

The present study had high prevalence of dental caries. The prevalence of caries was more as compared to discoloration, malocclusion, and gingivitis. Poor oral hygiene is hazardous to oral health. Maintenance of good sound oral health should be primary prerequisite for all school going children. This can be achieved by educating the children as well as parents through school dental health program. It should be aimed to increase awareness and attention towards oral health by promoting brushing methods. Awareness for preventive measures such as pit and fissure sealants should be made available and employed on patient at the earliest.

Ethical approval: The protocol for the study was approved by the institutional ethics committee.

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Author contribution

Dr. R. Y. Bansod: Conceptualization, study design, data collection, writing.
Dr. Lalita Belekar: Proof reading, Analysis
Dr. Amol Gadbail: Writing and proofreading
Dr. Suvarna Ramteke: Statistical analysis
Dr. Prasad Bansod: Writing and editing

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