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A Cross-sectional Study to Assess and Compare The Oral Hygiene Status, Knowledge, Perceptions Amongst The Students Studying in Government and Private Schools of Rural Areas of Chambal Region.

Abstract:

Objective: To assess and compare the oral hygiene status, knowledge, perceptions amongst the age group of 10 to 15-year-old students studying in government and private schools of rural areas of Chambal region.

Materials and Methods: The cross-sectional study was carried out at randomly selected secondary schools of Chambal region carried out approximately for a period of 2 months. Prior permission to examine the children would be obtained from the appropriate authorities before starting the study and the survey will be scheduled accordingly. The informed written consent and verbal assent will be obtained from the parents as well as to children respectively before the study. The investigator underwent training and calibration in January and Fabuary 2019. First, the literature of the two indices was thoroughly reviewed and a discussion was conducted with the staff of the Department of Public Health Dentistry. A calibration exercise was then performed on 30 adolescents who were examined by the investigator, as well as a previously trained examiner. Cohen's kappa values were calculated to assess the inter-examiner reliability. Substantial inter-rater agreement ($\kappa = 0.80$) was obtained.

Result: The difference in the debris score between the private school children and government school children for the study population as a whole statistically significant ($P = 0.01$) The mean debris score for the private school children was 0.7829 and the mean debris score for government school children were 0.9457. The difference in the calculus score between the private school children and government school children for the study population as a whole not statistically significant ($P = 0.21$) The mean calculus score for the private school children was 0.8206 and the mean calculus score for government school children were 0.7192.

Conclusion: The results of the study concluded that there were differences in oral health information obtained between public and private school students. This difference in the level of knowledge may be due to differences in the level of education between the two types of students. Students have responded well to engaging in oral health education for children and can undoubtedly be instrumental in this work. However, if schoolchildren are given the right training, learning materials, and support from dentists who are experienced in public health, it can bring about a change in the knowledge, attitudes, and behavior of our country's students.

Keywords: Oral hygiene status, Government school children, Private school children, socio-demographic, Calculus score, Debris score.

Introduction:

Oral diseases have been an ongoing public health problem, with almost everyone experiencing poor oral health at least once in their lifetime.[1, 2] Oral health is a state of relief from chronic oral and facial pain, oral and throat cancer, oral ulcers, birth defects such as cleft lip and palate, periodontal disease, tooth decay, and tooth loss, and other diseases and disorders affecting the oral cavity.[3, 4] Oral health affects the general health, well-being, education, and development of children and their families[5], and reduces the quality of life.[2, 3] A

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chronic oral infection can increase the risk of diabetes, cardiovascular disease such as stroke, respiratory infections, low birth weight, preterm birth.[1-4] Oral cases affect 3.9 billion people worldwide; the global burden increased by 20.8% from 1990-2010.[6] Oral health is important for normal health and well-being throughout life and is a hallmark of the general state of health. Dental caries and gingivitis are the most common or widespread conditions in children. Other conditions such as tooth decay and jaw, tooth decay, and crust deformity are known. Premature loss of decay teeth can lead to permanent misalignment of the teeth, and it can affect one's appearance. Poor oral health thus has the potential to affect the quality of life. It is the highest level of illness that has brought this disease to the main focus of dental health work. It has been noted that during the 1940s the prevalence of teeth in India was 55.5%, in 1960 it was reported to be 68%.[7] The American Dental Association recommends that to prevent oral diseases a person should brush and floss at least once a day and visit the dentist regularly.[8, 9] We all know that a lack of oral hygiene can lead to the development of oral diseases. These habits, such as brushing, flossing, and occasional tooth visits should be developed at an early age. Tooth extraction and tooth brushing are common oral procedures.[10] About one-third of the sample reported flossing at least once a day. Three-quarters of the people reported having regular dental visits at least once a year.[11] The majority of children (73-83%) in Sweden, Denmark, Germany, Austria, and Norway brushed their teeth twice a day. The use of dental floss was rare. In general, flossing was less common in boys than girls.[12]

Oral diseases deserve to be a major public health problem, due to their prevalence and incidence. Oral health information is considered to be an essential requirement for health-related behaviors. It has been shown that Indian children have a lower level of awareness and oral health compared to their western counterparts. The study aims to assess the oral hygiene status, knowledge, perceptions amongst the age group of 10 to 15-year-old students studying in government and private schools of rural areas of Chambal region.

The objectives are:

- To assess the socio-demographic (age. Gender, socio-demographic status) factors and Eating patterns.
- To assess the oral hygiene status, knowledge, perceptions amongst the age group of 10 to 15-year-old students studying in government schools of rural areas of Chambal region.
- To assess the oral hygiene status, knowledge, perceptions amongst the age group of 10 to 15-year-old students studying in private schools of rural areas of Chambal region.
- To compare the oral hygiene status, knowledge, perceptions amongst the age group of 10 to 15-year-old students studying in government and private schools of rural areas of Chambal region.
- To recommend oral health-related preventive, curative, and promotive measures for the school children of Chambal region.
- To assess the oral hygiene status using the OHI-S index and to compare the age group in between 10-12 and 13- 15.

Materials and Methods:

The present descriptive, cross-sectional study was conducted among 10-15year old school children from rural areas of Chambal region. Written approvals were obtained from school authorities before scheduling the survey. The informed written consent and verbal assent were obtained from the parents as well as to children respectively before the study before the examination. The investigator underwent training and calibration in January and Fabuary 2019. First, the literature of the two indices was thoroughly reviewed and a discussion was conducted with the staff of the Department of Public Health Dentistry. A calibration exercise was then performed on 30 adolescents who were examined by the investigator, as well as a previously trained examiner. Cohen's kappa values were calculated to assess the inter-examiner reliability. Substantial inter-rater agreement ($\kappa = 0.80$) was obtained. The study is a cross-sectional study that was carried out at randomly selected secondary schools of Chambal region carried out approximately for a period of 2 months. Prior permission to examine the children would be obtained from the appropriate authorities before starting the study and the survey will be scheduled accordingly. The informed written consent and verbal assent will be obtained from the parents as well as to children respectively before the study.
The data was collected using the WHO oral health assessment form 2013 (modified). Clinical examination was done to assess the Debris index and the calculus index (OHI-S). The investigator carried out the examination solely.

A list of Government and private primary schools of Chambal Region was obtained from the Education department. Chambal region was divided into four zones. Five government and 5 private schools were selected randomly

from each zone. 1600 children selected by systematic random sampling were examined in these schools and not more than 100 children were examined per school/ day.

Inclusion criteria:

- School children age group 10 to 15 year
- Children with no systemic diseases.

Exclusion criteria:

- Subjects who would be uncooperative and systemically ill.
- Subjects receiving orthodontic treatment
- Subjects not willing to sign the consent.

Sampling procedure:

A cluster random sampling technique was used for the selection of schools, where each school was considered a cluster. A list of government schools in Chambal Region was obtained from the postal of the ministry of the education of M.P (Madhya Pradesh), a two-stage sampling procedure was followed in the section of the study participants during the first stage by applying the simple random sampling procedure. A list of the schools in the selected zone was obtained, and schools were selected using the table of random numbers.

Schedule of the study:

The survey was systematically scheduled to spread over 2 months from January 2019 to February 2019. The first stage in data collection work was to set up a central survey unit at the Department of Public Health Dentistry to coordinate all the activities related to the survey. The central survey unit comprises of an experienced and senior dental health surgeons; the survey unit decided that a team has to be sent to the pre-decided field area (i.e. selected schools) in a mobile dental clinic for the examination.

Informed consent:

The students were addressed in their classrooms in the presence of a teacher. The nature of the study and the procedure was explained to them, and they were invited to ask any questions they had. After answering all the questions to their satisfaction, the informed consent forms were distributed to the students, and they were directed to get it signed by their parents if they consented. The consent forms were then duly collected by the class teacher over consequent days.

The examination of the subjects was carried out in the selected schools, Subjects were examined seated on the stool, with the examiner standing approximately in 10 o'clock position. The subject was positioned to receive maximum illumination; Examination of each individual took approximately 15 minutes. All examinations were conducted by the investigator while the assistant entered the values into the Performa.

Statistical analysis:

The questionnaires were coded and data were entered into Microsoft Excel 2016. Corresponding plaque and gingival indices were also calculated for each student and entered into the software. Descriptive and inferential statistics were performed using the Statistical Package for Social Sciences (SPSS) version 23.0. Frequency distribution tables were used for summarizing the data. A Chi-square test was used to test the differences between the four groups. Chi-square and independent samples t-test was used to compare the mean oral hygiene index between private school and government respectively. All tests were performed at 0.05 level of significance.

Tables 1 knowledge of school children of oral hygiene practices.

Times of brushing	Private school	%	Government school	%	P-value
Morning	225	28.1	320	40.0	0.3
morning and night	575	71.9	480	60.0	
Total	800	100.0	800	100.0	
Dental floss					
Don't know	288	36.0	137	17.1	0.557
No	312	39.0	558	69.8	
Yes	200	25.0	105	13.1	
Total	800	100.0	800	100.0	
Dental visit					
Regular	225	28.1	198	24.8	0.04
When problem	506	63.3	514	64.3	
Don't know	69	8.7	88	11.0	
Total	800	100.0	800	100.0	

Table no 2 Distribution of study subjects according to Perceptions of Oral health impact on daily activities.

Eating	Private school	%	Government school	%	P-value
Yes	723	90.4	600	75.0	0.8
No	65	8.1	152	19.0	
Not sure	12	1.5	48	6.0	
Total	800	100.0	800	100.0	
Cleaning of teeth					
Yes	704	88.0	603	75.4	0.1
No	80	10.0	158	19.8	
Not sure	12	2.0	39	4.9	
Total	800	100.0	800	100.0	
Smiling					
Yes	636	79.5	516	64.5	0.68
No	122	15.3	178	22.3	
Not sure	42	5.3	106	13.3	
Total	800	100.0	800	100.0	
Relaxing/sleeping					
Yes	369	46.1	367	45.9	0.89
No	259	32.4	179	22.4	
Not sure	172	21.5	254	31.8	
Total	800	100.0	800	100.0	
Doing school work					
Yes	384	48.0	311	38.9	0.64
No	241	30.1	189	23.6	
Not sure	175	21.9	300	37.5	
Total	800	100.0	800	100.0	

Table no. 3 Eating patterns of study participants.

	Fresh fruit		Biscuits, cake, etc		Coca-cola, Pepsi, etc.		Honey/jam		Sweet chewing gum		Sweets/toffee	
	Priv. sch. (%)	Govt. Sch (%)	Priv. sch (%)	Govt. Sch (%)	Priv. sch (%)	Govt. Sch. (%)	Priv. sch (%)	Govt. Sch (%)	Priv. sch (%)	Govt. Sch (%)	Priv. sch (%)	Govt. Sch. (%)
Several times in a day	8.4	5.8	8.3	6.9	14.6	14.3	24.0	11.3	39.1	13.3	43.9	13.9
Every day	9.1	17.6	31.0	9.9	42.0	19.3	23.4	36.9	16.9	33.9	14.3	27.8
Several times a week	5.9	7.9	21.6	13.1	21.4	20.1	14.5	27.6	14.5	27.3	19.3	30.5
Once a week	11.8	18.8	9.9	9.4	11.8	14.8	15.8	19.4	14.4	18.5	7.8	16.3
Several times a month	40.4	27.9	9.4	39.5	5.6	17.9	13.6	3.4	11.5	5.3	13.0	8.3
Never	24.5	22.1	19.9	21.3	4.5	13.8	8.8	1.5	3.6	1.9	1.9	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
P valve	0.86		0.42		0.1		0.5		0.03		0.5	

Table 4 -Comparison of OHI-S in private and government school

Oral hygiene	Private school	Government school	p-value
Oral hygiene index	1.4605	1.6275	0.01
Debris index	0.7829	0.9457	0.01
Calculus index	0.8206	0.7192	0.21

Results:

Table no 1 Shows knowledge of school children of oral hygiene practices in school children there was no significant difference between private and government school children regarding oral hygiene practices that is frequency, dental flossing, etc. there was a significant difference in school children of their dental in their dental visit. ($p \leq 0.04$)

Table no 2 shows the distribution of study subjects according to Perceptions of oral health impact on daily activities, there was no significant difference between school children's perception of daily activities like eating, smiling, cleaning teeth, sleeping, and school homework.

Table no 3 shows the eating patterns of study participants there was no significant difference in school children eating patterns like fresh fruits, soft drinks, biscuits, honey, jam, etc. there was a significant difference between the consumption of chewing gum, private school children consumed comparatively more than government school children.

Table no 4 The difference in the OHI-S score between the private school children and government school children for the study population as a whole statistically significant ($P = 0.01$) The mean OHI-S for the private school children were 1.4605 and the mean OHI-S for government school children were 1.6275.

The difference in the debris score between the private school children and government school children for the study population as a whole statistically significant ($P = 0.01$) The mean debris score for the private school children was 0.7829 and the mean debris score for government school children were 0.9457.

The difference in the calculus score between the private school children and government school children for the study population as a whole not statistically significant ($P = 0.21$) The mean calculus score for the private school children was 0.8206 and the mean calculus score for government school children were 0.7192.

Discussion:

Health is the source of daily life and is often regarded as a basic human right. It is undeniable that oral health is an important part of normal life. It is also understandable that the cost of dental care is high because of personal, financial, and social implications.[1] Despite the tremendous advances in oral health worldwide; major problems still exist in local areas, especially in poor communities and neglected rural areas.[2] Children, in particular, face the burden of this burden as oral diseases can significantly affect children's quality of life through pain, paralysis aesthetics, absenteeism, recurrent infections, eating disorders, difficulty sleeping, reduced learning ability, inadequate nutrition, and improper growth and development.[3] The social and behavioral aspects of the etiology of various dental diseases can be addressed by simply improving the levels of oral health knowledge at the school level that will enable children to make informed decisions, as well as to create an environment that promotes health.[4, 5]

Oral health conditions are known to vary in gender throughout the years, as girls tend to have better oral hygiene than boys.[6] Despite this, tooth decay and periodontitis are more common in women, probably for social and behavioral reasons. Women, for example, are more susceptible to the effects of hormones that can exaggerate the body's immune system and lead to more aggressive periods.[7] Teeth also erupt when they are younger than women, which is why they are often exposed to hostile environments.

Disruption of equipment and removal of plaque is simple and effective; Current oral hygiene measures used properly and in conjunction with general professional care can prevent almost all caries and many periodontal diseases and maintain oral health.[8] Many parents instruct their children to clean their teeth, although different levels of compliance may be detected. Already a large number of children in the current study were brushing their teeth. Given the wide availability of toothbrush and toothpaste and the increased information in recent times, it is not surprising that almost all children use a toothbrush to clean their teeth.

It is evident from this study that most school-age children do not have extensive knowledge of oral hygiene. Similar to the study conducted by Priya M et al and reported all information as low. Understandably, most of them are aware of certain facts related to oral health that can be interpreted as being made. As only 45.5% of private school students and 38.3% of public school students brushed their teeth twice a day although most 71.9% of private school participants and 60% of public school participants knew that brushing should be done twice a day. Similarly, only 4.27% know how to brush properly. V. l. Kuppuswamy et al and Priya M et al also reported that a small percentage of children brushed their teeth twice a day (17% and 38.3% respectively).[9] The practice of using dentures is now common in the community, but only 4% of students knew about fluoride use which contains dental adhesives that help protect the crust and prevent decay. A study by V. Sharva et al also reported that 92% of people in their study were unaware of the need for fluoride in toothpaste.

Dental brushes were 86.5% of the most commonly used oral hygiene products in line with the findings of children in Saudi Arabia and Kuwait.[13,14] However, the use of 25% of private school dental students and 17.1% of public school participants were aware that dental floss used for cleaning between teeth was less common among school children in the Chambal region. Our study was consistent with a previous study that found that dental floss is less commonly used by children.

Studies have shown that children, who have visited a dentist in the past, tend to have better oral health.[16] Children who have not visited a dentist may have a negative attitude towards dental treatment, or they may be suffering from dental anxiety. Identifying those children and the intended motives will help them improve their oral health status. One important factor in maintaining oral health is regular dental check-ups and any early dental / gum problems. However, it is common practice in the community to visit a dentist only when a dental problem arises. In this study, only 16.23% of educated people went for regular dental examinations, and 82.90% had never visited a dentist. These findings are similar to those reported in other studies. A study by AG Harikiran et al also reported that fear of the dentist was a major cause of irregular visits to 46.1% of students.[17] There are wide variations between recommendations regarding toothpaste techniques, and for how long. The most common methods recommended are the Modified Bass process and Bass technique. Next, a circular or phone process and then a Scrub process.[18] Depending on the person's needs, the dentist may recommend a proper dental procedure.

It is known that brushing teeth is necessary, and most people like to brush in the morning before breakfast. However, it is not the only time when a person should brush all day. The

process of enamel demineralization takes place much faster than reconstruction, so it is very important to take steps to reduce the amount of mineral extraction throughout the day for the teeth to recover.[19] There was a strong interaction between brush brushing. Low quality of life in terms of the experience of pain and discomfort in the teeth was common in both groups interviewed, however, due to limited access to dental care, most people remain inactive. Dental visits were rare and were performed mainly with emergency care and tooth extraction. Since parents and teachers are important educators in oral health their involvement should be considered in planning for oral health education for children.

Conclusion:

The school can use an active forum to promote oral health in relation to children and families. Besides, to prevent oral diseases and promote oral health, national health authorities must provide community-based oral health care and essential care should be provided in the primary sense of health care. The results of the study concluded that there were differences in oral health information obtained between public and private school students. This difference in the level of knowledge may be due to differences in the level of education between the two types of students. Students have responded well to engaging in oral health education for children and can undoubtedly be instrumental in this work. However, if schoolchildren are given the right training, learning materials, and support from dentists who are experienced in public health, it can bring about a change in the knowledge, attitudes, and behavior of our country's students.

Recommendations:

As to improve the oral health of children in rural areas of Chambal region, the following recommendations are given:
Oral health promotion through well-structured oral health education program can create positive change in awareness for special groups like school children.

Reinforcement of knowledge is necessary which can be done by incorporating chapters on oral health and oral hygiene in school textbooks. Also, the teachers training programs can ensure continuity of reinforcement

Implementation of school dental health programs focusing on preventive programs like tooth brushing programs and fluoride mouth rinse

Preventive services should be given high priority and needs to be started at an early age to target the primary dentition and future caries in permanent dentition

Regular interval screening programs to assess the oral health and treatment needs of school children and provision of treatment as per the need.

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