

Association of Dental Diseases with Oral Hygiene in School Children of Rural Rajasthan, India

Dr. Akhil Sharma¹ Dr. Sumbul Zafer² Dr. Rashmi Gupta³ and Dr. Suresh Kewalramani⁴

^{1,2}Dentist, Private Clinics, Jaipur (Rajasthan) India

³Senior Demonstrator Department of PSM, SMS Medical College, Jaipur (Rajasthan) India

⁴Assistant Professor Department of PSM, SMS Medical College, Jaipur (Rajasthan) India

Abstract— Oral diseases are health problem of industrialize well as developing countries because of its high prevalence. In developing countries these diseases are given less importance because of scarcity of resources but when these dental diseases remain untreated it can cause permanent toothache and disability. It can increase school attendance and intern lead to complication and expensive treatment. A community based study was conducted in rural area of Jaipur district to find out the association of dental diseases with oral hygiene. From schools of Amer tahsil of Jaipur district 1600 students were examined for dental diseases and interrogated for oral hygiene. Association of oral hygiene with dental diseases like Dental Carries, Dental Fluorosis, Malocclusion and Periodontitis was found out with chi-square test. It was revealed that Dental diseases like Dental Carries, Dental Fluorosis, Malocclusion and peridontitis all are associated with oral hygiene. Mouth rinsing frequency and teeth cleaning frequency is inversely proportion in Dental Carries but is directly proportional in Dental Fluorosis, Malocclusion and Periodontitis

Keywords— Dental Carries, Oral Hygiene, Dental Flosis, Malocclusion, Periodontitis

1. Introduction

Oral health is fundamental to general health and well being, significantly impacting on quality of life.¹ Ability to chew and swallow is a critical function required to obtain essential nutrients for the body.² Oral diseases qualify as major public health problems owing to their high prevalence and incidence in all regions of the world and is one of the most costly diet and behavior-related disease. Childhood oral diseases, if untreated, can lead to irreversible damage, pain, disfigurement, more serious general health problems, lost school time, low self-esteem and poor quality of life. Delay in treatment not only results in aggravation of the disease, but also the cost of treatment is substantially escalated as a consequence.

In many developing countries like in India, access to oral health services is limited and teeth are often left untreated or are extracted because of pain or discomfort. Most of the time managing such problems is beyond the resources of many developing countries.³ Grass-root level health workers and doctors do not have adequate knowledge about oral hygiene and prevention of oro-dental problems. Such factors have resulted in poor oro-dental health of our population.⁴ Oral diseases such as dental caries, gingivitis, Periodontitis are global health problems in both the industrialized and developing countries and are increasing, especially amongst children coming from poorer communities.⁴ Malocclusion, and oral cancers constitute an important public health problem in India today.⁴ This present study was conducted to found association between oral hygiene practices and dental diseases in school children of rural Rajasthan.

2. Methodology

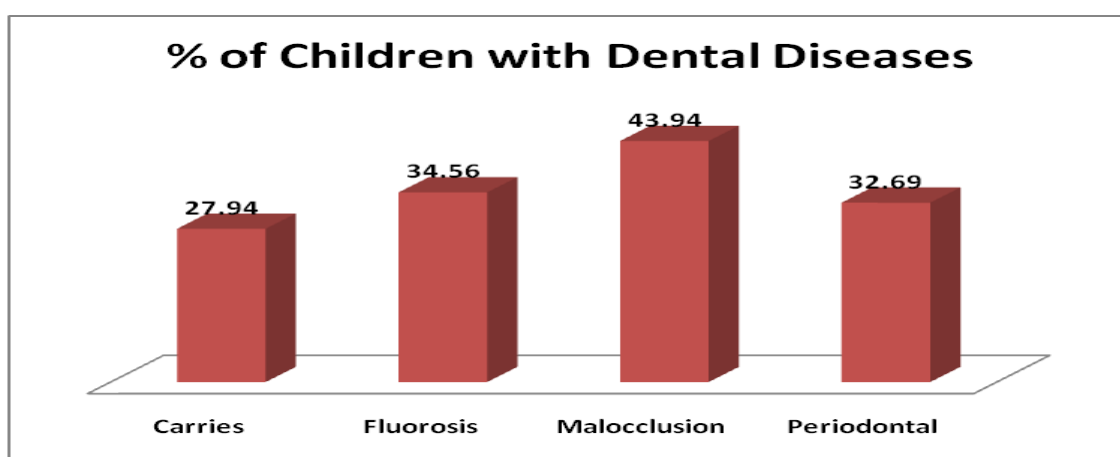
A Cross Sectional observational study was carried out on 1600 school going children aged 5-16 years of rural area of district Jaipur. Sample size was calculated 1584 subjects at 95% confidence limit and 6% allowable error assuming prevalence of Dental Carries 42% in school children.¹ So for the study purpose 1600 school children was taken. List of schools in the selected area of Amer Tahsil was

procured from the office of Deputy Director of Education Department, Jaipur District. School for survey was selected randomly till the sample size achieved.

Identified Schools were visited after due permission of Head/Principal of school, on the mutually pre-decided date and time so as to examine the maximum number of children by a dentist. Children were examined in the school premises at a suitable place in presence of respective class teachers with the subjects seated in ordinary chairs in natural day light for illumination, avoiding direct sunlight. They were examined for dental diseases and were asked about their habits related to oral hygiene. Data were collected on predesigned proforma. Data thus collected were compiled and analyzed with trial version of SPSS 20. To find out significance of difference in proportion chi-square test was used. For Significance p value equal to or less than 0.05 was considered significant.

3. Results

Present study observed that out of total 1600 children majority 703 (43.94%) of children were suffering from dental fluorosis followed by periodontal, Malocclusion and Dental Carries. (Fig. 1)



In this study about oral hygiene it was found that out of 1600 children only 87 (5.44%) were always rinsing their mouth after having meals and 423 (26.44%) were cleaning their teeth twice or more than twice which is a normal oral hygiene. (Table 1&2)

When association of dental diseases with oral hygiene then it was revealed that dental diseases like Dental Carries, dental fluorosis, Malocclusion and Periodontitis all were found to be associated with mouth rinsing and teeth cleaning frequency. Proportion of children with Dental Carries was found maximum in children who did not rinse their mouth at all but just reverse to it Periodontitis was found maximum in children who rinses their mouth after every meal. (Table 1)

When association of dental diseases with teeth cleaning frequency was observed then it was revealed that Dental Carries was found significantly more in children who do not either clean their teeth or do not clean daily. But Dental Fluorosis, and Malocclusion was found more than two third of children who clean their teeth twice a day or more. Periodontal was found comparatively less in those children who either not clean their teeth at all or clean more than twice a day. This variation of distribution of Dental Carries, Malocclusion and Periodontitis was found significant whereas it was not found significant as per frequency of teeth cleaning. (Table 2)

It was also revealed with this study that type of teeth cleaning materials was also found to be associated with these studied dental diseases i.e. Dental Carries, dental fluorosis, Malocclusion and Periodontitis. Beside the children who were not cleaning their teeth, the children cleaning their teeth with Charcoal were having more Dental Carries than the children cleaning their teeth with tooth powder, tooth brush, tooth powder and tooth paste. But Dental Fluorosis, periodontal and Malocclusion

was found more in children cleaning their teeth with tooth powder and tooth paste than those either who did not clean or clean their teeth with Charcoal. (Table 3)

Table 1

Association of Mouth Rinsing Frequency with Dental Diseases

Mouth Rinsing Frequency per Day	Total		Dental Carries		Dental Fluorosis		Malocclusion		Periodontal	
	No.	%	No.	%	No.	%	No.	%	No.	%
Never	683	(100)	220	(32.21)	209	(30.60)	277	(40.56)	182	(26.65)
Some times	830	(100)	204	(24.58)	316	(38.07)	389	(46.87)	298	(35.90)
Always After Meals	87	(100)	23	(26.44)	28	(32.18)	37	(42.53)	43	(49.43)
Total	1600	(100)	447	(27.94)	553	(34.56)	703	(43.94)	523	(32.69)
Chi-square Test at 2 DF P Value LS			10.945 P= 0.004 S		9.479 P= 0.009 S		6.133 P= 0.047 S		26.305 P<0.001 S	

Table 2

Association of Teeth Cleaning Frequency with Dental Diseases

Teeth Cleaning Frequency per Day	Total		Dental Carries		Dental Fluorosis		Malocclusion		Periodontal	
	No.	%	No.	%	No.	%	No.	%	No.	%
Zero	167	(10.44)	73	(43.71)	42	(25.15)	53	(31.74)	32	(19.16)
<1	88	(5.50)	34	(38.64)	29	(32.95)	30	(34.09)	31	(35.23)
Once	922	(57.63)	246	(26.68)	328	(35.57)	432	(6.85)	330	(35.79)
Twice	354	(22.13)	80	(22.60)	129	(36.44)	157	(44.35)	115	(32.49)
> Twice	69	(4.31)	14	(20.29)	25	(36.23)	31	(44.93)	15	(21.74)
Total	1600	(100)	447	(100)	553	(100)	703	(100)	523	(100)
Chi-square Test at 4 DF P Value LS			33.385 P<0.001 S		7.698 P= 0.103 NS		16.793 P<0.001 S		22.228 P<0.001 S	

Table 3

Association of Teeth Cleaning Material with Dental Diseases

Mouth Rinsing Frequency per Day	Total		Dental Carries		Dental Fluorosis		Malocclusion		Periodontal	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fingers	136	(8.50)	42	(30.88)	82	(60.29)	54	(39.71)	39	(28.68)
Tooth brush and Tooth Paste	922	(57.63)	229	(24.84)	273	(29.61)	415	(45.01)	331	(35.90)
Tooth brush and Tooth powder	125	(7.81)	30	(24)	62	(49.60)	70	(56)	54	(43.20)
Datun	213	(13.31)	60	(28.17)	81	(38.03)	94	(44.13)	56	(26.29)
Charcoal with finger	37	(2.31)	13	(35.14)	13	(35.14)	17	(45.95)	11	(29.73)
Donot Clean	167	(10.44)	73	(43.71)	42	(25.15)	53	(31.74)	32	(19.16)
Total	1600	(100)	447	(100)	553	(100)	703	(100)	523	(100)
Chi-square Test at 5 DF P Value LS			69.960 P<0.001 S		69.992 P<0.001 S		19.960 P=0.002 S		29.951 P<0.001 S	

4. Discussion:

Present study revealed that dental diseases were found to be associated with oral health. Although few like Baskaradoss, JK(2008)⁵ did not observe any significant difference was found between the oral hygiene habits but many of other authors⁶⁻¹⁰ had well comparable findings. These studied dental diseases were found to be associated with oral health in following manner:-

4.1 Dental Carries and oral hygiene:

It was observed that maximum proportion of dental caries were from those children who had never rinsed their mouth. Significant difference was found in the proportion of caries in students who cleaned their teeth twice as compared to those who cleaned their teeth less than once in both the areas. These findings are in accordance with the findings of K. Pandit et al (1986)⁶ who also reported that prevalence of caries was found to increase significantly in those who do not clean their teeth regularly.

Likewise Dental Carries was observed more in children who either never clean their teeth or did not clean daily than those who used tooth paste and tooth powder. Girish Parmar (2006-07)⁷ reported that prevalence of caries was comparatively lower in children who used toothbrush than amongst those who used tooth powder and neem datun in Gujarat. Remnant of food particles remaining in the mouth which stick to the teeth and promote bacterial growth that causes dental caries. So frequent rinsing of mouth is necessary to prevent caries. Brushing helps to control the plaque and bacteria that cause dental caries. Datun has mechanical cleaning effect. Plaque is a film of food debris, bacteria, and saliva that sticks to the teeth and gums. Bacteria in plaque converts certain food particles into acids that cause tooth decay. To prevent cavities, need to remove plaque, the transparent layer of bacteria that coats the teeth. The best way to do this is by brushing teeth twice a day and flossing at least once a day.

4.2 Dental Fluorosis and oral hygiene:

In this regard it was observed that variation in the proportion of dental flurosis cases with rinsing was also found significant with maximum proportion observed amongst cases who sometimes rinsed their mouth. Although maximum proportion of Dental Fluorosis was found in children who had cleaned their teeth twice or more than twice but variation in the proportion of dental flurosis as per teeth cleaning frequency was not found significant ($P>0.05$) This may be due to the fact that during mouth rinsing chances of ingestion of fluroidated water are more, so chances of having fluorosis are increased.⁸

Likewise variation in proportion of Dental Fluorosis as per teeth cleaning material used was also found significant ($P< 0.05$) with maximum proportion of amongst those who used tooth brush and powder in the rural areas. This may be explained that presently most of the tooth paste and tooth powder available in the market are fluroidated, therefore their dental use in younger children increase the chance of having Dental Fluorosis.⁸ Another fact is that most of tooth powder and toothpaste contain fluoride so more use of these in childhooch may lead to Dental Fluorosis.

4.3 Malocclusion and oral hygiene:

Significant difference was found in all variables i.e. frequency of mouth rinsing and teeth cleaning as well as with type of material used for teeth cleaning. These findings were considerably important because these factors also played an important role in the occurrence of the dental caries which can lead

to premature loss of deciduous and permanent teeth thereby causing migration of contiguous teeth, abnormal axial inclination and supra eruption of opposing teeth factors that are responsible for development of Malocclusion.⁹

4.4 Periodontitis and oral hygiene:

In the present study it was observed that maximum cases of Periodontitis were amongst those who rinsed their mouth always after meals. Regular and effective tooth brushing and mouth washing are effective only above and slightly below the gum line and once Periodontitis develops, more intensive treatments than rinsing alone are required.¹⁰ Therefore more Periodontitis cases were found in those people in urban areas who rinsed their mouth always after meals.

Likewise maximum Periodontitis was found amongst children who either cleaned their teeth with fingers or cleaned with tooth power and paste. Similar finding was reported in the study conducted by P Mahesh Kumar (2005)¹¹ and Faisal (2010)¹². This may be due to the fact that effective removal of dental plaque is directly associated with reductions in plaque levels on a regular basis and therefore it is important in long term prevention and control of Periodontitis.¹²

Toothbrush and toothpaste are used to maintain day to day oral hygiene and good oral hygiene status was found to be significantly correlated with better periodontal health. These are the mechanical aids which help in removing the microbial plaque in daily routine which in turn are responsible for good oral hygiene as well as less prevalence of Periodontitis.¹³

CONCLUSIONS

Dental diseases like Dental Carries, Dental Fluorosis, Malocclusion and periodontitis all are associated with oral hygiene. Mouth rinsing frequency and teeth cleaning frequency is inversely proportion in Dental Carries but is directly proportional in Dental Fluorosis, Malocclusion and periodontal diseases. This was further supported with that although Dental Carries were less common in children who clean their teeth with tooth powder and tooth paste but other three increases with the use of tooth powder and tooth paste.

REFERENCES

1. World Health Organizations. WHO Information Series on School Health, Document Eleven. World Health Organization 2003. Geneva, Switzerland) [http : // new.paho.org/hq/dmdocuments/ 2009 / OH _ st _ sch.pdf](http://new.paho.org/hq/dmdocuments/2009/OH_st_sch.pdf).
2. Singhal J.P. An Epidemiological Study of Dental and Periodontitis among school children in Ajmer City. Thesis submitted for the degree of MD. (P.S.M.), University of Rajasthan 1981.
3. Agrawal Anubha. Oral Health - As a prodrome of systemic diseases. Indian Journal of Dental Sciences 2010; Vol. 2, Issue 6, : 58-60.
4. Parkash H. National Oral Health Program. Indian Paediatrics 2002; 39 : 1001-1005.
5. Baskaradoss, JK. Prevalence of dental fluorosis and associated risk factors in 11-15 year old school children of Kanyakumari District, Tamilnadu, India : A cross sectional survey. Indian J Dent Res. 2008 Oct-Dec; 19 (4) : 297-303.
6. K. Pandit Periodontitis and dental caries in primary school children in rural areas of Delhi. Indian Journal of Pediatrics 1986; Vol 53, No. 4 : 525-529.
7. Girish Parmar. A Project Report "Management of dental caries in rural areas of Gujrat through Atraumatic Restorative Technique (ART) 2006-07.
8. Ana Karina Mascarenhas. Risk factors for dental fluorosis : A review of the recent literature. American Academy of Pediatric Dentistry (Pediatr Dent, 2000; 22 : 269-277.
9. S.I. Bhalajhi. Orthodontic, The Art and Science, 2nd Edition, 2000, Arya Publishing House.
10. [http://www.umm.edu/patiented/articles/how__ can __ periodontal __ disease __ be_prevented_000024_6.html](http://www.umm.edu/patiented/articles/how__can__periodontal__disease__be_prevented_000024_6.html)
11. Mahesh Kumar P et al. Oral health status of 5 years and 12 years school going children in Chennai city : An epidemiological study. J Indian Soc Pedo Prev Dent 2005; 23 : 17-22.
12. Faisal Awad. Periodontitis prevalence and some related factors among 15 years old school children in Khartoum State, Sudan Sudanesh. Journal of Public Health. Oct. 2010; vol 5 (4).
13. Agarwal Vipin et al. Prevalence of Periodontitis. Indian Journal of Oral Health and Community Dentistry, 2010; 4.