

ORAL HYGIENE AND GINGIVAL HEALTH STATUS OF PRESCHOOL CHILDREN ATTENDING A UNIVERSITY DENTAL HOSPITAL

*AMJAD HUSSAIN WYNE, BDS, BSC, MDS, FASDC

**ARHAM NAWAZ CHOCHAN, BDS, MSC, FPFA

***MOSA MOHAMMED AL-OWAISI, BDS

***Mohammed Safar Al-Ahmari, BDS

ABSTRACT

The objectives of the study were to determine the oral hygiene and gingival health status and to find out any relation between the oral hygiene and gingivitis in Saudi preschool children attending the King Saud University, College of Dentistry (KSUCD). A total of 60 preschool children, 36 male and 24 female were examined with a mean age of 4.4 (SD 1.0) years. About one in ten (11.7%) children had poor oral hygiene. There was no significant ($p > .05$) difference between male and female children in terms of oral hygiene status. About two-third (61.7%) of the children had gingivitis. There was no significant difference ($p > .05$) in gingival status of male and female children. There was a significant ($p < .05$) relation between poor oral hygiene and gingivitis. It was concluded that a considerable number of children had poor oral hygiene and a majority of the children had gingivitis. A relation was found between poor oral hygiene and gingivitis.

Key Words: Oral hygiene, gingivitis, pre-school children, gingival health status.

INTRODUCTION

Good oral hygiene is an important factor in maintaining an optimum oral health¹⁻⁴. Several studies have reported a relation between poor oral hygiene and occurrence of dental caries in preschool children¹⁻³. Similarly, a relation between poor oral hygiene and gingivitis has also been reported in preschool children⁴. There are many studies on oral hygiene and gingival status in children with special care needs⁵⁻⁸. However, there is a lack of similar information in healthy young children.

There is a lack of information about oral hygiene and gingival health status in Saudi preschoolers. Al-Banyan et al (2000)⁹ in their study of 5-12-year-old Saudi children of National Guards employees in Riyadh have reported a high levels of gingivitis and poor oral hygiene. There are no reports of any relation between oral hygiene and gingivitis in Saudi preschool children.

The information about oral hygiene and gingival health status in a population is important, as it helps in planning of preventive services as well

* Assistant Professor, Pediatric Dentistry Division, King Saud University, College of Dentistry, Riyadh, Kingdom of Saudi Arabia.

** Lecturer, Pediatric Dentistry Division, King Saud University, College of Dentistry, Riyadh, Kingdom of Saudi Arabia.

*** Interns Training Program, King Saud University, College of Dentistry, Riyadh, Kingdom of Saudi Arabia

Correspondence: Dr. Amjad H. Wyne, PDS Department, King Saud University, College of Dentistry, P.O. Box 60169, Riyadh 11545, Saudi Arabia. E. ahwyne@ksu.edu.sa, Phone: 966 1 4677445 Fax: 966 1 4626201

as in determination of treatment needs. The purpose of the present study was bi-fold. First, to determine the oral hygiene and gingival health status of Saudi preschool children attending the King Saud University College of Dentistry Clinics. Second, to determine any correlation between the oral hygiene and gingivitis in Saudi preschool children.

SUBJECTS AND METHOD

A convenience sample of preschool children attending the King Saud University College of Dentistry Clinics during the months of October and November 2001 was examined for oral hygiene and gingivitis. The two examiners (MMA & MSA) examined the children on a dental chair utilizing a mirror and explorer. The intra-examiner and inter-examiner reliability was determined utilizing Kappa method. The data were recorded on a form especially designed for the study. The following indices were used to assess oral hygiene and gingivitis in the sample.

Gingival Index

A modified gingival index described by Nanda (1990)¹⁰ was utilized in this study. The index is suitable for short duration studies. It adopts a clear classification of severity and is based on naked eye appearance. The severity of inflammation is graded numerically from 1 to 4 according to increasing intensity. Only the anterior maxillary and mandibular labial segments were recorded. It has been shown that these are valid indicators of gingival experience of the entire mouth¹¹.

Normal: Pale pink color, firm, no bleeding on firm digital pressure. Pointed to slightly rounded contour.

Mild gingivitis: Slight change in color and little loss of contour.

Moderate gingivitis: Swelling, glazing and redness. Tendency to bleed on slight pressure. Papillae or margins become blunted or rounded in contrast to the normal tissue

Profound: Severe inflammation with swelling and redness, and spontaneous bleeding. Slight degeneration.

Very Severe: A degree more severe than profound including ulceration and sloughing

Oral Hygiene Index

The oral hygiene index described by James et al (1960)¹² was utilized. The index has three categories of dental cleanliness.

Good: The teeth are clean. There is no sign of food debris or material alba.

Poor: The teeth are very dirty. There is considerable long-standing food debris, material alba.

Fair: This class falls between the two preceding ones. There is some evidence of debris, but not of the degree recognized as poor.

The data were then entered into a computer using the FOXPRO software and analyzed utilizing the Statistical Program for Social Sciences (SPSS). Various frequencies were generated. The Pearson Chi-Square test was used to determine gender differences in relation to oral hygiene and gingivitis and, any significant relation between oral hygiene and gingivitis. The maximum gingivitis score assigned to each child was utilized for gingival status categorization and statistical analyses.

RESULTS

The intra-examiner reliability was 0.91 and 0.89 for the two examiners respectively. The inter-examiner reliability was 0.86 utilizing the Kappa method. A total of 60 preschool children, 36 male and 24 female were examined with a mean age of 4.4 (SD 1.0) years. About one in ten (11.7%) children had poor and about half (48.3%) had fair oral hygiene. More than one-third (40.0%) had good oral hygiene. There was no significant ($p > .05$) difference in oral hygiene status of male and female children (Table 1).

More than one-third (38.3%) of the children had no gingivitis, 45% had mild and 16.6% had moderate or profound gingivitis. There was no significant ($p > 0.05$) difference in gingival status of male and female children (Table 2).

There was a significant ($p < .05$) relation between oral hygiene and gingivitis (Table 3). None of the children with good oral hygiene had moderate or

TABLE 1: ORAL HYGIENE IN RELATION TO GENDER.

Gender	Oral Hygiene			Total (%)
	Good (%)	Fair (%)	Poor (%)	
Male	16 (44.4)	15 (41.7)	5 (13.9)	36 (100)
Female	8 (33.3)	14 (58.3)	2 (8.3)	24 (100)
Total	24 (40.0)	29 (48.3)	7 (11.7)	60 (100)

P > 0.05

TABLE 2: GINGIVITIS IN RELATION TO GENDER.

Gender	Gingivitis				Total(%)
	Normal(%)	Mild(%)	Moderate (%)	Profound(%)	
Male	13 (36.1)	19 (52.8)	2 (5.6)	2(5.6)	36(100)
Female	10 (41.7)	8 (33.3)	6 (25.0)	0 (0.0)	24 (100)
Total	23 (38.3)	27 (45.0)	8(13.3)	2(3.3)	60(100)

P > 0.05

TABLE 3: ORAL HYGIENE AND GINGIVITIS

Oral Hygiene	Gingivitis				Total(%)
	Normal(%)	Mild(%)	Moderate (%)	Profound(%)	
Good	17 (70.8)	7 (29.2)	0 (0.0)	0 (0.0)	24(100)
Fair	6 (20.7)	18 (62.1)	5 (17.2)	0 (0.0)	29 (100)
Poor	0 (0.0)	2 (28.6)	3 (42.9)	2 (28.6)	7 (100)
Total	23 (38.3)	27 (45.0)	8 (13.3)	2 (3.3)	60 (100)

P < 0.05

profound gingivitis, and all the children with poor oral hygiene had some degree of gingivitis.

The number of observations were less than five in some cells in all the three tables (Tables 1- 3). Therefore, fair and poor categories of oral hygiene, and moderate and profound categories of gingivitis were merged to test the validity of the results. Chi-square test was executed again on the merged data, but no change was observed in the statistical significance.

DISCUSSION

There has been a general paucity of information on oral hygiene and gingival status in preschool children, and available information has been mostly anecdotal. Therefore, the present study has provided useful data on the subject.

A considerable number of children had poor or fair oral hygiene. Similar results have been reported by Al-Banyan et al (2000)⁹ in their study of children of National Guard employees in Riyadh. However, the results about unsatisfactory oral hygiene levels in Riyadh preschool children are not unexpected. A study by Wyne and Khan (1995)¹³ has reported a very late commencement of tooth brushing/cleaning in 4-6-year-old children of Riyadh. Keeping in view that poor oral hygiene has already been established as one of the main etiological factors for dental caries in children¹⁻³, there is an urgent need for the improvement in oral hygiene of preschool children. The situation warrants an increased efforts through oral hygiene instructions and advice to both the children and their parents.

About one in every five children had moderate to profound gingivitis. Al-Banyan et al (2000)⁹ have also

reported similar results in their study. The high levels of gingivitis hoist concern about the gingival and periodontal health of these children. But, it is consoling that gingivitis in young children is largely reversible and does not have irreversible effects on the periodontium of primary teeth¹⁴. Nevertheless, if gingivitis and inadequate oral hygiene habits continue after the eruption permanent teeth erupt, serious gingival and periodontal problems may occur in these children.

A strong relation was found between poor oral hygiene and gingivitis. This is in agreement with a previous study that also reported a relation between poor oral hygiene and gingivitis⁴. The strong relation between poor oral hygiene and gingivitis also explains a high percentage of children in the present study with moderate to profound gingivitis. The results of the study indicate a need for improvement in the oral hygiene and gingival status of these children. The preschool age is a habit-forming period. Good habits have to be developed at this stage with the support of parents and care takers. The parents should be provided with all the support and practical information about maintenance of good oral hygiene.

The results of the present study have to be viewed in radiance of its limitations. The study sample consisted of the children seeking treatment at KSUCD clinics, and some of these children probably had existing dental problem due to poor oral hygiene and/or gingivitis. The above factor could result in overestimation of the oral hygiene and gingival problems in these children. Second, a larger sample would have obtained more reliable results. Nevertheless, the study has provided base-line data for future comparisons, and would assist in planning of prevention efforts in these children.

CONCLUSIONS

- A considerable number of children had poor oral hygiene.
- About one in every five children had moderate to profound gingivitis.
- There was a significant ($p < 0.05$) relation between poor oral hygiene and gingivitis

ACKNOWLEDGEMENT

The authors are grateful to Dr. Nazir B. Khan for his help in statistical analysis. This study was registered (NF — 1844) with College of Dentistry Research Center, King Saud University, Riyadh.

REFERENCES

- 1 Alaluusua S, Malmivirta R. Early plaque accumulation: a sign for caries risk in young children. *Community Dent Oral Epidemiol* 1994; 22:273-76.
- 2 Al-Ghanim N, Adenubi J, Wyne A, Khan N. Caries prediction model in pre-school children in Riyadh, Saudi Arabia. *Int J Pediatr Dent* 1998; 8:115-22.
- 3 Wandera A, Bhakta S, Barker T. Caries prediction and indicators using a pediatric risk assessment teaching tool. *ASDC J Dent Child* 2000; 67:408-12.
- 4 Horowitz AM. Effects of supervised daily dental plaque removed by children after 3 years. *Community Dent Oral Epidemiol* 1980; 8:171-7
- 5 Forsberg H, Quick-Nilsson I, Gustayson KH, Jagell S. Dental health and dental care in Severely mentally retarded children. *Swed Dent J* 1985; 9:15-28.
- 6 Wyne A, Saleem F, Khan N. Plaque, gingivitis, enamel defects and tooth wear among cerebral palsy children of Riyadh region. *Saudi Med J* 1996; 17:466-70.
- 7 Kilpatrick NM, Weintraub RG, Lucas JO, Shipp A, Byrt T, Wilkinson JL. Gingival overgrowth in pediatric heart-lung transplant recipients. *J Heart Lung Transplant* 1997; 16: 1231-37.
- 8 Nunn JH, Sharp J, Lambert HJ, Plant ND, Coulthard MG. Oral health in children with renal disease. *Pediatr Nephrol* 2000; 14:997-1001.
- 9 Al-Banyan RA, Echeverri EA, Narendran S, Keene HJ. Oral health survey of 5-12-year-old children of National Guard employees in Riyadh, Saudi Arabia. *Int J Paediatr Dent* 2000; 10:39-45.
- 10 Nanda R. the relationship between socioeconomic status, gingival health and oral hygiene in schoolchildren. *J Clin Pediatr Dent* 1990; 15:25-32.
- 11 Massler M, Schour I. Relationship of malnutrition, endemic fluorosis and oral hygiene to the prevalence and severity of gingivitis. *J Perio* 1951; 22:205-209.
- 12 James PMC, Jackson D, Slack GL, Lawton FE. Gingival health and dental cleanliness in English schoolchildren. *Arch Oral Biol* 1960; 3:57-60.
- 13 Wyne A, Khan N. Use of sweet snacks, soft drinks and fruit juices, tooth brushing and first dental visit in high dmft 4-6-year-olds of Riyadh region. *Indian J Dent Res* 1995; 6:21-24.
- 14 Casamassimo P. Periodontal considerations. In: *Pediatric Dentistry, Infancy Through Adolescence*. Ed. Pinkham JR. Philadelphia: Saunders, 1988, p. 290.