PERIODONTAL DISEASE IN CHILDREN IN PAKISTAN

National Conference on Health Care & The Child at Jinnah Hall, Lahore on 5th Feb. 1981.

Summary

Children of Pakistan, according to various studies are suffering from Periodontal Disease and that needs prevention, through Public Health Practice, an introduction of Postgraduate Diploma Courses in Preventive Dentistry and Dental Hygienist are key to built Dental Public Health team for combating the Dental Disease from our Community. Periodontal Disease is an inflammatory condition of Periodontal apparatus.

ANATOMICAL REVIEW

The periodental apparatus is as follows: -

1. **Gingivae**.

   Gingivae a part of oral mucosa membrance that covers the alveolar process of in jaws and surrounds the neck of teeth. It is pink in colour, it is divided as :

   a. Marginal or unattached gingivae. This is a free margin of gingivae that surrounds the teeth, in a collar like fashion.
   b. **Attached gingivae**. It extends from marginal gingivae to the alveolar mucosa.
   c. **Inter-Dental Papilla**. It extends inter proximally.

2. **Periodontal Membrance**

It is component of periodontal apparatus. It is made of connective tissue-which surrounds the root of tooth and connects it with the bone. It continue with connective tissue of gingivae and communicates with narrow spaces through the vessal channel with the bone.

Normal Structural Characteristics

That periodontal membrance includes bundles of connective tissue fibers, connective tissue cells, strands of epithetiun blood vessels lymphatics and nerves. Principal fibres or collagenous fibres are most important element, for a part of it inserted into cementum. The principal fibres are arranged in groups some may ramify the gingivae and few extend between the approximatic teeth.

A. **Transeplat Fibres**.

Extend intraproximally over the alveolar crest and are emted in the cementum of adjacent teeth.

B. **Alveolar Fibres**.

Extend obliquely from cementum to alveolar crest, just beneath the epithelial attachment. It counter balances the coronal thrust of more apical fibres and helps the teeth to be in socket.

Horizontal Group

It extends at right angles to the long of the tooth from cementum to the alveolar bone.

3. **Oblique Group**

Extends from the cementum in a eoronal direction obliquely to the bone. This is largest group of fibres and bears the vertical stresses transforming them into tension on the alveolar bone.

4. **Apical Group**

Radiates from the cementum of the tooth at the fundus of the socket to the bone.

C. **Cementum**

Cementum is classified mesenchmal tissue which form the outer covering of anatomical root.

D. **The Alveolar Bone**

The portion of jaws which forms socket of the teeth is called alveolar process. It is made of osteceytes embedded in a calcified intra cellular matrix.

TYPES OF PERIODONTAL DISEASE AVAILABLE AMONG THE CHILDREN

Gingivitis – Inflamation of Gingivae as : -

a. Acute necrotizing gingivitis
b. Chronic desquamatic gingivitis
c. Puberty gingivitis
d. Perieoronitis- crupting gingivitis.

In all such conditions inflammation is common feature. Bacterial plaque is known source of aetiology. Materia alba, calculus are additional source of irritation and casaction.

Disease is distributed to single tooth or group teeth or may be generalized throughout the mouth. On the basis of location the disease is termed as : -

a. Marginai
b. Rapillary
c. Attached

So reviewing the anatomical explanation we now discuss the distribution and epidemiological study of the periodontal disease carried out here and elsewhere.

The Epidemiology of Periodotal Disease

Epidemiological investigations have been carried out in many parts of the world, starting from 1912 till today; still the epidemiology of periodontal disease is one of the important challenges before the dental profession in general and to preventive dentistry in particular at the moment. There are, of course, retarding factors, e. g. Degree of accurate diagnosis, system of examination, expense and physical difficulty of X-Rays and absence of uniform method of assessment with the result that comparison has become difficult. Before the advent of indices, various subjective studies show vast variation even when carried out in the same place. King (1940) observed 90% result where campbell and Cook (1942) noticed 22% gingivitis in Dundee (U.K) McCall (1926) observed 98% gingivitis in USA and Brucker (1943) noticed 8.3% in the same country.

There is a need of standardized study in order to compare the results of one place with another. The quantitative indices do exist and are of recent origin. Still the task of comparison is to be considered with some problems of invariability of examiners, etc. etc.

Similarly, factors of age, sex, intraoral distribution, local agents and other environment need to be considered for evaluating the periodontal disease in a community.

Prevalence and Severity of Periodontal Disease in Pakistan Early Study

There have been few epidemiological studies of periodontal disease in Pakistan. This is surprising in view of the widespread belief that there is a particularly high prevalence of certain types of periodontal disease in Pakistan an India. The earliest study was by Day & Shourie (1947) who studied children and adolescents of Lahore from Islamia High School and Queen Mary College, Lahore. Age range was 6 to 20 years. There were 1054 boys from a middle class School from 9-17 years and from Queen Mary College there were two groups-girls & boys of lower age. Total subjects were 1377 a typical cross section of Lahore population. The criteria for assessment of gingival disease was followed according to King (1945).

Hypertrophic types of the gingival disease were observed and gingival disease was found highest so far reported elsewhere. Among 1054 subjects from Islamia High School, only

six were free of gingival disease. Four age groups showed the disease about 100% and at all the age groups it was over 99% and average incidence was 99.43%. 73.62% showed either severe or very severe, whereas 25.8% slight to moderate gum disease.

In the case of girls the incidence is significantly less, % age of incidence of disease was 73.74% for 176 girls in comparison with boys 99.43 % of the same age group. This group comes from higher socio-economic division. A small group of boys 62 from 5-11 years attending the Queen Mary College was examined.

On comparing 58 boys to 106 girls of the same age group it was found that incidence of disease is more with boys than with girls.

It was found subjects with calculus had severity of disease and it was more common with school boys than girls. No relations could be made of ascorbic acide and gingival disease except vitamin –a deficiency might be the cause for hypertrophic exagition Gums.

Day and Tandan (1940) studied 756 children of School at Lahore and found 68% had gingivitis. Deposition of calculus and poor oral hygiene was observed. This study was carried out for incidence of dental caries and gingivitis was also included. Marshall Day was a Dean at de'Montomorency College of Dentistry, Lahore, emphasised the need of dental health education.

SCHOOL STUDY DENTAL HEALTH SURVEY IN QUETTA DIVISION AND INFLUENCE OF THE DIETARY HABITS

Quetta is an attractive district in West Pakistan. There is the Historical Bolan Pass, its border meets with Iran and Kabul. Area is 5310 Sq miles. There are various tribes and clans. Mountains add to the charm. Snowfall irrigates the land in winter. Springs water is thenormal source of drinking water except intown. The Government is spending a lot to improve the education, and irrigation and roads. The local people are general tall and healthy. However, negligence of health, illiteracy and poverty result in a number of ailments.

Soofi (1962) carried out an epidemiological study on school children and teachers in Quetta where he had an opportunity of serving this area for more than six years as a dental surgeon and a teacher in Aminud Din Medical School, Two types of schools were selected for comparison of dental condition habits of cleanliness, effect of dietary pattern and the general health.

Islamia High School is a thickly populated school on Eastern pattern, the majority of students are of poor and lower middle class and of local origin.

St. Francis and Convents are Western styled schools, population is of high class and few students are from local population.

Age Grouping

The complement of schoolchildren was divided into the following age groups: -

1. 5 - 9 years
2. 10 - 14 years
3. 15 - 19 years
4. 20 - 34 years

The records of age, sources of income and the family history were recorded with the help of teachers in the proforma designed for the study. The children were brought in batches in the sunlight and were seated in a chair in turn. Dental examination was carried out with the help of mouth mirror and probe and data was recorded on the proforma.

The oral Hygiene Index of Green and Vormillion (1960) was utilized as an objective method of assessment. In younger children corresponding deciduous teeth were used and gingival conditions were assessed with Russell's P.I. Index (1956)

Results

1507 school children and teachers of both the sexes have been examined for dental and general health.

Mean Debris Scores (D.I.)

In the poor and lower middle class, the index for females is at a higher level as compared to males except in 15-19 years age group where females of rich and upper middle class remain at a lower level except for the age group 20-34 years. Whereas the index level of females is higher in the first age group (5-9) otherwise for the other age groups there is exact agreement for the two indices.

Calculus Index

Males of poor and lower middle class show a high level of index except at 10-14 years of age. Index of the males of 5-9 years of age is at a higher level in rich and upper middle class and then there is an overlapping of the two indices for both the sexes. Comparing the two classes, there is exact correspondence of the male indices except in the age group of 20-34 years where poor and lower middle class index is a higher level. In the case of the female index for poor and lower middle classes it is at a higher level in the first two age groups and afterwards the indices of both the classes shadow each other.

Looking at detail in the group of poor and lower middle class calculus index stand one in male of 5-9 years 10-14 years and 2.5 in group of 20-34 years. Similarly female from 5-9 years has 5 index, 10-14 years but 15-19 years have 1.5 and 20-34 years stands for 2.

Oral Hygiene Index (O.H.I.)

Index for males of the first group shows a rising trend being high at the start, low at 10-14 years of age and against at a higher level until it attains the same standard as that of

females at 20-34 years. Male index of group No. 2 remains at a higher level throughout except the age 20-34 years.

As compared to group No. 2 index of the males of group No. 1 is at a lower level through except at 20-34 years of age, whereas index of the fair sex remains at a higher level up to 14-15 years of age and then there is exact correspondence of both the indices.

Periodontal Index (P. I.)

The periodontal Index is higher among the 10-14 years of age group of rich and upper middle class and the last class of 20-34 years among the females. The rest of the classes are identical in this index.

Summary

A self sponsored clinical dental survey of 1507 children and young adults of Eastern and European styled educational institutions in the Quetta, West Pakistan, is reported. The results show the prevalence of periodontal disease and give information on oral hygiene standards. A comparative study of two different patterns of schools and the dietary habits is carried out. The hard and fibrous diet is reported to produce better dental health. The prevalence of periodontal disease is over 99% among the population examined.

Dental fluorosis is widespread in inhabitants of Quetta. However, dental decay was noted in cases having fluorosis. No clinical signs of skeletal fluorosis were seen. No case of ulcoratove gingivitis or congenital deformity or benign or malignant growth have been seen; although such ailments have been seen in a dental decay in the local population i.e. poor and lower middle class as compared to high and upper middle has been observed.

About 78% of the poor and lower middle class had natural feeding against 65% of the rich and upper middle class. The lower middle class enjoys good (general) health as compared to the higher group.

Rich & upper middle class has used the toothbrush male 69.65% and female 91.0% whereas poor and lower middle class male 33.07 % and female 31.94 % has used the tooth brush still the IMF is significantly higher in the rich and upper middle class despite the fact that 20% of the poor lower middle class has not used anything.

Similarly, O.H.I is higher in the rich and upper middle class in the various age groups as compared to the poor and lower middle class. However, there is no marked difference in the calculus index of both the classes but the debris index is higher in the rich and upper middle class.

The periodontal index also represents the higher score in higher and upper middle class in the male group from 10-14 and in the female group from 20-34 years of age group. The other ago group does not represent any other significant differences.

Pattern of the prevalence of the disease in Pakistan is similar to that of other studies. Day (1947) 99.4%, Ramfjord (1960) 100% in India, King (1940) 99% in the Isle of Lowis, (1945) 99% in Dundee liassler et al. (1949) 80% U.S.A, McHugh et al (1964) 98% in Dundee, Scotland. It appeared that the disease is more common and is affecting the majority of the population. Prevalence of the disease in this particular study is different due to diet factor such as cheap diet and fruit are not available elsewhere. It appeared the disease would be more in areas where there is less abundance of hard diet is utilized.

Soofi et al (1979) examined 89 school children Girls High School, Nathiagali, NWFP for general and dental health, population was examined classwise, age group 10-15 years, he observed 46% population had orthodontics problems and 43% had dental caries whereas periodontal disease was prevalence 97% of the population.

Soofi (1975) examined 118 students of village Ferozewala, having 11 girls and 8 boys. There was 100% prevalence of periodontal disease and in case of village Gujumata 960 children were examined 92% prevalence of periodontal disease was observed.

Soofi (1977) examined school children Punjab and found the following %age of periodontal disease. In Threh 95% was noticed as prevalence of periodontal disease. Gujar Khan 100% in Sharqpur 95% in Burki 95% and Haripur Hazara 95%.

Soofi (1981) Unpublished examined Lahore school children and found 97% prevalence of disease.

References:

1. Soofi, M.A. (1969) School Dental Health Survey in Quetta Division and influence of diet, Pak. Dental Review Vol. XIX No. 1 January.
2. Soofi, M. A. (1978) An epidemiological study of periodontal disease in children, Med. : News, Fortnightly Karachi-April, 1.
3. Soofi, M. A. (1979) A survey report on general and dental health of Nathiagali school children. Med: News fortnightly Sept. 1.
4. Soofi, M. A. (1975) Baseline survey of Ferozewala & Gajumata (Punjab) dental and general health, Planning Commission Government of Pakistan, Islamabad.
5. Soofi, M. A. (1968) The tooth and the eye, Pak: Dent. Review, 18.73.
6. Soofi, M. A. (1968) Dental health in Pakistan Dent. Abstracts, Vol: 13 No. 9. 53.
7. King J. D. & Glover, R. E. (1945). The relative effect dietary constituents and other factors upon calculus formation Periodontal disease, caries in syrian hanstor. J. Dent. Res. 25 : 166.
8. King. J. D. (1945). Gingival disease in Dundee. Dr. Record 65: 9 (Jan), 32 (Feb), 55 (March).
9. King. J. D. & Franklyn. A. B. & Allen, I. (1944). The gingival disease in Gibraltar ovacuoo children. Lancot 1 : 495.

10. Campbeoll, T. D. (1939). Food, Food values & food habits of Australian Aborigines in relation to their dental condition. Aust. J. Dent. 43: 1.
11. McCall, J. O. (1937). Tae periodontitis, looks at children dentistry, J. A. D. A. 20 : 1518.
12. Bruckor, M. (1943). Studies of the incidence and cause of dental defects in children. J. Dent. Ros. 22: 309-314.
13. Day, G. D. Marshall, (1947), Hypertrophic gingivitis in Indian children and adolescents. Ind. J. Med. Ras. 35 : 4.
14. Day, C. D. et al. (1954) Periodontal disease. Prevalence and incidence. J. Periodent. 26. 185-303.
15. Day, C. D. Marshall (1952). The epidemiology of periodontal disease. J. Periodent. 22: 13.
16. Day, C. D. & Shourie, K. L. (1944) incidence of periodontal disease in the Punjab. Ind. J. Med. Res. 32, 47-51.
17. Day, C. D. & Shourie, K. L. (1950) Gingival disease in the virgin Islands J. Amer, Dent. Ass. 40, 175-185.