DENTAL DISORDERS IN PAKISTAN - A NATIONAL PATHFINDER STUDY

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ABSTRACT

A pilot study on dental diseases and treatment needs alongwith oral hygiene aids used and on provision of dental care was conducted in 1988 using WHO oral health assessment forms. A total of 1146 persons of 12-15 years and 35-65 years were included in the study. The sample was equally distributed in four provinces of Pakistan taking 13 urban and rural areas. Dental caries was found in 55% of children between 12-15 years of age and in 78% of adults. The DMFT index was 1.2 in the younger age group (12 years) and rose to 18.3 for 45-54 years. The percentage of periodontaly healthy persons at age 12 was 32% decreasing to 10.4% at age 50. Calculous was the most frequently observed condition in all age groups (JPMA 41: 250, 1991).

INTRODUCTION

In the absence of relevant data on dental diseases in Pakistan, the need was felt to conduct a survey. A base line province-wise study was therefore, conducted under the auspices of W.H.O. oral health unit (Geneva) in 1988 to provide information on prevalence of various dental diseases, treatment needs and existing facilities. The most prevalent diseases in the oral cavity were dental caries and periodontal disease. For both diseases diet, nutrition and oral hygiene methods are important. The staple diet in urban and rural population is mostly fibrous but with westernization, candies, chocolates and other refined carbohydrates are commonly used in urban areas, which are rarely available in rural areas, where chewing sugarcane is a common practice. The dental hygiene is also affected by arecanut and tobacco chewing in the southern part of the country and niswar in the northern parts of the country. Oral hygiene methods vary according to religious myth, socioeconomic condition and lack of awareness. Most commonly used are miswak, tooth brush and tooth powder.

PATIENTS AND METHODS

The study population included examination of 1146 persons from four provinces of Pakistan. One urban and two to three rural areas were chosen from each province. These persons were selected from Primary and Secondary Schools with a group of 25 persons from each area, Age groups 12,15 and 35-65 years old were selected for examination with equal number of males and females. Although 1200 subjects were examined[1], the data of 1146 was accepted for analysis by WHO. The sample and persons is shown in table 1,

TABLE 1. Studypopulation in areas of Pakistan (male-female ratio is 1:1).

	Age in years					
District	12	15	35-44	45-54	55-64	Total
Sindh	125	124	50	14	9	322
Karachi	75	74	22	2	1	174
Nawabshah	26	25	10	9	4	74
Shikarpur	24	25	18	3	4	74
Punjab	123	124	48	10	14	319
Lahore	74	74	15	5	5	173
Haripur	24	25	21	2	2	74
Sheikhopura	25	25	12	3	7	72
N.W.F.P.	100	90	61	19	11	281
Peshawar	25	25	10	10	2	72
Rural area-1	25	15	14	2	4	60
Rural area-2	25	25	18	3	4	75
Rural area-3	25	25	19	4	1	74
Balochistan	75	75	53	20	1	224
Quetta	25	25	20	3	1	74
Turbat	25	25	18	7	-	75
Loralai	25	25	15	10	-	75
Total	423	413	212	63	35	1146

male and female were almost equal in numbers. CPITN (Community Periodontal Index Treatment Needs) Probe[2], was used to measure index of periodontal disease i.e., bleeding gums due to inflammation, calculus, pockets of chronic inflammation leading to detachment of periodontal ligament to tooth. Explorer probe dental mirror was used under day-light for detecting caries. No radiographs were taken to record caries. From total number of teeth D(Decay), M(Missing), F(Filled)-DMF was calculated[4]. The chief investigator examined fifty percent of the samples, while the rest was done by a team of dentists who had been calibrated. WHO standardized recording forms were used[3] and subsequently data was analysed by Oral health unit WHO Geneva[4].

RESULTS

Of 1146 subjects examined, there were 594 males and 552 females, only four subjects were edentulous. As no clear difference in the results between both sexes was apparent the data is presented together. 74% of cases presented with periodontal disease whose cumulative CPITN score varied from 1-4, only 26% persons had healthy gums. 52% of 12-15 years old group had caries and the trend of dental caries rose to 70% in the older study population.

Periodontal disease

The percentage frequency of subjects with various periodontal diseases is shown in table II.

TABLE II. Percentage of subjects with various periodontal indicators as measured by CPITN Probe.

Age Group	Number of Subjects	Percentage of persons with Healthy	Bleeding	Calculus	Shallow Pockets	Deep Pockets
12	423	32.0	12.0	51.8	4.0	0.2
15	413	33.0	10.7	52.8	3.4	0.2
35-44	212	10.4	4.2	43.7	23.2	18.0
45-54	63	3.2	0.0	50.8	28.5	17.5
55-64	35	12.5	6.7	34.7	12.5	25.0

3 (8.6%) persons in the age group (55-64) and 1 (0.5%) in the age group (35-44) were edentulous.

In the age group of 12 and 15 years, only 32% cases in each group had healthy gums; in this age group calculus was very prominent being present in 51 and 53% cases, followed by bleeding in 12.5 and 11% cases and shallow pockets in 4 and 3.3% cases respectively. Deep pockets were infrequently seen in this group. The frequency of periodontal disease increased with the age and showed preponderance of male sex (78.2%) than female (69.8%). In the age group 12 and 15 years, the mean healthy sextants were 3.5, with bleeding, calculus and shallow pockets being present in 2.5 sextants. The older age group had a mean healthy sextants of 1.4 with bleeding in 3.9 sextants (teeth are divided into 6 quarderants, one quarderant is called sextant). When the various periodontal indices were compared in the rural and urban population, it was found that overall gum disease pattern was similar except significantly higher ($p < 0.001$) shallow and deep pockets in the rural population.

Dental caries

Fifty-two percent cases in the age group 12 and 15 years and 70% in the age group ranging from 35-64 years had dental caries. The frequency of caries increased with the age and was more common in males (60.25%) than in females (57.9%). Active caries was present in 45% young and 64% adult-old population. The mean number of permanent, decayed (D) missing (M) and filled(F) teeth in the population examined is shown in table III.

TABLE III. Dental caries status mean number of permanent teeth DMF by subjects.

		DMF		D		M		F	
Age group	Person	No of teeth	Mean	No of teeth	Mean	No of teeth	Mean	No of teeth	Mean
12	423	510	1.20	445	1.05	44	0.10	21	0.05
15	413	736	1.78	625	1.51	46	0.11	65	0.16
35-44	212	1168	5.51	555	2.62	550	2.59	63	0.30
45-54	63	548	8.70	212	3.37	325	5.16	11	0.17
55-64	35	642	18.34	135	3.86	506	14.46	1	0.05

The mean DMF for all ages is 3.1, while it is 1.2 for 12 years of age. The mean D and M indices show an increase with age, but F shows no significant rise. Overall the D index is highest (1.05) when compared with F index (0.05). On an average 65 children belonging to 12 years age group had at least one permanent tooth missing, and the frequency of missing tooth rose to 82% at 55-64 years age group. The mean number of missing teeth at 12 and 64 years were 10 and 14.46 respectively. Various methods of oral hygiene used were broadly classified into four groups, miswak, manjan, tooth brush and no method. The disease status in relation to Oral hygiene method is given in table IV.

TABLE IV. Oral hygiene methods and the dental disease.

		Miswak		Manjan		Tooth brush				Nothing		
Age group	No	CPITN	DMF	CPITN	DMF	No	CPITN	No	DMF	No	CPITN	DMF
12	64	73.4%	1.1	70	81.4%	1.1	216	59.7%	1.2	40	62.5%	1.9
15	68	75.0%	2.2	47	80.8%	1.4	249	62.2%	1.8	21	61.9%	1.5
35-44	59	84.7%	5.9	27	92.6%	5.9	98	89.7%	4.9	17	94.1%	7.4
45-54	19	94.7%	9.0	3	100%	9.3	20	95.0%	5.5	13	100%	8.4
55-64	11	90.0%	18.1	7	85.7%	14.9	5	75.0%	11.7	5	100%	13.0
			Mean			Mean			Mean			Mean
Total	221	80.0%	7.2	154	87.0%	6.5	588	67.0%	5.0	96	75.0%	6.4

This data is of total 1059 persons, 87 persons recording was inaccurate therfore not analysed.

When the methods of oral hygiene were correlated to dental disease, it was found that caries was maximally found (71%) in those using no specific method for dental cleaning, while gum disease (80-87%) and DMF (6.5-7.2%) were found in those using miswak or mangan. Tooth brush users showed 57% gum disease and DMF 5.Caries were more prevalent in rural areas, it showed DMF 1.4 in 12 years old and 2.3 in 15 years old inspite of less sugar in diet. While it was 1.0 in 12 years old and 1.5 in 15 years old in urban areas, perhaps it is attributed to oral hygiene. Data comparison between male and female showed no significant difference in periodontal disease or caries; DMF was also in the same figure of 7 for both sexes. Forty-three percent of study population was from urban area, of which 48% had access to dentists. As disease level is higher in rural areas, it may be due to lack of education, non-availability of dentist and socioeconomic constraints on availability of reliable means of oral hygiene methods. Other data analyses showed, slight malocclusion in 22.9% and severe in 6.1% among age 12-15. Fluorosis was present in 17.5% (12-15) and 15.8% (35-64). Tetracycline stains were observed in 6%, hyperplasia in 1.6%, opacities in 8.7%, and attrition in 21% of total samples.

DISCUSSION

The present study provides the spectrum of dental disorders in Pakistan. The overall frequency of caries irrespective of the age, as indicated by DMF is 3.1 and 1.2 for children in 12 years age group. These values lie within the acceptable range of W.H.O. target of DMF 3 for the year 2000[5]. When DMF is taken into consideration on individual basis, D appears to be significantly more than F suggesting lack of treatment either due to public unawareness or non-availability of dentists to a common man. A previous study conducted showed DMF of 2.1[6], which is higher than present study. Similar decreasing pattern has also been noticed for 15 years old as DMF of 1979[6] decreased from 3.2 to 1.8 in 1988. Till 1984 a review of the WHO global data bank information demonstrate an increasing trend of dental caries in developing countries[6]. However, since 1984 the DMF mean of 12 year old have been reported decreasing both in developing and developed countries. But these global figures mask the heterogenecity of populations' caries experience and might be biased in interpreting the actual situation for a wide group of population. However, this study should be treated as a baseline or preliminary study and it needs to be followed-up by a detailed survey on dental diseases and treatment needs in each province to accurately define our national needs.

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