

Prevalence of Periodontal Diseases in India

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ABSTRACT

Periodontal diseases, dental caries, malocclusion and oral cancer are among the most prevalent dental diseases affecting people worldwide as well as in Indian community. There is no national oral health data bank in India which reflects the prevalence of different oral diseases and risk factors responsible for them. No national oral health survey has been conducted in the country till date. Prevalence of disease is the key factor for effective and sound oral health care planning. Some cross sectional surveys has been conducted in various regions of the country at local level but those observations cannot be generalized for the whole community because of the great diversity in composition of Indian populations e.g. literacy rate in Kerala is more than 90% and in Bihar it is about 40%. Males are more literate than females. 70% of the population in India continues to live in rural areas. Different cross sectional surveys or studies showing prevalence of periodontal diseases mainly in the last twenty years have been collected from different sources and compiled in this article to give a comprehensive outlook of the present status and scenario of periodontal diseases in different population of Indian community.

KEY WORDS: *Periodontal disease, Prevalence*

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INTRODUCTION

Periodontal diseases, dental caries, malocclusion, and oral cancer are the major dental problems effecting people worldwide as well as in Indian community. Periodontal diseases include a group of chronic inflammatory diseases that affect the periodontal supporting tissues of teeth and encompass destructive and nondestructive diseases. Chronic periodontitis is the most common form of destructive periodontal disease. Aggressive periodontitis encompasses rapidly progressive form of periodontitis. Two other groups of destructive periodontal disease exist, including periodontitis as a manifestation of systemic diseases and necrotizing periodontal diseases. Gingivitis is inflammation of the soft tissue without apical migration of the junctional epithelium. It is a reversible nondestructive disease that does not involve loss of periodontal tissue.

Prevalence is defined as the number of cases of a disease in existence at a certain time within a community. It is usually calculated for one point or cross section in time. Incidence measures the rate of appearance of new cases in a population. Risk is defined as the probability of

occurrence of the disease in the population during a given time interval in the future. These are the basic parameters used in epidemiology to estimate the disease load and determine the probable risk factors for that particular disease at community level. Prevalence studies commonly are cross sectional surveys whereas incidence will be estimated by longitudinal studies comes under observational epidemiology. The amount of disease present in a community is the key factor in health planning at large scale(1).

POPULATION COMPOSITION IN INDIA

The total population of India (approximately 1022 million) spreads over more than 6.4 lakhs villages, 5661 towns and cities, 5564 tehsils/talukas, 7 union territories and 28 states. India is predominantly rural as over 72% of people continue to live in rural areas. The proportion of urban population to the total has been increasing steadily at a faster pace(2).

According to 1991 census 23 cities had a population of more than 10 lakhs each, they are called the metropolitan or million plus cities and these account for 65% of

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J Oral Health Comm Dent 2010;4(Spl)7-16

the total urban population. The sex ratio in India is unfavorable. On average, there are 927 females per thousand males in the country. 36% of the total population is children up to 14 yrs of age, 58% are in the age range of 15-59 years and 60 years and above are only 6.3%. Indian society is divided into large number of religious communities e.g. Hindus (82.4%), Muslim (11.6%), Christian (2.3%), Sikhs (1.9%) and Buddhist and others (1.6%). The average literacy rate in India is 52.19%. It is the highest in Kerala (87.79%) and lowest in Bihar (38.48%). The rate of literacy varies between males (64.20%) and females (39.19%). The literacy rate in urban areas is 73.81% whereas in rural areas is as low as 44.54% (3).

HEALTH CARE SYSTEM IN INDIA

In India, it is represented by 5 major sectors or agencies, which differ from each other by the health technology applied, and by the source of funds for operation. These are firstly the public health sectors which are including primary health care, hospital/health centres, health insurance schemes and other agencies. Primary health care includes primary health centres and subcentres. Hospitals/healthcentres include community health centres, rural hospitals, district hospitals, specialist hospitals, and teaching hospitals. Secondly health care system is divided into private sector, indigenous system of medicines, voluntary health agencies and national health programmes (4).

ORAL HEALTH CARE SYSTEM AND WORKFORCE

The principal unit of administration in a state in India is a district with an average population of about 3.5-4 million. The district consists of blocks known as community development blocks. Each block comprises of approx 80,000 to 1,20,000 population in about 100 villages. The health service in a rural areas are being administered through community health centres (CHCS)/primary health centres (PHCS) which are proposed to be setup one in each block. One community health care centre covers 80,000-1,20,000 population and one primary health care centre is for every 30,000 population, subcentres for 5,000 population and one village health guide, local dia and anganwari worker for 1,000 population at village level. At present oral health services exist at district, subdivision and tehsil level hospital and in about 20% of community health centre in our country. There is practically no parodontal infrastructure at the said level. There are no rural health services available in rural community of India where dentist population ratio is too high (5). National oral health care policy was accepted in principal to be included in national health policy in 1995 by ministry of health and family welfare, Government of India (6). The dental manpower situation in country in 1990 was approximately 35,000 dentists available for a population of 900 million and only about 10-12% of these dentists were serving in the rural areas which constitute about 75% of the total population. Thus in the rural areas the dentist population ratio was 1:2,00,000.(5) As per the information available from official website of the Dental Council of India, at present 291 dental colleges are running in India having 23,690 undergraduate students and 1,138 postgraduate students.

DESCRIPTIVE EPIDEMIOLOGIC SURVEYS OF PERIODONTAL DISEASE IN INDIAN COMMUNITY

Several regional/local cross sectional surveys have been conducted in India estimating prevalence of periodontal diseases as well as risk factors responsible for the same. Community periodontal index of treatment needs was used for assessment in more than 50% of the surveys. Brief description of some of the surveys is presented here in Table 1(7-49).

DISCUSSION

The overall prevalence of periodontal diseases was shown to be high in several studies (7,15,17,18,23,32,33,40,42,44). It can be explained because of several factors like India is having a huge population (approx 1000 million), out of which 72% lives in rural areas. There is no oral health care system in rural areas with the dentist: population ratio of about 1:2,00,000. There is no parodontal infrastructure at village level and the primary health care centre level. At community health care centre level only 25% community health centres are having posting of dental surgeons but have inadequate instruments, equipments and dental materials. Good oral health care infrastructure and easy access to the services available at village/primary health centre level has been shown to effect prevalence of periodontal diseases (5).

The extent and severity of periodontal diseases was shown to be different in different age groups and the general trend observed in majority of the studies was increasing severity with increasing age (7,15,17,29,35,43). Ageing is a natural process and changes are there in host immunity against disease process but if one can practice optimum oral hygiene, he or she can maintain teeth throughout life. Increasing severity may be because of the untreated cumulative effect of disease process over the period of time.

Periodontal health was shown to be better in females in large number of studies (39, 44). Females are generally more health conscious. It may be an important factor responsible for this observation. Diet has been shown to have significant effect on periodontal diseases (28). Diet effects plaque accumulation and microbes in plaque is a well established risk factor responsible for initiation as well as progression of periodontal diseases.

The better periodontal health in urban than rural areas may be because of the more number of dentists serving in urban areas (45). Majority of the hospitals and teaching institutions (dental colleges) are located in urban areas. Schools are having regular oral checkup of the students by undergraduate students of the dental colleges. Dental students also educate school children about proper oral hygiene maintenance methods, diet counseling etc. Dental schools organize oral health check up camps in rural areas and also inform/motivate people regarding prevention and treatment of existing dental diseases, but it is little difficult for them to get benefit of the facilities available in dental colleges located in nearby towns/city, because of some practical reasons like conveyance.

Table 1: Epidemiological Surveys of Periodontal Diseases in Indian Community

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETRES	RESULTS/FINDINGS
2009	Kumar TS, Daqil FJ et al(7) Oral health status and practices of dentate Bhil adult tribes in Southern Rajasthan	15-54 years	1590 male subjects	<ul style="list-style-type: none"> OHI-S CPITN 	<ul style="list-style-type: none"> Debris, calculus & OHI-S increased with age Shallow pockets were prevalent (40%) in 35-44 years age. Deep pockets were common (11%) in older individuals
2009	Parmar G, Sangwan P et al(8) Oral hygiene status of Arecanut and tobacco chewers and nonchewers	Mean age 32.5±0.7 years (chewers) 30.4±0.8 years (non chewers)	365 subjects (168 chewers and 197 non chewers)	<ul style="list-style-type: none"> OHI-S Clinical examination for ulcers and burns etc. 	<ul style="list-style-type: none"> Periodontal pocket and gingival lesion and gum recession was significantly higher in chewers
2009	Das UM, Beena JP et al(9) Oral health status of 6 and 12 year old school going children in Bangalore	6 years and 12 years	430 subjects (229- 6 years old, 201- 12 years old)	<ul style="list-style-type: none"> Periodontal condition by CPITN Malocclusion by WHO criteria. Caries by dentition status and treatment need 	<ul style="list-style-type: none"> Highly significant difference with respective periodontal disease and malocclusion between two age groups No significant difference for dental caries
2009	Jain M, Mathur A et al(10) Oral health status of mentally disabled subjects in India	12-30 years	225 mentally retarded subjects	<ul style="list-style-type: none"> OHI-S CPITN DMFT 	<ul style="list-style-type: none"> Oral health status of mentally retarded population was poor and influenced by cause of disability, IQ level & parents education
2009	Kumar S, Sharma J et al(11) Determinants for oral hygiene and periodontal status among mentally disturbed children and adolescents	—	171 mentally retarded subjects	<ul style="list-style-type: none"> OHI-S CPITN DMFT 	<ul style="list-style-type: none"> Oral health status of mentally retarded population was poor and influenced by cause of disability, IQ level & parents education
2009	Doshi D, Ramapuram J et al(12) Periodontal status of HIV positive patients	—	52 HIV positive 52 controls	<ul style="list-style-type: none"> OHI-S Plaque Index 	<ul style="list-style-type: none"> OHI-S was significantly different in HIV positive Plaque Index was not significantly different in HIV positive
2009	Acharya S, Bhat PV(13) Oral health related quality of life during pregnancy	Pregnant - 26±5 years Non pregnant - 27.8±6.9 years	259 Pregnant, 237 Non pregnant	<ul style="list-style-type: none"> CPITN 	<ul style="list-style-type: none"> CPITN score 2 and 3 and gingival index score were significantly high among pregnant than non- pregnant women
2008	S Nagarajan, Puspanjali K(14) Self assessed and clinically diagnosed periodontal health status among patients visiting dental hospital, Bangalore	20-44 years	216 patients	<ul style="list-style-type: none"> Self administered questionnaire Periodontal examination Loe & Silness gingival index CPITN Mobility 	<ul style="list-style-type: none"> Perceived periodontal health status was low and the discrepancy was more between subjective and objective assessment of disease. The awareness increased with increasing severity of the disease

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETRES	RESULTS/FINDINGS
2008	Kumar S, Dagli RJ et al(15) Periodontal status of Green marble mine labours, Rajasthan	18-25 years 26-34 years 35-44 years 45 and above	513 male subjects	<ul style="list-style-type: none"> WHO oral health assessment form Clinical examination by method suggested by WHO oral health survey 	<ul style="list-style-type: none"> Prevalence was 98.2% Prevalence increased with increasing age Maximum disease was present in 35-44 years of age On an average 0.4% sextant having deep probing depth
2008	Sumanth S, Bhat KM et al(16) Periodontal status of pan chewers with or without tobacco	—	300 subjects (150 tobacco chewers, 150 non tobacco chewers)	<ul style="list-style-type: none"> OHI-S CPITN 	<ul style="list-style-type: none"> Deep pockets were more (30%) in pan chewers with tobacco than (7.3%) in pan chewers without tobacco, approx 4 times more Pan with tobacco chewers were found to have 7 times more risk of loss of attachment
2007	Vandana KL, Seshu Reddy M(17) Periodontal status of a population residing in high fluoride area of Davangere district	15-74 years	1029 subjects	<ul style="list-style-type: none"> CPITN OHI-S Jackson's Fluorosis index 	<ul style="list-style-type: none"> With increasing age gingivitis reduce from 85% to 42.9% and periodontitis increased from 18.0 to 57.1% With increased severity of fluorosis severity of gingivitis reduced 89.4% to 64% and periodontitis increased from 8.5% to 35.8%
2007	Dhar V, Jan A et al(18) Prevalence of gingival diseases, malocclusion and fluorosis in school going children of rural areas in Udaipur distt.	—	1587 government school children	—	<ul style="list-style-type: none"> Gingivitis was found in 84.37% of children, malocclusion in 36.42% and fluorosis in 36.36%
2007	Nasim VS, Shetty YR et al (19) Dental health status in children with acute lymphoblastic leukemia	—	104 children with acute lymphoblastic leukemia	<ul style="list-style-type: none"> Questionnaire Clinical examination DMFT 	<ul style="list-style-type: none"> Moderate gingival inflammation irrespective of treatment Tender TM joint and oral mucositis High DMFT and history of halitosis
2007	Shashi Khan ND, Reddy VV et al(20) Effect of asthmatic medication on dental disease	6-14years	105 asthmatic children	—	<ul style="list-style-type: none"> Anti asthmatic medication has its effects on periodontal disease and dental caries Asthmatic patients on medication should take more precaution for oral hygiene practice
2007	Ranganathan K, Magesh KT et al(21) Greater severity and extent of periodontal breakdown in HIV positive patients	—	136 HIV positive individuals and 136 controls from the same background	<ul style="list-style-type: none"> CPITN 	<ul style="list-style-type: none"> Periodontal breakdown more in HIV positive patients
2006	Kumar M, Chandu GN et al(22) Oral health status and treatment needs in institutionalized psychiatric patients in India	—	220 psychiatric patients	<ul style="list-style-type: none"> CPITN OHI-S DMFT 	<ul style="list-style-type: none"> Low prevalence of caries with poor oral hygiene and extensive need for dental treatment

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETRES	RESULTS/FINDINGS
2005	GPI Singh, J Bindra et al(23) Prevalence of periodontal disease in Ludhiana	—	1000 subjects (500 from rural and 500 from urban)	<ul style="list-style-type: none"> ● Assessment according to WHO 	<ul style="list-style-type: none"> ● Bleeding in 68.8% urban and 69.2% rural ● Calculus in 96.8% urban and 97.2% rural ● Shallow pockets 42.3% urban and 31.7% rural ● Deep pockets 22.9% urban and 11.0% rural
2005	Sood M(24) Epidemiological factors affecting periodontal disease in district Ludhiana	—	500 urban and 500 rural subjects	<ul style="list-style-type: none"> ● Assessment by WHO ● Oral health assessment form 	<ul style="list-style-type: none"> ● Periodontal disease prevalence as well as severity was more in smokers and coronary artery diseases
2004	Joshi NV and Marawar PP(25) Periodontal health status of rural population of Ahmednagar distt. Maharashtra	15-19 years 20-29 years 30-44 years 45-60 years 60 and above	561 dentate subjects from 6 villages	<ul style="list-style-type: none"> ● CPITN 	<ul style="list-style-type: none"> ● Calculus was more in 15-19 and 20-29 years ● Shallow pockets were more in 30-44 and 45-60 years age group. ● Deep pockets were more in 61 years and age group above
2003	Shah N, Sundaram KR(26) Impact of sociodemographic variable, oral hygiene practices and oral habits on periodontal health status of Indian elderly	Above 60 years	—	<ul style="list-style-type: none"> ● CPITN ● Gingival recession ● Mobility ● Halitosis ● Modified WHO oral health survey performa ● Impact of sociodemographic variable ● Oral hygiene habits ● Chronic systemic disease 	<ul style="list-style-type: none"> ● Step wise multivariate logistic regression analysis showed that periodontal disease were directly correlated with age, oral hygiene practices and presence of cardiac diseases
2003	Christensen LB, Peterson P et al Oral health behavior among 11-13 year old in Bhopal(27)	11-13 years	599 children	<ul style="list-style-type: none"> ● Clinical examination by WHO standard ● DMFT ● CPITN 	<ul style="list-style-type: none"> ● Implementation of community oriented oral health promotion programmes is needed to improve oral health. ● Caries experience was 2.5 times higher among children in slum areas compared to children in rural areas
2002	Rekha R and Hiremath SS(28) Oral health status and treatment needs of confectionary workers in Bangalore	Biscuit group 107 Chocolate group 160 Sweet group 44 Bakery group 99 Control group 294	502 subjects	—	<ul style="list-style-type: none"> ● Periodontal disease was significantly higher in confectionary than controls and more so in biscuit and sweet groups
2002	Anuradha KP, Chandrashekhar J et al(29) Prevalence of periodontal diseases in endemically fluorosed area in Davangere taluk	36-45 years	283 villagers	<ul style="list-style-type: none"> ● CPITN ● Silness and Loe plaque index 	<ul style="list-style-type: none"> ● Decrease in plaque with increase in fluoride content ● Shallow and deep pockets were also less

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETRES	RESULTS/FINDINGS
2002	Sogi GM, BhaskarDJ(30) Dental caries and oral hygiene status of school children in Davangere related to their socio economic level economic classification	13-14 years	2001 children	<ul style="list-style-type: none"> Type III examination DMF caries index OHI-S Prasad's socio- 	<ul style="list-style-type: none"> Dental caries and oral hygiene experience of children are strongly correlated to socio-economic status
2000	Madden IM, Stock CA et al(31) Oral health status and access to care in a rural area Andhra Pradesh	15- 70 years	150 villagers	<ul style="list-style-type: none"> CPITN Interview 	<ul style="list-style-type: none"> High prevalence of chronic inflammatory periodontal diseases which was untreated. Difficulties in access to oral health care. Need of good preventive oral health care within rural community
2000	Rao A, Sequeira et al(32) Oral health status of the institutionalized elderly in Mangalore	>60 years	287 institutionalized	<ul style="list-style-type: none"> Modified oral health assessment form 	<ul style="list-style-type: none"> Shallow pockets seen in 32.9% dentate subjects. Edentulousness directly proportional to period of stay in old age home
2000	Doifode VV, Ambedekar NN et al(33) Assessment of oral health status and its association with some epidemiologic factors in population of Nagpur	—	5189 subjects	<ul style="list-style-type: none"> House to house clinical examination 	<ul style="list-style-type: none"> Periodontal disease (34.8%) and dental caries(43.2%) were the most common disorders. Other disorders were. Dentofacial anomaly (24.2%) Opacities and enamel disorder (18.2%) Oral mucosal lesion (7.1%) Oral cancer lesion (2.4%)
2000	Goel P, Sequeira P et al(34) Prevalence of dental disease among 5-6 and 12-13 year old school children in Puttur, Karnataka	5-6 years 12-13 years	200 (for each group, 5-6 and 12-13 years)	<ul style="list-style-type: none"> Calculus Malocclusion DMFT 	<ul style="list-style-type: none"> Dental caries was higher in 5-6 years than 12-13 years of age Malocclusion and calculus significantly higher in 12-13 years
2000	Thomas S, Tandon S et al(35) Effect of dental health education on the oral health status of a rural child population	—	430 children, 7 teachers and 100 parents divided into three groups	<ul style="list-style-type: none"> Children alone Children and teacher Children and parents 	<ul style="list-style-type: none"> Dental health score improved best in the group of children involving the teachers
1999	Kenkre AM, Spadigam AE(36) Oral health and treatment needs in institutionalized psychiatric patients in India	Mean age 25 years	153 inmates, 59% males, 41% females	<ul style="list-style-type: none"> OHI-S DMFT 	<ul style="list-style-type: none"> 5.4% with healthy periodontium 12% were free from dental caries 16.2% required complex periodontal treatment. Mean DMFT and OHIS increased with increasing age.

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETERS	RESULTS/FINDINGS
1998	Paul T, Brandt RS(37) Oral and dental health status of children with cleft lip and/ or palate	3-18 years	114 children	<ul style="list-style-type: none"> ● Simplified debris index ● Gingival bleeding index ● DMFS/dmfs index 	<ul style="list-style-type: none"> ● Mean simplified debris index-0.9 ● Gingival bleeding index-0.4 ● Mean dmfs-23, Mean DMFS- 0.9
1997	Alexandre S, Hegde S et al(38) Prevalence of malocclusion and periodontal status in Tibetan school children of Mysore	7-17 years	817 Tibetan school children	<ul style="list-style-type: none"> ● Bleeding ● Calculus ● Malocclusion 	<ul style="list-style-type: none"> ● Malocclusion was more in girls ● Significant increase in bleeding among 8-13 years and 17 years old girls than boys. ● Calculus was more in girls
1996	Joseph PA and Cherry RT(39) Periodontal treatment needs in patients attending dental college hospital, Trivandrum	15-64 years	3006 patients	<ul style="list-style-type: none"> ● CPITN 	<ul style="list-style-type: none"> ● Disease severity increased with increasing age ● Females were having better periodontal condition ● Low income people were having poor periodontal status ● Habits like smoking affected periodontal status ● Persons using brush and paste were having better periodontal status
1996	Maity AK, Pal TK et al(40) Periodontal status of young adults in rural population of West Bengal	15-19 years 20-29 years	3692 subjects from 15 villages of Midnapur	<ul style="list-style-type: none"> ● CPITN 	<ul style="list-style-type: none"> ● Calculus was common finding in 71% in 15-19 and 92% in 20-29 years age group ● Shallow pockets were 0.3% in 15-19 and 5.91% in 20-29 years ● Deep pockets were 0% in 15-19 and 0.1% in 20-29
1995	Bhavsar JP, Damle SG(41) Dental caries and oral hygiene among 12-14 year old handicapped children of Bombay	12-14 years	593 children 2 group cerebral palsy and blind	<ul style="list-style-type: none"> ● CPITN ● DMF index 	<ul style="list-style-type: none"> ● Dental caries more in palsy group ● Gingival bleeding and calculus more in both groups than in healthy children
1994	Maity AK, Banerjee K et al(42) Levels of destructive periodontal disease in a rural population in West Bengal	15- 65 years	5960 subjects from 13 villages	<ul style="list-style-type: none"> ● CPITN 	<ul style="list-style-type: none"> ● Code 4 was 2.3% in 45-64 year subjects ● Code 3 was 26.9% in 45-64 years ● Code 2 was 80% in 20-64 years age group
1994	Bhowate RR, Borle SR et al(43) Dental health among 11-15 year old children in Sevagram, Maharashtra	11-15 years	802 children	<ul style="list-style-type: none"> ● OHI ● DT index 	<ul style="list-style-type: none"> ● Prevalence of gingivitis and caries increased with increasing age
1993	Rao S, Homagain S(44) Periodontal status and treatment needs of an adult rural community	20-64 years	575	<ul style="list-style-type: none"> ● CPITN 	<ul style="list-style-type: none"> ● High prevalence of periodontal disease-99.6% ● Greater treatment needs in males than females

YEAR	REFERENCE	AGE (in years)	SAMPLE SIZE	CLINICAL PARAMETRES	RESULTS/FINDINGS
1993	Rao SP, Bharambe MS(45) Dental caries and periodontal diseases among urban, rural and tribal school children	—	778 children studying in 2 urban, 4 rural and 2 tribal private school	<ul style="list-style-type: none"> Bleeding and calculus DM index 	<ul style="list-style-type: none"> Periodontal disease was more in rural children Dental caries was more in urban children Stains were more in tribal but overall dental health was better than other
1993	Dubey R, Jalili VP et al(46) Oral hygiene and gingival status in orthodontic patients	—	100 subjects divided into 4 groups	<ul style="list-style-type: none"> Plaque index Gingival Index 	<ul style="list-style-type: none"> Both indexes higher in all groups
1993	Chavada MG, Shah HM et al(47) Influence of diabetes mellitus on periodontal disease	35-66 years	62 uncontrolled diabetes and 60 non diabetics	<ul style="list-style-type: none"> Plaque Calculus Gingival Periodontal indices 	<ul style="list-style-type: none"> Salivary calcium level was significantly higher in uncontrolled diabetics which helps in calculus formation and hence increases severity of periodontal disease
1991	Kaimeny JT, Gururaja Rao TR(48) Periodontal health of adult population of Kenya and India	20-35 years	497 Kenyan and Indian population	<ul style="list-style-type: none"> Silness and Loe plaque index Russell's Periodontal index 	<ul style="list-style-type: none"> Overall mean periodontal and plaque index scores of Kenyan participants were significantly lower than Indian
1990	Anil S, Hari S et al(49) Periodontal condition of a selected population in Trivandrum distt. Kerala	15-19 years 25-29 years 35-44 years	2756 subjects (1354 males and 1402 females)	<ul style="list-style-type: none"> CPITN 	<ul style="list-style-type: none"> 15-19 years age calculus and bleeding was common (86%) 25-29 years age group calculus and shallow pockets (80%) 35-44 years age group deep pockets 6mm (33%)
<p>OHI-S : Oral Hygiene Index - Simplified, CPITN : Community Periodontal Index of Treatment Needs, WHO : World Health Organization, DMFT : Decayed Missing Filled Teeth, DMFS: Decayed Missing Filled Surfaces, dmfs: Decayed Missing Filled Surfaces (for deciduous teeth), DMF : Decayed Missing Filled, DT : Decayed Teeth, DM : Decayed Missing</p>					

Toothbrush and toothpaste used to maintain day to day oral hygiene and good oral hygiene status was found to be significantly correlated with better periodontal health (26, 39). These are the mechanical aids which help in removing microbial plaque in day to day routine which in turn are responsible for good oral hygiene as well as less prevalence of periodontal diseases. Conflicting reports are there in reference to high fluoride and periodontal health status. In one report fluorosis was shown to be with good periodontal health status (29) and in another report it was reported with poor periodontal status (17).

Habits like smoking, pan with tobacco chewing was shown to be a significant risk factor for more prevalence of periodontal diseases (8, 16, 27, 39). Tobacco has been shown to affect gingival and periodontal diseases by several means like increased colonization of shallow periodontal pockets by periodontal pathogens and increased levels of periodontal pathogens in deep periodontal pockets. Smoking may alter neutrophil chemotaxis, phagocytosis and oxidative burst. It can also increase secretion of tumor necrosis factor alpha, prostaglandin E 2, neutrophil collagenase and elastase in gingival crevicular fluid (50).

In children the trend of periodontal disease status was shown to be same as it was for adult population. The severity was increased with increasing age (9, 34, 43). Dental health education and oral hygiene maintenance instructions are shown to be strongly correlated with periodontal health (27, 35).

Oral health status of mentally retarded population, handicapped subjects, HIV positive individuals, institutionalized psychiatric patients, pregnant women and diabetic patients were poor in comparison to control (10, 11, 12, 13, 21, 22, 36, 37, 41). The reason for bad periodontal health in mentally retarded, handicapped and psychiatric patients may be because of their less efficiency in maintaining optimum oral hygiene. The poor periodontal conditions in diabetics may be because of polymorphonuclear leukocyte deficiency resulting in impaired chemotaxis, defective phagocytosis, or impaired adherence. Increased collagenase activity and decreased collagen synthesis is found in individuals with diabetes in chronic hyperglycemia(51).

CONCLUSION

Periodontal diseases are one of the more prevalent oral diseases affecting more than 50% of Indian community. Untreated chronic periodontitis is responsible for tooth loss in majority of the cases. Constant presence of chronic inflammation and inflammatory mediators has also been proved to be a significant risk factor of several systemic diseases e.g. preterm low birth weight babies, coronary artery diseases, diabetes mellitus etc. Foreseeing the bad effects of periodontal diseases on oral as well as general health, the prevention of these diseases should included in national health programme and national oral health survey should be conducted to get meaningful data for different oral diseases and plan around preventive/curative measures.

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