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Food Habits and Dental Health: A Study among Tribal and Non- tribal Groups of Bastar District in Chhattisgarh, India

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Abstract
The Tribal and Non-tribal groups inhabiting in Bastar region of Chhattisgarh, India show distinct cultural features. But community groups based on biological characteristics is not distinctly visible. One of the important cultural variations is the type of food they consume; thus ecology shapes the food grown in the area and the food habits. Food has a very important role to play in the wear and tear of the teeth. It has been observed that the incidence of a disease like a dental caries is found differently in this area, part of it, on account of food contents consumed by the people. Such a disease affects people's health and in tern it affects the other functions of the body like that elementary system, sugar contents in the blood as well as the heart. Even in pregnancy changes are found too, in the teeth which may affect the fetus. The various investigations in eight different villages under Bakavand block of Bastar district in Chhattisgarh reveal that caries accounts for a large number of tooth extractions, which have a lot of bearing and consequences on the individual. Due to these extractions depending upon the age group, vital man-hours are lost in the economic sphere. It has also been reported that there exists a relationship between dental morbidity and a few genetically traits. Thus in view of this, it is of vital importance to understand the food habits and their implications on tooth morbidity due to dental pathology and its role in Tribal and Non-tribal way of life, both biologically and culturally.

Keywords: *Tribal, Non-tribal, Cultural variableties, Ecology, Food habits, Dental morbidity.*

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I. Introduction

Diet and nutrition is the important aspects of human dental health. One of the most easily obtainable statistics which is considered to reflect the general level of health and adequacy of health services to the people is the availability of information on qualified health manpower. Physician to population ratio is one such index which, when used in relation to morbidity and mortality figures, provides a rough measure of not only the level of health of the people but also their concern for staying healthy. By the same token the ratio of dentist to population can be a reflection of the level of oral health of the people and their concern for it. The statistics varies from one country to another country, while speaking of very poor manpower resource position in developing countries, raise two fundamental issues which are given such as (1) Whether the people in Western countries are more oral health conscious compared to their counterparts in developing countries, or (2) Is it that the people in developed countries suffer more from dental ill-health, which generates greater demand for dental health services and the higher dentist population ratio in these countries, is merely a reflection of the need of the people? Answer to the first question can be an unequivocal 'yes', but the reply to the second, needs a review of the prevalence of oral health problems, their nature, extent of distribution and the distress or disability they cause to people (Gulati, 1985).

Global oral health information and epidemiology data bank indicates that two commonest oral health problems which affect people in both developing and developed countries and have public health significance are: (i) dental caries, and (ii) periodontal disease. Both are widespread and preventable across the world. Reviews of prevalence of these two conditions present divergent trends (Reddy, 1985). As indicated in eight villages under Bakavand block of Bastar district Chhattisgarh which are faced with manpower and other resource scarcity, is one of rapidly increasing dental, caries and stable and high periodontal diseases, while in developed countries with increasing manpower resources, it is a picture of stable or decreasing dental caries and diminishing periodontal diseases. For understanding the basis of these contrasting trends, an insight into the etiology and patho-physiology of these conditions is necessary focus of the present research article.

II. Methodology

This cross-sectional study was conducted in Bastar region of Chhattisgarh, India. Primary data were collected in the field by survey, observation, personal interview, questionnaires, schedules, mechanical devices like cameras, projective techniques and group discussions are some of the methods were used. On the other hand, secondary data collected from private and government dental hospitals, published research paper, journals, books and internet.

Tools of Data Collection

There are two kind of scientific tools for the data collection. They are:

1. Chronological method: It is significantly used to find out dental caries remains a prevalent oral disease among the Tribal and Non-tribal.
2. Methodological tools: Interview by structured and pre tested schedule, FGDs, case study with help of dental probe, mouth mirror and tape has been used to find out the internal and external environmental factors and relevant causes to find out the reasons of dental morbidity.

Sampling

For the research purpose persons and their families who belong to schedule Tribal and Non tribal communities have been selected. The person who is suffering from dental problem, any kind of genetical diseases, congenital disorder and facial cleft was included from sampling. In the sampling frame 409 individuals were comprised in which 201 individuals were from Tribal with special reference to Bhatra communities and rest 208 included from Non-tribal (SC, OBC and General) communities. The selection of the study areas was depend on stratified sampling while the selection of the objects were chosen by purposive sampling.

Number of Household Members Studied

Out of the 409 surveyed household individuals in the 8 multiethnic villages under Bakavand block of Bastar district, Chhattisgarh (table 1). More than 50 percent household individuals were interviewed as well studied. The Bhatra tribe has been chosen for our research purpose. In case of tribal, maximum number of sample was taken from Rajnagar village followed by Chotedewda, Jharumargaov, Sargipal, Masgaov, Bhejripadar, Dasapal and Dimrapal respectively. Similarly, the same villages had been taken in case of Non-tribal communities (SC- Satnami, Chamar, Chamra; OBC-Dhakad, Kevta, Patel, Rauth, Sahu, Sundi; GEN-Mahra).

Table 1: Villages with Studied Household Members

State	District	Block	Panchayat	Village	Studied Communities	
					Tribal	Non--Tribal
					(ST- Bhatra)	(SC- Satnami, Chamar, Chamra; OBC-Dhakad, Kevta, Patel, Rauth, Sahu, Sundi; GEN-Mahra)
Chhattisgarh	Bastar	Bakavand	Chotedewda	Chotedewda	48	50
			Dimrapal	Dimrapal	8	25
			Jharumargaov	Jharumargaov	26	20
			Sargipal	Sargipal	18	15
				Masgaov	18	25

	Bhejripadar	Bhejripadar	18	20
		Dasapal	9	8
	Rajnagar	Rajnagar	56	45
Total			**201**	**208**

Area of Study

Bastar is a land of various tribal people which shows not only cultural diversity but they have their own special food diversity. The nature of living of the local tribal people of the Bastar is traditional type. Therefore they are the better indicator tools for the evolutional development of human anatomy. So, general Tribal with special reference to Bhatra of Bastar and Non-tribal population of same areas had been selected for this purpose of the study.

Data Analysis

The data was processed in MS-Excel data sheet and analyzed by using SPSS software package of keeping in view the specific objective of the study.

Dental Health

Dental caries, according to WHO (Technical Report Sr. No. 242, 1962 and 494, 1972) is "a localized post-eruptive pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity", whereas the periodontal disease is a pathological process of the supporting structures of teeth namely, the gums and alveolar bones (Jaw bones) that immediately surround the teeth. In fact, it includes a wide variety of inflammatory conditions which range from mild inflammation of gums (gingivitis) at the one end, to acute periodontal abscess causing intense pain and discomfort, at the other. In between these two conditions there exists a chronic state if inflamed, red looking, swollen gums with tendency to bleed on tough or even spontaneously causing little or no discomfort to subjects except bad breath (halitosis), more pronounced on awakening from sleep. This condition is important since it represents the first phase of established periodontal disease progressing slowly but surely to the eventual loss of tooth function and teeth prematurely. This is caused due mainly to gradual and ultimate destruction of fibrous bands (periodontal ligaments) that anchor the teeth to the jaw bones.

Causes, origin and Symptoms of Dental Health

Recent researches have shown that the presence of a soft, floc-like structure called dental 'plaque' on the tooth surface constitutes the principal etiologic, agent and acts as a common factor for both caries and periodontal disease in initial stages. The plaque is composed of organic and inorganic materials in which different types of bacteria grow and produce substances harmful to both dental and periodontal tissues. The protein components of plaque matrix in which bacteria are embeded are mainly derived from saliva (secretions from parotid and salivary, glands) and the polysaccharide constituents are, synthesised by the 'micro-organisms from dietary sugars. Regular intake of high concentrations of sucrose or glucose causes a change in the carbohydrate-protein ratio of human plaque. The plaque is usually formed in the regions of dentition difficult to reach through ordinary procedures of oral hygiene. Within weeks deposition of calcium and magnesium on plaque occurs, thereby, mineralising it (tartar deposit) and leading to calculus formation. Thus, the tartar together with plaque and particulate food material acts as a major irritant to gums and if untreated, spreads to deeper areas causing periodontitis.

The high bacterial concentration in plaque (estimated to be about 250 million organisms per mg. of wet-weight of plaque), enables it to produce acid (from carbohydrates) at a rapid rate (Rao, 1985). Because of the relatively slow rate of diffusion of substances out of the plaque, the acids thus formed accumulate, thereby, favouring growth and colonisation of cariogenic organisms. Caries does not occur in the absence of bacteria and it requires the presence of fermentable carbohydrate in oral cavity. Role of certain streptococal species (S. mutans group) in causing caries has been confirmed. However, in periodontal diseases the microflora which are demonstrated are a constituent of the oral environment. The starting and progression of the pathology appears to be more a manifestation of disequilibrium between the rate of plaque formation and its removal from tooth structures through cleaning processes.

III. Result and Discussion

Population Composition

Table 2 depicted that out of 409 respondents, there were 201 belong to tribal in which 78 males and 123 are females. Similarly in case of Non-tribal, total respondents were 208 individuals. In this case majority 110 were males and 98 females which were covered for the present study.

Table 2: Population of Studied Individuals among Tribal and Non-tribal in Eight Villages of Bakavand Block of Bastar District

Gender	Tribal		Non-Tribal		Total	
	Number	***%***	***Number***	***%***	***Number***	***%***
Male	78	38.81	110	52.88	**188**	**45.97**
Female	123	61.19	98	47.12	**221**	**54.03**
Total	**201**	**100.00**	**208**	**100.00**	**409**	**100.00**

Literacy Rate and Level of Education

An overwhelming majority (60.39 percent) of the respondents are literates, which hampers many of their activities, especially handling money and properties or availing the government benefits meant for them. Thus feminisation of literacy is seen in this study. It had been observed (table 3) that large percentage of the population was only educated by primary level and middle and very few percentages of respondents were highly educated.

Table 3: Literacy and Level of Education among Tribal and Non-tribal in Eight Villages of Bakavand Block of Bastar District

Literacy	Tribal		Non-Tribal		Total	
	Number	***%***	***Number***	***%***	***Number***	***%***
Illiterate	83	41.29	79	37.98	**162**	**39.61**
Literate	118	58.71	129	62.02	**247**	**60.39**
Total	**201**	**100.00**	**208**	**100.00**	**409**	**100.00**
Education Level						
Primary	50	42.37	52	40.31	**102**	**41.30**
Middle	34	28.81	32	24.81	**66**	**26.72**
High School	21	17.80	19	14.73	**40**	**16.19**
Higher Secondary	7	5.93	12	9.30	**19**	**7.69**
Graduate	2	1.69	8	6.20	**10**	**4.05**
Post graduate	4	3.39	6	4.65	**10**	**4.05**
Total	**118**	**100.00**	**129**	**100.00**	**247**	**100.00**

Occupation

Table 4 depicted the occupational pattern of surveyed population where majority of respondents (more than 40 percent) were Cultivators followed by 10 percent of each are Agriculture labour and Business. More than 6 percent of each respondents depend on multiple occupation or more than one source of income i.e. Cultivation with Daily Labour and Cultivation with Business respectively. The rest of the total respondents were doing work in government/private job, LIC Agent, Shopkeeper, Photographer, TV mechanics, Wood seller etc. Worldwide, women participate less in the formal or paid work, sector of the economy than do men. The International Labor Organization (2009) estimates total worldwide female participation in the paid work force at 40 percent, with generally a lower rate in the less developed countries (closer to 35 percent) and a higher rate in the more developed countries (closer to 45 percent in the OECD).

Table 4: Occupational Pattern and Source of Income among Tribal and Non-tribal in Eight Villages of Bakavand Block of Bastar District

Types of Occupation/ Source of Income	Tribal		Non-Tribal		Total	
	Number	***%***	***Number***	***%***	***Number***	***%***
Cultivation	81	40.30	85	40.87	**166**	**40.59**

Table 4: Occupational Pattern and Source of Income among Tribal and Non-tribal in Eight Villages of Bakavand Block of Bastar District

Types of Occupation/ Source of Income	Tribal		Non-Tribal		Total	
	Number	*%*	*Number*	*%*	*Number*	*%*
Agriculture Labour	23	11.44	21	10.10	**44**	**10.76**
Daily Labour	15	7.46	14	6.73	**29**	**7.09**
Business	19	9.45	23	11.06	**42**	**10.27**
Govt. Service	7	3.48	3	1.44	**10**	**2.44**
Private Service	9	4.48	13	6.25	**22**	**5.38**
House Wife/ Students	12	5.97	7	3.37	**19**	**4.65**
Cultivation & Daily Labour	12	5.97	14	6.73	**26**	**6.36**
Agriculture Labour & Daily Labour	5	2.49	4	1.92	**9**	**2.20**
Cultivation & Business	12	5.97	15	7.21	**27**	**6.60**
Cultivation, Agriculture Labour & Daily Labour	4	1.99	3	1.44	**7**	**1.71**
Others (LIC Agent, Shopkeeper, Photographer, TV mechanics, Wood seller etc.)	2	1.00	6	2.88	**8**	**1.96**
Total	**201**	**100.00**	**208**	**100.00**	**409**	**100.00**

Annual Income

Economic conditions of both Tribals and Non-tribals are not good. They are poor and their incomes are per annum each. They are not aware about expenditure and spend almost their whole annual income on food items and clothes as well as festivals and fairs. The pattern of annual household income obtained from different households on the present study is presented in table 5. It can be clearly seen that a little than 80 percent of the Tribal and a little more than 68 percent of Non-tribals population are relatively poor. Middle income group constitutes only about 11 percent of tribal population and about 18 percent of Non-tribal population. Whereas, only 3.48 percent of Tribals and 2.88 percent of non-tribals can be considered as prosperous.

Table 5: Annual Household Income among Tribal and Non-tribal in Bastar District

Category (Income Range in Rs.)	Percentage of Household	
	Tribal (n=201)	Non- Tribal (n=208)
<Rs. 25,000 (Poor)	79.10	68.75
Rs. 25,000- 1,50,000 (Lower middle)	10.95	17.79
Rs.1,50,001-3,00,000 (Moderate)	6.47	10.58
> Rs. 3,00,000 (Prosperous)	3.48	2.88

Awareness in five major dental problems mentioned in the table was 63% where as only 37% of the respondents were unaware, but in spite of awareness, the prevalence of dental caries is very high. Only one fifth of the respondents were aware about the pyorrhea, which is significant maker of oral hygiene. The most common problem was mal-position of teeth (42.79%), whereas spacing of teeth was least noticed (8.80%). Awareness of proper replenishment of the tooth brush was only in less than 1% of the respondents. (Table 6)

Table 6: Status of Awareness and Type of anomalies among Study Population

Variables	Respondents
Awareness regarding Dental Problems	**Multiple Responses (n= 409)**
(i) Dental decay	83.37
(ii) Toothache	95.11
(iii) Bleeding Gum	51.83
(iv) Foul smelling(Halitosis)	61.61
(v) Pyorrhea	22.25
Type of anomalies	**Non-Multiple Response (n= 409)**
(i) Mal-position of teeth	42.79
(ii) Crowding of teeth	11.98

Table 6: Status of Awareness and Type of anomalies among Study Population

Variables	Respondents
(iii) Spacing of teeth	8.80
(iv) Extra teeth	36.43
Awareness Status of changing brush	**Non-Multiple Responses (n= 409)**
(i) Adequate	1.71
(ii) Excellent	0.73
(iii) Inadequate	97.56

Two third of the respondents had meal consumption frequency 4 or more. Correlation between the meals and dental morbidity indicates a direct relation between the two. The direct relationships between dental caries and frequency of meals is statistically significant (p<0.001). More than half of the respondents were vegetarian in their dietary practices, rest were mixed vegetarians. Prevalence of morbidity was higher in vegetarians (77.58%) than mix vegetarians (75.27%). Prevalence of dental caries cannot be correlated significantly with dietary habits. (p>0.10). More than three fourth of the respondents were habitant of chewing Betel nut / Tobacco/ Pan. Chewing habits have a statistically significant inverse relationship with dental (p<0.001). Only 40.10% of the respondents were doing Post meal mouth rinsing practices. Improper rinsing could be positively correlated with the prevalence of third molar eruption in this study. (X2=9.44, DF=1, P<0.001, which is highly significant.) Majority of the respondents consumed mixed water supply (56.97%). 82.02% of the persons who consumed surface water were having erupted third molar teeth, followed by persons consuming ground water (75.86%) and lastly, persons drinking maxed water (73.82%). A highly significant relationship between third molar eruption and type of water consumption has been derived in this study (p<0.001). For better understanding table 7 may be consulted.

Table 7: Different Variables in relation to Dental Morbidity among Study Population

Variables	Dental Morbidity		No Dental Morbidity		Total		χ2 test d.f., p value
	No.	*%*	*No.*	*%*	*No.*	*%*	
Daily frequency of meals							
(i) Less than or equal to 4	72	49.32	74	50.68	146	35.70	χ 2 =614.99,d.f.=1,P<0.001
(ii) More than 4	240	91.25	23	8.75	263	64.30	
Type of food							
(i) Vegetarian	173	77.58	50	22.42	223	54.52	χ 2 =1.861,d.f.=1,P>0.10
(ii) Mixed Vegetarian	140	75.27	46	24.73	186	45.48	
Chewing Habits Betel nut/ Tobacco/Pan							
(i) Daily and occasional Habitant	210	78.36	58	21.64	268	65.53	χ 2 =22.62,d.f.=1,P<0.001
(ii) Non Habitant (Never used)	125	88.65	16	11.35	141	34.47	
Post meal mouth rinsing practices							
(i) Rinse the mouth	120	73.17	44	26.83	164	40.10	χ 2 =9.44,d.f.=1,P<0.001
(ii) Not rinse the mouth	192	78.37	53	21.63	245	59.90	
Type of Drinking water							
(i) Ground Water	66	75.86	21	24.14	87	21.27	χ 2 =20.09%,d.f.=2 P<0.001
(ii) Surface Water	73	82.02	16	17.98	89	21.76	
(iii) Mix (some time ground some time surface)	172	73.82	61	26.18	233	56.97	

Role of Diet and Nutrition on Dental Health

The people living under different geographic and climatic conditions, huge variations in the prevalences of caries and periodontal diseases following different dietary and feeding habits prompted workers to study these diseases in relation to community, climate, soil, water, culture, food and feeding habits of population. Realizing that very little or no evidence of nutritional excesses or deficiency in chronic periodontal diseases, exists and that stronger association between the prevalence of caries and consumption of carbohydrate rich food particularly, refined wheat flour, bakery products and confections is seen, more number of studies have been undertaken in the area of elucidation of precise role of diet and nutrition factors in dental caries as compared to periodontal diseases. These have been considered at two levels- (i) one during pre-eruptive stage and (ii) the other in post-eruptive stage of dentition. Evaluation of these factors in animal experimentations suggest that during pre-eruptive stage the nutrients influence the maturation process of enamel, the-physical and chemical composition of tooth, tooth size, its morphology and to a lesser degree the time of eruption. Nutrients can also influence oral microflora by the process of enrichment which in turn facilitate implantation and growth of microflora on tooth surface once it is erupted. In post-eruptive stage, the diet per se and through nutrients

have been shown to influence not only the implantation and growth of microbial plaque but also the flow and composition of saliva that contributes to the micro-environment of the teeth in oral cavity. Salivary fluid by virtue of its basic constituents like bi-carbonates, urea etc., has been shown to exert a buffering effect on acids which, arc formed due to bacterial action on large amounts of dietary carbohydrate in oral cavity. The above mention fact support to the diet and nutrition play an important role for dental health.

Mechanism of Process

Adult enamel, the outermost covering of tooth, is an a cellular structure without any vascular and nerve supply and hence, does not possess any metabolic pathway. It consists of about 95 to 96 percent inorganic salts, 0.5 percent organic constituents and the remaining fraction of about 5 percent is assumed to be made up of water. The greater portion of this water is bound to the mineral salt and this limits diffusion of ions. Therefore, any chemical changes in enamel that occur, are due to a process of molecular exchange of ions between the solid enamel phase and the soluble components of the salivary environment. Experimental evidence though suggests that significant fluctuations in salivary constituents cannot be brought about by dietary means, inclusion of proteins and vegetables increases buffering capacity of saliva, while carbohydrates tend to reduce it. To what extent this effect is due to alteration of flow of saliva is not clear. Significant differences observed in blood urea levels of children with caries active and caries free groups tend to suggest a greater consumption of protein by caries free groups than the caries-active group. Relationship of phosphate and calcium levels in parotid saliva and their intake levels through foods has not been clear cut and consistent. The cariostatic action of the phosphate observed in animals has been shown to be local, and hence, is considered to be a function of the time the phosphate is retained in solution in saliva and plaque rather than systemic. Taking cue from such experiments, di-calcium phosphate was added to chewing-gum and certain carbohydrate foods whose regular use was stated to have resulted in a reduction of caries in children. As a result, phytate content is mainly considered due to cariostatic effect of unrefined food.

Fat content of diets has been shown to exert protective action from caries. The mechanism of action is considered multifactorial though (i) formation of a protective film on dental surface and thus, preventing decalcification, (ii) decreasing the caries-producing potential of carbo-hydrates in diet, and (iii) the antimicrobial action of fat.

The protective role of organic films called as "acquired pellicle", formed on enamel surface due to absorptive action of salivary glycoproteins and also food protein by hydroxyapatite has been described. It is important to note that casein, a phosphoprotein that shows a strong affinity for calcium was the most active protein in reducing enamel solubility.

Effect of fluoride often consumed through water on dental caries has been the subject of extensive research. Its inhibitory action on caries has been proved beyond doubt. The inverse relationship seen between dental caries and fluoride consumption is as strong as the positive association observed between caries and consumption of sucrose. Certain constituents of food, plaque or saliva like citrate, lactate carbonate, pyrophosphate, phytate, etc., has been considered to extert chelating and complexing influence on calcium and their exact role in caries and dental erosion is being extensively explored.

Food Habits Culture and Dental Health

Bastar district of Chhattisgarh is inhabited by a variety of community groups having varied forms of cultural pattern. These cultural ways of life also depends upon the food grown and eaten by the people which have ultimately a bearing on their health. One of the man's basic need is food. Food gives him the nutrition to keep fit, to procreate and to maintain his biological fitness leading to his survival as well of his group. Further, it is worthy to note that taboos and religious convictions control the nutrition in many parts of the world. Food sophistication can lead to obesity and this in turn to serious diseases.

(i) Impact of Globalisation on Food Habits

Due to impact of globalization, in the fast changing world, change in the food habits is a universal phenomenon. With the migration it has been difficult to feed so many people in areas which do not grow to that required extent. The effect of food technology is to alter food from its original simplicity and this is absolutely necessary if a large urban population is to get a fair share of fresh food to eat in any season of the year in any place. If canning, freezing and other methods of preservation had not been developed we might have lived on stale and unattractive foods for most of the year with deleterious effects on health. But with sophisticated foods may come a multitude of dangers. They do not have the hard bite of natural foods; often, as in biscuits, they are concentrated, pappy and sugary. They play havoc with children's teeth because they encourage the growth of caries producing bacteria in the mouth which lead to tooth decay.

(ii) Breast Feeding

The food habits have a bearing on the dental morbidity. This dental morbidity has also led to the deterioration of other physiological functions of the human body affecting the health and thus, stimulating the rate of mortality. We would like to cite one of the most important and present example of the change of practice from breast feeding to bottle feeding which has affected the infant's health and thus, affecting the shape of the teeth into the form more suitable to the various selective variations. One is aware of the advantages of breast feeding strategy as it promotes growth, health and development of the children as a whole. Mother's milk is a dynamic living fluid and its chemical compositions are especially adapted to the physiology of new infants. The profile of antibodies in a mother's milk is specially designed to protect her infant against the infections prevalent in its given environment and this is how the composition of the breast milk is tailored to the special needs of the infant. The protective effect of breast milk against infants, both in poor and affluent families among Tribal and Non-tribal has been well documented.

In the Non-tribal groups specially in Bastar, the discontinuation of breast feeding, a natural practice, has led to malnutrition of the mothers with abnormalities as well as the children. The children have been very much affected and might have developed dental caries at a later stage by being affected by the food. This might have worked differentially in both rural and urban setting as well as Tribal and Non-tribal communities. One is not very much aware yet of the condition regarding the teeth morbidity in the tribal populations, as there has not been very many changes in their food habits in the present study.

(iii) Factors Affecting Dental Abnormality

It is true that diseases arising from poverty, ignorance, malnutrition, bad sanitation, lack of safe water supply, drainage or adequate housing and low levels of immunity are still the most common. It apears that although not only among Tribal and Non-tribal in Bastar region but also the average Indian may now live longer, his morbidity is only marginally less than that of his forefathers and he continues to be largely prone to the same disease as they were. 95 percent of the population in Bastar district of Chhattisgarh is suffering from periodontal diseases, a major cause of tooth loss after the age of 30 years; and 60 percent of tooth morbidity is from dental caries. The prevalence of caries is on the increase continuously.

A large number of various Scientists studied on dental caries in India. Anthropologists have shown the interest from the point of view of studying the human variability. Though the studies are not many in the literature, one does not find any study having bearing of caries on other functions of the body, as well as on the demographic features, since dental caries does definitely affect the other functions of the body due to the infections produced by this pathology. The other human functions are affected to the extent that the diseased tooth can definitely bring about other diseases which may be sometimes fatal. Therefore, it becomes more important to have a better insight into the various aspects of dental caries and their effect on other human systems so as to understand the rate of its morbidity ultimately resulting in mortality is continuously increasing.

A number of diseases and disorders affected to human teeth, gums and the oral mucus. The most common dental diseases in India are the dental caries and the periodical disease or pyorrhoea. Dental caries has been affecting the human teeth since time immemorial. Tooth decay which is a major oral disease begins at an early age. Although susceptibility to dental caries is not established to be related to socio-economic level of the community, yet it has been observed so. Dental caries in the primary dentition may occur as early as in the first year of life. The caries pattern of a child is related to the caries pattern of his parents, his brothers and his sisters. At any given age, girls show a higher caries attack rate than boys. This difference is probably due to the earlier eruption of teeth in girls. Dental caries has a multifactorial etiology not only from the point of microorganisms but also from the consideration of amount and type of carbohydrates used. The physical and chemical properties of saliva may influence dental caries susceptibility. There are three major factors in the pathogenesis of dental caries: (1) the fermentable carbohydrates foodstuff, (2) the oral microbial enzymes and (3) the physical and chemical composition of the tooth surface. The first two may be considered as attack forces and the tooth surface as the resistance force. The acids produced during fermentation and degradation of the food, have been found to be actively associated with caries-production and the most important of them is Lacto-bacillus—Acidophilus Odontolyticus. In case the affected teeth cannot be treated, they should be extracted to control the carious process. The following are: (1) Pulpitis (inflammation of pulpal tissues in the tooth cavity) makes the teeth very tender and there is a severe pain on taking drinks, especially the hot ones. (2) Pulpitis may lead to infection of bone around the apex of the root of the tooth; and apical infection of bone may lead to the formation of an elveolar abscess. (3) An abscess can lead to a situation like cellulitis of floor of the mouth cavity causing asphyzia, i.e., choking. (4) The abscess may burst on the skin and form sinuses which in communication with the maxillary antrum forms an oro-antral fistula. (5) The abscess can cause necrosis of bone, i.e., osteomyelitis (to become dead) of the jaws. (6) The infected tissue around the root tip of a tooth may degenerate in the centre and form a dental cyst. (7) The bacteria and their toxins from the infected carious tooth through the blood stream leads to becteramia having deleterious effects on other organs or systems of the body.

Such manifestations of the carious teeth may prove to be fatal and affect the populations. To the anthropologists another important point of 4 caries, into study the relationship between dental morbidity and genetical traits like tasting ability to PTC. As has already been reported by others, there exists a relationship between the two. It will be fruitful to study the relationship between the two in various populations and also to study the relationship, if any, between the extent of caries and tasting ability. As in the beginning I have already pointed out that in caries pattern there exists a similarity between sibs, parents and children, etc., it will be very useful to find out its genetics and also its relationship with other genetical parameters of human being.

It has been noted that damage to the teeth in the form of dental erosion quite different from decay associated with microbial activity is another factor to be taken into account. Sophisticated eating habits are in some way connected with this deterioration phenomenon. As reported by R.S. Levine of Turner Dental School, Manchester (1980), large consumption and frequent sipping of fruit juices and aerated waters can also cause dental erosion. Erosion, i.e., the removal of enamel, the protective coating of the hardest material over the denture, may assist decay by providing cavities formed by removal of enamel. This is actually a slow chemical dissolution of the crown of the tooth; it is totally evidence based proved fact.

Economic solvency and modernization has given rise to weight consciousness and the people tend to add on to their intake of fruit juices to act as weight reducing-diet. Affluent sections of the society as a status symbol or as a fashion or with the idea of better nourishment drink fruit juices, aerated waters and squashes frequently and are threatened with tooth erosion. Also other foods like jams, lollipops and any food item with a large citric acid content accelerate this as its acidic nature has proved its ability as a decalcifying agent. Generally, erosion removes enamel and the site of erosion due to beverages may differ from the defects caused by other factors. However. they are generally present on the interior of the upper teeth: premolars, molars and the grinding surface of the molars.

IV. Recommendation

The exact role of diet and various nutrients in the causation of dental diseases is though difficult to define in human situation, the following important inferences can be drawn which are relevant to their control and prevention.

1. Poorly nourished population in Tribal of Bastar have less caries and more periodontal diseases as compared to populations in Non-tribal of Bastar with better nutritional status.
2. Though there is little statistical evidence to show that the nature of the basic cereal substrate (rice, wheat or corn) in diet is in any way related to the caries or periodontal diseases, enough experimental, clinical and epidemiological data exist to suggest that caries is associated with consumption of highly refined wheat flour, bakery products and confections. The relationship is more direct and consistent when these foods are solid and sticky, consumed more frequently (between meals). In areas where drinking water contains fluoride salts (natural or fluoridated artificially) dental caries is less common. The periodontal disease, however, is found prevalent in communities where the level of oral hygiene is far from satisfactory.
3. Differences seen in the prevalences of these conditions in different racial settings could not be attributed to ethnicity when the data base has been standardized for factors of economic, education oral habits (hygiene) and environment.
4. The strong correlation seen with age probably reflects the cumulative effect of the disease rather than diminishing resistance of old age.
5. Supplementation of minerals like phosphate and calcium to human diets has proven to be discouraging. So also beneficial effects of dietary proximate principles viz., proteins, vitamins and fats are not conclusive as such. The basic facts that should guide in planning preventive programmes for the caries as well as periodontal diseases are: (a) Inculcation of oral hygienic habits like regular and effective dental brushing, flossing, etc. (b) Reduction in quantity and frequency of intake of sugary (sucrose containing) foods and their substitution by starchy foods. (c) Provision of fluoride through drinking water (drops and tablets).

V. Conclusion

It would be worthwhile to undertake research work not only to find out the frequency of prevalence of dental diseases but to have facts to know their effects on the demographic parameters which affect the population dynamics. It is true that the data collected on dental caries in Indian populations is scarce, yet it would be interesting to have a look into other problems related to the consequential effects viz., loss of working hours etc., of these dental morbidity. The anthropological perspective would gain momentum if we try to understand the overall picture of the dental morbidity and their making of the urban, rural and Tribal and Non-tribal populations. It would be also desirable to have a scientific measure and diagnosis of the changes taking place in the food habits, teeth cleaning habits, of the various populations living in different ecological conditions. This would definitely help to us to tune with the wave length of the public health programmes.

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