National Oral Health Survey & Fluoride Mapping 2002-2003

KERALA

Dental Council of India
New Delhi
2004

NATIONAL ORAL HEALTH SURVEY & FLUORIDE MAPPING

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Authors
Dr. R. K. Bali
Dr. K. Nanda Kumar
Dr. V. Ravindran

Co-authors
Dr. V. B. Mathur
Prof. P. P. Talwar
H. B. Chanana

DENTAL COUNCIL OF INDIA
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DENTAL COUNCIL OF INDIA
Aiwane - Ghalib Marg
Kotla Lane
New Delhi - 110002
Phones : 23220204, 23236740, 23238542
Fax : 23231252

MINISTRY OF HEALTH & FAMILY WELFARE
Government of India,
Nirman Bhawan,
New Delhi

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ABBREVIATIONS & ACRONYMS

NOHS & FM	National Oral Health Survey & Fluoride Mapping
DCI	Dental Council of India
NFHS	National Family Health Survey
NDP	Net Domestic Product
WHO	World Health Organisation
CEB	Census Enumeration Block
BDS	Bachelor of Dental Surgery
MDS	Master in Dental Surgery
M.P.H.	Master in Public Health
M.Sc	Master in Science
D.P.H.	Dental Public Health
deft	Decayed, indicated for extraction and filled primary (deciduous) teeth
Dmft	Decayed, missing and filled primary (deciduous) teeth
DMFT	Decayed, missing and filled permanent teeth
dt/DT	Decayed teeth (primary/ permanent)
mt/MT	Missing teeth (primary/ permanent)
ft/FT	Filled teeth (primary/ permanent)
SIC Index	Significant Caries Index
CPI	Community periodontal index
DAI	Dental Aesthetics Index
TMJ	Temporomandibular Joint
mnt/ MNT	Mean number of teeth (primary/ permanent)
ppm	Part per million (of fluoride)

FOREWORD

It gives me great pleasure to write a foreword to this report on the National Epidemiological Oral Health Survey & Fluoride Mapping of the Dental Council of India. This is a historic document as it is for the first time that a scientific survey on oral health problems at state and national levels has been undertaken in India. With this report in place, we are amongst those few countries in the world where data on oral health problems has been collected through a scientifically conducted sample survey. The report, I am sure, will prove to be an invaluable tool for effective planning and implementation of oral health programmes in the country.

This gigantic national survey, with the states as component units, would not have been possible without the commitment and the efforts of a large number of organizations and individuals. At the outset, I must acknowledge the role of the members of the Executive Committee of the Dental Council of India and its General Body, who supported me in this endeavour and gave all help as and when necessary. The survey work in the states was entrusted to Regional Coordinators who were selected from senior faculty members in Community Dentistry or allied fields from reputed dental colleges. I am pleased that a large number of dental colleges, through their managements and the Principals/ Deans responded to my request to collaborate in this national endeavour. A list of the participating dental colleges and individuals has been given elsewhere in this report.

I would particularly like to acknowledge the contribution of the members of the core technical team for all pre-survey planning and designing activities, who include Drs V.B. Mathur, P.P. Talwar, Shankar Aradhya, S.S. Hiremath, K.V.V. Prasad, M.B. Aswathnarayan, (Ms) Amrit Tiwari, and S.G. Damle.

A central team was established early in the course of the survey at the office of the Dental Council of India to help develop project protocols, coordinate and liase with regional coordinators, manage logistics, compile, computerise and analyse data and develop tabulation plans and reports. This report, for which there was no precedence or example, is evidence of the hard work and professional competence of the team. As the leader of the team, it is with a sense of pride and satisfaction that I acknowledge the painstaking and dedicated work of the members, namely Dr. V.B. Mathur, Prof. P.P. Talwar and Mr. H.B. Chanana.

I gratefully acknowledge the cooperation and support of the Municipal Corporation of Delhi, particularly its Health Officer and Director, Health Services, Dr. K N Tiwari, who spared the services of Dr. V B Mathur for this national cause.

It would be impossible to conduct a large scale national survey of the present magnitude without sufficient resources. We are indebted to our esteemed partners, Colgate-Palmolive Co., U.S.A., and Colgate-Palmolive (India) Ltd., for supporting the project.

I am sure that results of this survey will pave the way for improving the oral health of the people of India. We recognise that this is only the first step in this direction, where oral health problems and related practices have been identified. The next crucial step will be to use the findings of this survey to plan and implement an appropriate and need-based oral health programme. Here, I hope the national and state governments will use the findings of the survey for planning and implementation of oral health programmes.

As President of the Dental Council of India, I would emphasise and recommend to all those concerned with dental education in the country to review the oral health needs of the people in the context of dental education and use the results of the survey to help strengthen the teaching/ training curriculum of the dental colleges. The students should be taught to look at survey results critically and make decisions about dental care strategies based on age, geographical areas and disease levels in the communities they serve. The dental colleges should use its findings and lay the correct emphasis so that the oral health needs of the people are met with quality services.

This survey must not remain a solitary event. We must ensure that a MIS (Management Information System) is established so that future trends of oral disease and action taken to combat it are monitored regularly through continuing periodic surveys.

The challenge for all of us lies in ensuring a more equitable and need based distribution of resources for oral health, making sure that the benefits of the survey reach the communities in improving their oral health.

Dr R. K. Bali

President, Dental Council of India.

July 2004.

PREFACE

The National Oral Health Survey & Fluoride Mapping of the Dental Council of India is the first-ever national-level epidemiological survey in the country, the need for which was felt for a long time. This massive initiative could not have been carried out without the partnership, participation, cooperation, support and help from a number of institutions, organizations and individuals, all of whom have directly and indirectly assisted the Dental Council of India in this magnanimous task.

We are indebted to the Ministry of Health & Family Welfare for providing the necessary permissions and management support since inception. We gratefully acknowledge the valuable contribution made by the Chief Director, Dr. K.V.Rao, National Family Health Survey, at the stage of sampling design, sample selection and training. We also gratefully acknowledge the contribution of Professor Fauj Ram, of the International Institute for Population Sciences, Mumbai, who was instrumental in setting the sampling frame for the selection of rural and urban primary units from where households were selected for data collection.

In the planning phase, the proposed survey was discussed with international experts in the field of oral epidemiology, health promotion and community dentistry. Prominent among these were Professor Aubrey Sheiham, Head, Department of Community Dentistry, University College, London; Professor Robert Bagramian, Chairman, Department of Community Dentistry, University of Michigan, Ann Arbor, USA; Professor Martin Hobdell, Ireland; and Dr Michael Craft, UK. We remain most indebted for their valued inputs and time.

Dr. P E Petersen, Responsible Officer, Oral Health Program, World Health Organization (WHO), Geneva, found time and visited us at the Dental Council of India, New Delhi, in November 2002. He volunteered the full cooperation and support of the WHO for the project, including assistance in data analysis and reports. We gratefully acknowledge his valuable inputs and feel sure that the information collected will find its appropriate place in the oral global databank maintained by the WHO and in their other publications.

The active participation of dental colleges, their managements, Principals Deans and faculty was envisioned since the inception of the project planning. It was, however, most gratifying to note the extent of enthusiasm and support that was received from the managements and faculty members of some of the colleges. They took upon themselves to meet Herculean challenges that were in front of them in the face of limited resources. The role of some of the colleges strengthens our belief that our colleagues are alive to their professional responsibilities and are dedicated to selfless service in the interest of research and community benefits.

The chairperson, Dr. Ram Das Pai, and the management, faculty and staff of the Manipal Academy of Higher Education (MAHE), Manipal (Karnataka), deserve a special thanks for co-hosting the large-scale training and calibration meeting for all Regional Coordinators and Supervisors at the Manipal Dental College in March 2002. We would specially like to record our sincere appreciation of the Dean, Dr. Shobha Tandon, and her able team, including Dr. V Surendra Shetty, Dr. Soben Peter and others for the professional management of this meeting and the excellent hospitality extended by them.

We also extend a very special thanks to Dr. S.G. Damle, Dean, Nair Dental College & Hospital, Mumbai, who co-hosted the report-writing workshop in January 2004 in Mumbai, where issues relating to state reports were discussed.

The central survey team, from time to time, has received valuable suggestions and active feedback from some senior members of the profession, including Drs. Ganesh Shenoy, Shankar Aradhya, A Jaykumar, S S Hiremath, S G Damle, N C Rao, and Mahesh Verma, and we wish to place on record our appreciation and grateful thanks for their inputs. Drs Arundeep Kaur, Pankaj Goel and C L Dileep assisted the central team in Delhi from time to time and deserve our sincere thanks for their inputs.

We are indebted to the members of the Executive Committee and the General Body of the Dental Council of India, New Delhi for their wholehearted support to this initiative of the Council President. We gratefully acknowledge the able leadership of Mr A L Miglani, Secretary (Retd.), the Secretary Incharge of the Dental Council of India, Mr S S Arora, and Mr C L Bhatia, Coordinator, who though working in the background put in every effort for the success of the survey. While every member of staff has made a valuable and selfless contribution to the survey, we wish to place on record the special contribution of Mr K V Abraham, Mr P K De, Mr. Shiv Kumar, Mr. Praveen Dewan, Mr. Puneet Bansal, and Mr. Anil Verma.

We acknowledge the valuable support, both technical and financial, provided by Colgate-Palmolive. While technical support was provided by Dr. Tony Volpe, Dr. Kedar Rustogi, Dr. Raj Kohli and Dr. Surendra Manek, valuable project management input was given by Mr. Mahendra Jauhari and Mr. Mahender Ashtekar.

Fluoride mapping of drinking water sources in the country to determine areas with optimal or high levels of fluoride was an integral part of the project. Dr. P M Dixit, his team and the management of M/s Medlar Labs, Mumbai, deserve our special thanks, as they were instrumental in completing the task of analysing more than 4,000 water samples that they received directly from the Regional Coordinators as per schedule despite various constraints.

We acknowledge the support of TNS MODE, New Delhi, a prominent marketing, advertising and research organization, who took responsibility of computerization and tabulation of the massive data sets and provided tables according to our tabulation plan. Later on, they also helped in the collection of water samples from the states which could not be covered so far under the survey.

We appreciate the efforts and patience of Mr Rajiv Mathur, an independent Consultant in Information Technology and data management, who has painstakingly worked in programming and reprogramming till we were satisfied with the final set of tables.

We wish to record our gratitude and thanks to all other organisations and individuals, whose names do not appear here but who have supported our work and contributed towards its success in one way or the other.

Dr. R. K. Bali

Dr. V. B. Mathur

Prof. P. P. Talwar

H.B. Chanana

July 2004.

ACKNOWLEDGEMENTS

(State Coordinator)

This project is the fruit of the hard work of several people. While it is impossible to mention all by name, there are some whom I would particularly like to thank.

First of all, I wish to thank the DCI Survey team members Dr. R.K. Bali, Dr. V.B. Mathur, Prof. P.P. Talwar and Mr. H.B. Chanana for their help, advice and support throughout the survey.

I am thankful to Mr. Chandrasekharan Nair, Chief Secretary, Kerala State, and Mr. K. Ramamoorthy, Principal Secretary for Health and Family Welfare, Kerala State, for their support and help.

The Director of Medical Education, Dr. K.A. Kumar and Director of Health Services, Dr. Rajan, gave us their wholehearted support and were kind enough to permit the use of staff and facilities of their departments for the survey.

I am very much thankful to the Principals of the Thiruvananthapuram, Calicut and Kottayam Dental Colleges, Dr.T. Sreelatha, Dr.M. Hareendranathan and Dr. Ramakrishnan E., respectively, for deputing required staff and house surgeons and enabling the use of facilities of their colleges for the survey.

All Heads of Departments of the Thiruvananthapuram, Calicut and Kottayam Dental Colleges supported the survey by their guidance and cooperation. The officials and leaders of various locations, the staff of the Revenue Department and the Census Directorate helped us in selecting the locations and enabling the smooth conduct of the survey.

The supervisor, Dr. V. Ravindran, was with me throughout the survey, helping me in all stages of the work. I appreciate the effort taken by Dr. K. Hari Kumar for the survey in Kottayam district. I thank all regional coordinators and team members for their sincere and dedicated work, which made the project a great success.

I thank Dr. Latha for typing and formatting the report. I also thank all others who were directly or indirectly involved in this venture and helped us.

Last, but not the least, I thank the Almighty who showered his blessings upon us to make this tedious task easy.

Dr. K. Nanda Kumar
State Coordinator
Kerala State

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CHAPTER 0
EXECUTIVE SUMMARY

1. GENESIS

Oral health is a very important component of general health. However, it is one component about which there is very little awareness and little clear understanding of the implications of the consequences of ill-health. The high prevalence of dental diseases, like dental caries, periodontal diseases, various stages of malocclusion, besides lack of access to the required services leads to significant absenteeism and economic loss, apart from the ill-effects on the health of the person afflicted. In view of the adverse effects of poor oral health, it is important to take preventive measures and create the required services. For this purpose, it is necessary to know the prevalence of oral health problems and understand the dental health practices that people follow. Such information is basic for formulation of oral health policies and implementation of appropriate programmes to improve the awareness and knowledge of general public about the preventive aspects of oral health, to create the required services and to train the necessary dental manpower to meet these needs.

The Dental Council of India has been greatly concerned about this gap in knowledge and the resultant lack of appropriate policies and programmes. There has been a long-felt need for an epidemiological study on oral health problems, which would also include a study of the related oral health practices besides mapping fluoride levels in drinking water from various sources in the country. Such a study may help bring about a balance between the oral health needs of the people and the services provided, and help plan and organise need-based services to improve the level of oral health of the people.

Keeping this in view, the Dental Council of India undertook a national-level epidemiological study, "National Oral Health Survey and Fluoride Mapping," to assess the oral health problems of the people and practices they adopt in this regard. The present study is a community-based survey with the objectives of assessment of (1) awareness and knowledge of people about oral health problems; (2) current status of oral health problems in the community; (3) practices people adopt for both prevention and treatment of their oral and dental problems; and (4) levels of fluoride in the drinking water of the people across the country. The survey, initiated in 2002, aimed at knowing the ground situation to help decision-makers formulate policies and programmes to improve the oral health of the people. Mapping of fluoride levels in drinking water was made a part of the survey since the fluoride level is directly associated with oral health problems, such as dental and skeletal fluorosis.

2. SCOPE OF THE SURVEY

The scope of the survey was to collect information covering the following dimensions of oral health:

1. Prevalence of oral health problems,
2. Fluoride levels in drinking water,
3. Eating habits affecting oral health,

4. Dental cleaning practices,

5. Awareness and knowledge of people on factors affecting oral health, and

6. Treatment-seeking behaviour of people for their oral health problems.

It must be noted that this survey delved into areas much beyond the usual ambits of oral health surveys, which generally focus on the levels and problems of oral health in the community. This survey, on the other hand, collected data on many more dimensions so as to enable an understanding of the practices that cause oral health problems and the steps people take to seek treatment.

3. DESIGN OF THE SURVEY

Recognising the fact that India is a vast country with great diversity in eating habits and behavioural practices, the survey was designed and conducted so that state-wise oral health problems and related practices could be determined. This is to help the formulation and implementation of state-wise policies and programmes.

3.1 Sample size

Three considerati ons were kept in mind while deciding upon the sample size: (1) The estimates should be valid at the state level; (2) Intra-state regional variations may be captured in oral health problems and practices; and (3) It should be possible to complete the survey of the proposed sample within the limited budget available. In view of these, the WHO recommendation, that the sample comprise 300-600 dental examinations of people aged 5, 12, 15, 35-44 and 65-74 years from a homogeneous region, was adopted. Accordingly, it was decided that 315 households, both in rural and urban areas, would be taken from each homogeneous region in a state, and oral examinations done on 315 subjects in each identified age group. Also, the sample size would increase in case all the 315 subjects in each of the five identified age groups (5, 12, 15, 35-44 and 65-74 years) were not available in the selected 315 households. Besides, it was also decided that the examinations in each age group would be equally distributed between males and females. Further, of the selected sample size of 315 households, 210 households were to be from rural areas and 105 from urban areas. Thus, 105 males and 105 females were examined in each of the five age groups from the rural areas, and 53 males and 53 females in each age group from the urban areas.

3.2 Sample selection

Each state was divided into a few homogeneous regions, comprising of a number of districts, on the basis of agro-climatic factors used by the Planning Commission and the physio-geographic factors used by the Office of the Census Commissioner and the Registrar General of India. The total sample of households from a state thus depended upon the number of such homogeneous regions.

A three-stage sampling design was adopted to select 210 rural households from each homogeneous region. The first stage was the random selection of a district from a region. The second was selection of 15 villages with probability proportional to size (pps) of the village, and, finally, selection of 14 households randomly from each selected village.

In the case of the urban sample of 105 households from a homogeneous region, eight blocks/wards were randomly selected from the selected district. From these eight blocks, 15 wards or census enumeration blocks (CEBs) were randomly selected (each CEB has almost equal population). In the next stage, 7 households were selected from each CEB. Again, 105 subjects from each age group (5, 12, 15, 35-44 and 65-74) were to be examined, with males making up half the number, and females the other half.

4. STUDY TOOLS

In order to encompass all the objectives of the study, two types of questionnaires/schedules were used in the survey. One was the WHO schedule on Oral Health Assessment and the second was an individual questionnaire (specially developed by the Dental Council of India) for collecting information on etiologic factors related to oral health awareness, knowledge and practices of individuals on factors affecting oral health, and their treatment-seeking behaviour **Annexures**.

5. DATA COLLECTION

A small nucleus, Central Survey Unit, was set up in the office of the Dental Council of India in New Delhi. For the fieldwork, one dental state coordinator and his/her dental college were selected for each state. This coordinator was to oversee the fieldwork in the state in coordination with the Central Survey Unit. Each coordinator was to form field teams consisting of two dentists and one social worker. While the dentists were to examine the oral health of the subjects and record information on the Oral Health Assessment questionnaire, the social worker was to record information on the questionnaire related to etiological factors.

Great care was taken to ensure that the quality of the data collection met stringent standards. Besides a state coordinator, supervisors were appointed to move with the teams when they went for data collection. The coordinators, supervisors, of the dental colleges, were given total responsibility for the scrutiny and checking of the data. The data was scrutinised at three levels, in the field, in the state coordinator's office and at the central level, before processing.

Besides, water samples were taken from the selected households for testing fluoride levels, and all such tests on these samples were conducted in a laboratory in Mumbai.

6. CALIBRATION AND TRAINING WORKSHOPS

A three-day calibration and training workshop was organised where all the coordinators and supervisors were given training in field logistics, data collection, and standardisation of the assessment of oral health problems. The last is very important, and very thorough training was imparted for it, so that all field teams adopted uniform assessment methods in recording dental problems. A workshop on report writing was also organised in Mumbai to standardise the format & writing of each state report. This was necessary because some coordinators undertook responsibility of writing reports for their respective state. Of course some state reports were prepared by the Central Survey Unit.

7. AREA COVERAGE IN SURVEY

National Oral Health Survey was designed to cover all Agro-Climatic regions of the state. All the three Agro climatic regions into which the state is divided were covered in the survey.

8. FINDINGS (ORAL HEALTH KNOWLEDGE AND PRACTICES)

8.1 Characteristics of households surveyed

- More than 65 per cent of the subjects live in semi-pucca houses with only 4 per cent reported living in kuccha houses. However, in the Hills region, 18 per cent of the households, are among region live in kuccha houses.
- A majority of the households (65 per cent) had monthly income less than or equal to Rs 2,500.
- 45 per cent of the households belonged to Hindus and other 46 per cent belonged to the Muslim community. In Coastal Midland region, more than 64 per cent of the subjects were of Muslims, while in the other two regions, about 64 per cent of the households were of Hindus.
- About 60 per cent of the households belonged to OBCs.
- Only 8 per cent of the households depended on tap water for drinking water.
- Rice was the staple food of more than 98 per cent of the households, with over 95 per cent being non-vegetarians.

8.2 Profile of population in surveyed

- Literacy is very high in the state, i.e. more than 95 per cent. No significant difference between male-female or urban-rural population was seen in this regard. However, a lower level of literacy was seen in the 65-74 year age group as compared to other age groups.
- About 95 per cent of the population except 65-74 year olds had the habit of reading newspapers. In contrast, in the Hills region, more than 60 per cent of the subjects did not have the habit of reading newspapers.
- Exposure to radio and TV was quite high, with 90 per cent of the population had radio listening habits and 80 per cent TV viewing habits.
- In contrast, only 30 per cent of the people had cinema-watching habits.
- Both educational status and media exposure was considerably low in the Hills region compared to the other two regions.

8.3 Abnormal oral health habits across sge groups

- The habit of breathing from the mouth was seen to be slightly higher in the 15-year age group subjects (2.2 per cent for males and 0.8 per cent for female) and more in the urban areas as compared to the rural areas.
- The habit of grinding/gritting teeth was higher in the 65-74 year age group.

8.4 Sweet/sugar-taking habits across age groups

- There was a higher sugar intake in the rural areas than in the urban areas, with no significant difference seen across the sexes. It was also seen that sugar intake decreased as age advanced.
- The percentage of subjects who had not taken sugar in the previous 24 hours was about 15-25 per cent for subjects up to 15 years of age, going up to 35 per cent for the 35-44 year age group and to 54 per cent in 65-74 year age group.
- In the 5-year age group, more than 30 per cent of the subjects had taken sugar two or more times in last 24 hours.
- In the 5 and 12-year age groups, sugar intake was found to be higher in the Midlands.

8.5 Oral hygiene practices across age groups

- The practice of cleaning teeth was universal.
- About 85-90 per cent in all age groups, except in the age group 65-74 years, across both sexes and more subjects in urban areas reported using toothbrush to clean their teeth. Use of toothbrush was lower in the Hills.
- About 60 per cent, across both sexes and more people in rural areas cleaned their teeth once a day. In urban areas, more people reported cleaning them twice a day.
- About 80 per cent, except 65-74 year olds across ages and sexes, and more subjects in the urban areas reported the use of toothpaste. Usage was more in the Midlands.
- About 80 per cent, across all ages and both sexes, and more in rural areas reported the use of non-fluoridated toothpaste/powder.
- About 40 per cent, across all ages, more males and more in urban areas changed their toothbrush once in 1-3 months. The change was less frequent in rural areas once in four to six months or even after six months.
- Almost all the respondents in the state and in the Coastal Midlands and Midlands, across all ages and both sexes, reported rinsing their mouth after every meal. But in the Hills region, 35-40 per cent had rinsed their mouth sometimes after meals.

8.6 Dental problems and treatment aspects across age groups

- The percentage of subjects who had dental problems in the last one year was about 20-30 per cent across age groups, and across sexes, and rural and urban areas.
- The most common problem reported was dental decay. The problem of gum disease increased with increase in age. About 17 per cent in the higher age groups (35+) reported problems of gum disease.
- About three-fourth of those had problems across all ages, consulted trained dentist. However, about 45 percent, across all ages and both sexes, but more in urban areas reported the availability of governmental dental facility. Against this, more were aware of private dental care facility.

- Most respondents reported less than half-an-hour to reach the dental care facilities. This was especially so in urban areas. However, in the Hills region, half the respondents said half an hour to one hour to reach the dental care facility.

8.7 Awareness of dental health problems across age groups

- About 97 per cent of subjects except 65-74 year olds, across ages and both sexes, but more in urban areas, were aware of oral health problems in the state.
- About 7-11 per cent of respondents except 65-74 year olds were not aware of the factors that cause oral health problems. In the Hills region, this figure was higher at 40-50 per cent. Of those who were aware, most of them reported "not brushing regularly" (70 per cent), followed by "eating sweets/ice cream" (35 per cent) as two important factors.
- About preventive measures in regard to oral health problems, 9-12 per cent subjects except 65-74 year olds across all ages and sexes reported no knowledge. Very few subjects (less than 1 per cent said that using fluoride paste or powder would prevent oral health problems.

8.8 Tobacco smoking and chewing habits across age groups

- About 16 per cent in across age groups had the habit of smoking in the state. The habit was more prevalent among males and in urban areas. Higher percentages were reported from the Hills region. In the 35-44 age group, cigarettes were smoked more while Bidis were smoked more in the 65-74 age group. Fortunately, 83 per cent of smokers, across sexes and place of residence, said they smoked less than 10 times a day.
- There was a very low prevalence of tobacco smoking and alcohol consumption in females. Pan chewing with tobacco, was equally prevalent among males and females.
- About 12 per cent, across all ages and place of residence, but more males chewed pan or pan masala with tobacco. Around 80 per cent of them, across all ages and both sexes and place of residence, said they had been chewing it for more than five years.
- About 7 per cent, across all ages, but more males and more in rural areas, said they drank alcohol.

9. FINDINGS (ORAL HEALTH ASSESSMENT)

The oral health status of subjects was clinically assessed in the field conditions by teams of dental surgeons who were previously trained and calibrated. The WHO Clinical Assessment Form (1997) was used to record the clinical conditions. The clinical findings are presented in this report in Chapter VI under the following broad heads:

1. Dental Caries status & Treatment Need
2. Periodontal Disease status
3. Malocclusion status
4. Oral Cancers and other oral mucosal lesions

5. Dental Fluorosis status

6. Other conditions:

Extra Oral Lesions; TMJ Assessment; Enamel Opacities and Hypoplasia; Prosthetic Status & Need; and Community need for immediate Care and Referrals.

9.1 Dental caries

- The highest percentage of caries experience was seen in the age group of 35-44 years (87.7 %).
- The percentage prevalence of caries experience in the state was 73.0 (5 years); 66.5 (12 years); 68.0 (15 years); 87.7 (35-44 years); and 71.4 (65-74 years).
- The mean DMFT values of different age groups were: 1.7 and 1.8 respectively in 12 and 15 years age group; 5.1 in 35-44 yrs age group; and 10.5 in 65-74 yrs age group.
- The mean dmft in 5 years age group was 3.3
- The Significant Caries (SIC) Index, which gives the mean of one third of the subjects with highest dmft/DMFT levels, was applied to all age groups. The SIC Index was high in 5 years age group (6.9). In 12 years and 15 years age group the SiC index was about 3.7. In 35-44 yrs age group SiC index was 9.1. SIC index was highest in 65-74 years age group, which were about 20.1.
- The percentage of subjects with root caries was approximately 25% in both age groups (35-44 and 65-74 years). The percentage of subjects with root fillings was virtually zero.

9.2. Treatment need

- The need for treatment was more than 60 % in all age groups. In 35-44 years age group the need was maximum (87.6 %).
- At the state level, the mean number of teeth, which required treatment, was highest in the age group of 65-74 yrs (6.3 in males and 7.7 in females), followed by 35-44 years age group (4.2 for male and 5 for female).

9.3. Periodontal status

- The periodontal status was assessed using the community periodontal index (CPI) with its three indicators of gingival bleeding, calculus and periodontal pockets. In addition, the loss of epithelial attachment was also measured to provide an indication of status of periodontal health.
- There was a low prevalence of periodontal disease in the of 5 years age group (2.7 % in male and 6.2% in female). It was almost completely due to calculus. As the age increases the prevalence of periodontal disease also increases. It was 47.1 % in 12 years age group, 53.2 per cent in 15 years age group, 78.6 per cent in 35-44 years age group and 74.7 per cent in 65-74 years age group in males and females respectively.

- Percentage of subjects with calculus as the highest score was the major contributor of periodontal disease. The percentage of subjects with deep pockets were nil in smaller age groups (5,12 and 15 years age groups) and it was very low in elder age groups also.
- In 5 and 12 years age groups the rural population was more affected, but in higher age groups the urban population was more affected.
- Mean number of sextants with pockets more than 6 mm was very low. As the age increases the severity of periodontal disease also increases. The excluded sextants increased in 65-74 years age group. It may be due to missing teeth.
- Overall, the proportion of subjects with loss of attachment in one or more sextants was lowest in the 15 years age group and highest in the 65-74 years age group.
- The proportion of subjects with loss of attachment was almost equally distributed across both sexes.
- Mean number of sextants with loss of attachment was low in 15 and 65-74 years age group, but comparatively high in 35-44 years age group.
- There were no male female or rural urban difference in the severity of periodontal disease.

9.4. Malocclusion Status

- The Dental Aesthetic Index (DAI), recommended by the WHO, was used to analyze the severity of malocclusion in the surveyed population.
- Malocclusion was virtually absent in 5 year old children whre only primary teeth are present.
- Malocclusion was unusually high in the state in higher age groups. It was 78 per cent (12 years); 78.1 per cent (15 years); and 79.2 per cent (35-44 years). The majority of those with malocclusion had 'definite' malocclusion followed by 'severe' and 'very severe' malocclusion.
- The prevalence of malocclusion was more in urban when compared to the rural population.

9.5. Oral Cancer & Oral Mucosal Lesions

- The prevalence of oral mucosal lesions was quite low in the state
- It increases with age. Only 0.15% of 5 years age group, 0.3% of 12 years age group, 1.4% in 15 years age group, 3.5% in 35-44 years age group and 8.8% in 65-74 years age group had oral mucosal lesions.
- In Region 3 there was a significantly increased prevalence of oral mucosal lesions in all age groups. In 65-74 years age group the percentage of subjects with oral mucosal lesions was 25.2% of male and 21.2% of female population. Even in 5 years age group 1.5% was affected with oral mucosal lesions. 0.9% of 35-44 years age group females and 1.3% of 65-74 years age group females had oral cancer in Region 3.
- 6% of both male and female subjects were affected by leukoplakia of buccal mucosa and 27% of population had other lesions of buccal mucosa. 6% of the population had lichen planus of the buccal mucosa.

- The rural population was affected more than the urban.

9.6. Dental fluorosis status

- Prevalence of fluorosis was 1.7 % in 5 years age group, 1.4 % in 12 years age group, 1.5 % in 15 years age group, 1.7% in 35-44 years age group and 0.5 % in 65-74 years age group.
- Moderate or severe fluorosis was almost nil in the state.
- There was some regional variation but there was no marked gender related differential. The distribution between rural and urban areas was somewhat even.

9.7 Other lesions

9.7.1 Extra oral lesions

- There were no extra oral lesions detected in 12 years age group. In 5 years age group only 0.5% got extraoral lesions.
- The percentage of subjects with extraoral lesions was highest in 65-74 years age group (0.8% in both male and female).
- In Region 3 there is a higher prevalence of extraoral lesions in 65-74 years age group (2.5 % in male and 1.45% in female).
- There was an increased prevalence of extraoral lesions in rural area in all age groups when compared to urban area.
- There is no much male female difference.

9.7.2 T M joint symptoms and signs

- None of the male and female subjects in the age group of 5 years and 15 years had any TMJ symptoms or signs. 0.5% of 35-44 years age group and 3.4% of 65-74 years age group had TMJ symptoms.
- TMJ symptoms were higher in urban than in rural. In the age group of 35-44, 1.75% of urban population was having TMJ symptoms while only 0.3% of rural population got the symptoms. In 65-74 years age group, the values were 7.2% and 2.2/% for urban and rural respectively.
- Males were affected more than females

9.7.3 Enamel defects (opacities, hypoplasia)

- Overall, there was an even distribution of the enamel defects by age groups and sex in the state of Kerala.
- The defects appeared to be evenly distributed in rural and urban areas.
- The proportion of subjects with enamel defects ranged from 2.5% in females in the age group of 65-74 years to a maximum of 8.3% of 15 years old males.

- The most prevalent enamel defect was diffuse opacity followed by demarcated opacity across age groups.

9.8 Prosthetic status & need

- The dental prosthetic status and need for both upper and lower dental arches was recorded for subjects 15 years and above. The information was collected to assess the extent to which subjects were wearing or needing dental prostheses including bridge, partial dentures and full dentures.
- No subjects were wearing prosthesis in the age group of 15 years.
- There was a higher need for prostheses as the age advanced. About 2.8% of the subjects examined required a one-unit prosthesis in the subjects aged 15 years. In the age group 35-44 years, the most prevalent need was for multi-unit prostheses followed by one-unit prostheses.
- The full denture was the most prevalent prostheses amongst the 65-74 yrs age group followed by a much lower prevalence of partial dentures. In the age group 35-44 years, the most prevalent prostheses were the partial dentures.
- The prevalence of subjects wearing prostheses was more in urban than in rural areas.
- More males needed prostheses than females.
- About 39% of 65-74 yrs age group needed full prostheses.
- In the subjects aged 15 years the most prevalent need was for one unit prostheses followed by the need for multi-unit prostheses. In the 35-44 years old subjects, the most prevalent need was for multi-unit prostheses followed by the need for one unit prosthesis.

9.9 Community need for immediate care and referrals

- Overall, life threatening and painful or infective conditions were extremely rare in the state.
- There was an increased rate of life threatening condition in urban males in the age group of 35-44 years (1.8%).
- Pain or infection was relatively high in the 5 years age group in both rural and urban areas (5.4% in rural and 3.75% in urban).
- Pain or infection was found to be in a higher proportion in rural subjects, compared to their urban counterparts.

Summary of findings of important oral health conditions and practices by age in Kerala

	Findings	Age in years				
		5	12	15	35-44	65-74
1.	**Oral disease conditions**					
1.1	Dental Caries					
	% Prevalence	73.0	66.5	68.0	87.7	71.4
	Mean DMFT	3.3	1.7	1.8	5.1	10.5
	SiC Index	6.9	3.7	3.7	9.1	20.1
1.2	Periodontal disease					
	Bleeding, calculus or pockets					
	% Prevalence	4.5	47.1	53.2	78.6	74.7
	Mean no of Sextants affected	-	1.1	1.8	3.3	1.8
1.3	Loss of attachment					
	% Prevalence	NA	NA	9.7	45.1	69.5
	Mean no of Sextants affected	NA	NA	0.3	1.5	1.4
1.4	Malocclusion (%)	1.3	78.0	78.1	79.2	-
1.5	Dental Fluorosis (%)	1.7	1.4	1.5	1.7	0.5
1.6	Oral mucosal conditions (No.)	3	3	10	43	62
1.7	Oral Cancer (Nos.)	0	0	0	1	2
1.8	Edentulousness (%)	NA	NA	0.0	2.2	41.7
2	**Oral Health Practices**					
2.1	Sugar Intake in last 24 hours					
	Once	15.2	16.1	17.2	23.5	17.4
	Two & more times	69.2	65.8	57.9	39.8	28.2
2.2	Clean teeth with					
	Tooth Brush	87.3	87.5	87.9	87.1	50.2
	Fingers	12.8	12.5	12.2	12.9	35.3
2.3	Rinsing mouth					
	Always	87.7	87.5	87.9	87.1	50.2
	Sometimes	11.6	7.2	7.7	6.9	9.0
2.4	Tobacco smoking	NA	NA	NA	18.1	14.8
2.5	Frequency of tobacco smoking					
	Less than 10 times	NA	NA	NA	81.2	84.9
	10 or more times	NA	NA	NA	18.8	15.1

CHAPTER I
INTRODUCTION

1.1 BACKGROUND OF THE STATE

1.1.1 Geographical location

Kerala acquired the status of a state within the Indian Union, with Thiruvananthapuram as its capital, on November 1, 1966. It has a total land area of 38,863 sq.km, or 1.18 per cent of the country's land area.

On the basis of physical features, Kerala can be divided into three natural regions – Highlands, Midlands and Lowlands. The state accounted for 3.1 per cent of India's population in 2001. At the time of the 1991 census, the state was divided into 14 districts and 61 taluks. Since then the number of taluks has risen to 63.

1.1.2 Population and demographic profile

The 2001 census put Kerala's population at 31.8, up from 29 million in 1991, a decadal growth rate of only 9.4 per cent. This was much lower than the 21.3 per cent recorded for the country as a whole. Population density in Kerala increased from 549 in 1971 to 655 in 1981 and 749 in 1991. This was almost three times the density of the country as a whole (273). The increase in population density indicates increasing pressure on land and other resources. The only other states with a population density greater than Kerala are Bihar and West Bengal.

Kerala has been undergoing slow but steady urbanisation. The percentage of the total population living in urban areas increased from 16 per cent in 1971 and further to 19 per cent in 1981 to 27 per cent in 1991. According to the 1991 census, 10 per cent of the state's population comprises Scheduled caste and 1 per cent Scheduled Tribes.

1.1.3 Socio-economic characteristics

According to the 2001 census, Kerala is the most literate state in India, with a literacy rate of 91 per cent for the population of age 7-year and above. By contrast, the corresponding literacy rate for the country as a whole is only 65 per cent. Literacy rates are 94 per cent for males and 88 per cent for females in the state, compared with 76 per cent for males and 54 per cent for females in the country as a whole.

Kerala is predominantly an agricultural state, with 73 per cent of its population living in rural areas. In fact, the agricultural sector had a 31 per cent share of the state domestic product in 1996-97 down from 34 per cent in 1980-81 (EPW Research Foundation, 1998). At the time of the 1991 census, the agricultural sector provided livelihood for 48 per cent of the state's labour force (Office of the Registrar General and Census Commissioner).

Rice is the only major serial crop grown in Kerala. Nearly 76 per cent of the agricultural land is under non-food crops. Coconut palms and other cash crops such as tea, coffee and rubber are among the most important products of the state.

Kerala is an industrially backward state, with only a few industries manufacturing cement, fertilisers, aluminium and automobiles. The average annual per capita net domestic product of the state increased from Rs 1,508 in 1980-81 to Rs 2,363 in 1996-97 at constant 1980-81 prices or Rs 9,066 at current prices (EPW Research Foundation, 1998).

As per estimates given by the Planning Commission for 1993-94, 25 per cent of the state's population was below the poverty line (Central Statistical Organisation 1999).

1.2 NEED FOR ORAL HEALTH SURVEY

1.2.1 Oral health problems

Oral Health is a very important component of the general health of the people. The high prevalence and severity of oral diseases such as dental caries, periodontal disease, oral cancers and various stages of malocclusions and crippling nature of these diseases lead to significant absenteeism and economic loss. Dental illness, thus contributes to considerable reduction in national productivity and overall national development.

It is reported that almost 85 percent of children and 95-100 percent adult population suffer from periodontal disease at a point in time. About 35 percent of children suffer from misaligned teeth and jaws affecting their proper functioning. These children lose their school time, and suffer from pain of dental origin. This not only affects their routine life activities but also causes a good deal of discomfort to their parents in several ways. These dental problems are initially painless but become chronic and self-destructive later, thus leading to gradual tooth loss. The dental caries has a crippling effect on the functional components of oral cavity that leads to malnutrition because of incapacity to chew any coarse food available to them. Unfortunately, this is still not considered a public health problem and thus no action is taken to correct it. In other words, there is need to make people aware of preventive and curative aspects of oral health so that quality of life of people could be improved.

The oral diseases also have an adverse effect on the vital organs of the body. The pus oozing pockets in advanced periodontal disease in adults act as a focus of infection for other vital organs of body like kidney, heart, lungs, brain etc. Limited information available from the micro level studies suggests that 35-40 percent of body cancers are oral cancers. That is, incidence of simple oral morbidity becomes chronic and ultimately life-threatening. One needs not only to take preventive measures, but early curative steps as well. It is unfortunate that oral health has received much less attention perhaps because of its lower life threatening risk. Its role in quality of life, now, has been recognized and thus all efforts should be afoot to improve oral health of the people.

Several adverse effects of poor oral health necessitate preventive, curative and educational services/ activities. It requires an understanding of people's knowledge and awareness, attitudes towards oral health and their oral health practices besides the magnitude of the problems and corrective and treatment-seeking measures people adopt. This information is basic for the formulation of policy, developing strategic measures and meeting appropriate manpower needs, and creating programmes for improvement of oral health of people.

1.2.2 Lack of data for policies and manpower development

No authentic, reliable or consolidated data on the magnitude of oral health problems, behavioural practices of people for preventive and curative care, dental manpower, infrastructure and on the appropriateness and efficiency of the existing oral health care services including educational and awareness-raising activities are available in the country. However, a wide spectrum of oral health services exists in many urban/rural areas in India. These services range from rudimentary & sporadic in rural areas to sophisticated and state-of-the-art in urban areas. It is unfortunate that there has neither been any systematic assessment of the need and form of educational activities and curative services, nor of the impact of the existing services on the oral health of the people. The vacuum of an effective monitoring and evaluation system is being felt; the dental professionals are very keen to fill this gap between the emerging needs and the existing services. A strong need exists to understand the oral health care practices and treatment-seeking behaviours of people and to assess the existing oral health care services. An appropriate and relevant oral health policy for the country should address the local problems in the broad context of the overall World Health Organization's (WHO) primary health care approach framework. Ultimately, data needs to be generated to help address and improve the overall oral health of the people in the country.

Since the quantity of intake of fluorides has an effect on dental caries prevention and control, it is also necessary to know the intake of fluoride through water, tooth paste or any other source. This will help to bring out area specific policies to meet fluoride needs of the people.

In summary, two types of studies are needed. One, on the incidence/ prevalence of oral health problems, and the knowledge and behavioural practices of people for prevention as well as treatment of oral health problems. Second, the existing facilities and infrastructure need to be assessed for their cost effectiveness and utilization patterns. Such studies and their analysis will ultimately help in bringing about a balance between the needs and the services to meet these needs.

1.3 INITIATIVE OF THE DENTAL COUNCIL OF INDIA

The Dental Council of India, as per its objective, has always been concerned with the oral health of people in the country. It has, on the one hand, been attempting to strengthen the quality of oral health activities by arranging workshops/seminars to inform and involve dentists in the oral health issues of the country, and, on the other, been raising its concern for the poor oral health situation in the country with the Government. The idea is to work at both the stakeholders for improving oral health in the country. It has been making recommendations and suggesting ways and means to bring about improvement in the overall oral health situation in the country.

1.4 NATIONAL ORAL HEALTH SURVEY

As indicated above, there is need to conduct two types of studies on oral health to bring about a balance between the oral health needs of the people and services to meet those needs. The first is a community survey to assess (i) knowledge of the people on appropriate dental health promoting behaviors including treatment seeking behaviors, and (ii) the oral health status of the population concerned. The second is the survey and assessment of available dental care services. The Dental Council of India undertook a community survey, National Oral Health Survey, to assess the dental problems and practices related to oral health in 2002. This report presents the result of this survey where a representative sample of community members in all the states have

of Dental Colleges readily agreed with his request and expressed willingness to participate in this national endeavor.

The Dental Council of India appointed a core technical committee consisting of experts in oral health and survey methodology (Statistics) to work out technical and field details for the National Oral Health Survey. Joint expertise was felt necessary so that this oral health survey could provide scientific estimates of the prevalence of various oral health problems and knowledge and behavioural practices of people. The members of the committee are listed in the appropriate section in the annexure in this report. **(Annexure-2)**

1.5 SCOPE OF THE SURVEY

This survey recognized the fact that India is a vast country with great diversity in eating habits and behavioural practices which could affect the oral health of people. It was, therefore, decided to conduct the survey in such a way that state-wise oral health problems and practices can be determined. This would help in formulation and implementation of the state-wise policies and programmes on oral health activities and services to improve oral health of the people of each state.

As indicated earlier, it was also decided to collect water samples from representative areas to assess level of fluoride in water because of its implications on the oral health. Such data was ultimately to help in fluoride mapping at state level.

The scope of data collection was enlarged in the sense that it would collect data not only on incidence/ prevalence of oral health problems (WHO clinical form), but also on dental hygiene practices, food habits, knowledge of dental problems and behavioural practices related to dental health.

In this way, the scope of this survey was to have state-wise and national data and reports containing information on the following components of the oral health:

- Prevalence of important oral health problems
- Fluoride mapping
- Dental cleaning practices
- Awareness and knowledge of people on the factors affecting oral health, and their related dietary and dental cleaning practices
- Treatment seeking behaviour of people for their oral health problems.

It also explores association between oral health and its related practices.

1.6 OBJECTIVES

The long-term goal of the survey was to provide state-wise data for improvement of the overall oral health of people in India. It was done by collecting enough information for formulation of national oral health policy and for implementation of oral health programs in each state. All its dimensions of preventive, promotive and curative oral health care were to be addressed in the survey.

More specifically, the objectives of the National Oral Health Survey were:

1.6.1 To collect data on oral health status, particularly on,

- Dental Caries
- Periodontal disease
- Malocclusion
- Oral cancers
- Fluorosis
- Mucosal and Bony lesions

1.6.2 To understand eating and dental cleaning practices that affect oral health and determine the degree of association/ correlation between some of the known etiologic factors which affect oral health status; particularly included were

- Food habits (affecting oral health)
- Eating habits (affecting oral health)
- Dental cleaning practices, and
- Intake of fluoride

1.6.3 To assess awareness and knowledge of people on the factors affecting oral health, and

1.6.4 To determine treatment seeking behaviour of people for their oral health problems.

It was presumed that the data collected would lead to development of programs on preventive, promotive and curative dimensions of the oral health problems in each state. It was also to serve as a baseline data against which progress of the dental programs could be assessed in the future years.

1.7 CHAPTERIZATION PLAN

The report comprises of the following main chapters:

0 Executive Summary

1. Introduction
2. Methodology & Data Collection
3. Background Characteristics of the Surveyed Population
4. Mapping of the Fluoride Levels
5. Oral Health Knowledge and Practices
6. Status of Oral Health

CHAPTER II

METHODOLOGY AND DATA COLLECTION

2.1 BASIC CONSIDERATIONS IN DESIGNING THE SURVEY

The following considerations were taken into account to design the survey:

1. The estimates of oral health problems and related practices need to be made at state level.
2. The study should be able to capture intra-state regional variations in oral health problems. That is, regional differentials (within a state) in oral health problems should be assessed to suggest region-specific programmes.
3. The scope of information should be so decided that the states should be able to formulate state-wise oral health policies and programmes. It means that information should be collected on

- Levels of oral health problems
- Etiological factors which affect oral health
- Behavioural practices in regard to dental cleaning practices
- Awareness of dental problems and practices followed to seek treatment, and
- Fluoride mapping and issues related to fluoride in tooth paste/ powder

4. Available financial resources (limited) should be able to carry the survey in all the states of the country unless some other prohibitive factors operate in a state.

2.2 SAMPLE DESIGN

2.2.1 Sample size

The following considerations were made in working out the sample size:

- The estimates should be valid at state level, and
- Intra-state regional variations in the oral health problems and related practices may be captured.

The World Health Organisation (WHO) has recommended a sample of 300-600 dental examinations of people of ages 5, 12, 15, 35-44 and 65-74 from a homogeneous region of a state. Hence, this sample size was kept in mind while deciding on number of households to be selected from different homogeneous regions (within a state). It was decided that 315 households covering both rural and urban areas would be selected from each homogeneous region in the state. It was expected that this sample of households would give 315 respondents/examinees of each of the five ages 5, 12, 15, 35-44 and 65-74. In case this number of respondents (315 in each of the five ages) was not available from 315 households selected, then more households were covered to get these numbers of examinees/ respondents. It may be pointed out that though this is a lower limit of the sample size recommended by WHO, this study had to settle for this sample size because of the financial constraints under which this study was undertaken.

It may be restated that the sample size of 315 households or more was taken from each homogeneous region within a state. Therefore, there was much larger sample size at the state level; it depended on the number of homogeneous regions in which the state has been divided. For instance, if the state has five homogeneous regions, then the total sample size of the households for the state would be 5x315= 1575 or more households to cover 1575 respondents/ examinees of each of the five ages. In all, 7875 oral examinations were to be done in the above example.

In order to give representation to urban population, which formed a small proportion of the total population in most of the regions in India/state, urban sample was over-sampled so as to get estimates with a reasonable margin of sampling error of the parameters under study. It was decided that two-thirds of the sample would come from rural areas and one-third from urban. Thus 210 households were selected from rural areas and 105 from the urban. Weights (for rural and urban proportions) were applied to these estimates to get parameter estimates at the stratum (region) level and then at the state level.

As indicated above, though it was expected that 315 households from each region would give a sample of 315 individuals from the ages 5, 12, 15, 35-44 and 65-74, yet instructions were given to the field teams that 315 respondents/ examinees from each age were to be covered from each region even if larger number of households needed to be visited and interviewed/ examined.

It was also decided to have equal number of males and females in the sample. Therefore, when the field teams were to visit the households they had to make sure that 315 respondents/ examinees were equally divided between males and females. In other words, the field teams had to start with a larger sample of households in order to cover 315 respondents/ examinees of each of the five ages with equal number of males and females.

2.2.2 Selection of sample

The Planning Commission of India, in an exercise to group districts in homogeneous regions within a state, had divided each of the major states and Union Territories into a few homogeneous agro-climatic regions on the basis of socio-economic indicators and agricultural parameters. In the case of remaining States/Union Territories, the homogeneous physio-geographic regions determined by the office of Registrar General of India, were used as strata/ homogeneous regions within a state. Each homogeneous region thus formed a stratum for collection of data from 315 respondents/ examinees of each age. This number of 315 was equally divided between males and females. The selected states, by homogenous regions and district selected from each region is enclosed in **(Annexure-3)**.

2.2.2.1 Rural sample

In order to get a sample of rural households in a stratum (region), three-stage sampling method was adopted. At the first stage, one district was selected from the group of districts in that particular region; the second stage was selection of 15 villages from the selected district and the third stage was selection of 14 households from the villages selected in the second stage. The selection of the district was done randomly. For the selection of villages, all the villages in the selected district were arranged in an array by size of the village to get cumulative total of village population. This cumulative total array was divided into three sections, each having equal

population size. Five villages with probability proportional to the population size (pps) of the village were selected from each of three sections. Thus 15 villages were selected in the second stage. The list of villages were taken from the sampling frame developed for the Rapid Household Survey, a district-wise survey conducted by the Government of India, and coordinated by the International Institute for Population Sciences, Mumbai; the list was based on the 1991 census. In the third stage, 14 or more households were selected randomly from a village (by dividing it into two equal parts with seven or more household from each part) to get a sample of 14 respondents/ examinees from each of the five ages – 5, 12, 15, 35-44 and 65-74, half of them were to be males. Thus a sample of 210 or more households from rural areas of the district/ region was selected to interview 14 members from each of the five ages 5,12,15,35-44 & 65-74. Half of them were to be males/females in each age.

2.2.2.2 Urban sample

As regards the urban sample, again, three stage sampling design was adopted to select urban households from the selected districts. In the first stage, eight blocks/ wards were selected randomly from the list of urban blocks/wards in the selected district. The second stage was selection of 15 Census Enumeration Blocks (CEBs) from the list of CEBs in the selected eight blocks/ wards (the population size in each CEB is approximately equal). The list of CEBs was obtained from the District Census Office and was for the year 1991. The third stage was a systematic sample of 7 or more households to get seven members of each of the five ages 5, 12, 15, 35-44 and 65-74. Half of them were to be males in each age. Thus a total of 105 or more households were randomly selected from the selected 15 CEBs.

On the basis of this sampling design, the number of households to be covered were 28, 665 or more to cover 28,665 respondents/ examinees in each of the five ages 5, 12, 15, 35-44 and 65-74. Half of them were to be males. The total number of examinations to be done were 1, 43, 325. The actual coverage comes to a minimum of 19845 households. That is, 92,225 examinations were done. Their state-wise, rural/urban distribution is shown in Table- 2.1

Table 2.1(a) : Presents regions/districts within region and sampled district in the state of Kerala

Table 2.1(a) Statement showing regions/districts within regions and sampled district in the state of KERALA

Code	Region	Districts	Sampled District	*Coverage as per design No. of Households*			*Actual Coverage No. of Households*		
				Rural	Urban	Total	Rural	Urban	Total
1	Coastal midland	i) Thiruvananthapuram							
		ii) Alleppy							
		iii) Ernakulam							
		iv) Trichur							
		v) Malappuram	Malappuram	210	105	315	210	105	315
		vi) Kozhikode							
		vii) Cannanore							
		viii) Kasargod							
		ix) Quilon							
2	Midlands	i) Pathnanamthitta							
		ii) Kottayam	Kottayam	210	105	315	210	105	315
		iii) Palaghat							
3	Hills	i) Idduki							
		ii) Wynad	Wayanad	210	105	315	210	105	315
Total	**3**	**14**	**3**	**630**	**315**	**945**	**630**	**315**	**945**

It may be noted that sample size shown, both on the basis of design and actual coverage, is for minimum number of households. They were to give this number of respondents from each of the five age groups – 5, 12, 15, 35-44 and 65-74 years, equally divided between males and females.

2.3 STUDY TOOLS

In order to cover the total scope of the study, two types of questionnaire/ schedules were used for data collection: Oral Health Assessment Questionnaire (WHO, 1997)) for recording the result of the examination of oral health of the individuals and Individual Questionnaire (Especially developed by DCI for this survey) for collecting information on etiologic factors related to oral health awareness, knowledge and practice of individuals on factors affecting oral health and their treatment seeking behaviour. These questionnaires were pre-tested and finalized by the Central Survey Unit in Delhi with the help of consultant. A copy each of the tools used is annexed in this report **Annexure-7**.

2.3.1 Oral health assessment form

This survey used the Oral Health Assessment form recommended by World Health Organization, Geneva. It followed all the instructions given in the WHO publication, "Oral Health Surveys: Basic Methods". By keeping the WHO form as it is, it was considered possible to collect data comparable to other sets of data in the Data Bank of WHO.

2.3.2 Questionnaire on oral health knowledge and practices

As indicated above, this survey did not limit itself to mere oral health assessment because the goal of this survey was to help formulate dental policies and programmes. Therefore, it was essential to collect information on all parameters like food habits, dental cleaning practices and treatment seeking practices that ultimately affect the oral health of people.

The core technical group working on this national survey developed a questionnaire wherein all the information related to factors that affect oral health was collected from respondents/ examinees that were examined for oral health problems. The idea was (1) to understand factors that affected their oral health status, and (2) determine relationship of different etiological factors with oral health status. The questionnaire had the following sections:

1. Socio-economic and demographic characteristics of population
2. Abnormal oral habits
3. Eating habits
4. Oral hygiene practices
5. Pattern of practices for dental treatment
6. Awareness and knowledge of dental problems, and
7. Tobacco smoking and chewing habits

2.4 DATA COLLECTION

Since the individuals of different ages and sex were to be examined/ interviewed (for oral health problems), it was necessary that dentists should be involved in the data collection teams. Therefore, it was decided that dental colleges, particularly Departments of Community Dentistry of the dental colleges should be involved in the data collection work. It was also hoped that their involvement will help reduce cost of the survey as not only their manpower but also their infrastructure and equipments could be deployed in the survey work. This was based on the

assumption that they were willing to cooperate with the task of national survey, the Dental Council of India had taken up, as well as their own professional interest in this long over-due activity for the dental profession. Keeping this in mind, the technical group formed for this survey identified dental colleges and individuals with such an interest in each state whose involvement could be helpful in quality data collection work. The President, Dental Council of India, wrote to these identified individuals and dental colleges to seek their interest in this national effort. The response was very positive and almost all the invitees were very enthusiastic about their involvement. A list of the participating dental colleges is annexed **(Annexure-4).**

The first stage in this data collection work was to set up a Central Survey Unit at the Dental Council Office in Delhi to coordinate all the activities related to this survey in each state. Because of the limited resources, a small nucleus was set up in the office of DCI. This nucleus consisted of an experienced and senior public health dental surgeon whose services were requisitioned on deputation from the Municipal Corporation of Delhi, a full-time statistician and a part-time Consultant in survey techniques.

This Central Survey Unit worked out the fieldwork logistics to get maximum output at the minimum cost. It was decided to send two field teams together in one vehicle to cover one village in a day. Based on the pre-test and the experience of WHO Assessment Form, it was found that two field teams, each of two dentists and one worker of social science background could complete the field work in one village where 14 or more households were to be covered to interview/ examine 14 individuals of each of the five ages in one day. A team of two dentists were to examine mouth of the respondent and complete the WHO Assessment Form – one was to examine the mouth and the other was to record the observations. They were to interchange their roles in order to reduce the fatigue factor. The social science—background worker, the third member of the field team, was to complete the questionnaire related to awareness and practices of the respondents related to dental health.

The quality of data was given utmost consideration. It was decided that supervisors would continuously move with the field teams to guide the data collection work. They were to help the team not only to select the households (as per the study design) whose members were to be interviewed/ examined but will scrutinize the filled in forms before sending them to the state headquarter. Therefore, keeping in view the constraints of funds, it was decided that number of supervisors would be in the ratio of one supervisor for four field teams so that they can accompany the teams alternately (As stated earlier, two teams were to travel together to collect data).

After working out logistics of the fieldwork, it was necessary to identify a team involved in the survey in each state. Three types of persons were needed from each state, a Coordinator, a Supervisor and dentists to form field teams. The former was to coordinate all survey activities at state level and was to liaise with the Central Survey Unit. The latter was to supervise and guide the fieldwork activities of the state field teams (each consisting of two dentists and one with social science background), working under the overall direction of the state Coordinator. The Coordinators were all very senior, experienced persons with research bent of mind – the principals, deans or professors of the departments of Community Dentistry of the dental colleges. **(Annexure -5**). The Technical Committee of the survey identified them. These Coordinators were asked to identify senior dental surgeons from the dental colleges as their field team supervisors in the ratio of one supervisor for four teams.

These Coordinators and Supervisors were to identify field teams for the fieldwork. The number of field teams was to be equal to the number of homogeneous zones/ regions in the state so that field work in a district could be completed in two-month period by one team. Again, two dentists/ dental surgeon/ interns for each team were to be taken from the dental colleges in the state. This was not only to reduce cost of salaries of these dentists but was meant to give them field experience in examination of the mouth under the guidance of supervisors.

2.5 CALIBRATION AND TRAINING

Before start of the work at state level, it was necessary that standardization should be done in the examination and recording of the dental problems. The examiners should have common standards for identifying the dental problems. The Dental Council of India collaborated with the Manipal Academy of Higher Education (MAHE) to organize a three-day training cum calibration Workshop at Manipal, Karnataka during March 2002. All the State Coordinators and their identified Supervisors were invited to this workshop. They were explained the sampling design, various study tools and the field logistics of data collection. They were taken to the field to practice selection of the sample households and fill the questionnaire related to the practices that affect the oral health. They were also taken to the dental chairs of the dental college of Manipal to examine mouths of the patients to decide the dental problems patients had. A good deal of discussion was held along with the Coordinators and the Supervisors to ensure that every body had a common and uniform understanding of the dental problems to record in the form. This exercise was continued till it was felt that every body (Coordinators and Supervisors) had a uniform understanding on how to measure dental problems. This calibration workshop helped in standardization of measurement of the dental problems, which was necessary to ensure comparability of data from state to state. This training of the Coordinators and Supervisors was the first stage; they had to train their field teams who were, actually, to collect data in the field.

2.6 CLINICAL ASSESSMENT AND CONSIDERATIONS

The information on the questions on behavioural practices was asked directly to the respondents and their answers recorded on the prescribed proforma. In the case of clinical assessment of oral health status, there was need for common and uniform understanding of recording criteria amongst field teams. Therefore, special efforts were made to standardize methods of assessment and the field teams were trained and calibrated accordingly. The details on how the clinical assessment was made and some considerations in clinical assessment are described below.

The recording criteria used for various oral health conditions were as prescribed and as described for pathfinder survey methodology in "Oral Health Surveys: Basic Methods", 4th Edition, 1997, WHO Geneva. The WHO Oral Health Assessment Form 1997 was used in the National Oral Health survey. All columns for the clinical data (column no. 32 to column no.180) were filled up by the teams in the field while conducting the survey for each individual.

The main instruments and utilities which formed a part of the field kit bag carried by each of the teams during the course of clinical examinations were:

1. Mouth Mirrors, Tweezers, Curved double ended probes and WHO CPI ball ended probes.

2. Supplies of cotton rolls, masks and gloves, cold sterilizing solution, alcohol or spirit, instrument trays and chittle forceps. The cold sterilizing solution was used in field conditions for the instruments although the sets of instruments were previously boiled for 20-30 minutes.

3. Lightweight folding chair for clinical dental examination of subjects.

4. Torches and batteries.

A portable, lightweight field chair was used to seat the subjects in such a manner that the head was placed aligned with the back of chair and the lower jaw was horizontal (parallel to the floor). Examinations were carried out in natural light (daylight) and a simple two-cell torch was used to illuminate the oral and dental tissues in the mouth. The examiner stood behind and on side of the subject while examining the subject. The combination of natural and torchlight was used to provide consistency of lighting during examinations of different subjects and provide sufficient light for clear visibility in the mouth. The torch was held in place by an assistant from within the team or from the community where the examinations were being carried out. (As stated earlier, all trainers were trained in Manipal training workshop to adopt this method. The teams in all states were trained to use this method to ensure that the approach and results were uniform and widely comparable.)

Clinical oral examinations were carried out by previously trained and calibrated dental surgeons who worked in pairs in the field while surveying subjects. The dental surgeons working in the field were normally interns, junior residents or other dental surgeons drawn from regional dental colleges carefully chosen for the task by senior faculty members responsible for the survey in their area. Two dental surgeons formed one clinical examination team. One member was the examiner, who examined the selected subject and called out the scores for each item of examination clearly. The other member was the Recorder, who again called out or repeated the scores loudly and clearly for the examiner to hear and either confirm or correct, as necessary, and then enter it in the appropriate place in the paper proforma for each subject examined. In order to avoid monotony and fatigue, the roles of the examiner and recorder were interchanged from time to time; they did not exchange their role during the course of any one examination.

The teams used instruments and utilities as mentioned above for the detection of caries, periodontal disease and most other conditions. Sufficient numbers of instruments were carried everyday by field teams after proper sterilization so that work was not interrupted due to the need to re-sterilize instruments.

The data was collected by the field teams led by their supervisors and scrutinized by the State Coordinators who forwarded the filled up forms to the Central Project Cell in the office of the Dental Council of India in New Delhi. In Delhi, the clinical data forms were scrutinized again by the central project team before sending them for analysis and preparation of tables.

The clinical findings are presented in Chapter VI of this report under the following broad heads:

1. Summary of Findings

2. Dental Caries Status and Treatment Need

3. Periodontal Disease Status

4. Malocclusion Status
5. Oral Cancers and other Oral Mucosal Lesions
6. Status of Dental Fluorosis
7. Other conditions:

   Extra Oral Lesions; TMJ Signs and Symptoms; Enamel Opacities and Hypoplasia; Prosthetic Status and Need; and Community Need for immediate Care and Referrals.

While the criteria used for recording caries is as described in the WHO manual, the data on caries status is presented in tables which also provide information on the distribution of subjects with mean values of dmft and DMFT. The following range is used :

Primary teeth (5 yr)	Permanent teeth (12 & 15 yr)	Permanent teeth (35-44 yr & 65-74 yr)
dmft = 0	DMFT = 0	DMFT = 0
dmft = 1 to 3	DMFT = 1 to 3	DMFT = 1 to 3
dmft = 4 to 5	DMFT = 4 to 7	DMFT = 4 to 8
dmft = 6 to 10	DMFT = 8 to 14	DMFT = 9 to 16
dmft = 11 to 15	DMFT = 15 to 21	DMFT = 17 to 24
dmft = 16 to 20.	DMFT = 22 to 28.	DMFT = 25 to 28.
		DMFT = 29 to 32.

A new approach to grouping of dmft/ DMFT by range according to the percentage of affected teeth in the mouth is introduced in this survey report. The first range is the dmft/ DMFT value of 1 to 3. This provides an estimate of subjects who had less than 4 teeth decayed, missing or filled. Further, the dentition has been divided into 4 equal parts (quarters) on the basis of the number of teeth (maximum being 20 for primary teeth and 28 or 32 for permanent teeth). Each quarter represents 25% of the teeth normally present. The ranges therefore reflect these four quarters in each case as explained above. The rationale for this distribution is to facilitate reporting in terms of the four quarters or percentage teeth that are decayed, missing or filled, out of the number of teeth normally present for the age group concerned.

The status of malocclusion has been presented based on the Dental Aesthetic Index (DAI) scores for the age groups 12 yr, 15 yr and 35-44 yr which were computed as per the WHO's instructions and are presented in the report.

The severity of malocclusion within a population is classified based on their Dental Aesthetic Index (DAI) Index scores. The regression equation (WHO 1997) used for calculating standard DAI scores is as follows:

(missing visible teeth x 6) + (crowding) + (spacing) + (diastema x 3) + (largest anterior maxillary irregularity) + (largest anterior mandibular irregularity) + (anterior maxillary overjet x 2) + (anterior mandibular overjet x 4) + (vertical anterior openbite x 4) + (antero-posterior molar relation x 3) + 13

2.7 FLUORIDE ESTIMATION IN DRINKING WATER SAMPLES

As stated earlier, the analysis of the drinking water samples from various states were directly sent by the various Regional Coordinators and received by M/s Medlar Laboratories Pvt Ltd., (a Unit of M/s CIPLA), Mumbai. Dr. P M Dixit, Chief Chemist, has provided the following information on the analysis procedure.

Medlar Labs used sophisticated equipment and intricate chromatographic separation methodology to analyse the water samples with accuracy and precision.

The analysis procedure was based on the Ion Chromatographic separation in Anion Exchange mode and Suppressed Conductivity detection. The basic separation is performed by anion exchange mechanism of water samples on high efficiency Ionpac AG 11RC and IonPac AS 11RC connected in series and elution (process of extracting one material from another by washing with a solvent to remove adsorbed material from an adsorbent) with sodium hydroxide mobile phase.

Under this technique, a standard stock solution of Fluoride (100 ppm F anion) is prepared (0 – 5.0 ppm) in order to build a calibration graph prior to the start of the analysis.

The actual water samples were thoroughly mixed by vigorously shaking and filtered through a 0.45 u Nylon membrane. The effluent was collected into a clean dry conical glass tube. This was used for the fluoride estimation. The actual water sample was loaded into the mobile phase container in the equipment where the container is connected to a pump and made to run on the system. After about 20 minutes of stabilization period, the actual concentration of Fluoride ion in the water is analysed.

The following modules were used to assemble the fluoride analyser:

1. Isocratic pump-M/s Dionex Corp., USA, IP 20 Pump (I. No. -1)
2. AS300 Auto sampler- M/s Thermo Separation Products
3. Conductivity Detector-M/s Dionex Corp., USA, Model CD 20, (I. No. 4)
4. Anion Self Regenerating Suppressor- M/s Dionex Corp., USA, Model ASRS Ultra.
5. IonPac AG 11RC, as guard column, 4 x 50 mm- M/s Dionex Corp., USA
6. IonPac AS 11RC, as analytical column, 4 x 250 mm- M/s Dionex Corp., USA.
7. WinchromEx, data acquisition software in personal computer, PC 2.

In order to confirm the system stability and performance, one standard stock solution of fluoride (strength 1.0 ppm) was injected after every 10 samples.

2.8 FIELD WORK EXPERIENCES

2.8.1 Pre-fieldwork activity

In order to get help and support in fieldwork, we approached the state authorities like Director of Medical Education and Director of Health Services. Further, we sought the assistance of the Principals of the Thiruvananthapuram, Calicut and Kottayam Dental Colleges for enabling us to use their staff and house surgeons for the purpose of the survey. We also contacted authorities of

various State Government departments to get the locations and other details of the villages. We also approached the census department to get details of enumeration blocks. Before starting work in the villages, we approached the village officers and Panchayat presidents or Panchayat members. In urban areas, we got details from municipal offices. We also got assistance from the ward members regarding details of the location.

Identification of sampling units: Kerala was divided into three regions for the planning purpose of ther survey — Coastal Midlands, Midlands and Hills. One district was selected from each zone — Malappuram from Coastal Midland, Kottayam from Midlands and Wayanad from the Hills Region – and in each 15 villages were selected out of a list of 20 villages provided by the Dental Council of India. In the case of urban areas, we were asked to select 14 census enumeration blocks in each district from the list of wards provided by DCI. However, due to certain identification problems, we had to select some locations in each municipal ward randomly to get a total number of 14 urban locations in each district.

2.8.2 Identification and training the field teams

Three teams were formed, each consisting of three members. We availed the services of 14 House Surgeons from Calicut and Thiruvananthapuram Dental Colleges for the survey. Training was imparted to them at a three-day workshop organized in the Dental College, Thiruvananthapuram. In the workshop calibration procedures, clinical data collection, quantitative data collection, fluoride mapping, filed visits and data gathering were discussed in detail. **Annexure -6**

2.8.3 Fieldwork

After the classroom and dental college training, the teams were taken to the field to make sure that they had understood the method of selection of the households, interview the individuals, fill the questionnaires and undertake clinical examination of the dental problems. Once it was found that the teams had understood all the issues and were in a position to work independently, they were sent to the field.

Despite the extensive training, both in the class and in the field, the teams faced several initial problems. The Supervisors, who were accompanying the teams, helped them overcome these problems, acquire confidence and ensure smooth field operations.

The Supervisors were very alert to make sure that data was complete and consistent. They also ensured that all forms were scrutinised and corrected before they were submitted to the Coordinator.

In order to get cooperation from the respondents, the teams carried free samples of medicines and vitamins. These were distributed to the respondents to build the necessary equation with them. It was found that people in rural areas were more cooperative than those in the urban areas.

Each team covered one location every day; in this way we could cover one village or two urban locations in a day. It took 45 days to complete the survey. As the team members were house surgeons, we were not able to complete the survey in one schedule. We could conduct the survey only for 2-3 days every week because of their working arrangements in the various departments.

2.9 SCRUTINY OF DATA

As stated earlier, all efforts were made to ensure that quality of data was good. A senior-level person was moving with the teams to guide them in case of any doubts. He/ she was also responsible for scrutiny of the completed forms before the team returned from the field. It was his/her responsibility to scrutinise the forms, if they could not be checked in the field. This scrutiny was necessary before they were submitted to the state Coordinator and then to the Central Survey Unit. The Coordinator was also responsible of scrutinising the forms, fully in the initial stages and then on sample basis before sending them to the Central Survey Unit in New Delhi.

The Central Survey Unit was particularly careful in scrutinising forms from each state. First two batches of forms from each survey team from each state were scrutinised to determine gaps in the form of blanks, wrong recording and inconsistencies. The Coordinators were immediately contacted in case such problems were spotted, both telephonically and by facsimile transmission. In such cases, the next batch again scrutinised carefully to ensure that deficiencies were not repeated. Subsequent to this initial scrutiny, the form was scrutinised on a sample basis to ensure that there had been no slackness – the fatigue factor should not affect the quality of data.

2.10 DATA ANALYSIS

In the absence of any resources for data analysis at the Dental Council of India, the total job of data entry, validity checks and production of desired tables (as per analysis plan) was contracted out to TNS MODE, an organization with a good deal of research experience in studies related to health. All efforts were made to monitor quality of this work at this stage. The Central Survey Unit had worked out the type of tables needed, the level (Zone or Region/ State/ Country) for which such analysis was needed. The necessary weights were also worked out to ensure that the estimates were valid for the level to which they relate. These blank tables were given to the agency (TNS MODE) to fill in the data in different cells. In order to ensure that the values given in each cell of the table were right, the software package developed by TNS MODE was tested in a limited number of schedules by manually checking the results.

2.11 REPORT WRITING

The Central Survey Unit, Delhi prepared two reports, for Delhi and Maharashtra, as model reports after detailed discussions on the report and tabular format. Once these reports were ready, an effort was made to identify Coordinators who could find time and resources to write reports for their own states. The idea was to conduct a report writing workshop to orient them with the chapterisation plan, data tables of their own states and share with them the style of writing adopted in the model reports (Delhi and Maharashtra). This was felt necessary to make sure that all state reports were written in a uniform style/pattern. For other states, it was decided that the Central Survey Unit, Delhi would write the reports and send it to them for their modifications, if any. The Central Survey Unit also prepared all the sections and sub-sections of Chapters 1 (Introduction) and 2 (Methodology and Data Collection), which were to be common to all reports. These chapters were also given to the Coordinators involved in the report writing workshop.

Dr. S. G. Damle, Dean, Nair Dental Hospital, Mumbai & Director, Medical Education & Public Health, Municipal Corporation of Maharashtra, co-hosted the report writing workshop in Mumbai on January 10-11, 2004 where the staff of the Central Survey Unit discussed all the issues involved

in writing the reports with Coordinators from the States of Andhra Pradesh, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Pondicherry, Punjab and Tamil Nadu. They were given two reports (models), a set of tables for their own state and even a CD containing raw data. They were told that their state report should adopt the format shown in the model reports; they could do more analysis, if needed, by using their own raw data. It was also decided and agreed that report should be ready in one month's time.

CHAPTER III

BACKGROUND CHARACTERISTICS OF SURVEYED POPULATION

3.1 CHARACTERISTICS OF HOUSEHOLDS

The characteristics of household are shown in Table 3.1. It may be noted that more than 65 per cent of the subjects live in Semi Pucca houses. About 4 per cent had Kuccha houses. However, in the Hills region, over 18 per cent of the households were living in Kuccha houses.

Most of the respondents (about 65 per cent) had a monthly expenditure (proxy for household income) less than or equal to Rs. 2,500. This income level was found more among rural respondents in the state.

About 45 per cent households in the state was of Hindu, followed by 46 per cent Muslim. In the Coastal Midlands, the majority were Muslims (64 per cent) while in the Midlands and Hills region, the majority were Hindus. Overall, about 60 per cent of the households was of other Backward Castes (OBCs).

Table : 3.1 Percent distribution of the households by characteristics and geographical area. STATE : Kerala

	Household Charactersties		REGIONS			STATE		
			1	2	3	R	U	T
1	**Type of household**	n=	461	515	450	967	459	1426
	Kuccha		0.8	6.0	18.4	3.2	1.9	3.7
	Semi Pucca		63.1	72.1	61.8	64.8	64.1	65.3
	Pucca		36.1	22.0	19.8	31.9	34.0	31.0
2	**Monthly expenditure (in Rs.)**							
	<= 2500		55.2	83.4	76.4	62.9	58.3	64.1
	2,501 - 5,500		40.4	9.7	20.8	33.5	32.8	31.2
	5,501 - 10,000		4.3	5.6	1.2	3.2	8.0	4.1
	10,000 +		0.2	1.4	1.5	0.4	0.9	0.6
3	**Religon**							
	Hindus		35.1	63.4	64.6	38.6	54.5	45.1
	Muslims		64.2	6.0	21.5	53.7	40.1	46.7
	Sikhs		0.0	2.8	0.3	0.5	0.6	0.6
	Christians		0.6	27.1	13.3	7.0	4.6	7.4
4	**Caste**							
	Scheduled Caste		3.9	6.4	9.2	5.1	3.3	5.1
	Scheduled Tribe		1.6	1.1	38.5	3.6	4.7	5.1
	Other Backward Classes		74.7	27.1	28.5	67.2	48.6	59.1
	Others		19.7	65.4	23.8	24.1	43.4	30.7
5	**Sources of drinking water**							
	Pipe/tap		4.6	18.9	15.9	9.0	4.8	8.5
	Tubewell/handpump		4.8	10.9	3.7	6.5	3.9	6.1
	Others		90.6	70.3	80.4	84.5	91.3	85.4
6	**Staple food**							
	Wheat		0.7	2.7	0.9	1.4	0.1	1.2
	Rice		99.3	96.8	99.1	98.3	99.9	98.6
7	**Nature of food**							
	Vegetarian		5.1	5.5	2.3	3.8	8.8	5.0
	Non-vegetarian		94.9	94.5	97.7	96.2	91.2	95.0

Only 8 per cent of the households cited taps as their main source of drinking water. Piped water supply was higher in urban areas compared to rural areas in the state.

Rice was the staple food of the people. Almost 95 per cent of the households reported non-vegetarians.

CHARACTERISTIC OF HOUSEHOLDS SURVEYED (SUMMING UP)

- More than 65 per cent of the subjects live in semi-pucca houses with only 4 per cent reported living in kuccha houses. However, in the Hills region, 18 per cent of the households,are among region live in kuccha houses.
- A majority of the households (65 per cent) had monthly income less than or equal to Rs 2,500.
- 45 per cent of the households belonged to Hindus and other 46 per cent belonged to the Muslim community. In Coastal Midland region, more than 64 per cent of the subjects were of Muslims, while in the other two regions, about 64 per cent of the households were of Hindus.
- About 60 per cent of the households belonged to OBCs.
- Only 8 per cent of the households depended on tap water for drinking water.
- Rice was the staple food of more than 98 per cent of the households, with over 95 per cent being non-vegetarians.

3.2 PROFILE OF POPULATION

3.2.2 12 year olds

3.2.2.1 Educational levels

Almost all of this age were literate in the state as well as in each region. About 95 percent irrespective of sex & residence had education up to middle in the state & in each region. The rest 5 percent were high school & above. Table 3.2.2

3.2.3 15 year olds

3.2.3.1 Educational levels

Nearly all the subjects in this age group were literate. About 16 per cent of the respondents had education up to the middle level and 84 per cent reported education up to high school and above (Table 3.2.3). The picture was similar in the regions for both males and females. However there was rural and urban differentials but marginal.

Table : 3.2.2 Percent distribution of 12 year olds by educational level and media exposure, sex & geographical area.

AGE: 12 yrs **STATE : Kerala**

	Educational level & Media Exposure		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Educational level**	n=	129	161	108	261	137	398	120	159	108	264	123	387	785
	Illiterate		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.1	0.0	0.1	0.1
	Upto middle		92.9	100.0	97.1	94.2	96.0	94.8	93.3	99.2	90.5	94.3	95.1	94.5	94.7
	High school & above		7.1	0.0	2.9	5.8	4.0	5.2	6.7	0.8	8.2	5.6	4.9	5.4	5.3
2	**Newspaper reading habits**						NOT ASKED								
3	**Radio listening habits**						NOT ASKED								
4	**TV watching habits**						NOT ASKED								
	Daily														
	Sometimes														
	Not at all														
5	**Cinema watching habits**						NOT ASKED								
	Once in 3 months														
	Less often														
	Not at all														

3.2.3.2 Exposure to media

As expected because of high literacy, about 64 per cent of respondents of this age group reported reading newspapers daily but this percentage in the urban areas was higher at 80, and was slightly more for males than females. Against this, 56 per cent rural respondents reported reading newspapers daily.

More than 57 per cent listened to radio sometimes while 52 per cent of the respondents had daily exposure to TV. The exposure to cinema, at least once in three months, was only 13 per cent.

Exposure to radio was higher in the Coastal Midlands while exposure to TV was more in the Hills region. Exposure to cinema was lower in the Coastal Midlands and Hills.

Table : 3.2.3 Percent distribution of 15 year olds by educational level and media exposure, sex & geographical area.

AGE: 15 yrs **STATE : Kerala**

	Educational level & Media Exposure		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Educational level**	n=	127	157	119	276	127	403	120	155	111	263	123	386	789
	Illiterate		0.0	0.0	3.4	0.3	0.0	0.2	0.0	0.0	6.3	0.5	0.0	0.3	**0.3**
	Upto middle		14.0	23.5	29.8	16.7	17.7	17.0	9.3	26.0	40.4	17.1	6.5	14.0	**15.5**
	High school & above		86.0	76.5	66.8	83.0	82.3	82.8	90.7	74.0	53.3	82.4	93.5	85.7	**84.3**
2	**Newspaper reading habits**														
	Daily		71.3	45.2	54.4	59.3	80.2	66.2	66.9	45.1	34.4	54.1	81.2	62.2	**64.2**
	Sometimes		25.5	50.6	24.1	34.8	18.9	29.6	27.1	52.1	32.7	37.9	16.1	31.4	**30.5**
	Not at all		3.3	4.3	21.5	5.9	0.9	4.2	5.9	2.8	32.8	8.0	2.7	6.4	**5.3**
3	**Radio listening habits**														
	Daily		36.0	16.5	47.8	30.1	39.6	33.2	37.2	16.4	38.9	29.7	42.6	33.6	**33.4**
	Sometimes		58.5	69.6	33.9	60.7	55.6	59.0	55.2	67.9	35.5	57.6	54.4	56.6	**57.8**
	Not at all		5.5	13.9	18.3	9.2	4.8	7.8	7.7	15.7	25.7	12.7	3.0	9.8	**8.8**
4	**TV watching habits**														
	Daily		40.8	36.4	32.0	36.9	46.6	40.1	51.0	54.9	24.5	44.6	69.7	52.1	**46.1**
	Sometimes		32.9	51.6	24.2	43.0	17.1	34.5	20.2	37.0	29.2	27.2	15.2	23.6	**29.1**
	Not at all		26.3	12.0	43.8	20.1	36.4	25.5	28.7	8.1	46.3	28.2	15.1	24.3	**24.9**
5	**Cinema watching habits**														
	Once in 3 months		11.7	18.1	26.8	13.8	14.6	14.1	8.9	14.6	15.8	9.2	15.1	10.9	**12.5**
	Less often		32.5	65.9	18.8	35.1	49.7	39.9	16.7	55.0	17.2	25.3	24.5	25.1	**32.5**
	Not at all		55.7	15.9	54.4	51.1	35.6	46.0	74.4	30.4	66.9	65.5	60.4	64.0	**55.0**

3.2.4 35-44 year olds

3.2.4.1 Educational level

About 41 per cent in this age group had education up to middle school while another 55 per cent were high school and above (Table 3.2.4). More males in this age group had achieved educational level of high school and above than the females. In the Hills region, there was comparatively more illiterates than in the remaining two regions.

3.2.4.2 Exposure to media

About 61 per cent of respondents in this age group had the habit of reading newspapers daily (53 per cent females and 70 per cent males). Urban areas had much greater exposure than rural areas. Daily exposure to radio was reported by 39 per cent.

TV viewership in this population grouping was 48 per cent, which was much higher in urban areas. Exposure to TV was found to be higher in the Midlands. Not much differences were observed between males and females. Not much exposure was found to cinema, with about 9 per cent viewing cinema once in three months. This percentage was higher in the urban areas.

Table : 3.2.4 Percent distribution of 35-44 year olds by educational level and media exposure, sex & geographical area.

AGE: 35-44 yrs **STATE : Kerala**

	Educational level & Media Exposure		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Educational level**	n=	142	164	175	323	158	481	180	164	167	343	168	511	992
	Illiterate		1.4	0.8	23.7	3.4	1.8	2.8	4.0	1.6	29.9	6.9	0.0	4.7	3.8
	Upto middle		42.1	19.3	33.2	40.9	26.2	35.8	49.6	39.2	39.7	48.4	43.9	46.9	41.4
	High school & above		56.5	79.9	43.1	55.7	72.0	61.3	46.4	59.2	30.4	44.8	56.0	48.4	54.9
2	**Newspaper reading habits**														
	Daily		71.1	66.2	44.3	62.1	84.2	69.7	54.2	45.5	31.9	47.7	62.6	52.5	61.1
	Sometimes		23.8	32.6	24.9	30.1	13.6	24.4	32.9	41.1	24.4	34.7	30.6	33.4	28.9
	Not at all		5.1	1.3	30.8	7.8	2.1	5.9	13.0	13.4	43.7	17.5	6.8	14.1	10.0
3	**Radio listening habits**														
	Daily		41.0	14.8	51.8	34.4	42.5	37.2	43.9	14.0	36.7	33.2	54.8	40.1	38.7
	Sometimes		50.6	68.9	27.3	54.0	48.3	52.0	47.4	64.5	32.8	50.9	44.7	48.9	50.5
	Not at all		8.5	16.3	20.8	11.6	9.2	10.8	8.6	21.4	30.6	15.8	0.5	10.9	10.9
4	**TV watching habits**														
	Daily		46.7	39.0	32.3	35.7	66.4	46.4	51.1	40.8	25.7	41.6	66.9	49.7	48.1
	Sometimes		29.7	50.6	25.0	40.3	15.2	31.6	25.8	42.7	19.0	31.1	19.3	27.4	29.5
	Not at all		23.6	10.5	42.7	23.9	18.3	22.0	23.1	16.5	55.3	27.2	13.8	23.0	22.5
5	**Cinema watching habits**														
	Once in 3 months		10.5	9.7	15.2	9.7	13.5	11.0	5.4	11.9	18.9	6.0	11.0	7.6	9.3
	Less often		29.5	73.1	23.9	36.4	41.3	38.1	19.5	44.1	16.6	24.1	21.0	23.1	30.6
	Not at all		60.0	17.3	60.9	53.9	45.2	50.9	75.1	44.0	64.5	69.9	68.0	69.3	60.1

3.2.5 65-74 year olds

3.2.5.1 Educational level

In this age group, 23 per cent of the respondents were illiterate (33 per cent females and 13 per cent males) (Table 3.2.5). As expected, literacy level was higher in the urban areas and among males. Among regions, the Midlands had higher literacy levels than other two regions.

3.2.5.2 Exposure to media

Exposure to different media was quite low. About 40 per cent of the respondents more females in this age group did not read newspapers. Again, readership was higher in the urban areas than in the rural areas.

Exposure to radio was slightly lower than TV, especially in the rural areas where 31 per cent males as against 20 per cent females reported listening to radio daily. Similarly, 34 per cent females and 36 per cent males said they watched TV daily. Exposure to radio was the least in the Hills region.

Table : 3.2.5 Percent distribution of 65-74 year olds by educational level and media exposure, sex & geographical area.

AGE: 65-74 yrs **STATE : Kerala**

	Educational level & Media Exposure		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Educational level**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	Illiterate		14.5	1.9	52.4	16.9	4.9	13.1	39.0	11.1	62.1	40.1	18.1	32.8	**23.0**
	Upto middle		64.0	73.4	39.2	63.5	68.1	65.0	52.6	80.8	28.3	52.9	69.7	58.4	**61.7**
	High school & above		21.5	24.6	8.3	19.6	27.0	21.9	8.3	8.1	9.5	7.0	12.3	8.7	**15.3**
2	**Newspaper reading habits**														
	Daily		55.3	34.8	26.3	42.4	70.0	51.1	22.2	13.0	20.2	15.1	34.8	21.6	**36.4**
	Sometimes		22.7	52.8	14.1	31.4	20.3	27.9	13.7	46.6	14.2	23.2	12.4	19.6	**23.8**
	Not at all		22.1	12.4	59.6	26.1	9.7	21.0	64.2	40.5	65.6	61.7	52.8	58.7	**39.9**
3	**Radio listening habits**														
	Daily		40.5	13.1	44.1	31.4	45.0	35.7	29.9	10.4	24.9	20.2	41.6	27.3	**31.5**
	Sometimes		43.3	68.1	24.2	47.0	49.4	47.8	30.0	58.1	23.2	37.8	28.8	34.8	**41.3**
	Not at all		16.2	18.8	31.8	21.6	5.6	16.5	40.0	31.5	51.9	42.0	29.6	37.9	**27.2**
4	**TV watching habits**														
	Daily		34.4	36.3	21.6	28.5	51.5	35.7	30.5	40.9	20.8	26.1	49.5	33.9	**34.8**
	Sometimes		21.3	48.1	12.3	31.8	10.6	25.1	12.4	40.7	11.9	22.7	5.2	16.9	**21.0**
	Not at all		44.2	15.7	66.1	39.7	37.9	39.1	57.0	18.4	67.2	51.2	45.2	49.2	**44.2**
5	**Cinema watching habits**														
	Once in 3 months		2.5	3.9	3.1	2.8	2.9	2.8	6.1	3.1	2.3	3.0	12.1	6.0	4.4
	Less often		10.7	18.9	12.3	11.7	15.6	12.9	2.9	19.0	6.9	7.0	4.5	6.2	**9.6**
	Not at all		86.8	77.2	84.5	85.5	81.5	84.2	91.0	77.9	90.9	90.0	83.4	87.8	**86.0**

Exposure to cinema was very low, only about 4 per cent respondents watched cinema once in 3 months, with their number being more among females and more in urban areas.

PROFILE OF POPULATION ACROSS AGE GROUPS (SUMMING UP)

(i) Literacy is very high in the state, i.e. more than 95 per cent. No significant difference between male-female or urban-rural population was seen in this regard. However, a lower level of literacy was seen in the 65-74 year age group as compared to other age groups.

(ii) About 95 per cent of the population except 65-74 year olds had the habit of reading newspapers. In contrast, in the Hills region, more than 60 per cent of the subjects did not have the habit of reading newspapers.

(iii) Exposure to radio and TV was quite high, with 90 per cent of the population had radio listening habits and 80 per cent TV viewing habits.

(iv) In contrast, only 30 per cent of the people had cinema-watching habits.

(v) Both educational status and media exposure was considerably low in the Hills region compared to the other two regions.

CHAPTER IV

MAPPING OF FLUORIDE LEVELS

4.1 INTRODUCTION

As stated in Chapter 2 (Objectives), one of the objectives of the National Oral Health Survey was to map the fluoride levels in different parts of the country. For this purpose, the field teams were expected to collect drinking water samples from the households they visited for collection of information related to oral health practices and the current situation of oral health. This chapter presents results of the analysis of fluoride levels from such water samples.

4.2 COLLECTION OF WATER SAMPLES

The field teams were given the following instructions about collection of water samples from the households they visited:

1. Each team would carry along with it a set of sterilised plastic bottles. These bottles had been specially ordered for the purpose of the survey from a Hyderabad-based manufacturer and had the following characteristics:

(1) A capacity of 500 ml as had been recommended by M/s Medlar Labs, Mumbai, where the water samples were to be analysed for fluoride levels. (M/s Medlar Labs have since accepted that a sample of even 200 ml would have been enough). This quantity of water was decided to take account of any possible spillage during transportation.

(2) The plastic was of a quality able to withstand transportation pressures, first from Hyderabad to each state where the survey was being conducted, then with the field teams and then to Mumbai where the samples were sent for analysis.

(3) The bottles were sterilised to ensure that samples did not get contaminated, and

(4) Two corks were provided for each bottle so as to minimise any spillage and ensure the M/s Medlar Labs got sufficient quantity of water to analyse the fluoride levels.

2. Each field team was instructed to collect water samples from the first household they visited every day. Subsequent samples were to be collected only if the sources of supply were different from that in the first house. In other words, water samples were collected from all sampled households that had different sources of drinking water in the area of coverage. It means that water samples were collected from a representative sample of households of the villages/urban blocks. Since the villages and urban areas were themselves representative of the other areas of zones/states, the water samples collected were representative of all the area units of the zones/states.

3. All water sample bottles had to carry identification particulars of the household, including the state, zone and serial number given to the household for the purpose of the survey Thus, every household covered had a unique serial number within a zone. The water sample bottles were labelled with this number, thereby uniquely matching each sample with the information on oral health collected from that household.

4. This linkage of the water sample with other information from the household was done for two purposes. The first was that the collected household drinking water samples would represent the situation of water supply in rural and urban households in the zone and ultimately that of the state (after proper weights had been assigned to the rural and urban areas). This analysis would help map the fluoride levels in different areas of the state and the country. The other purpose was to try to link the fluoride levels in drinking water, with the oral health related dental practices and the actual status of oral health of the households and individuals.

4.3 ANALYSIS OF WATER SAMPLES

Since analysis of water samples for their fluoride levels requires special equipment, Dr. R. K. Bali, the President, Dental Council of India, contacted Colgate-India for help. Colgate-India, which has been very supportive of the effort of the Dental Council of India in conducting the National Oral Health Survey having also provided financial assistance for it, agreed to his request and nominated M/s Medlar Labs, Mumbai for such analysis.

The methodology M/s Medlar Labs adopted for analysing the fluoride levels has been described in section 2.3.3 of the chapter on Methodology and Data Collection.

4.4 FINDINGS

The levels of fluoride in Regions, rural, urban areas and total Kerala are shown in Table 4.1.

Table 4.1 Percent distribution of water samples by levels of fluoride in rural, urban and total Kerala

Levels of ppm	Regions			State		
	I	II	III	Rural	Urban	Total
0.0-0.5	55.5	83.9	81.8	65.5	58.7	65.7
0.51-1.00	1.5	8.9	3.5	2.0	4.7	3.1
1.01-1.50	5.2	0.8	7.5	7.1	0.4	4.0
1.51-2.00	33.6	1.8	4.9	20.2	33.5	24.0
2.01-4.00	4.2.	4.6	2.3	5.1	2.7	3.3
4.01-8.00	0.0	0.0	0.0	0.0	0.0	0.0
8.01+	0.0	0.0	0.0	0.0	0.0	0.0

Note: The state of Kerala has been divided into three regions. Namely (i) Coastal Midland (ii) Midlands & (iii) Hills. Their boundaries and districts within them may be seen in the state map.

About 27 percent of the households in Kerala use water with fluoride levels of 1.5 or more ppm; this percentage was higher in urban areas (36 per cent). There were no significant differences between rural and urban areas. However, the Coastal Midlands had much higher levels of fluoride in water than the other two regions.

Fig. 4.1 Drinking water levels of fluoride in KERALA

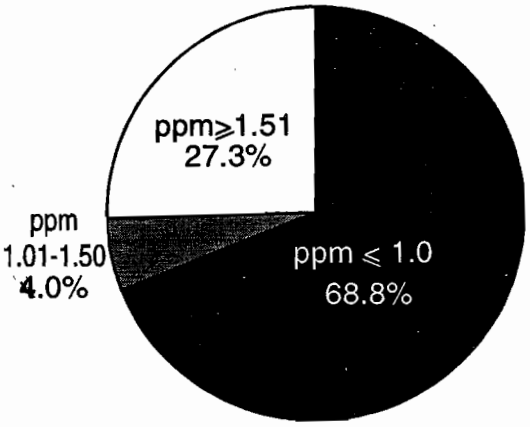
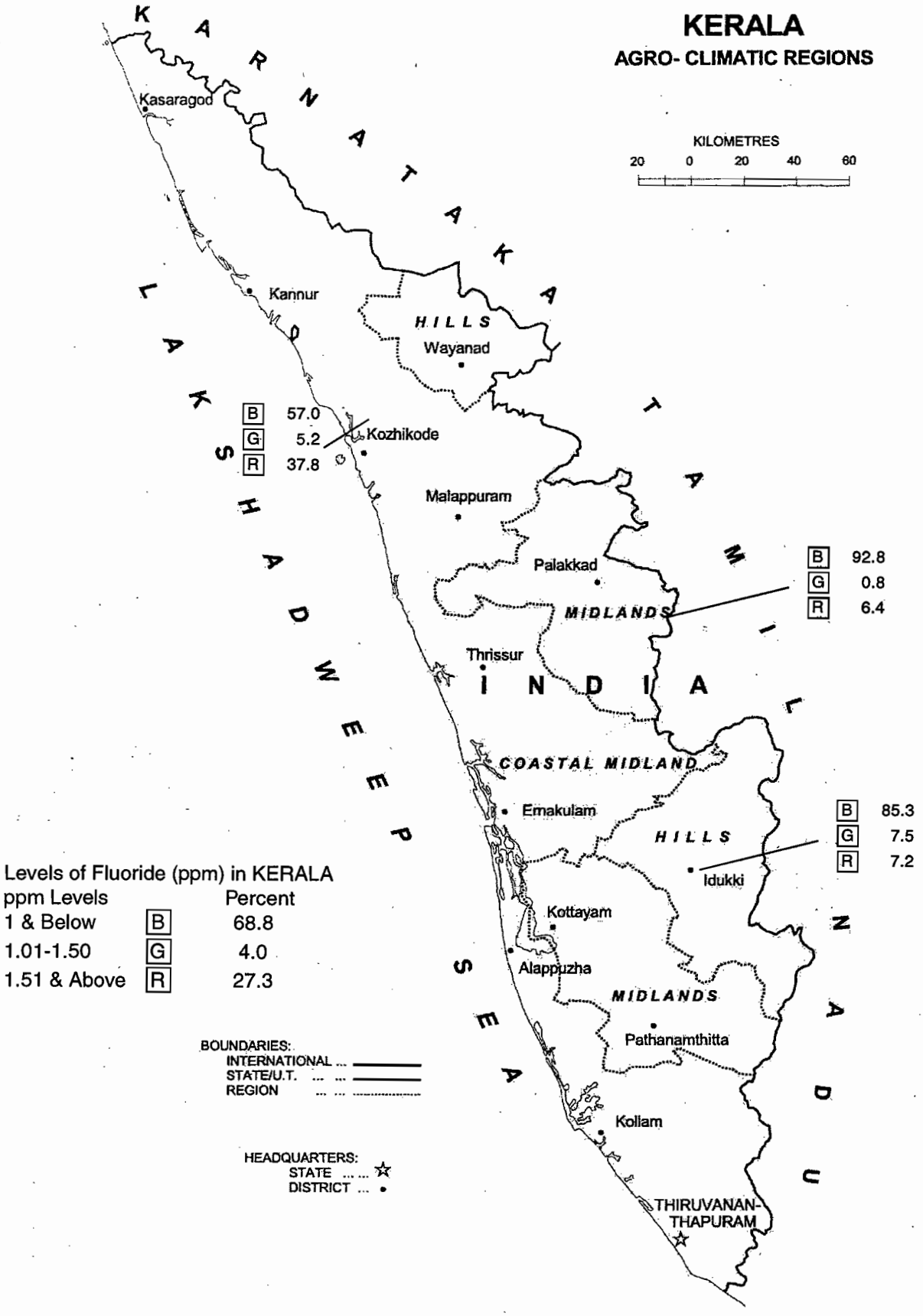


Fig. 4.2 Drinking water levels of Fluoride (ppm) in KERALA, INDIA



CHAPTER V

ORAL HEALTH KNOWLEDGE AND PRACTICE

A series of questions were asked on food habits and other habits/practices that could affect oral health during the survey. Prevalence of each of those practices for different ages/age groups, males and females, rural and urban areas and for each Region is discussed in this chapter. These figures should help suggest appropriate educational activities to improve practices related to oral health and thus improve oral health of the population.

5.1 ABNORMAL ORAL HABITS

Five questions on abnormal habits, "breathing from mouth", "habit of sucking or biting fingers or thumb", "thrusting tongue on teeth", "biting nails, lips or objects like pencil", and "habit of grinding/gritting teeth" were enquired from each respondents aged 5, 12, 15, 35-44, 65-74 year olds. (In case of 5 year old from his/her care taker). Responses are reported in Table 5.1 & Fig. 5.1.

It may be seen that prevalence of these practices was generally very low, though habit of "grinding/ gritting teeth was slightly higher in the 65-74 age group. "Breathing from mouth" was slightly higher in the 15-year age group, and more prevalent in urban areas as compared to in rural areas

The Hills region reported higher percentages of all habits.

ABNORMAL ORAL HEALTH HABITS ACROSS AGE GROUPS (SUMMING UP)

I. The habit of "breathing from mouth" was seen to be slightly higher in the 15-year age group of subjects (2.2 per cent for males and 0.8 per cent for female) and more in the urban areas as compared to the rural areas.

II. The habit of "grinding/gritting teeth" was higher in the 65-74 year age group.

5.2 SWEETS-TAKING HABITS

Since sweets eating habits affect oral health, the respondents were asked how many times they had taken sugar during the last 24 hours. (Table 5.2 and Fig. 5.1)

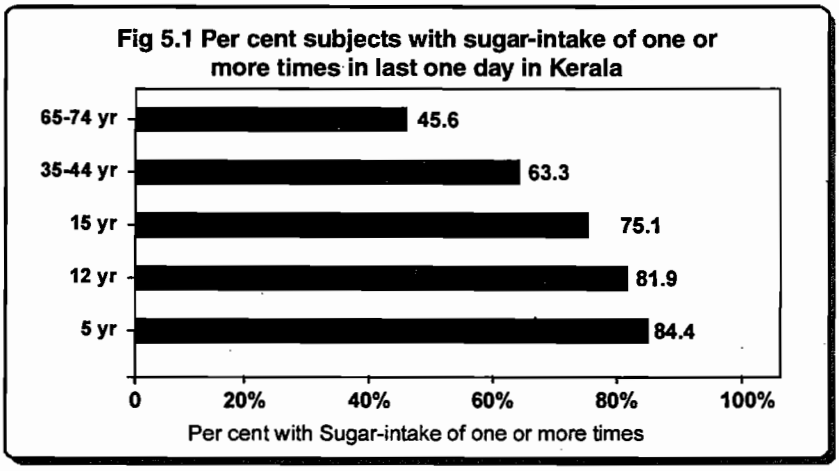


Fig 5.1 Per cent subjects with sugar-intake of one or more times in last one day in Kerala

(1) About 29 per cent respondents across age groups had not taken sugar or sweets at all in the last 24 hours. However, it was seen that intake decreased with age in both rural and urban areas. There was a higher sugar intake in rural areas than in urban areas.

(2) No significant difference was found between males and females with regard to sugar intake.

(3) Among regions, there was a higher sugar intake in 5 and 12-year age groups in the Midlands, but was significantly lower in the elder age groups.

Table : 5.1 Percent respondents by habits affecting oral health age, sex & geographical area.

AGE: 5 yrs STATE : Kerala

	Habits affecting Oral Health		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	163	172	155	336	154	490	100	143	109	239	113	352	842
1	Breathing from mouth		7.8	10.6	20.8	8.4	11.5	9.4	6.0	9.3	11.9	7.2	6.9	7.1	8.3
2	Sucking or biting fingers/thumb		3.6	7.1	5.4	3.7	6.5	4.6	4.9	6.5	4.1	4.5	7.7	5.5	5.1
3	Thrusting tongue on teeth		1.1	0.8	0.9	0.3	3.4	1.3	0.0	0.9	0.1	0.3	0.0	0.2	0.8
4	Biting nails/lips/objects like pencil		4.7	0.0	5.3	2.3	8.5	4.3	0.9	1.8	3.9	0.9	2.8	1.5	2.95
5	Grinding / gritting teeth		1.1	0.8	12.4	1.2	3.4	1.9	1.0	2.1	8.0	2.1	0.3	1.6	1.8

AGE: 12 yrs STATE : Kerala

	Habits affecting Oral Health		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	129	161	108	261	137	398	120	158	108	263	123	386	784
1	Breathing from mouth		4.5	0.5	8.9	2.2	8.5	4.3	5.9	1.1	9.5	5.7	2.7	4.8	4.6
2	Sucking or biting fingers/thumb		0.7	0.0	1.3	0.1	2.0	0.7	0.9	0.2	0.0	0.8	0.2	0.6	0.7
3	Thrusting tongue on teeth		0.8	0.0	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3
4	Biting nails/lips/objects like pencil		1.4	3.8	2.8	1.1	4.4	2.2	2.6	4.8	1.5	3.7	0.7	2.8	2.5
5	Grinding / gritting teeth		3.1	0.8	7.0	3.1	2.1	2.8	3.5	1.6	8.1	4.3	0.0	3.0	2.9

AGE: 15 yrs STATE : Kerala

	Habits affecting Oral Health		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	127	157	119	276	127	403	120	155	111	263	123	386	789
1	Breathing from mouth		2.3	0.8	2.4	1.2	4.1	2.2	0.8	0.0	2.5	0.2	2.4	0.8	1.5
2	Sucking or biting fingers/thumb		0.7	0.0	1.1	0.1	2.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.4
3	Thrusting tongue on teeth		0.8	0.0	1.1	0.9	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3
4	Biting nails/lips/objects like pencil		2.4	0.0	2.2	1.8	2.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	1.0
5	Grinding / gritting teeth		1.5	0.2	5.7	1.3	2.3	1.6	2.6	0.8	1.3	2.8	0.0	1.9	1.8

AGE: 35-44 yrs STATE : Kerala

	Habits affecting Oral Health		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	141	164	175	322	158	480	180	164	167	343	168	511	991
1	Breathing from mouth		0.0	0.0	0.8	0.1	0.0	0.1	0.0	0.8	0.0	0.2	0.0	0.1	0.1
2	Sucking or biting fingers/thumb		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Thrusting tongue on teeth		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Biting nails/lips/objects like pencil		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.0	0.0
5	Grinding / gritting teeth		0.0	0.0	5.5	0.6	0.0	0.4	2.3	0.0	1.7	2.5	0.0	1.7	1.1

AGE: 65-74 yrs STATE : Kerala

	Habits affecting Oral Health		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	120	156	108	264	120	384	141	162	112	279	136	415	799
1	Breathing from mouth		0.0	0.8	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2	Sucking or biting fingers/thumb		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Thrusting tongue on teeth		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Biting nails/lips/objects like pencil		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Grinding / gritting teeth		3.5	0.0	1.2	3.4	0.0	2.3	0.7	0.0	1.3	0.8	0.0	0.6	1.5

Table : 5.2 Percent respondents by pattern of sugar in take, age, sex & geographical area.

AGE: 5 yrs **STATE : Kerala**

	Pattern of sugar intake in last one day		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	163	172	155	336	154	490	100	143	109	239	113	352	842
1	Not taken		19.5	8.5	23.9	21.2	7.0	16.6	17.1	7.6	19.9	16.0	11.8	14.8	15.7
2	Taken one time		13.0	35.2	11.8	19.4	10.1	16.4	10.1	27.5	14.7	16.5	7.8	13.9	15.2
3	Taken two times		25.4	39.6	35.6	26.2	36.2	29.4	36.1	42.9	40.1	38.6	35.6	37.7	33.6
4	Taken 2+ times		42.1	16.7	28.7	33.1	46.7	37.5	36.7	22.0	25.3	28.9	44.8	33.6	35.6

AGE: 12 yrs **STATE : Kerala**

	Pattern of sugar intake in last one day		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	129	161	108	261	137	398	120	158	108	263	123	386	784
1	Not taken		21.3	14.8	20.6	23.2	10.7	19.0	17.5	15.6	25.9	17.9	16.3	17.4	18.2
2	Taken one time		13.2	33.7	12.6	18.3	15.3	17.3	12.5	24.0	11.4	16.1	11.7	14.8	16.1
3	Taken two times		33.8	34.9	45.2	31.9	42.4	35.4	39.5	45.0	31.6	35.9	55.2	41.6	38.5
4	Taken 2+ times		31.7	16.6	21.6	26.7	31.6	28.3	30.5	15.3	31.1	30.2	16.8	26.2	27.3

AGE: 15 yrs **STATE : Kerala**

	Pattern of sugar intake in last one day		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	127	157	119	276	127	403	120	155	111	263	123	386	789
1	Not taken		22.4	36.5	29.0	29.5	14.9	24.7	25.2	25.3	38.7	27.9	19.4	25.4	25.1
2	Taken one time		12.8	33.3	14.1	19.8	10.0	16.6	14.2	30.8	16.5	18.5	15.9	17.8	17.2
3	Taken two times		39.3	24.4	37.3	28.3	58.5	38.3	39.8	35.6	29.3	36.4	44.6	38.9	38.6
4	Taken 2+ times		25.5	5.8	19.6	22.4	16.6	20.5	20.8	8.3	15.5	17.1	20.0	18.0	19.3

AGE: 35-44 yrs **STATE : Kerala**

	Pattern of sugar intake in last one day		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	141	164	175	322	158	480	180	164	167	343	168	511	991
1	Not taken		22.9	62.5	38.3	35.8	21.7	30.9	37.5	73.7	42.5	47.7	31.9	42.6	36.8
2	Taken one time		26.4	31.5	22.1	28.1	24.3	26.8	19.4	23.9	18.8	19.8	21.1	20.2	23.5
3	Taken two times		42.0	4.4	31.3	27.5	50.4	35.4	35.3	0.8	28.2	26.0	38.9	30.1	32.8
4	Taken 2+ times		8.7	1.6	8.3	8.6	3.6	6.9	7.7	1.6	10.5	6.5	8.1	7.0	7.0

AGE: 65-74 yrs **STATE : Kerala**

	Pattern of sugar intake in last one day		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
		n=	120	156	108	264	120	384	141	162	112	279	136	415	799
1	Not taken		45.6	88.3	58.3	61.8	36.5	53.9	46.1	89.7	54.4	56.8	51.5	55.0	54.5
2	Taken one time		17.4	7.0	21.6	14.3	18.8	15.7	23.1	8.2	18.2	22.5	11.9	19.0	17.4
3	Taken two times		32.8	1.9	12.8	19.3	42.2	26.5	25.7	1.0	23.5	15.1	36.4	22.1	24.3
4	Taken 2+ times		4.2	2.8	7.2	4.6	2.5	3.9	5.2	1.0	3.9	5.7	0.2	3.9	3.9

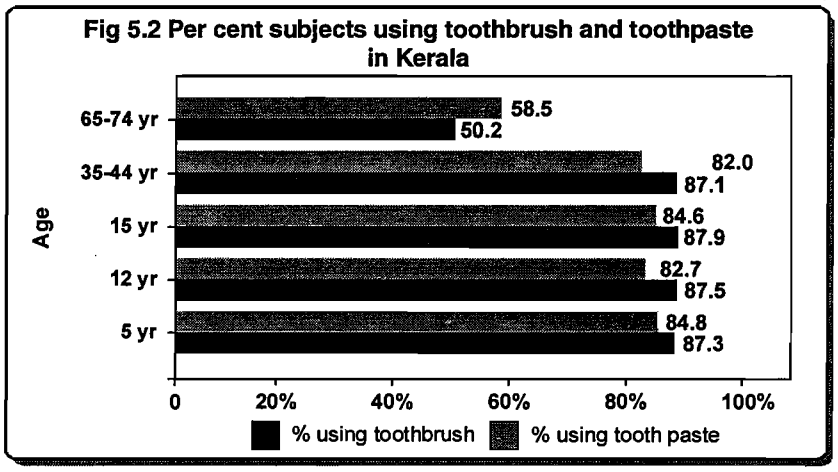
SWEET/SUGAR-TAKING HABITS ACROSS AGE GROUPS (SUMMING UP)

- There was a higher sugar intake in the rural areas than in the urban areas, with no significant difference seen across the sexes. It was also seen that sugar intake decreased as age advanced.
- The percentage of subjects who had not taken sugar in the previous 24 hours was about 15-25 per cent for subjects up to 15 years of age, going up to 35 per cent for the 35-44 year age group and to 54 per cent in 65-74 year age group.
- In the 5-year age group, more than 30 per cent of the subjects had taken sugar two or more times in last 24 hours.
- In the 5 and 12-year age groups, sugar intake was found to be higher in the Midlands.

5.3 ORAL HYGIENE PRACTICES

A series of questions were asked about oral hygiene practices, like how teeth are cleaned, what material is used to clean them, whether this is fluoridated or not, how often teeth are cleaned and whether and how often mouth is rinsed after meals. The responses to these questions are shown in Tables 5.3.1 to 5..3.5 and Fig. 5.2 are discussed in the sections below by age group of the respondents.

5.3.1 5 year olds



About 87 per cent children in this age group reported the use of toothbrush in the state (about 86 per cent in rural areas and 89 per cent in urban areas) (Table 5.3.1). Usage was slightly more in females. Usage was also found to be more in the Midlands. While more respondents in urban areas reported changing their toothbrushes once in three months, in the rural areas, such change took place mostly between three and six months.

It was encouraging to note that almost everybody reported cleaning their teeth daily—about 66 per cent once a day and about 33 per cent twice a day. There were no significant differences between rural and urban areas, or among regions.

A majority of the children were using toothpaste (about 85 per cent). There were no major rural-urban differences. The situation was the same across both sexes. Fluoridated toothpaste/powder was used by only 11 per cent subjects.

On rinsing practices, a high 88 per cent reported doing so after every meal – there were no significant rural/urban differentials or between sexes. The practice was less prevalent in the Hills region.

Table : 5.3.1 Percent 5 year olds by oral hygiene practices, sex & geographical area.

AGE: 5 yrs STATE : Kerala

	Oral Hygiene Practices		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Clean teeth with**	n=	**163**	**172**	**155**	**336**	**154**	**490**	**100**	**143**	**109**	**239**	**113**	**352**	**842**
	finger		14.1	5.7	39.7	14.8	12.3	14.0	11.0	9.4	28.9	12.6	8.9	11.5	**12.8**
	brush		85.9	94.3	60.2	85.2	87.7	86.0	89.0	90.6	71.1	87.4	91.1	88.5	**87.3**
	datun		0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	others		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
2	**Frequency of cleaning teeth**	n=	**163**	**172**	**154**	**336**	**153**	**489**	**100**	**143**	**109**	**239**	**113**	**352**	**841**
	Once a day		55.9	87.9	77.1	66.2	54.4	62.4	66.9	77.0	63.6	68.9	69.8	69.1	**65.8**
	Twice a day		42.1	12.1	21.9	31.8	45.6	36.3	31.0	23.0	36.4	29.3	30.2	29.6	**33.0**
	After every meal		1.9	0.0	1.0	2.0	0.0	1.4	2.1	0.0	0.0	1.9	0.0	1.3	**1.4**
3	**Material used for cleaning teeth**														
	Tooth paste		84.0	96.5	52.4	83.9	86.0	84.6	84.1	95.2	58.4	85.8	82.6	84.9	**84.8**
	Tooth powder		8.6	3.5	15.0	7.7	8.8	8.1	7.8	3.0	11.7	5.5	11.7	7.4	**7.8**
4	**Type of toothpaste/ powder**	n=	**151**	**172**	**115**	**290**	**148**	**438**	**92**	**141**	**85**	**208**	**110**	**318**	**756**
	Flouridated		11.8	1.5	12.8	8.8	12.7	10.1	15.3	3.7	21.1	12.8	12.2	12.6	**11.4**
	Non flouridated		85.6	98.5	74.2	89.0	83.8	87.3	79.6	94.1	76.8	85.5	75.4	82.4	**84.9**
5	**Change of toothbrush once in**	n=	**140**	**163**	**105**	**268**	**140**	**408**	**89**	**132**	**83**	**199**	**105**	**304**	**712**
	1-3 months		48.3	48.0	52.7	45.8	55.9	49.1	51.4	46.9	28.1	46.4	58.3	50.0	**49.6**
	4-6 months		46.1	45.4	43.9	49.2	36.2	44.9	40.8	42.4	64.3	45.7	31.7	41.4	**43.2**
	6 + months		4.9	6.6	1.9	4.1	8.0	5.4	6.7	10.7	5.8	7.8	6.9	7.6	**6.5**
6	**Rinse mouth after eating**	n=	**163**	**172**	**155**	**336**	**154**	**490**	**100**	**143**	**109**	**239**	**113**	**352**	**842**
	Sometimes		7.9	3.2	43.9	9.2	9.4	9.2	15.1	3.7	43.1	14.8	11.8	13.9	**11.6**
	Always		91.5	96.8	56.1	90.8	88.9	90.2	83.9	96.3	54.3	84.0	88.2	85.2	**87.7**

5.3.2 12 year olds

About 88 per cent children in this age group reported the use of toothbrush in the state (Tables 5.3.2). In the rural areas, they changed their toothbrushes mostly in four to six months time while in the urban areas this period was earlier.

Toothpaste was used by about 83 per cent. There were more females. Toothpaste was however more popular in urban areas where about 86 per cent reported using the same. Use of fluoridated toothpaste/tooth powder was quite low at 13 per cent.

About 58 per cent reported cleaning their teeth once a day – this was higher at 60 per cent in the rural areas as against 53 per cent in urban areas.

The practice of rinsing was almost universal. A high 92 per cent of the respondents reported rinsing their mouth after every meal, both in the urban and rural areas. The rest said they rinsed their mouth sometimes. The practice of always rinsing the mouth after eating was more common in the Midlands.

5.3.3 15 year olds

About 88 percent, across both sexes & more in urban reported the use of tooth brush to clean teeth in the state as well as in each region.

35 percent of the subjects, across both sexes & more in urban reported change of tooth brushes once in 1-3 months. While 54 percent, more females & more in rural had changed tooth brush once in 4-6 months.

More reported change of tooth brushes once in 4-6 months, followed by those who had changed tooth brushes once in 1-3 months in each region.

58 percent across both sexes & more in rural had cleaned teeth once a day. While other 41 percent across both sexes & more in urban reported cleaning teeth twice a day.

About 85 percent, more females, across places of residence reported the use of tooth paste to clean their teeth. Only 13 percent, more females & more in urban had used fluoridated tooth paste/tooth powder. Other 82 percent, across both sexes & more in rural reported the use of non-fluoridated tooth paste/powder in the state. The pattern of use of fluoridated & non fluoridated tooth paste/ powder in each region was similar to that in the state.

About 92 percent of subjects, more males reported rinsing mouth always. Table 5.3.3

Table : 5.3.2 Percent 12 year olds by oral hygiene practices, sex & geographical area.

AGE: 12 yrs STATE : Kerala

	Oral Hygiene Practices		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Clean teeth with**	n=	**129**	**161**	**108**	**261**	**137**	**398**	**120**	**158**	**108**	**263**	**123**	**386**	**784**
	finger		11.7	4.3	31.2	11.9	8.9	10.9	14.9	5.6	36.0	13.6	15.2	14.1	**12.5**
	brush		88.3	95.5	68.8	88.1	90.9	89.0	85.1	94.4	64.0	86.4	84.8	85.9	**87.5**
	datun		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	others		0.0	0.2	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	**0.1**
2	**Frequency of cleaning teeth**	n=	**129**	**160**	**108**	**261**	**136**	**397**	**120**	**158**	**108**	**263**	**123**	**386**	**783**
	Once a day		55.8	78.7	69.5	63.1	56.3	60.8	49.1	70.3	69.9	56.7	49.4	54.5	**57.7**
	Twice a day		42.6	21.3	29.1	35.2	43.6	38.0	47.4	28.1	30.1	39.6	50.6	42.9	**40.5**
	After every meal		1.6	0.0	1.5	1.7	0.0	1.1	3.5	1.6	0.0	3.7	0.0	2.6	**1.9**
3	**Material used for cleaning teeth**														
	Tooth paste		76.4	97.8	57.3	78.0	85.5	80.6	83.4	97.1	55.4	85.8	82.5	84.8	**82.7**
	Tooth powder		14.9	2.2	14.8	12.8	10.4	12.0	9.8	1.9	15.1	6.3	14.8	8.9	**10.5**
4	**Type of toothpaste/ powder**	n=	**118**	**160**	**86**	**231**	**133**	**364**	**112**	**156**	**83**	**233**	**118**	**351**	**715**
	Flouridated		14.9	0.8	20.0	8.4	21.0	12.8	19.0	0.8	27.2	16.6	10.0	14.5	**13.7**
	Non flouridated		80.0	97.8	72.7	87.4	74.4	82.8	73.2	99.2	63.2	79.4	77.5	78.9	**80.9**
5	**Change of toothbrush once in**	n=	**114**	**152**	**79**	**223**	**122**	**345**	**102**	**149**	**79**	**218**	**112**	**330**	**675**
	1-3 months		30.2	50.4	20.8	31.6	42.1	35.3	39.2	44.7	27.1	39.9	40.7	40.1	**37.7**
	4-6 months		56.7	36.4	73.1	56.0	43.8	51.8	55.1	47.0	55.8	54.0	50.1	52.8	**52.3**
	6 + months		11.4	13.2	4.2	11.3	11.9	11.5	4.7	8.3	13.0	5.0	9.2	6.2	**8.9**
6	**Rinse mouth after eating**	n=	**129**	**161**	**108**	**261**	**137**	**398**	**120**	**158**	**108**	**263**	**123**	**386**	**784**
	Sometimes		6.3	2.5	40.6	8.3	4.1	6.9	7.6	0.5	41.0	8.4	5.6	7.5	**7.2**
	Always		93.0	97.5	59.2	91.7	93.8	92.4	91.6	99.5	59.0	90.8	94.4	91.9	**92.2**

Table : 5.3.3 Percent 15 year olds by oral hygiene practices, sex & geographical area.

AGE: 15 yrs **STATE : Kerala**

	Oral Hygiene Practices		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Clean teeth with**	n=	**127**	**157**	**119**	**276**	**127**	**403**	**120**	**155**	**111**	**263**	**123**	**386**	**789**
	finger		14.8	2.1	30.6	11.5	17.6	13.5	11.8	3.9	30.7	12.1	7.8	10.8	**12.2**
	brush		85.2	97.9	69.4	88.5	82.4	86.5	88.2	96.1	69.3	87.9	92.2	89.2	**87.9**
	datun		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	others		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
2	**Frequency of cleaning teeth**	n=	**127**	**157**	**119**	**276**	**127**	**403**	**120**	**155**	**111**	**263**	**123**	**386**	**789**
	Once a day		55.4	69.6	67.0	57.5	64.0	59.6	50.8	77.1	69.5	59.8	50.3	56.9	**58.3**
	Twice a day		44.6	29.6	31.8	42.2	36.0	40.1	47.5	22.1	30.5	38.4	49.7	41.8	**41.0**
	After every meal		0.0	0.8	1.2	0.3	0.0	0.2	1.7	0.8	0.0	1.9	0.0	1.3	**0.8**
3	**Material used for cleaning teeth**														
	Tooth paste		80.5	99.5	61.5	85.7	76.8	82.8	84.9	97.6	55.5	84.9	89.6	86.3	**84.6**
	Tooth powder		10.7	0.5	13.6	5.9	16.9	9.5	9.2	2.2	14.2	8.0	7.8	7.9	**8.7**
4	**Type of toothpaste/ powder**	n=	**116**	**157**	**94**	**246**	**121**	**367**	**113**	**154**	**86**	**233**	**120**	**353**	**720**
	Flouridated		13.5	2.5	14.6	8.6	17.8	11.7	17.5	1.7	20.9	12.1	19.9	14.5	**13.1**
	Non flouridated		79.8	97.0	76.4	88.1	70.8	82.3	78.0	97.0	71.5	83.8	77.1	81.7	**82.0**
5	**Change of toothbrush once in**	n=	**108**	**151**	**89**	**237**	**111**	**348**	**106**	**149**	**83**	**224**	**114**	**338**	**686**
	1-3 months		32.3	49.4	20.5	36.2	35.0	35.8	32.8	38.3	23.0	32.0	39.1	34.2	**35.0**
	4-6 months		53.3	42.3	69.0	54.5	41.6	50.4	59.5	51.5	61.7	57.7	57.7	57.7	**54.1**
	6 + months		13.5	8.3	8.9	9.2	20.9	12.9	6.7	10.2	13.4	9.3	3.2	7.4	**10.2**
6	**Rinse mouth after eating**	n=	**127**	**157**	**119**	**276**	**127**	**403**	**120**	**155**	**111**	**263**	**123**	**386**	**789**
	Sometimes		6.4	1.6	31.1	7.7	4.3	6.6	9.0	0.0	34.0	7.3	12.3	8.8	**7.7**
	Always		93.6	97.5	68.9	92.1	95.7	93.3	89.4	100.0	66.0	91.9	85.3	89.9	**91.6**

5.3.4 35-44 year olds

About 87 per cent of the respondents in the 35-44 age group reported the use of toothbrush to clean their teeth about 84 per cent in rural areas and 92 per cent in urban areas (Table 5.3.4). About a third of the users replaced their toothbrushes once in three months, and the practice was more prevalent in urban areas. There was not much difference between males and females. Among regions, use of toothbrush was more common in the Midlands & more were changing tooth brushes once in 1-3 months.

About 53 per cent of the respondents said they cleaned their teeth once a day while another 45 per cent said they cleaned their teeth twice a day. More males cleaned their teeth once a day. Region-wise, more people in the Coastal Midlands cleaned their teeth twice a day.

The use of toothpaste was reported by about 82 per cent (77 per cent in the rural areas against 88 per cent in the urban areas. The others reported using tooth powder. Not much difference was noticed between the genders. Among regions, usage of toothpaste was reported more in the Coastal Midlands and Midlands. The use of fluoridated toothpaste was quite low at 12 per cent. Again, gender differences were not significant.

About 92 per cent of the population reported rinsing their mouth after every meal. This practice was found to be most prevalent in the Coastal Midlands and Midlands regions.

5.3.5 65-74 year olds

The use of toothbrush, in this age group was relatively low at 50 per cent (Table 5.3.5). While people in the rural areas changed their toothbrushes mostly in four to six months or after six months, in urban areas a majority did so between one and three months and between four and six months. People in the Midlands tended to change their toothbrushes more often than in the other regions.

About 69 per cent of the subjects reported cleaning their teeth once a day wile another 27 per cent said they cleaned their teeth twice a day. In the rural areas more people cleaned their teeth once a day. Comparatively, more males reported cleaning their teeth twice a day. More people cleaned their teeth twice a day in the Coastal Midlands.

Over half the respondents in this age group (59 per cent) reported using toothpaste. In the rural areas, 54 per cent people reported using toothpaste for cleaning their teeth while 67 per cent did so in the urban areas. The use of fluoridated toothpaste/tooth powder was much less at 10 per cent.

Rinsing after meals was common. About 90 per cent respondents reported that they had the habit of rinsing their mouth always after the meals while another 9 per cent reported rinsing "sometimes".

Table : 5.3.4 Percent 35-44 year olds by oral hygiene practices, sex & geographical area.

AGE: 35-44 yrs STATE : Kerala

	Oral Hygiene Practices		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Clean teeth with**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	finger		15.9	4.4	37.1	17.4	9.2	14.6	11.3	5.6	35.6	13.9	5.4	11.2	12.9
	brush		84.1	95.6	62.1	82.5	90.8	85.4	88.7	94.2	64.4	86.1	94.4	88.7	87.1
	datun		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	others		0.0	0.0	0.8	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.2	0.1	0.1
2	**Frequency of cleaning teeth**	n=	141	164	174	321	158	479	180	163	167	343	167	510	989
	Once a day		48.4	78.1	74.5	60.7	44.6	55.1	44.4	80.1	58.7	52.8	46.0	50.6	52.9
	Twice a day		49.4	21.1	25.2	37.6	53.6	43.1	51.0	19.1	41.3	42.3	54.0	46.0	44.6
	After every meal		2.1	0.0	0.2	1.5	1.8	1.6	4.6	0.8	0.0	4.9	0.0	3.4	2.5
3	**Material used for cleaning teeth**														
	Tooth paste		78.4	96.4	49.0	76.9	87.3	80.5	81.9	95.2	55.9	79.7	91.3	83.4	82.0
	Tooth powder		12.9	2.6	16.2	11.9	9.0	10.9	8.4	2.1	14.0	8.6	5.2	7.5	9.2
4	**Type of toothpaste/ powder**	n=	129	162	130	266	155	421	163	159	129	290	161	451	872
	Flouridated		17.1	0.8	17.3	13.0	14.8	13.7	11.0	4.2	15.1	10.0	10.1	10.0	11.9
	Non flouridated		78.1	97.9	70.6	81.7	83.0	82.1	84.6	94.3	73.8	85.8	86.1	85.9	84.0
5	**Change of toothbrush once in**	n=	119	157	125	252	149	401	160	154	118	279	153	432	833
	1-3 months		30.6	46.8	20.7	30.4	41.8	34.6	27.0	40.0	30.4	30.8	25.5	29.0	31.8
	4-6 months		55.5	38.1	62.6	51.4	53.5	52.1	67.5	46.3	55.9	62.1	66.4	63.6	57.9
	6 + months		13.0	15.1	15.4	17.2	4.7	12.6	5.6	13.8	13.7	7.1	8.1	7.4	10.0
6	**Rinse mouth after eating**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	Sometimes		7.1	0.0	33.4	8.5	5.6	7.5	4.9	0.8	36.9	6.0	6.7	6.2	6.9
	Always		91.5	100.0	65.8	91.4	90.9	91.2	94.5	99.2	63.1	93.4	93.3	93.4	92.3

Table : 5.3.5 Percent 65-74 year olds by oral hygiene practices, sex & geographical area.

AGE: 65-74 yrs STATE : Kerala

	Oral Hygiene Practices		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Clean teeth with**	n=	**120**	156	**108**	**264**	**120**	**384**	**141**	**162**	**112**	**279**	**136**	**415**	**799**
	finger		37.0	23.3	47.5	37.2	26.4	33.8	39.3	28.8	42.6	39.4	31.3	36.7	**35.3**
	brush		47.5	70.1	40.3	52.2	51.4	52.0	44.4	61.8	41.2	46.3	52.2	48.3	**50.2**
	datun		2.5	0.8	0.0	1.9	2.3	2.0	1.4	0.0	0.0	0.7	1.9	1.1	**1.6**
	others		13.0	5.7	12.2	8.7	20.0	12.2	14.9	9.4	16.3	13.6	14.6	13.9	**13.1**
2	**Frequency of cleaning teeth**	n=	**101**	**144**	**88**	**239**	**94**	**333**	**118**	**146**	**92**	**242**	**114**	**356**	**689**
	Once a day		57.4	89.5	79.4	67.8	60.8	65.8	67.2	89.1	76.3	75.3	63.6	71.5	**68.7**
	Twice a day		35.5	9.6	20.6	25.5	39.2	29.4	26.8	8.0	23.5	18.7	33.8	23.6	**26.5**
	After every meal		7.2	0.9	0.0	6.7	0.0	4.8	4.4	1.8	0.2	4.8	0.0	3.3	**4.1**
3	**Material used for cleaning teeth**														
	Tooth paste		55.2	75.4	36.2	57.0	65.4	59.4	51.9	74.3	41.1	51.9	69.3	57.5	**58.5**
	Tooth powder		12.0	9.2	19.5	13.1	7.1	11.4	16.4	9.2	12.9	16.9	8.1	14.0	**12.7**
4	**Type of toothpaste/ powder**	n=	**68**	**125**	**54**	**167**	**80**	**247**	**81**	**121**	**59**	**168**	**93**	**261**	**508**
	Flouridated		16.2	2.1	7.7	11.7	12.2	11.9	9.9	4.2	20.2	8.8	8.9	8.8	**10.4**
	Non flouridated		76.3	94.3	74.8	80.8	83.3	81.5	82.7	88.1	60.1	82.6	84.9	83.4	**82.5**
5	**Change of toothbrush once in**	n=	**57**	**113**	**46**	**141**	**75**	**216**	**63**	**100**	**54**	**137**	**80**	**217**	**433**
	1-3 months		26.3	45.7	37.1	33.8	28.3	32.1	25.2	33.5	8.3	25.6	29.4	27.0	**29.6**
	4-6 months		66.7	26.8	50.9	52.3	60.2	54.8	63.3	46.3	75.9	57.7	63.6	59.8	**57.3**
	6 + months		5.3	27.1	12.0	12.3	11.1	11.9	8.1	20.2	3.1	12.7	6.9	10.7	**11.3**
6	**Rinse mouth after eating**	n=	**120**	**156**	**108**	**264**	**120**	**384**	**141**	**162**	**112**	**279**	**136**	**415**	**799**
	Sometimes		10.2	1.4	39.3	11.5	5.2	9.5	7.9	3.1	43.5	9.3	6.5	8.4	**9.0**
	Always		89.0	98.6	60.7	87.7	94.8	89.9	91.5	96.9	55.3	90.6	91.6	90.9	**90.4**

ORAL HYGIENE PRACTICES ACROSS AGE GROUPS (SUMMING UP)

1. The practice of cleaning teeth was universal.

1. About 85-90 per cent in all age groups, except in the age group 65-74 years, across both sexes and more subjects in urban areas reported using toothbrush to clean their teeth. Use of toothbrush was lower in the Hills.

2. About 60 per cent, across both sexes and more people in rural areas cleaned their teeth once a day. In urban areas, more people reported cleaning them twice a day.

3. About 80 per cent, except 65-74 year olds across ages and sexes, and more subjects in the urban areas reported the use of toothpaste. Usage was more in the Midlands.

4. About 80 per cent, across all ages and both sexes, and more in rural areas reported the use of non-fluoridated toothpaste/powder.

5. About 40 per cent, across all ages, more males and more in urban areas changed their toothbrush once in 1-3 months. The change was less frequent in rural areas once in four to six months or even after six months.

6. Almost all the respondents in the state and in the Coastal Midlands and Midlands, across all ages and both sexes, reported rinsing their mouth after every meal. But in the Hills region, 35-40 per cent had rinsed their mouth sometimes after meals.

5.4 DENTAL PROBLEMS AND TREATMENT PRACTICES

The respondents were asked whether they had any dental problem in the last one year and whom they consulted for this. Furthermore, they were asked about the access they had to dental facilities. They were also asked if they had problems like hypertension, diabetes, epilepsy, jaundice, asthma. Responses on all these aspects are shown in Tables 5.4.1 to 5.4.5.

5.4.1 5 year olds

About 22 per cent of the respondents in this age group had oral health problems in the last one year. There were no significant rural-urban differentials. Females reported more dental problems. The problems mostly reported were dental decay (about 95 per cent). Incidence of dental problems was the highest in the Midlands.

The practice of consultation was followed by about two-thirds of the respondents, more females, and there was not much difference between urban and rural areas. About 68 per cent males and 72 per cent females who got dental problems consulted a trained dentist.

About 46 percent & 84 percent reported aware of Govt. & Pvt. dental care facilites respectively in their areas. More than 70 per cent reported less than half an hour in the state & in the Coastal Midlands and the Midlands, to reach dental care facility in the Hills region, about 35 per cent of the subjects reported half an hour to reach dental care facility. Table 5.4.1

Table 5. 4. 1 Percent 5 year olds by reported nature of dental problems and treatment related aspects, sex & geographical area.

AGE: 5 yrs **STATE : Kerala**

	Nature of Dental Problems and Treatment related aspects		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Suffered from oral health**	n=	163	172	155	336	154	490	100	143	109	239	113	352	842
	problems in last one year		10.2	62.1	14.7	20.2	20.1	20.2	12.6	58.1	9.7	22.2	26.3	23.4	21.8
2	**Type of oral health problems**	n=	17	102	24	98	45	143	13	79	12	70	34	104	247
	Dental decay		88.9	100.0	94.0	99.6	83.2	94.3	91.8	100.0	86.7	95.3	100.0	96.9	95.6
	Gum disease		0.0	0.0	6.0	0.4	0.0	0.2	8.2	0.0	0.0	4.2	0.0	2.8	1.5
	Foul breath		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.3	0.0	0.8	0.4
	Bleeding gums		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Others		5.5	0.0	0.0	0.0	8.4	2.7	0.0	0.0	13.3	0.5	0.0	0.3	1.5
3	**Consulted (out of those suffered)**														
	None		29.2	25.6	24.4	25.5	31.2	27.3	22.7	20.0	29.3	17.7	31.6	22.3	24.8
	Trained dentist		64.6	71.2	63.7	68.8	67.1	68.3	69.1	74.4	70.7	74.3	66.3	71.7	70.0
4	**Availaibility of dental facility**	n=	163	172	155	336	154	490	100	143	109	239	113	352	842
	None		0.0	3.0	1.0	0.8	0.0	0.6	0.0	0.0	1.3	0.1	0.0	0.1	0.4
	Govt. facility		42.0	49.7	40.5	35.8	66.1	45.6	43.9	47.9	32.7	35.5	73.4	46.7	46.2
	Pvt. facility		92.2	54.4	77.2	83.5	86.1	84.4	91.0	59.6	76.6	81.3	87.5	83.1	83.8
	Do not know		0.6	0.0	0.0	0.6	0.0	0.4	1.0	0.8	1.3	1.0	0.9	1.0	0.7
5	**Time taken to reach the facility**	n=	162	168	153	330	153	483	99	140	107	236	110	346	829
	Less than 1/2 hr.		71.9	74.3	33.0	60.7	97.1	72.6	70.8	78.0	41.0	63.2	96.1	72.9	72.8
	1/2 - 1 hr.		23.6	25.7	52.9	33.6	2.9	23.6	27.1	21.1	49.7	33.9	3.9	25.0	24.3
	> 1 hr.		4.5	0.0	13.2	5.6	0.0	3.8	2.1	0.0	9.3	2.7	0.0	1.9	2.9
	Cannot say		0.0	0.0	0.9	0.1	0.0	0.0	0.0	0.9	0.0	0.3	0.0	0.2	0.1
6	**Ever suffered from**	n=	163	172	155	336	154	490	100	143	109	239	113	352	842
	Hypertension		0.6	0.0	0.1	0.6	0.0	0.4	1.0	0.0	0.0	0.9	0.0	0.7	0.6
	Diabetes		0.6	0.8	0.0	0.8	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3
	Epilepsy		1.8	0.8	0.0	1.5	1.7	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.8
	Jaundice		0.0	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Asthma		0.6	1.5	0.0	1.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.4

5.4.2 12 year olds

About 19 per cent of the respondents in this age group, more females & more in urban reported oral health problems in the last one year.

Most of those who had problems reported dental decay (85 per cent) followed by gum disease (4 per cent). About 78 per cent of respondents who had faced problems consulted a trained dentist.

49 percent & 82 percent reported knowledge of Govt. & Pvt. dental care facility respectively in their areas. About 72 percent more females & more in urban reported less than half hour to reach dental care facility. Another 26 percent more in rural told half to one hour, to reach dental care facility. Table 5.4.2

5.4.3 15 year olds

18 per cent of the respondents, in this age group, more females and more in rural areas, had dental problems. While about 19 per cent respondents reporting such problems were from rural areas, about 16 per cent were from urban areas (Table 5.4.3). Most of them reported problems of dental decay (86 per cent). Prevalence of problems was found to be higher in the Midlands. About 77 per cent respondents had consulted trained dentist.

About 47 percent & 85 percent were aware of Govt. & Pvt. dental care facility respectively in their areas. 72 percent of the respondents more in urban reported less than half-an-hour as the time to reach these facilities. However, in the Hills region, more reported half to one hour to reach facility.

Table 5. 4. 2 Percent 12 year olds by reported nature of dental problems and treatment related aspects, sex & geographical area.

AGE: 12 yrs **STATE : Kerala**

	Nature of Dental Problems and Treatment related aspects		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Suffered from oral health**	n=	129	161	108	261	137	398	120	158	108	263	123	386	784
	problems in last one year		12.3	25.5	15.3	14.7	16.7	15.4	20.6	26.2	25.0	20.7	26.7	22.5	**19.0**
2	**Type of oral health problems**	n=	16	40	17	47	26	73	25	39	27	62	29	91	164
	Dental decay		81.8	99.0	91.4	93.9	74.9	86.9	80.0	95.9	84.1	85.8	81.1	84.1	**85.5**
	Gum disease		5.8	0.0	0.0	0.0	12.0	4.4	4.2	3.1	6.3	5.5	0.2	3.6	**4.0**
	Foul breath		0.0	3.2	0.0	1.6	0.0	1.0	0.0	4.1	0.0	1.2	0.9	1.1	**1.1**
	Bleeding gums		0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	3.9	0.0	2.5	**1.3**
	Others		6.6	0.0	0.0	5.5	0.0	3.5	4.2	0.0	5.3	4.3	0.0	2.8	**3.2**
3	**Consulted (out of those suffered)**														
	None		30.6	10.7	10.3	16.5	37.3	24.1	11.6	7.2	22.2	8.0	19.1	11.9	**18.0**
	Trained dentist		69.4	83.2	89.7	81.9	59.1	73.5	84.2	84.7	61.9	84.5	79.1	82.6	**78.1**
4	**Availaibility of dental facility**	n=	129	161	108	261	137	398	120	158	108	263	123	386	784
	None		0.7	0.0	0.1	0.0	2.0	0.7	0.9	2.5	1.3	1.6	0.0	1.1	**0.9**
	Govt. facility		43.4	52.8	37.7	39.1	62.0	46.9	50.7	46.4	33.1	41.2	74.5	51.1	**49.0**
	Pvt. facility		90.3	53.1	76.0	82.7	78.8	81.4	90.0	58.4	77.5	80.8	87.2	82.7	**82.1**
	Do not know		1.6	0.5	0.0	1.6	0.4	1.2	0.0	0.2	0.0	0.0	0.2	0.1	**0.7**
5	**Time taken to reach the facility**	n=	126	159	107	259	133	392	119	154	107	258	122	380	772
	Less than 1/2 hr.		67.1	72.7	32.0	55.5	97.3	69.6	71.3	80.2	27.3	62.6	98.7	73.5	**71.6**
	1/2 - 1 hr.		29.6	27.3	56.1	40.4	2.7	27.7	27.0	19.8	56.6	34.7	1.3	24.6	**26.2**
	> 1 hr.		3.3	0.0	11.9	4.1	0.0	2.7	1.7	0.0	14.8	2.7	0.0	1.9	**2.3**
	Cannot say		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.1	0.0	0.1	**0.1**
6	**Ever suffered from**	n=	129	161	108	261	137	398	120	158	108	263	123	386	784
	Hypertension		0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.8	0.0	0.6	**0.3**
	Diabetes		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Epilepsy		1.5	0.0	0.0	0.8	2.0	1.2	1.7	0.8	0.0	1.9	0.0	1.3	**1.3**
	Jaundice		0.0	0.0	1.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	**0.1**
	Asthma		0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.2	0.0	2.4	0.2	1.8	**0.9**

Table 5. 4. 3 Percent 15 year olds by reported nature of dental problems and treatment related aspects, sex & geographical area.

AGE: 15 yrs **STATE : Kerala**

	Nature of Dental Problems and Treatment related aspects		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Suffered from oral health**	n=	127	157	119	276	127	403	120	155	111	263	123	386	789
	problems in last one year		14.2	31.9	13.7	19.2	14.3	17.6	15.8	30.9	8.5	19.0	17.5	18.6	**18.1**
2	**Type of oral health problems**	n=	18	45	14	60	17	77	19	45	14	52	26	78	155
	Dental decay		89.8	92.2	99.2	96.3	70.9	89.5	73.9	100.0	52.9	85.8	72.3	81.9	**85.7**
	Gum disease		0.0	5.2	0.0	2.5	0.0	1.8	5.5	0.0	30.9	5.2	0.2	3.8	**2.8**
	Foul breath		0.0	2.6	0.0	1.2	0.0	0.9	5.5	0.0	0.0	4.3	0.0	3.1	**2.0**
	Bleeding gums		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Others		5.8	0.0	0.0	4.2	0.0	3.1	4.8	0.0	14.7	0.5	13.7	4.2	**3.7**
3	**Consulted (out of those suffered)**														
	None		16.7	21.5	24.6	19.6	15.9	18.6	15.8	13.4	75.1	16.0	18.0	16.6	**17.6**
	Trained dentist		77.6	69.3	75.4	72.5	81.2	74.9	78.8	83.1	24.9	78.5	80.6	79.1	**77.0**
4	**Availaibility of dental facility**	n=	127	157	119	276	127	403	120	155	111	263	123	386	789
	None		0.0	0.0	1.1	0.1	0.0	0.1	1.7	1.9	1.3	2.2	0.2	1.6	**0.9**
	Govt. facility		38.3	52.5	39.4	33.8	63.8	43.7	49.9	43.3	37.0	39.8	74.2	50.1	**46.9**
	Pvt. facility		94.7	53.7	78.7	84.4	86.8	85.2	91.0	64.1	77.2	84.1	85.1	84.4	**84.8**
	Do not know		0.8	0.0	0.0	0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	**0.3**
5	**Time taken to reach the facility**	n=	126	157	118	274	127	401	118	152	110	258	122	380	781
	Less than 1/2 hr.		68.8	77.2	29.5	58.9	95.4	71.0	71.1	79.4	28.1	62.5	96.8	72.9	**72.0**
	1/2 - 1 hr.		30.4	22.8	59.1	39.4	4.6	27.9	26.2	20.6	50.2	33.4	3.2	24.2	**26.1**
	> 1 hr.		0.8	0.0	11.3	1.7	0.0	1.1	2.6	0.0	19.1	3.9	0.0	2.7	**1.9**
	Cannot say		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.2	0.0	0.1	**0.1**
6	**Ever suffered from**	n=	127	157	119	276	127	403	120	155	111	263	123	386	789
	Hypertension		0.0	0.8	0.0	0.2	0.0	0.2	2.6	0.0	0.0	2.4	0.0	1.7	**1.0**
	Diabetes		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Epilepsy		1.6	0.0	0.1	1.6	0.0	1.1	2.6	0.8	0.0	2.7	0.0	1.9	**1.5**
	Jaundice		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Asthma		1.6	0.0	2.4	1.8	0.0	1.2	0.8	0.0	0.0	0.0	2.4	0.7	**1.0**

5.4.4 35-44 year olds

About 30 per cent of the respondents more females & more in rural, in this age groups reported dental problems in the last one year in the state. More reported dental problems in Midlands than in other two regions.

As regard type of problems most of the respondents reported problem of dental decay (82 percent) followed by gum disease (12 per cent) and bleeding gums by one percent only.

More from this age group had gone in for consultation than of earlier ages — more people in urban areas consulted trained dentist (over 71 per cent) than in rural areas (67 per cent).

The reporting on availability of dental facilities was also similar to that reported by respondents in the earlier age groups—more people in urban areas reported knowledge of Govt. & Pvt. dental care facilities. 75 percent, across both sexes & more in urban told less than half an-hour to reach such facility places. While other 25 percent reported half to more than an hour to reach the facility.

Around 4 percent, more females & more in rural had hypertension & same percent of respondents, more females & more in rural, had diabetes. Table 5.4.4

5.4.5 65-74 year olds

About 28 percent, more males & more in rural reported dental problems in last one year in the state. More in Midlands region than in other regions reported dental problems in last one year. As regard type of problems, 83 percent, reported dental decay, followed by other about 25 percent who had gum disease including bleeding gums.

69 percent of those suffered, more males & more in urban consulted trained dentist in the state. As regard knowledge of availability of dental care facilities about 46 percent & 82 percent were aware of Govt. & Pvt. dental facility in their areas. 72 percent of them, more in urban reported less than half hour to reach the dental care facility. While other about 25 percent, more in rural reported half to one hour to reach the dental care facility.

34 percent, across both sexes & more in urban had problem of hypertension. Another 22 percent evenly distributed by sex & places of residence reported problem of diabetes. Table 5.4.5

Table 5. 4. 4 Percent 35-44 year olds by reported nature of dental problems and treatment related aspects, sex & geographical area.

AGE: 35-44 yrs **STATE : Kerala**

	Nature of Dental Problems and Treatment related aspects		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Suffered from oral health**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	problems in last one year		20.7	40.5	23.8	27.1	19.0	24.3	36.0	44.4	32.2	36.8	38.4	37.3	30.8
2	Type of oral health problems	n=	29	63	42	95	39	134	65	67	54	129	57	186	320
	Dental decay		62.3	95.5	79.5	77.6	62.0	73.3	84.9	100.0	86.0	91.0	78.9	87.0	80.2
	Gum disease		24.2	3.9	10.2	16.1	18.5	16.8	7.5	1.8	16.7	4.8	12.7	7.4	12.1
	Foul breath		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.2	0.0	0.1	0.1
	Bleeding gums		0.0	0.0	3.3	0.3	0.0	0.2	3.0	0.0	0.0	1.6	4.2	2.5	1.4
	Others		6.7	0.0	6.6	3.3	9.2	4.9	4.8	0.0	0.0	4.9	0.0	3.3	4.1
3	**Consulted (out of those suffered)**														
	None		34.5	18.0	34.0	28.5	31.7	29.3	20.1	20.3	19.3	20.6	18.5	19.9	24.6
	Trained dentist		61.9	62.6	56.1	60.7	65.6	62.0	76.9	70.8	78.0	75.7	76.0	75.8	68.9
4	**Availaibility of dental facility**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	None		0.7	1.6	0.9	1.3	0.0	0.8	0.6	1.0	0.9	0.8	0.2	0.6	0.7
	Govt. facility		44.2	55.9	38.9	37.1	70.6	48.7	43.8	45.8	32.9	32.8	76.0	46.6	47.7
	Pvt. facility		93.1	52.4	73.2	82.3	86.5	83.8	92.3	61.7	81.3	86.2	88.0	86.8	85.3
	Do not know		0.7	0.0	1.6	0.9	0.0	0.6	0.6	0.8	0.0	0.8	0.0	0.5	0.6
5	**Time taken to reach the facility**	n=	139	162	172	316	157	473	178	161	166	338	167	505	978
	Less than 1/2 hr.		76.0	72.5	34.2	61.8	99.2	74.9	74.5	83.2	26.7	65.5	95.9	75.3	75.1
	1/2 - 1 hr.		23.3	27.5	51.4	35.9	0.8	23.6	22.0	16.8	58.7	29.8	4.1	21.5	22.6
	> 1 hr.		0.8	0.0	14.4	2.3	0.0	1.5	3.5	0.0	14.6	4.8	0.0	3.2	2.4
	Cannot say		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	**Ever suffered from**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	Hypertension		3.7	1.5	2.5	4.1	0.6	2.9	5.6	4.8	3.7	5.9	3.8	5.2	4.1
	Diabetes		5.7	1.8	0.0	4.8	3.7	4.4	4.5	1.6	0.9	4.0	3.2	3.7	4.1
	Epilepsy		1.5	0.0	0.0	1.5	0.0	1.0	0.0	0.8	0.0	0.2	0.0	0.1	0.6
	Jaundice		0.0	0.0	0.8	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Asthma		1.5	0.2	0.0	1.5	0.2	1.0	1.7	3.5	0.0	2.5	0.2	1.7	1.4

Table 5. 4. 5 Percent 65-74 year olds by reported nature of dental problems and treatment related aspects, sex & geographical area.

AGE: 65-74 yrs **STATE : Kerala**

	Nature of Dental Problems and Treatment related aspects		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Suffered from oral health**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	problems in last one year		26.0	46.6	30.8	33.5	22.3	30.0	24.7	32.8	20.3	25.7	27.6	26.3	**28.2**
2	**Type of oral health problems**	n=	31	67	30	98	30	128	35	51	25	74	37	111	239
	Dental decay		84.1	89.8	88.2	88.1	77.4	85.6	80.1	82.3	93.7	82.1	78.6	80.9	**83.3**
	Gum disease		12.2	16.0	16.1	8.7	37.0	15.3	22.5	40.5	20.0	24.5	33.9	27.8	**21.6**
	Foul breath		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.9	0.0	0.6	**0.3**
	Bleeding gums		2.9	0.0	0.0	0.0	10.3	2.4	2.6	7.3	0.0	2.6	6.9	4.1	**3.3**
	Others		2.9	0.0	0.0	0.0	10.3	2.4	3.0	0.0	0.0	2.9	0.0	1.9	**2.2**
3	**Consulted (out of those suffered)**														
	None		16.2	16.2	43.1	18.7	13.3	17.5	28.8	25.7	58.8	31.7	22.4	28.4	**23.0**
	Trained dentist		80.4	71.3	52.9	74.2	83.6	76.4	62.2	58.2	35.0	54.2	76.3	61.9	**69.2**
4	**Availaibility of dental facility**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	None		2.4	0.0	0.0	0.8	4.6	2.0	0.0	4.0	2.5	1.3	0.0	0.8	**1.4**
	Govt. facility		41.7	54.1	32.0	37.9	62.6	45.6	44.1	46.2	37.6	33.2	76.2	47.4	**46.5**
	Pvt. facility		88.7	56.2	83.1	82.3	78.0	80.9	88.7	57.4	74.4	80.2	85.7	82.0	**81.5**
	Do not know		0.0	0.0	2.4	0.2	0.0	0.1	0.7	1.8	0.0	1.2	0.2	0.9	**0.5**
5	**Time taken to reach the facility**	n=	116	156	107	261	118	379	140	154	110	269	135	404	783
	Less than 1/2 hr.		74.2	73.6	32.5	63.8	96.6	73.9	66.8	79.5	35.6	58.0	95.3	70.5	**72.2**
	1/2 - 1 hr.		24.0	26.4	56.5	33.6	3.4	24.3	27.3	20.2	51.4	35.1	4.5	24.8	**24.6**
	> 1 hr.		1.8	0.0	11.0	2.5	0.0	1.8	5.9	0.0	13.0	6.9	0.0	4.6	**3.2**
	Cannot say		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.1	**0.1**
6	**Ever suffered from**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	Hypertension		33.4	39.1	13.0	33.6	33.1	33.4	34.5	31.0	27.1	31.1	40.2	34.1	**33.8**
	Diabetes		21.6	24.0	6.5	19.4	27.1	21.8	23.7	22.8	11.9	24.3	18.9	22.5	**22.2**
	Epilepsy		0.8	0.0	1.3	0.1	2.3	0.8	0.0	2.6	1.3	0.7	0.2	0.6	**0.7**
	Jaundice		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Asthma		9.4	11.5	7.5	12.0	2.8	9.1	2.9	6.1	5.3	4.1	2.3	3.5	**6.3**

DENTAL PROBLEMS AND TREATMENT ASPECTS ACROSS AGE GROUPS (SUMMING UP)

1. The percentage of subjects who had dental problems in the last one year was about 20-30 per cent across age groups, and across sexes, and rural and urban areas.
2. The most common problem reported was dental decay. The problem of gum disease increased with increase in age. About 17 per cent in the higher age groups (35+) reported problems of gum disease.
3. About three-fourth of those had problems across all ages, consulted trained dentist. However, about 45 percent, across all ages and both sexes, but more in urban areas reported the availability of governmental dental facility. Against this, more were aware of private dental care facility.
4. Most respondents reported less than half-an-hour to reach the dental care facilities. This was especially so in urban areas. However, in the Hills region, half the respondents said half an hour to one hour to reach the dental care facility.

5.5 AWARENESS OF DENTAL HEALTH PROBLEMS

The respondents were asked three questions about their awareness of dental health problems. The first was about the common dental problems, the second about the major factors responsible for such problems and the third about how these problems could be prevented. Their responses are shown in Tables 5.5.2 to 5.5.5. and are analysed below:

5.5.2 12 year olds

Nearly all the respondents (97 per cent) in this age group, across both sexes, reported knowledge of dental health problems (Table 5.5.2). Most of them knew about dental decay (94 per cent), gum disease (24 per cent) and a small percentage knew of problems like bad smell (about 8 per cent). Awareness was little more among males, and more in urban areas. Subjects in the Hills region were less aware than in other regions.

About 9 per cent of the respondents, across both sexes, reported lack of knowledge about the factors that can cause problems. Awareness was less in the Hills region. Also, urban people were more aware. The most-often cited factors causing dental problems were "not brushing regularly" (74 per cent) and "eating sweets/ice cream/chocolates" (36 per cent). The other cause cited by about 16 per cent respondents was "not rinsing".

When asked about the preventive measures, again about 10 per cent of the respondents reported no knowledge. Awareness was lower among males, and in rural areas. About 86 per cent cited cleaning teeth regularly as a preventive measure. Other preventive measures reported were "avoid sweet items" (13 per cent), visiting dentist regularly" (4 per cent) and "not consuming tobacco" (3 per cent). Awareness of preventive measures was found to be lower in the Hills region.

Table: 5.5.2 Percent 12 year olds by reported awareness of oral health problems, their causes & preventive measures, sex & geographical area.

AGE: 12 yrs **STATE : Kerala**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Awareness of Oral Health Problems**	n=	129	161	108	261	137	398		159	108	264	123	387	785
	No knowledge		3.2	3.5	18.7	5.2	0.8	3.7		1.1	17.2	4.6	0.2	3.3	**3.5**
	Tooth decay		93.6	96.3	75.7	92.0	96.9	93.7		98.1	82.4	91.9	97.3	93.5	**93.6**
	Gum disease		24.8	20.3	17.5	22.3	26.6	23.8		20.8	13.4	21.4	27.3	23.1	**23.5**
	Bad smell		1.6	26.6	1.6	7.7	4.8	6.7		31.0	0.4	9.0	10.7	9.5	**8.1**
	Stained teeth		0.0	0.0	1.3	0.1	0.0	0.1		0.0	0.0	2.4	0.0	1.7	**0.9**
	Others		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	2.4	0.0	1.7	**0.9**
2	**Factors that cause Oral Health Problems**														
	Eating sweets/ice cream		23.4	87.2	27.6	40.2	28.8	36.3		86.9	22.6	38.0	26.3	34.6	**35.5**
	Not brushing regularly		79.6	55.6	49.5	68.8	84.6	74.1		64.3	49.7	65.9	92.5	73.8	**74.0**
	Not rinsing		8.8	36.7	5.3	17.0	7.6	13.8		45.2	5.9	19.6	14.4	18.1	**16.0**
	Consuming tobacco		0.0	0.0	0.0	0.0	0.0	0.0		0.8	1.3	0.3	0.0	0.2	**0.1**
	Do not know		8.6	1.1	36.0	9.2	6.2	8.2		0.2	41.0	13.3	2.7	10.1	**9.2**
3	**Reported Preventive Measures**														
	Not consuming Tobacco		1.6	7.4	8.7	4.3	0.1	2.9		7.3	4.8	2.4	2.6	2.5	**2.7**
	Cleaning teeth regularly		81.1	96.8	63.9	81.5	89.4	84.2		96.5	57.3	84.9	97.3	88.6	**86.4**
	Visiting dentist regularly		3.7	6.6	1.5	2.8	8.0	4.6		10.5	2.9	4.9	2.5	4.2	**4.4**
	Using flouride paste / powder		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.8	0.0	0.6	**0.3**
	Avoid sweet items		8.6	36.4	2.0	14.4	13.5	14.1		43.4	3.0	12.9	8.5	11.6	**12.9**
	Do not know		11.9	1.6	33.3	13.0	4.6	10.2		1.1	41.2	12.7	2.7	9.7	**10.0**

5.5.3 15 year olds

About 98 per cent of the respondents of this age group, more females and more in urban areas, reported knowledge of oral health problems (Table 5.5.3). Most of them knew about dental decay (94 per cent), gum disease (38 per cent) and bad smell (15 per cent). Among regions, awareness was relatively higher in the Hills region in this age group of respondents.

Like in the 12-year age group, only about 7 per cent of the respondents aged 15 years did not know about the factors affecting oral health— this was more in rural areas and significantly more in the Hills region. The most-often reported factor causing oral health problems was "not brushing regularly" (78 per cent), "eating sweets/ ice cream/chocolates" (38 per cent), and not rinsing (21 per cent).

Again, about 9 per cent of the respondents of this age group reported lack of knowledge of preventive measures. Such respondents were more in rural areas and less in urban. The four main preventive measures reported were 'cleaning teeth regularly' (88 per cent), "avoid sweets" (15 per cent), "visiting dentist regularly" (6 per cent) and "not consuming tobacco" (about 4 per cent). Awareness of preventive measures was lower in the Hills region than in other two regions.

Table: 5.5.3 Percent 15 year olds by reported awareness of oral health problems, their causes & preventive measures, sex & geographical area. **AGE: 15 yrs** **STATE : Kerala**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Awareness of Oral Health Problems**	n=	127	156	119	276	126	402		155	111	263	123	386	788
	No knowledge		2.5	0.5	11.3	3.3	0.4	2.4		1.1	12.6	2.8	0.2	2.0	2.2
	Tooth decay		95.2	99.5	87.0	95.0	97.4	95.8		98.1	81.6	94.2	90.0	92.9	94.4
	Gum disease		38.0	31.1	29.9	36.3	35.3	36.0		41.7	29.9	38.2	42.6	39.5	37.8
	Bad smell		11.0	35.0	2.6	15.4	16.2	15.7		46.9	5.5	13.9	17.4	14.9	15.3
	Stained teeth		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.8	2.4	1.3	0.7
	Others		2.5	0.8	2.2	2.8	0.0	1.9		0.0	2.6	2.6	0.0	1.8	1.9
2	**Factors that cause Oral Health Problems**														
	Eating sweets/ice cream		25.2	84.0	24.3	39.6	32.0	37.1		86.7	35.5	47.3	21.3	39.5	38.3
	Not brushing regularly		77.4	70.0	61.5	69.7	90.0	76.4		76.6	52.2	73.5	90.4	78.6	77.5
	Not rinsing		18.5	39.3	9.3	25.1	14.3	21.6		51.0	3.4	19.5	23.0	20.6	21.1
	Consuming tobacco		0.8	0.0	0.0	0.8	0.0	0.5		0.8	1.3	1.1	0.0	0.8	0.7
	Do not know		8.9	0.2	34.8	10.8	2.3	8.0		0.5	37.9	6.8	2.9	5.6	6.8
3	**Reported Preventive Measures**														
	Not consuming Tobacco		2.4	8.2	7.2	4.5	2.2	3.7		8.4	5.3	3.6	2.5	3.2	3.5
	Cleaning teeth regularly		86.3	98.1	61.7	84.5	95.6	88.1		97.0	59.6	85.0	94.7	87.9	88.0
	Visiting dentist regularly		2.5	8.5	2.4	4.9	0.2	3.4		12.3	2.8	6.8	12.6	8.5	6.0
	Using flouride paste / powder		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	1.6	0.0	1.1	0.6
	Avoid sweet items		10.3	34.9	3.1	15.2	14.8	15.1		44.3	4.4	17.7	11.0	15.7	15.4
	Do not know		11.3	1.1	33.8	12.5	4.4	9.8		1.3	35.2	9.3	2.9	7.4	8.6

5.5.4 35-44 year olds

About 97 per cent respondents of this age group reported awareness of oral health problems. This percentage was slightly more in urban areas than in the rural areas of the state. Many of them reported problems such as dental decay (about 93 per cent), gum disease (about 50 percent), bad smell (18 per cent) and stained teeth (4 per cent). Awareness was found to be higher in the Midlands followed by the Coastal Midlands regions. Table 5.5.4

About 11 per cent respondents in this age group reported lack of knowledge on the factors that cause oral health problems. This was more in rural areas than in the urban. The factors most reported as causing problems were "not brushing regularly" (77 per cent) "eating sweets/ice cream/ chocolates" (36 per cent) "not rinsing" (27 per cent) and "consuming tobacco products" (3 per cent). "Not rinsing" was cited by more subjects in the Midlands region than in other two regions.

About preventive measures in regard to oral health problems, 12 per cent reported no knowledge. Their percentage was more in rural areas as compared to urban areas. Of those with knowledge of preventive measures, about 88 per cent said cleaning teeth regularly was one such measure. Other three measures cited were "avoid sweets" (16 per cent), "visiting dentist regularly" (7 per cent) and "not consuming tobacco" (5 percent).

Table: 5.5.4 Percent 35-44 year olds by reported awareness of oral health problems, their causes & preventive measures, sex & geographical area.

AGE: 35-44 yrs **STATE : Kerala**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Awareness of Oral Health Problems**	n=	142	164	175	323	158	481		164	167	343	168	511	992
	No knowledge		1.4	0.8	18.9	2.9	1.8	2.5		0.0	11.9	3.3	1.6	2.8	2.7
	Tooth decay		96.7	99.2	79.6	97.0	92.8	95.5		100.8	84.1	91.8	90.2	91.3	93.4
	Gum disease		51.3	33.9	40.0	44.2	54.5	47.7		36.5	48.1	48.4	57.1	51.2	49.5
	Bad smell		15.3	34.9	6.2	16.9	23.0	19.0		44.0	8.4	15.0	19.7	16.5	17.8
	Stained teeth		7.1	0.0	0.0	5.1	5.3	5.2		0.0	0.1	2.4	1.6	2.1	3.7
	Others		4.9	0.0	1.6	3.1	5.3	3.8		0.0	5.2	4.0	1.6	3.2	3.5
2	**Factors that cause Oral Health Problems**														
	Eating sweets/ice cream		31.8	80.4	29.4	43.7	34.7	40.6		83.0	27.5	35.2	23.1	31.3	36.0
	Not brushing regularly		83.4	81.1	51.6	76.2	92.3	81.8		83.8	55.0	67.2	81.1	71.6	76.7
	Not rinsing		24.9	41.7	14.2	28.8	23.6	27.0		44.2	22.5	28.5	25.0	27.4	27.2
	Consuming tobacco		4.2	0.0	4.0	3.3	3.5	3.4		2.4	2.6	2.5	4.8	3.2	3.3
	Do not know		8.6	0.8	41.7	11.1	5.3	9.1		0.0	37.7	15.4	8.1	13.1	11.1
3	**Reported Preventive Measures**														
	Not consuming Tobacco		5.7	4.8	9.7	6.6	3.6	5.6		6.5	6.4	4.8	3.3	4.4	5.0
	Cleaning teeth regularly		84.2	96.8	56.5	81.5	92.9	85.4		94.1	57.2	77.0	88.6	80.7	83.1
	Visiting dentist regularly		3.3	6.8	2.7	2.0	9.2	4.5		10.6	1.4	9.3	7.2	8.6	6.6
	Using flouride paste / powder		0.7	0.0	0.2	0.7	0.0	0.5		0.0	1.0	0.7	3.2	1.5	1.0
	Avoid sweet items		15.0	34.5	9.6	19.7	15.1	18.1		45.4	6.6	13.1	12.7	13.0	15.6
	Do not know		10.1	2.4	39.4	13.5	3.5	10.1		0.0	39.3	16.2	8.1	13.6	11.9

5.5.5 65-74 year olds

About 80 percent of respondents of this age group more males & more in urban were aware of oral health problems in the state. There was more aware of oral health problems in Midlands & least in Hills region. Table 5.5.5

Many of them (of those aware) reported problems such as tooth decay (76 percent), gum disease (32 percent) bad smell (11 percent) and strained teeth etc (5 percent).

More reported each of the oral health problems in Midlands followed by in Coastal Midland & in Hills regions.

About the factors responsible for oral health problems about 66 percent more males than females & more in urban had reported knowledge of the factors. Of those with knowledge of the factors, about 52 percent, more males & more in urban reported not brushing regularly. While other 30 percent, & 24 percent more males & more in rural cited factors such as eating sweets/ice cream and not rinsing respectively. Another 3 percent told consuming tobacco a factor responsible for oral health problems in the state.

More in Midlands, followed by Coastal Midlands region reported each of the causative factor for oral health problems.

About 65 percent of the subjects, more males & more in urban had knowledge of measures to prevent oral health problems. Of those with knowledge about 60 percent reported cleaning teeth regularly. Other 13 percent, more males cited use of fluoride paste/powder in the state.

More in Midlands, followed by Coastal Midlands region reported each of the preventive measures.

AWARENESS OF DENTAL HEALTH PROBLEMS ACROSS AGE GROUPS (SUMMING UP)

1. About 97 per cent of subjects except 65-74 year olds, across ages and both sexes, but more in urban areas, were aware of oral health problems in the state.
2. About 7-11 per cent of respondents except 65-74 year olds were not aware of the factors that cause oral health problems. In the Hills region, this figure was higher at 40-50 per cent. Of those who were aware, most of them reported "not brushing regularly" (70 per cent), followed by "eating sweets/ice cream" (35 per cent) as two important factors.
3. About preventive measures in regard to oral health problems, 9-12 per cent subjects except 65-74 year olds across all ages and sexes reported no knowledge. Very few subjects (less than 1 per cent) said that using fluoride paste or powder would prevent oral health problems.

Table: 5.5.5 Percent 65-74 year olds by reported awareness of oral health problems, their causes & preventive measures, sex & geographical area.

AGE: 65-74 yrs **STATE : Kerala**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Awareness of Oral Health Problems**	n=	120	155	108	263	120	383	162	112	279	136	415	798	
	No knowledge		17.7	1.1	21.1	15.1	11.8	14.0	5.3	43.2	26.3	27.2	26.6	**20.3**	
	Tooth decay		78.9	99.7	77.5	81.8	88.2	83.8	94.5	56.2	70.0	66.8	68.9	**76.4**	
	Gum disease		39.0	19.5	33.9	31.2	44.4	35.4	22.2	29.7	25.7	31.3	27.5	**31.5**	
	Bad smell		6.6	26.8	5.2	10.1	13.3	11.1	37.3	1.6	10.3	12.0	10.9	**11.0**	
	Stained teeth		1.6	0.0	2.4	1.0	2.3	1.4	0.0	0.0	0.0	0.0	0.0	**0.7**	
	Others		4.1	0.0	1.3	2.6	4.6	3.2	0.0	1.4	2.3	1.9	2.2	**2.7**	
2	**Factors that cause Oral Health Problems**														
	Eating sweets/ice cream		23.6	81.0	19.4	39.7	23.8	34.7	73.2	13.5	30.0	15.9	25.3	**30.0**	
	Not brushing regularly		56.8	71.8	38.6	53.3	76.9	60.7	63.5	34.2	41.7	47.2	43.5	**52.1**	
	Not rinsing		25.9	36.3	15.0	27.4	28.0	27.6	45.1	6.0	22.0	17.1	20.3	**24.0**	
	Consuming tobacco		6.0	0.3	5.0	5.3	2.5	4.5	0.0	5.2	1.1	0.0	0.7	**2.6**	
	Do not know		28.6	0.3	55.1	25.7	18.7	23.5	4.7	61.6	43.5	44.6	43.9	**33.7**	
3	**Reported Preventive Measures**														
	Not consuming Tobacco		1.6	6.0	3.7	2.8	2.3	2.7	4.8	6.7	4.0	2.0	3.3	**3.0**	
	Cleaning teeth regularly		63.4	93.3	44.8	63.5	85.4	70.4	86.1	39.5	48.2	49.3	48.6	**59.5**	
	Visiting dentist regularly		5.1	7.7	1.4	6.4	2.3	5.1	4.5	0.4	3.3	2.3	3.0	**4.1**	
	Using flouride paste / powder		0.9	0.0	0.0	0.8	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**	
	Avoid sweet items		11.6	31.0	5.3	14.4	18.6	15.7	40.0	4.1	11.5	7.8	10.3	**13.0**	
	Do not know		29.7	3.3	51.6	28.6	14.6	24.2	6.1	58.8	45.3	46.3	45.6	**34.9**	

5.6 TOBACCO SMOKING AND CHEWING HABITS

As smoking habits and chewing tobacco have special affects on oral health. A set of questions on these aspects were asked. These questions related to smoking habits, chewing pan with tobacco and drinking alcohol. This section summarises findings on those questions for the age groups 35-44 years and 65-74 years since these age groups were considered more relevant for these questions. The findings are shown in Tables 5.6.4 and 5.6.5

5.6.4 35-44 year olds

About 18 per cent of respondents had the habit of smoking tobacco in the state (Table 5.6.4). There were no significant rural/urban differentials. About 35 per cent males and 2 per cent females reported smoking tobacco. There was no significant difference among regions.

About 61 percent of respondents, 63 percent in urban & 57 percent in rural reported smoking cigarettes. While 23 percent, more males & more in rural had smoked Bidi. Another 13 percent, almost all females in rural reported smoking Chillum in the state. The pattern of smoking in each region was similar to that in the state.

The practice of chewing pan or pan masala with tobacco was quite low. Only about 8 per cent men and only 3 per cent women reported this habit. There were no significant rural/urban differentials. The habit was reported more in the Hills region. A majority of those who chewed tobacco or pan masala with tobacco said they been using it for the last 5-10 years.

About 56 per cent of them were chewing tobacco 5-10 times in a day. Also, 15 per cent males and 1 per cent females reported taking alcohol. Most of them said they took it occasionally.

Table 5. 6. 4 Percent 35-44 year olds by reported smoking, chewing pan & pan masala and alcohol taking habits, sex & geographical area.

AGE: 35-44 yrs **STATE : Kerala**

	Tobacco Smoking or Chewing with Pan masala and Alcohol taking habits		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Smoking Habits**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	Subjects smoking tobacco		33.2	38.1	39	34.6	34.9	34.7	1.2	3.7	2.6	2.1	0.3	1.5	18.1
2	**Nature of Smoking**	n=	47	60	64	120	51	171	2	6	3	9	2	11	182
	Chillum		0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	28.4	0.0	26.5	13.3
	Hookah		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cigars		6.2	4.2	2.2	3.6	10.1	5.9	0.0	0.0	0.0	0.0	0.0	0.0	3.0
	Cigarettes		52.8	78.8	22.4	53.4	62.5	56.6	50.0	100.0	0.0	62.0	100.0	64.6	60.6
	Bidis		41.0	17.0	75.4	42.9	27.4	37.5	0.0	0.0	100.0	9.6	0.0	9.0	23.3
3	**Number of times Smoking in a day**														
	< 10 times		55.3	89.8	56.3	64.9	57.9	62.4	100.0	100.0	100.0	100.0	100.0	100.0	81.2
	10-20 times		31.9	7.5	36.7	25.3	31.3	27.4	0.0	0.0	0.0	0.0	0.0	0.0	13.7
	20 + times		12.8	2.7	7.0	9.8	10.8	10.2	0.0	0.0	0.0	0.0	0.0	0.0	5.1
4	**Chewing pan/pan masala habits**	n=	141	164	175	322	158	480	180	164	167	343	168	511	991
	Chew pan or pan masala with tobacco		5.7	5.5	40.2	9.2	5.8	8.0	1.7	1.0	31.5	4.4	0.2	3.1	5.6
5	**Number of years of chewing pan or**														
	pan masala with Tobacco	n=	8	9	52	62	7	69	3	2	37	41	1	42	111
	Less than 5 years		11.6	37.7	21.5	14.6	36.2	20.1	0.0	100.0	18.9	14.5	100.0	16.0	18.1
	5 - 10 years		75.4	62.3	37.4	58.5	63.8	59.8	66.7	0.0	27.0	41.9	0.0	41.2	50.5
	> 10 years		13.1	0.0	41.1	26.9	0.0	20.1	33.3	0.0	54.1	43.6	0.0	42.9	31.5
6	**Number of times of chewing tobacco**														
	in a day														
	Less than 5 times		23.2	33.3	25.4	16.4	63.4	28.2	0.0	100.0	32.4	22.1	100.0	23.4	25.8
	5 - 10 times		63.8	66.7	58.9	68.4	36.6	60.4	66.7	0.0	45.9	52.5	0.0	51.6	56.0
	> 10 times		13.1	0.0	15.7	15.2	0.0	11.4	33.3	0.0	21.6	25.5	0.0	25.0	18.2
7	**Alcohol consumption habits**	n=	141	164	174	321	158	479	180	164	167	343	168	511	990
	Consuming alcohol		6.4	41.3	40.2	18.8	8.4	15.2	0.0	5.1	4.3	1.4	0.2	1.0	8.1
8	**Frequency of alcohol consumption**	n=	9	64	57	103	27	130	0	7	5	11	1	12	142
	Daily		21.8	15.9	9.9	15.4	23.0	16.9	0.0	47.6	0.0	38.0	0.0	36.0	26.5
	3 times a week		0.0	10.0	51.9	16.1	9.1	14.8	0.0	47.6	60.0	52.4	0.0	49.7	32.3
	Occasionally		78.2	74.1	38.3	68.5	67.9	68.4	0.0	4.7	40.0	9.6	100.0	14.3	41.4

5.6.5 65-74 year olds

About 15 per cent in this age group (29 per cent males and less than 1 per cent females) reported the habit of smoking tobacco. More males in urban areas reported the habit (Table 5.6.5). Bidi smoking was higher at 65 per cent followed by cigarette smoking at 30 per cent. The frequency of smoking bidis and cigarettes was mostly less than 10 times in a day. Among regions, the habit was reported more in the Hills.

In the state, about 19 per cent (16 per cent males and 22 per cent females) of this age group reported chewing pan /pan masala with tobacco. Their percentage was slightly more in the urban areas (23 per cent) as opposed to rural areas (17 per cent). About 80 per cent of them said they were chewing it less than 10 times a day. About 70 per cent said they had this habit for more than 10 years.

About 7 per cent (mostly males) reported taking alcohol. Most of them took it three times a week and their number was more in the rural areas. More people with this habit were reported from the Midlands and Hills regions.

TOBACCO SMOKING AND CHEWING HABITS ACROSS AGE GROUPS (SUMMING UP)

1. About 16 per cent in across age groups had the habit of smoking in the state. The habit was more prevalent among males and in urban areas. Higher percentages were reported from the Hills region. In the 35-44 age group, cigarettes were smoked more while Bidis were smoked more in the 65-74 age group. Fortunately, 83 per cent of smokers, across sexes and place of residence, said they smoked less than 10 times a day.

2. There was a very low prevalence of tobacco smoking and alcohol consumption in females. Pan chewing with tobacco, was equally prevalent among males and females.

3. About 12 per cent, across all ages and place of residence, but more males chewed pan or pan masala with tobacco. Around 80 per cent of them, across all ages and both sexes and place of residence, said they had been chewing it for more than five years.

4. About 7 per cent, across all ages, but more males and more in rural areas, said they drank alcohol.

Table 5. 6. 5 Percent 65-74 year olds by reported smoking, chewing pan & pan masala and alcohol taking habits, sex & geographical area.

AGE: 65-74 yrs STATE : Kerala

	Tobacco Smoking or Chewing with Pan masala and Alcohol taking habits		MALE						FEMALE						STATE TOTAL
			REGIONS			STATE			REGIONS			STATE			
			1	2	3	R	U	T	1	2	3	R	U	T	
1	**Smoking Habits**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	Subjects smoking tobacco		28.9	25.7	37.3	26.2	36.4	29.4	0.0	0.8	1.5	0.3	0.0	0.2	14.8
2	**Nature of Smoking**	n=	35	43	39	76	41	117	0	1	3	2	2	4	121
	Chillum		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Hookah		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cigars		14.3	6.6	0.0	11.3	12.6	11.8	0.0	0.0	0.0	0.0	0.0	0.0	5.9
	Cigarettes		22.6	59.9	14.9	27.0	34.4	29.9	0.0	0.0	91.7	27.6	50.0	29.0	29.5
	Bidis		63.1	33.6	85.1	61.7	53.0	58.3	0.0	100.0	8.3	72.4	50.0	71.0	64.7
3	**Number of times Smoking in a day**														
	< 10 times		62.8	100.0	60.2	70.6	68.3	69.7	0.0	100.0	100.0	100.0	100.0	100.0	84.9
	10-20 times		26.3	0.0	33.3	25.6	12.8	20.6	0.0	0.0	0.0	0.0	0.0	0.0	10.3
	20 + times		11.0	0.0	6.5	3.9	18.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	4.9
4	**Chewing pan/pan masala habits**	n=	120	156	108	264	120	384	141	162	112	279	136	415	799
	Chew pan or pan masala with tobacco		13.9	8.9	57.0	14.0	19.5	15.7	22.5	13.7	49.2	20.8	25.6	22.4	19.1
5	**Number of years of chewing pan or**														
	pan masala with Tobacco	n=	17	14	49	65	15	80	32	20	45	73	24	97	177
	Less than 5 years		24.2	50.5	12.7	30.4	12.9	23.6	12.4	30.8	12.9	14.4	15.6	14.9	19.3
	5 - 10 years		6.2	18.1	8.5	10.3	3.5	7.7	16.0	20.9	15.8	19.9	9.0	15.7	11.7
	> 10 years		69.6	31.4	80.9	60.0	83.6	69.2	71.6	48.3	73.9	66.1	75.4	69.6	69.4
6	**Number of times of chewing tobacco**														
	in a day														
	Less than 5 times		22.7	27.6	25.4	17.4	38.7	25.7	40.0	13.4	18.9	26.3	52.9	36.4	31.1
	5 - 10 times		53.1	72.4	40.7	54.3	49.5	52.5	43.6	51.7	55.0	45.4	47.0	46.0	49.3
	> 10 times		24.2	0.0	36.0	29.0	11.7	22.3	16.4	34.9	28.7	28.6	0.1	17.8	20.1
7	**Alcohol consumption habits**	n=	120	155	108	263	120	383	141	162	112	279	136	415	798
	Consuming alcohol		4.9	30.9	45.4	13.8	10.2	12.6	0.0	1.8	1.4	0.5	0.2	0.4	6.5
8	**Frequency of alcohol consumption**	n=	6	46	43	72	23	95	0	3	2	3	2	5	100
	Daily		15.7	13.8	2.7	9.6	22.4	12.8	0.0	0.0	0.0	0.0	0.0	0.0	6.4
	3 times a week		33.3	19.3	61.7	34.0	22.9	31.2	0.0	87.0	0.0	84.0	0.0	70.0	50.6
	Occasionally		51.0	66.8	35.6	56.4	54.7	56.0	0.0	13.0	100.0	16.0	100.0	30.0	43.0

CHAPTER VI
ORAL HEALTH STATUS

6.0 CLINICAL FINDINGS

The clinical findings are presented under the following broad heads:

1. Dental Caries status & Treatment Need
2. Periodontal Disease status
3. Malocclusion Status
4. Oral Cancers and other oral mucosal conditions
5. Dental Fluorosis status
6. Other conditions:

   Extra Oral Lesions; TMJ Assessment; Enamel Opacities and Hypoplasia; Prosthetic Status & Need; and Community need for immediate Care and Referrals.

6.1 DENTAL CARIES STATUS

This section presents a review of data for both coronal (crown) caries and root caries. The coronal caries is of interest in all index age groups and reported using a) the conventional dmft/ DMFT Index for primary and permanent teeth and b) the Significant Caries Index (SIC). The Significant Caries Index (SIC) helps identify the one third of the population with the highest caries (mean DMFT value) and the mean DMFT for this group. The root caries develops in the higher age groups and is therefore assessed for the age groups of 35-44 and 65-74 years subjects; its greatest significance lies in the aging population in the 50-60 years or higher age groups.

6.1.1 Coronal caries

Tables 6.01 and Figure 6.01 present the prevalence proportion of subjects by age and sex who were caries-free and those with caries experience using a range of dmft (deft)/ DMFT values. The range of values has been grouped in such a way as to provide some indication of the proportion of dentition affected with caries out of the normally present (28 or 32) in an average mouth.

Fig 6.01. Percent subjects with caries experience in Kerala

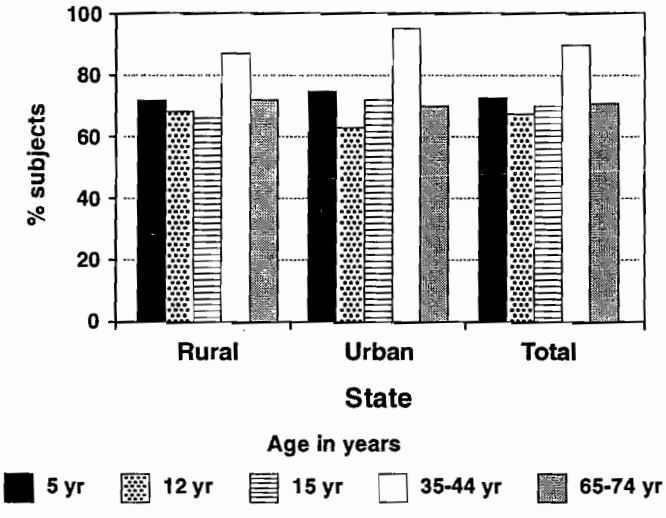


Table 6.01. Percent subjects with caries experience and with dmft/ DMFT values by age, sex and geographical area. State : Kerala

Decayed, Missing, Filled Teeth		5 years			Decayed, Missing, Filled Teeth		12 years			15 years			35-44 years			65-74 years		
		M	F	T			M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	100	263	**Region 1**	n=	129	120	249	127	120	247	142	180	322	120	141	261
With caries		63.8	75.0	**69.4**	With caries		68.2	66.7	**67.5**	64.6	70.0	**67.3**	95.1	88.9	**92.0**	69.2	80.1	**74.7**
dmft value 1-3		23.9	35.0	**29.5**	DMFT value 1-3		49.6	50.0	**49.8**	50.4	59.2	**54.8**	41.5	26.1	**33.8**	6.7	2.8	**4.8**
dmft value 4-5		14.7	14.0	**14.4**	DMFT level 4-7; 4-8		16.3	15.8	**16.1**	12.6	8.3	**10.5**	38.7	43.3	**41.0**	15.0	16.3	**15.7**
dmft value 6-10		19.6	22.0	**20.8**	DMFT value 8-14; 9-16		2.3	0.8	**1.6**	1.6	1.7	**1.7**	13.4	15.6	**14.5**	26.7	25.5	**26.1**
dmft value 11-15		4.9	3.0	**4.0**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.0	0.8	**0.4**	1.4	2.8	**2.1**	8.3	19.1	**13.7**
dmft value 16 or more		0.6	1.0	**0.8**	DMFT value 22-28; 25-28		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.6	**0.3**	9.2	4.3	6.8
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.6	**0.3**	3.3	12.1	7.7
Region 2	n=	169	143	312	**Region 2**	n=	161	159	320	157	155	312	164	164	328	156	162	318
With caries		83.7	86.0	**84.9**	With caries		69.6	68.6	**69.1**	69.4	73.5	**71.5**	91.5	97.0	**94.3**	76.3	66.0	**71.2**
dmft value 1-3		46.5	46.9	**46.7**	DMFT value 1-3		59.6	55.3	**57.5**	59.2	58.7	**59.0**	25.6	15.9	**20.8**	3.2	1.2	**2.2**
dmft value 4-5		23.3	20.3	**21.8**	DMFT level 4-7; 4-8		9.3	11.9	**10.6**	9.6	14.8	**12.2**	57.3	65.2	**61.3**	19.9	11.7	**15.8**
dmft value 6-10		12.8	18.2	**15.5**	DMFT value 8-14; 9-16		0.6	0.6	**0.6**	0.6	0.0	**0.3**	7.9	14.0	**11.0**	39.1	35.2	**37.2**
dmft value 11-15		1.2	0.7	**1.0**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.6	1.8	**1.2**	11.5	14.8	**13.2**
dmft value 16 or more		0.0	0.0	**0.0**	DMFT value 22-28; 25-28		0.0	0.6	**0.3**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	2.5	**2.2**
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.6	0.6	**0.6**
Region 3	n=	155	108	263	**Region 3**	n=	108	108	216	119	111	230	175	167	342	108	112	220
With caries		67.1	57.8	**62.5**	With caries		63.0	60.2	**61.6**	64.7	63.1	**63.9**	74.9	80.8	**77.9**	67.6	67.0	**67.3**
dmft value 1-3		23.2	27.5	**25.4**	DMFT value 1-3		50.0	45.4	**47.7**	48.7	47.7	**48.2**	25.7	27.5	**26.6**	13.9	6.3	**10.1**
dmft value 4-5		16.8	14.7	**15.8**	DMFT level 4-7; 4-8		12.0	13.9	**13.0**	14.3	15.3	**14.8**	41.1	37.7	**39.4**	14.8	20.5	**17.7**
dmft value 6-10		20.0	13.8	**16.9**	DMFT value 8-14; 9-16		0.9	0.9	**0.9**	0.8	0.0	**0.4**	5.7	13.8	**9.8**	13.0	25.9	**19.5**
dmft value 11-15		5.8	0.9	**3.4**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.8	0.0	**0.4**	1.7	1.2	**1.5**	14.8	4.5	**9.7**
dmft value 16 or more		1.3	0.9	**1.1**	DMFT value 22-28; 25-28		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.6	**0.3**	8.3	7.1	**7.7**
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.6	0.0	**0.3**	2.8	2.7	**2.8**
State Rural	n=	333	239	572	**State Rural**	n=	261	264	525	276	263	539	323	343	666	264	279	543
With caries		72.9	71.1	**72.0**	With caries		69.3	66.3	**67.8**	65.2	66.5	**65.9**	83.3	86.6	**85.0**	72.3	72.4	**72.4**
dmft value 1-3		29.8	36.8	**33.3**	DMFT value 1-3		55.6	51.1	**53.4**	52.9	54.8	**53.9**	27.9	20.4	**24.2**	8.3	3.9	**6.1**
dmft value 4-5		18.5	16.3	**17.4**	DMFT level 4-7; 4-8		11.9	13.6	**12.8**	10.9	11.0	**11.0**	43.3	50.1	**46.7**	15.5	15.4	**15.5**
dmft value 6-10		20.5	15.5	**18.0**	DMFT value 8-14; 9-16		1.9	1.1	**1.5**	1.1	0.4	**0.8**	9.9	13.7	**11.8**	25.8	26.5	**26.2**
dmft value 11-15		3.6	1.7	**2.7**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.4	0.4	**0.4**	1.9	1.7	**1.8**	12.1	16.5	**14.3**
dmft value 16 or more		0.6	0.8	**0.7**	DMFT value 22-28; 25-28		0.0	0.4	**0.2**	0.0	0.0	**0.0**	0.0	0.6	**0.3**	8.0	3.9	**6.0**
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.0	**0.2**	2.7	6.1	**4.4**
State Urban	n=	154	112	266	**State Urban**	n=	137	123	260	127	123	250	158	168	326	120	136	256
With caries		69.5	80.5	**75.0**	With caries		63.5	64.2	**63.9**	69.3	75.6	**72.5**	93.0	93.5	**93.3**	70.0	68.4	**69.2**
dmft value 1-3		35.7	38.9	**37.3**	DMFT value 1-3		50.4	50.4	**50.4**	54.3	57.7	**56.0**	35.4	29.2	**32.3**	5.0	1.5	**3.3**
dmft value 4-5		18.2	17.7	**18.0**	DMFT level 4-7; 4-8		13.1	13.8	**13.5**	14.2	17.1	**15.7**	51.3	45.2	**48.3**	20.0	16.2	**18.1**
dmft value 6-10		10.4	23.0	**16.7**	DMFT value 8-14; 9-16		0.0	0.0	**0.0**	0.8	0.8	**0.8**	6.3	16.1	**11.2**	32.5	35.3	**33.9**
dmft value 11-15		4.5	0.9	**2.7**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.4	**1.2**	10.0	7.4	**8.7**
dmft value 16 or more		0.6	0.0	**0.3**	DMFT value 25-28		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.7	5.1	**3.4**
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.6	**0.3**	0.8	2.9	**1.9**
State Total	n=	487	351	838	**State Total**	n=	398	387	785	403	386	789	481	511	992	384	415	799
With caries		71.8	74.1	**73.0**	With caries		67.3	65.6	**66.5**	66.5	69.4	**68.0**	86.5	88.8	**87.7**	71.6	71.1	**71.4**
dmft value 1-3		31.6	37.5	**34.6**	DMFT value 1-3		53.8	50.9	**52.4**	53.3	55.7	**54.5**	30.4	23.3	**26.9**	7.3	3.1	**5.2**
dmft value 4-5		18.4	16.8	**17.6**	DMFT level 4-7; 4-8		12.3	13.7	**13.0**	11.9	13.0	**12.5**	45.9	48.5	**47.2**	16.9	15.7	**16.3**
dmft value 6-10		17.3	17.9	**17.6**	DMFT value 8-14; 9-16		1.3	0.8	**1.1**	1.0	0.5	**0.8**	8.7	14.5	**11.6**	27.9	29.4	**28.7**
dmft value 11-15		3.9	1.4	**2.7**	DMFT value 15-21; 17-24		0.0	0.0	**0.0**	0.2	0.3	**0.3**	1.2	2.0	**1.6**	11.5	13.5	**12.5**
dmft value 16 or more		0.6	0.6	**0.6**	DMFT value 22-28; 25-28		0.0	0.3	**0.2**	0.0	0.0	**0.0**	0.0	0.4	**0.2**	6.0	4.3	**5.2**
					DMFT value 29 or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.2	**0.2**	2.1	5.1	**3.6**

Note: The categories of DMFT values of 4-7, 8-14, 15-21 and 22-28 have been computed and apply to subjects aged 12 and 15 years only. In age groups 35-44 yr and 65-74 yr, the 'M' (Missing) component includes both missing due to caries and missing due to other reasons. Associated Tables :**6.02 and 6.03.**

Table 6.02 Mean number of teeth decayed, missng, filled by age, sex and geographical area. **State : Kerala**

Decayed, Missing, Filled Teeth		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	100	263	129	120	249	127	119	246	142	175	317	86	114	200
Mean no. of teeth present (mnt/MNT)		19.7	19.9	**19.8**	27.9	27.9	**27.9**	27.8	27.8	**27.8**	29.6	28.6	**29.1**	24.0	20.3	**22.2**
Mean dmft and Mean DMFT		3.3	3.6	**3.5**	1.8	1.8	**1.8**	1.8	1.9	**1.9**	4.8	5.7	**5.3**	9.2	12.9	**11.1**
Mean no. of Decayed teeth (dt/DT)		3.0	3.5	**3.3**	1.7	1.6	**1.7**	1.6	1.7	**1.7**	2.1	2.2	**2.2**	1.2	1.1	**1.2**
Mean no. of Missing teeth (mt/MT)		0.3	0.0	**0.2**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	2.4	3.4	**2.9**	8.0	11.7	**9.9**
Mean no. of Filled teeth (ft/FT)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.1	**0.2**	0.0	0.0	**0.0**
SIC Index		7.8	7.6	7.7	4.0	3.9	**4.0**	3.9	3.9	**3.9**	9.2	11.3	**10.3**	20.5	25.0	**22.8**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	7	**7**
Region 2	n=	169	143	312	161	159	320	157	155	312	164	164	328	122	111	233
Mean no. of teeth present (mnt/MNT)		19.7	19.8	**19.8**	28.0	28.0	**28.0**	28.0	28.0	**28.0**	30.9	30.4	**30.7**	26.3	26.0	**26.2**
Mean dmft and Mean DMFT		3.0	3.2	**3.1**	1.5	1.7	**1.6**	1.4	1.6	**1.5**	4.4	5.7	**5.1**	9.1	9.4	**9.3**
Mean no. of Decayed teeth (dt/DT)		3.0	3.1	**3.1**	1.4	1.6	**1.5**	1.3	1.4	**1.4**	2.9	3.5	**3.2**	3.4	3.4	**3.4**
Mean no. of Missing teeth (mt/MT)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.1	1.6	**1.4**	5.7	6.0	**5.9**
Mean no. of Filled teeth (ft/FT)		0.0	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.2	**0.2**	0.4	0.6	**0.5**	0.1	0.0	**0.1**
SIC Index		5.8	6.2	**6.0**	3.1	3.8	**3.5**	3.1	3.5	**3.3**	7.5	8.9	**8.2**	17.4	17.7	**17.6**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	1	**2**
Region 3	n=	155	108	263	108	107	215	119	110	229	172	166	338	83	82	165
Mean no. of teeth present (mnt/MNT)		19.8	19.8	**19.8**	27.9	27.8	**27.9**	27.7	27.8	**27.8**	29.6	28.6	**29.1**	23.8	24.4	**24.1**
Mean dmft and Mean DMFT		3.8	2.5	**3.2**	1.5	1.6	**1.6**	1.9	1.6	**1.8**	4.0	4.6	**4.3**	8.9	8.0	**8.5**
Mean no. of Decayed teeth (dt/DT)		3.7	2.3	**3.0**	1.4	1.4	**1.4**	1.6	1.4	**1.5**	1.5	1.1	**1.3**	0.7	0.4	**0.6**
Mean no. of Missing teeth (mt/MT)		0.2	0.2	**0.2**	0.1	0.1	**0.1**	0.3	0.1	**0.2**	2.4	3.4	**2.9**	8.2	7.6	**7.9**
Mean no. of Filled teeth (ft/FT)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.2	**0.2**	0.1	0.0	**0.1**
SIC Index		8.1	6.3	**7.2**	3.5	3.7	**3.6**	4.1	3.6	**3.9**	8.0	9.4	**8.7**	20.8	18.4	**19.6**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	2	**2**
State Rural	n=	333	239	572	261	264	525	276	262	538	321	341	662	203	211	414
Mean no. of teeth present (mnt/MNT)		19.7	19.9	**19.8**	27.9	27.9	**27.9**	27.8	27.8	**27.8**	29.7	28.9	**29.3**	23.7	21.5	**22.6**
Mean dmft and Mean DMFT		3.5	3.1	**3.3**	1.8	1.8	**1.8**	1.8	1.8	**1.8**	4.7	5.6	**5.2**	10.0	12.4	**11.2**
Mean no. of Decayed teeth (dt/DT)		3.2	3.1	**3.2**	1.7	1.7	**1.7**	1.5	1.6	**1.6**	2.2	2.2	**2.2**	1.7	2.0	**1.9**
Mean no. of Missing teeth (mt/MT)		0.2	0.0	**0.1**	0.1	0.1	**0.1**	0.2	0.1	**0.2**	2.3	3.1	**2.7**	8.3	10.5	**9.4**
Mean no. of Filled teeth (ft/FT)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.2	0.3	**0.3**	0.0	0.0	**0.0**
SIC Index		7.4	6.6	**7.0**	3.6	4.0	**3.8**	3.7	3.5	**3.6**	8.6	9.9	**9.3**	20.6	21.8	**21.2**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	8	**9**
State Urban	n=	154	112	266	137	122	259	127	122	249	157	164	321	88	96	184
Mean no. of teeth present (mnt/MNT)		19.7	19.9	**19.8**	27.9	27.9	**27.9**	27.8	27.9	**27.9**	30.0	28.9	**29.5**	26.2	21.6	**23.9**
Mean dmft and Mean DMFT		2.8	4.1	**3.5**	1.6	1.5	**1.6**	1.7	1.8	**1.8**	4.7	5.8	**5.3**	7.2	11.1	**9.2**
Mean no. of Decayed teeth (dt/DT)		2.6	4.1	**3.4**	1.4	1.3	**1.4**	1.6	1.8	**1.7**	2.3	2.5	**2.4**	1.3	0.7	**1.0**
Mean no. of Missing teeth (mt/MT)		0.3	0.0	**0.2**	0.1	0.1	**0.1**	0.1	0.0	**0.1**	2.0	3.1	**2.6**	5.8	10.4	**8.1**
Mean no. of Filled teeth (ft/FT)		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.1	**0.1**	0.4	0.1	**0.3**	0.0	0.0	**0.0**
SIC Index		6.7	6.7	**6.7**	3.4	3.3	**3.4**	3.5	3.9	**3.7**	7.3	10.0	**8.7**	16.7	18.6	**17.7**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	2	**2**
State Total	n=	487	351	838	398	386	784	403	384	787	478	505	983	291	307	598
Mean no. of teeth present (mnt/MNT)		19.7	19.9	**19.8**	27.9	27.9	**27.9**	27.9	27.9	**27.9**	29.9	29.0	**29.5**	24.6	21.9	**23.3**
Mean dmft and Mean DMFT		3.3	3.3	**3.3**	1.7	1.7	**1.7**	1.7	1.8	**1.8**	4.6	5.6	**5.1**	9.2	11.8	**10.5**
Mean no. of Decayed teeth (dt/DT)		3.1	3.3	**3.2**	1.6	1.6	**1.6**	1.5	1.6	**1.6**	2.2	2.3	**2.3**	1.7	1.7	**1.7**
Mean no. of Missing teeth (mt/MT)		0.2	0.0	**0.1**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	2.1	3.0	**2.6**	7.4	10.1	**8.8**
Mean no. of Filled teeth (ft/FT)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.3	0.2	**0.3**	0.0	0.0	**0.0**
SIC Index		7.2	6.6	**6.9**	3.5	3.8	**3.7**	3.6	3.7	**3.7**	8.2	9.9	**9.1**	19.4	20.8	**20.1**
No. of subjects edentulous		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	1	10	**11**

Note: In age groups 35-44 yr and 65-74 yr, the 'MT' (Missing Teeth) component includes both missing due to caries and missing due to other reasons. For detailed breakup, please refer to and co-relate with Table No. 6.03. Associated Tables : **6.01 and 6.03.**

Table 6.02 and Figure 6.02 present the mean number of teeth decayed, missing and filled (mean dmft and mean DMFT) in the surveyed population and includes the Significant Caries (SIC) Index. The table also gives the mean number of teeth present in the mouth and the per cent subjects who were edentulous.

Table 6.03 presents the breakup of the per cent subjects with missing teeth, due to caries and due to other reasons. This is presented for age groups 35-44 and 65-74 years.

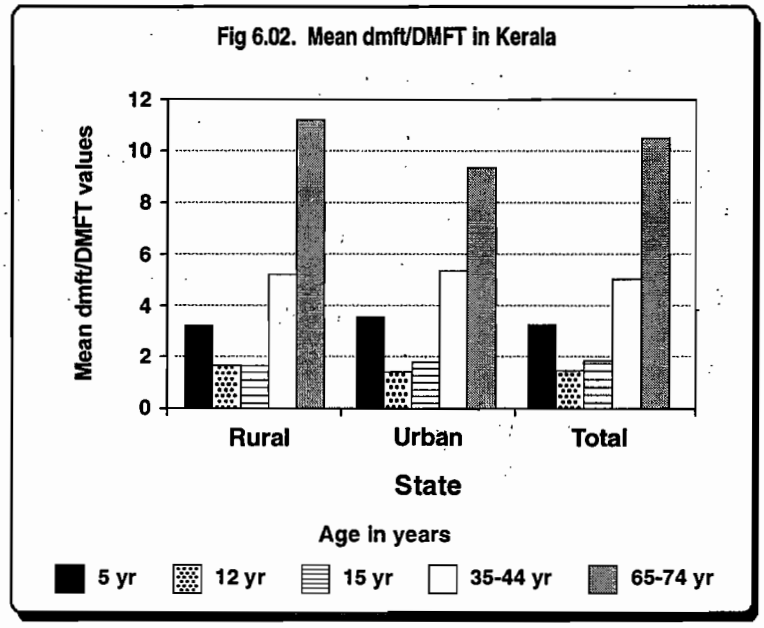
In all age groups the per cent subjects with caries range from 66.5 to 87.7 per cent with the highest prevalence being in the 35-44 year age group. DMFT value of 1-3 was most prevalent followed by DMFT value of 4-8, except in 65-74 year age group where DMFT value of 9-16 was most prevalent (28.7 per cent). The percentage of subjects with DMFT 9-16 or more was almost nil in 12 and 15 year age group and was very low in higher age groups also.

In the 5 year age group, where only primary teeth are present, the mean dmft value in the state in male and female subjects was 3.3. The decayed teeth (DT) component contributed to most of dmft value (Table 6.02).

In 12 year and 15 year age groups the mean DMFT was 1.7 and 1.8 respectively. Then DMFT value appeared to rise steadily as age advanced and was highest for the age group of 65-74 years (10.5). The decayed teeth (DT) component contributed most to the DMFT in the age groups of 12 year, 15 year and 35-44 year age groups. In the 65-74 year age group in both male and female subjects, the missing teeth component (MT) contributed the most.

The mean DMFT values in Region 1 were highest in all age groups. The filled component was very low in all three regions. The dmft/DMFT was higher in rural than in urban areas. There were no marked gender based differentials

The Significant Caries (SiC) Index, which gives the mean of one third of the subjects with highest dmft/DMFT levels, was applied to all age groups. It can be seen that the SiC Index was high in 5 year age group (6.9). In 12 year and 15 year age group the SIC index was 3.7. In 35-44 year age group SiC index was 9.1. It was highest in 65-74 year age group (20.1).



There were 11 out of 598 subjects (1.9 per cent) who were edentulous (without any natural teeth in the mouth) in the state in the 65-74 year age group. Edentulous subjects reported were mostly from rural (8 female and 1 male) when compared with urban areas (2 female and 1 male) in the 65-74 year age group. Edentulous in the state was very low in comparison to some other states where it is reported to be upto 30 per cent.

Table 6.03 Mean number of teeth missng due to caries or other reasons by age, sex and geographical area. **State : Kerala**

Missing Teeth		12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	129	120	249	127	119	246	142	175	317	86	114	200
Mean no. of teeth missing due to caries		0.1	0.1	0.1	0.1	0.1	0.1	2.3	3.1	2.7	5.7	8.7	7.2
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.2	2.3	3.0	2.7
Region 2	n=	161	159	320	157	155	312	164	164	328	122	111	233
Mean no. of teeth missing due to caries		0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.8	0.8	3.3	2.5	2.9
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	2.3	3.4	2.9
Region 3	n=	108	107	215	119	110	229	172	166	338	83	82	165
Mean no. of teeth missing due to caries		0.1	0.1	0.1	0.3	0.1	0.2	2.3	3.3	2.8	6.5	6.3	6.4
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.6	1.2	1.4
State Rural	n=	261	264	525	276	262	538	321	341	662	203	211	414
Mean no. of teeth missing due to caries		0.1	0.1	0.1	0.2	0.1	0.2	2.0	2.8	2.4	5.9	6.9	6.4
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	2.3	3.5	2.9
State Urban	n=	137	122	259	127	122	249	157	164	321	88	96	184
Mean no. of teeth missing due to caries		0.1	0.1	0.1	0.1	0.0	0.1	1.9	2.7	2.3	3.8	8.4	6.1
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.5	0.3	2.0	2.0	2.0
State Total	n=	398	386	784	403	384	787	478	505	983	291	307	598
Mean no. of teeth missing due to caries		0.1	0.1	0.1	0.1	0.1	0.1	1.9	2.7	2.3	5.3	7.1	6.2
Mean no. of teeth missing due to other reasons		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	2.2	3.0	2.6

Note: In age groups 35-44 yr and 65-74 yr, the 'M' (Missing) component includes both missing due to caries and missing due to other reasons.

Associated Tables : 6.01 and 6.02.

6.1.2 Root caries

Table 6.04 and Figure 6.04 present the per cent subjects with root caries and fillings, if any, and the mean number of teeth with root caries and fillings, if any.

The Root Caries does not appear in children and young adults. Therefore the data on root caries is presented only for the two age groups of 35-44 year and 65-74 year. The percentage of subjects with root caries was approximately 25per cent in both age groups. The percentage of subjects with root fillings was virtually zero.

The percentage of subjects with root caries was markedly low in Region 2 in both age groups. In 35-44 year age group, there was 8.4 per cent root caries in Region 2 and the per centage was 34per cent and 33 per cent in Region 1 and 3 respectively. In 65-74 year age group, there was 9.3per cent root caries in Region 2 and the per centage was 34.5per cent and 36.6 per cent in Region 1 and 3 respectively. The prevalence was higher in rural than in urban areas and it was more in females than males.

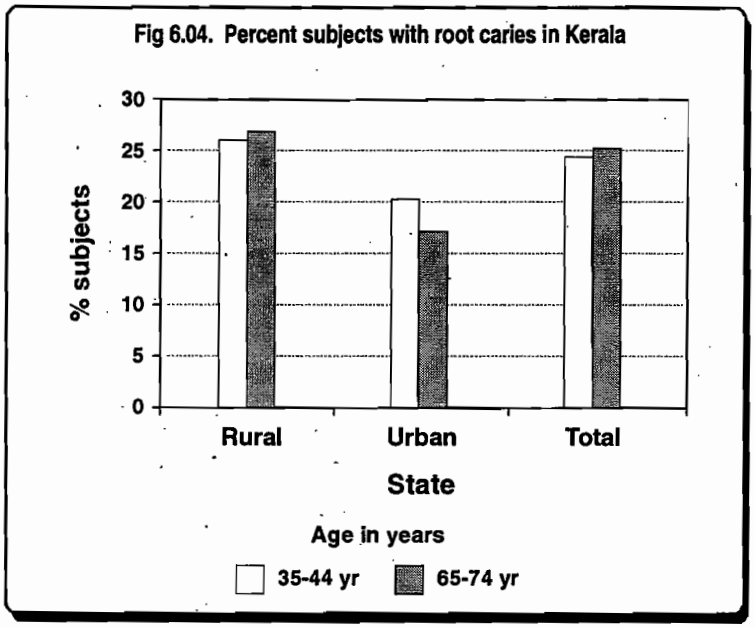


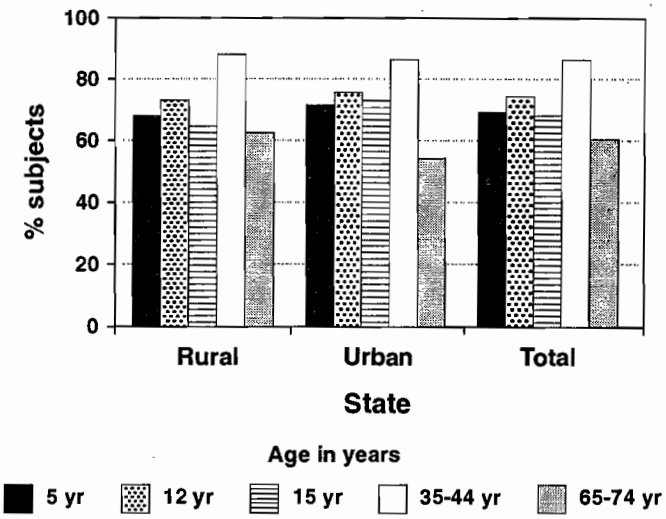
Table 6.04 Percent subjects and mean no. of teeth with root caries and fillings by age, sex and geographical area. State : Kerala

Root Caries		35-44 years			65-74 years		
		M	F	T	M	F	T
Region 1	n=	**142**	**180**	**322**	**120**	**141**	**261**
% Subjects with Root caries		37.6	30.1	**33.9**	30.6	38.4	**34.5**
Mean nos of teeth with Root Caries		1.0	1.0	**1.0**	1.5	1.9	**1.7**
% Subjects with Root fillings		0.7	0.0	**0.4**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	n=	**164**	**164**	**328**	**156**	**161**	**317**
% Subjects with Root caries		7.1	9.7	**8.4**	9.0	9.6	**9.3**
Mean nos of teeth with Root Caries		0.2	0.2	**0.2**	0.4	0.6	0.5
% Subjects with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	n=	**175**	**167**	**342**	**108**	**112**	**220**
% Subjects with Root caries		30.2	35.4	**32.8**	33.6	39.5	**36.6**
Mean nos of teeth with Root Caries		0.6	0.9	**0.8**	1.6	1.7	**1.7**
% Subjects with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Rural	n=	**323**	**343**	**666**	**264**	**278**	**542**
% Subjects with Root caries		24.7	26.5	**25.6**	25.0	27.8	**26.4**
Mean nos of teeth with Root Caries		0.6	0.8	**0.7**	1.3	1.4	**1.4**
% Subjects with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Urban	n=	**158**	**168**	**326**	**120**	**136**	**256**
% Subjects with Root caries		21.3	19.1	**20.2**	10.8	24.0	**17.4**
Mean nos of teeth with Root Caries		0.5	0.4	**0.5**	0.3	0.9	**0.6**
% Subjects with Root fillings		1.1	0.0	**0.6**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	n=	**481**	**511**	**992**	**384**	**414**	**798**
% Subjects with Root caries		24.2	25.4	**24.8**	22.9	27.2	**25.1**
Mean nos of teeth with Root Caries		0.5	0.7	**0.6**	1.0	1.2	**1.1**
% Subjects with Root fillings		0.2	0.0	**0.1**	0.0	0.0	**0.0**
Mean nos of teeth with Root fillings		0.0	0.0	**0.0**	0.0	0.0	**0.0**

6.1.3 Treatment need

Table 6.05 and Fig. 6.05 present the per cent subjects requiring preventive and treatment care by type of treatment needed, and Table 6.06 and Fig. 6.06 present the mean number of teeth requiring treatment, by type of treatment.

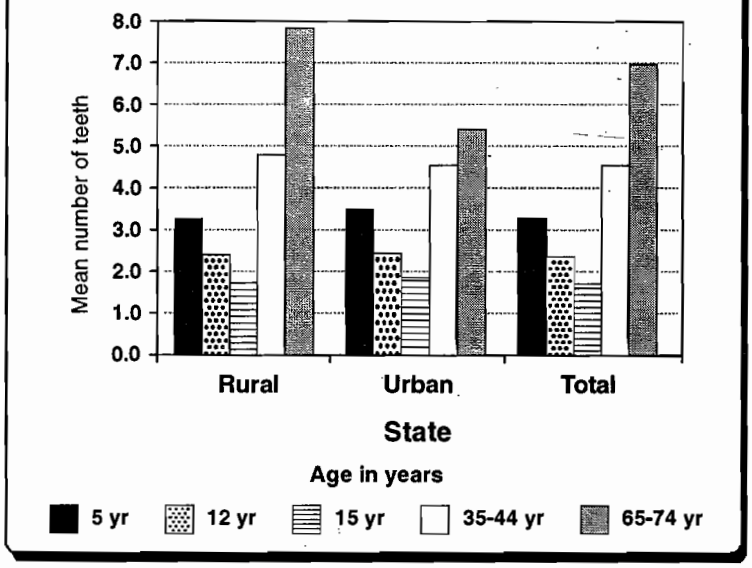
Fig 6.05. Percent subjects with treatment need in Kerala



The subjects were clinically assessed for their need for both preventive and treatment care, based on their caries experience and dentition status. Preventive care needs included caries arresting care and fissure sealing. Treatment need included the need for one, two or more surface fillings, extractions of teeth, pulp care, crowns and veneers.

The need for treatment was 60 per cent or more in all age groups. In 35-44 year age group the need was 86.6per cent. The treatment need was similar in Region 1and 2 and slightly lower need was recorded in Region 3. Almost 90 per cent of 35-44 year age group in Region 1 and 2 needed treatment. The need for filling of one or more surfaces contributes to the most of the treatment need in all regions. In 65-74 year age group, in Region 2 there was a higher need for filling (63.5per cent male and 56.1per cent female). In Region 1 and 3 the higher need was for extraction in this age group. There was no significant difference in the pattern of need by type of need between male and female subjects and between rural and urban areas.

Fig. 6.06. Mean number of teeth with treatment need in Kerala



At the state level, the mean number of teeth, which required treatment, was highest in age group of 65-74 year (6.3 in males and 7.7 in females), followed by 35-44 year age group (4.2 for male and 5 for female).

The mean number of teeth, which needed filling, was higher in 5 year age group (approximately 2.5). Need for extraction was higher in 65-74 year age group (1.4 in male and 2.2 in female). There were no major regional differences except in 65-74 year age group where in Region 3 the mean number of teeth which needed treatment was lower than the other two regions (4 in male and 5.3 in female) wherein other two regions it was approximately 7.5.

Table 6.05 Percent subjects with treatment need by age, sex and geographical area. **State : Kerala**

Treatment Need		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	100	263	129	120	249	127	120	247	142	180	322	120	141	261
Treatment needed		64.6	72.8	**68.7**	74.8	76.8	**75.8**	66.1	68.8	67.5	91.8	86.1	**89.0**	56.1	61.3	**58.7**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		57.8	67.7	**62.8**	48.5	52.1	**50.3**	62.3	67.1	64.7	59.6	60.4	**60.0**	15.6	17.1	**16.4**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.7	1.2	**1.0**	0.0	0.0	**0.0**
Pulp care		25.5	28.7	**27.1**	2.1	4.2	**3.2**	5.4	5.1	**5.3**	9.9	7.6	**8.8**	6.7	1.4	**4.1**
Extraction		21.9	14.0	**18.0**	43.3	43.1	**43.2**	7.0	6.8	6.9	40.4	30.6	**35.5**	31.5	38.6	**35.1**
Need for other care		3.0	0.0	**1.5**	2.2	4.1	**3.2**	1.6	4.3	**3.0**	35.5	46.3	**40.9**	43.4	46.3	**44.9**
Region 2	n=	172	143	315	161	159	320	157	155	312	164	164	328	156	162	318
Treatment needed		76.4	78.5	**77.5**	72.0	61.8	**66.9**	61.2	65.2	**63.2**	85.1	93.6	**89.4**	71.2	62.8	**67.0**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.0	**0.1**	0.3	0.2	**0.3**
Filling one or more surfaces		76.4	78.5	**77.5**	68.7	59.7	**64.2**	60.3	63.5	**61.9**	77.5	90.0	**83.8**	63.5	56.1	**59.8**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.8	**0.4**	3.4	4.5	**4.0**	4.2	0.8	**2.5**
Pulp care		1.5	1.8	**1.7**	0.8	0.8	**0.8**	3.5	1.7	**2.6**	7.4	7.3	**7.4**	5.3	6.4	**5.9**
Extraction		0.0	0.9	**0.5**	2.5	2.7	**2.6**	0.8	1.7	**1.3**	0.5	0.8	**0.7**	6.8	8.2	**7.5**
Need for other care		0.0	0.0	**0.0**	2.7	1.2	**2.0**	3.8	3.8	**3.8**	40.8	55.8	**48.3**	52.9	49.8	**51.4**
Region 3	n=	155	109	264	108	108	216	119	111	230	175	167	342	108	112	220
Treatment needed		69.4	50.6	**60.0**	75.8	70.5	**73.2**	60.8	64.4	**62.6**	65.6	71.4	**68.5**	53.9	55.7	**54.8**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		64.8	46.6	**55.7**	37.3	34.5	**35.9**	54.1	57.9	**56.0**	47.0	42.6	**44.8**	12.8	9.7	**11.3**
Crown & Veneer		0.0	1.3	**0.7**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.6	**1.3**	0.0	0.0	**0.0**
Pulp care		29.4	20.3	**24.9**	4.1	5.3	**4.7**	5.7	3.9	**4.8**	8.7	5.2	**7.0**	2.5	1.3	**1.9**
Extraction		16.0	10.6	**13.3**	54.9	48.4	**51.7**	10.3	10.3	**10.3**	28.7	37.3	**33.0**	32.6	37.9	**35.3**
Need for other care		6.3	4.0	**5.2**	2.9	5.3	**4.1**	5.7	5.7	**5.7**	37.5	48.8	**43.2**	35.1	42.8	**39.0**
State Rural	n=	336	239	575	261	264	525	276	263	539	323	343	666	264	279	543
Treatment needed		69	70	**69.4**	72	74	**72.7**	64	64	**63.9**	89	87	**87.9**	62	64	**62.8**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		63.1	66.2	**64.7**	50.6	56.2	**53.4**	61.4	62.3	**61.9**	59.8	63.6	**61.7**	26.1	27.0	**26.6**
Crown & Veneer		0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.8	0.2	**0.5**	1.6	2.3	**2.0**	1.2	0.2	**0.7**
Pulp care		23.8	19.1	**21.5**	0.5	3.8	**2.2**	3.8	4.8	**4.3**	10.1	6.1	**8.1**	6.6	2.6	**4.6**
Extraction		20.4	10.5	**15.5**	33.4	31.3	**32.4**	5.0	6.9	**6.0**	32.0	26.2	**29.1**	30.8	34.2	**32.5**
Need for other care		2.4	0.3	**1.4**	1.7	2.8	**2.3**	3.0	5.2	**4.1**	38.1	49.3	**43.7**	44.5	48.4	**46.5**
State Urban	n=	154	113	267	137	123	260	127	123	250	158	168	326	120	136	256
Treatment needed		62.7	81.1	**71.9**	81.1	71.5	**76.3**	67.4	80.2	**73.8**	86.5	86.6	**86.6**	51.7	54.2	**53.0**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.0	**0.1**	0.2	0.2	**0.2**
Filling one or more surfaces		57.6	78.2	**67.9**	57.0	41.7	**49.4**	61.2	77.7	**69.5**	68.5	66.2	**67.4**	25.3	18.2	**21.8**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.0	0.0	**0.0**
Pulp care		13.7	31.5	**22.6**	6.0	2.4	**4.2**	8.5	2.4	**5.5**	7.2	11.3	**9.3**	4.8	1.9	**3.4**
Extraction		8.5	11.4	**10.0**	40.3	44.0	**42.2**	8.3	2.5	**5.4**	30.5	26.0	**28.3**	11.7	27.0	**19.4**
Need for other care		3.4	0.0	**1.7**	4.2	6.0	**5.1**	0.4	1.3	**0.9**	32.8	44.1	**38.5**	46.5	42.6	**44.6**
State Total	n=	490	352	842	398	387	785	403	386	789	481	511	992	384	415	799
Treatment needed		67.2	72.4	**69.8**	75.0	72.1	**73.6**	64.4	67.8	**66.1**	87.0	86.2	**86.6**	59.1	60.8	**60.0**
Preventive care & fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		62.2	68.8	**65.5**	53.3	52.1	**52.7**	60.8	65.7	**63.3**	62.4	64.8	**63.6**	27.8	25.9	**26.9**
Crown & Veneer		0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.5	0.2	**0.4**	1.2	1.9	**1.6**	1.2	0.2	**0.7**
Pulp care		20.2	21.1	**20.7**	2.2	3.4	**2.8**	5.2	4.1	**4.7**	9.2	7.7	**8.5**	6.0	2.7	**4.4**
Extraction		16.0	10.2	**13.1**	34.4	33.2	**33.8**	5.9	5.7	**5.8**	29.7	25.4	**27.6**	24.6	31.0	**27.8**
Need for other care		2.7	0.4	**1.6**	2.5	3.4	**3.0**	2.4	3.9	**3.2**	36.1	47.8	**42.0**	44.5	46.4	**45.5**

Table 6.06 Mean number of teeth with treatment need by age, sex and geographical area. **State : Kerala**

Treatment Need		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	**n=**	**163**	**100**	**263**	**129**	**120**	**249**	**127**	**119**	**246**	**142**	**174**	**316**	**72**	**91**	**163**
Treatment needed		3.2	3.4	**3.3**	3.3	3.3	**3.3**	2.4	2.5	**2.5**	4.7	5.2	**5.0**	6.3	8.1	**7.2**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.2	2.6	**2.4**	1.4	1.5	**1.5**	2.0	2.1	**2.1**	1.8	1.9	**1.9**	0.4	0.5	**0.5**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pulp care		0.5	0.5	**0.5**	0.0	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.0	**0.1**
Extraction		0.5	0.3	**0.4**	1.9	1.7	**1.8**	0.2	0.1	**0.2**	1.2	1.0	**1.1**	1.9	3.0	**2.5**
Need for other care		0.1	0.0	**0.1**	0.0	0.1	**0.1**	0.0	0.1	**0.1**	1.5	2.1	**1.8**	3.9	4.6	**4.3**
Region 2	**n=**	**166**	**142**	**308**	**155**	**157**	**312**	**153**	**152**	**305**	**163**	**162**	**325**	**120**	**108**	**228**
Treatment needed		2.5	2.8	**2.7**	0.9	0.7	**0.8**	0.8	0.8	**0.8**	3.6	4.7	**4.2**	7.5	8.0	**7.8**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.5	2.8	**2.7**	0.8	0.7	**0.8**	0.7	0.7	**0.7**	2.6	3.2	**2.9**	2.9	2.8	**2.9**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.3	**0.2**
Pulp care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.1	**0.1**
Extraction		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.4	**0.4**
Need for other care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	1.4	**1.1**	4.1	4.4	**4.3**
Region 3	**n=**	**154**	**107**	**261**	**108**	**107**	**215**	**119**	**110**	**229**	**168**	**163**	**331**	**70**	**68**	**138**
Treatment needed		3.8	2.4	**3.1**	1.6	1.6	**1.6**	0.9	0.7	**0.8**	3.2	3.9	**3.6**	4.0	5.3	**4.7**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.5	1.6	**2.1**	0.3	0.3	**0.3**	0.6	0.6	**0.6**	1.2	0.9	**1.1**	0.3	0.3	**0.3**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pulp care		0.6	0.5	**0.6**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**	0.0	0.0	**0.0**
Extraction		0.5	0.2	**0.4**	1.3	1.3	**1.3**	0.1	0.1	**0.1**	0.6	1.0	**0.8**	1.5	1.9	**1.7**
Need for other care		0.2	0.1	**0.2**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	1.3	2.0	**1.7**	2.1	3.1	**2.6**
State Rural	**n=**	**330**	**238**	**568**	**256**	**262**	**518**	**273**	**259**	**532**	**318**	**335**	**653**	**179**	**187**	**366**
Treatment needed		3.3	3.0	**3.2**	2.3	2.4	**2.4**	1.7	1.7	**1.7**	4.5	5.0	**4.8**	6.9	8.8	**7.9**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.3	2.4	**2.4**	1.0	1.2	**1.1**	1.4	1.4	**1.4**	1.8	2.0	**1.9**	1.0	1.1	**1.1**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**
Pulp care		0.4	0.3	**0.4**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.2	0.1	**0.2**	0.1	0.0	**0.1**
Extraction		0.5	0.2	**0.4**	1.3	1.1	**1.2**	0.1	0.1	**0.1**	1.0	0.9	**1.0**	1.9	2.8	**2.4**
Need for other care		0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	1.5	2.0	**1.8**	3.8	4.7	**4.3**
State Urban	**n=**	**153**	**111**	**264**	**136**	**122**	**258**	**126**	**122**	**248**	**155**	**164**	**319**	**83**	**80**	**163**
Treatment needed		2.8	4.0	**3.4**	2.6	2.1	**2.4**	1.7	1.8	**1.8**	4.0	5.2	**4.6**	5.0	5.5	**5.3**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.1	3.3	**2.7**	1.2	0.9	**1.1**	1.4	1.7	**1.6**	2.1	2.3	**2.2**	0.9	0.5	**0.7**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pulp care		0.3	0.5	**0.4**	0.1	0.0	**0.1**	0.1	0.0	**0.1**	0.1	0.2	**0.2**	0.1	0.0	**0.1**
Extraction		0.3	0.2	**0.3**	1.3	1.1	**1.2**	0.1	0.0	**0.1**	0.8	0.7	**0.8**	0.3	1.2	**0.8**
Need for other care		0.1	0.0	**0.1**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	1.0	2.0	**1.5**	3.7	3.8	**3.8**
State Total	**n=**	**483**	**349**	**832**	**392**	**384**	**776**	**399**	**381**	**780**	**473**	**499**	**972**	**262**	**267**	**529**
Treatment needed		3.1	3.2	**3.2**	2.4	2.3	**2.4**	1.6	1.7	**1.7**	4.2	5.0	**4.6**	6.3	7.7	**7.0**
Preventive care/ fissure sealant		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Filling one or more surfaces		2.2	2.6	**2.4**	1.1	1.1	**1.1**	1.4	1.5	**1.5**	1.9	2.1	**2.0**	1.1	1.0	**1.1**
Crown/ Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**
Pulp care		0.4	0.3	**0.4**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.0	**0.1**
Extraction		0.4	0.2	**0.3**	1.2	1.1	**1.2**	0.1	0.1	**0.1**	0.9	0.8	**0.9**	1.4	2.2	**1.8**
Need for other care		0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	1.3	1.9	**1.6**	3.7	4.4	**4.1**

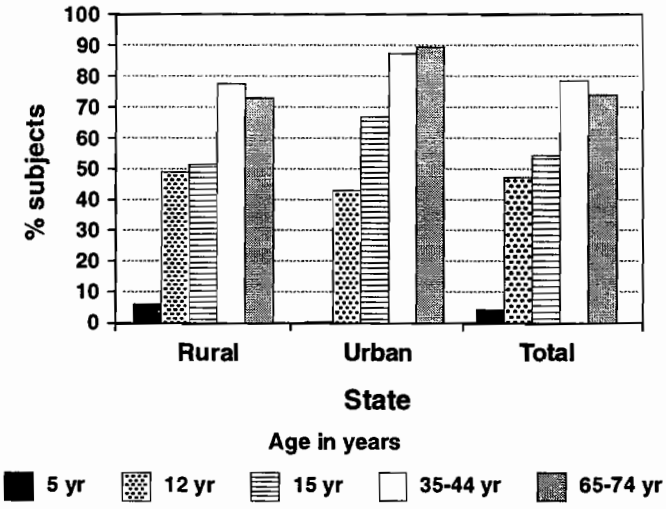
6.2 PERIODONTAL STATUS

6.2.1. Bleeding, calculus and pockets

The periodontal status was assessed using the Community Periodontal Index (CPI) with its three indicators of gingival bleeding, calculus and periodontal pockets.

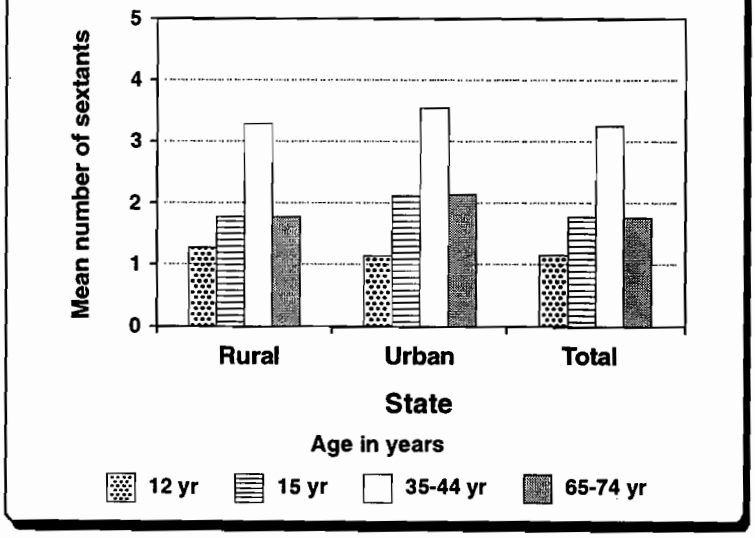
Table 6.07 and Fig. 6.07 present the per cent subjects with their periodontal status (bleeding, calculus and pockets) by level of severity and Table 6.08 and Fig. 6.08 present the mean number of teeth with bleeding, calculus and pockets.

Fig 6.07. Percent subjects with bleeding, calculus & pockets in Kerala



There was a very low prevalence of periodontal disease in the of 5 year age group (2.7per cent in male and 6.2per cent in female). It was almost completely due to calculus. As the age increases the prevalence of periodontal disease also increases. It was 47.1 per cent in 12 year age group, 53.2 per cent in 15 year age group, 78.6 per cent in 35-44 year age group and 74.7 per cent in 65-74 year age group. Percentages of subjects with calculus as the highest score were the major contributor foe periodontal disease. The percentage of subjects with deep pockets was nil in smaller age groups (5,15 and 15 year age groups) and it was very low in elder age groups also. In 5 and 12 year age groups the rural population was more affected, but in higher age groups the urban population was more affected. In Region 2 there was a lower prevalence of periodontal disease in all age groups.

Fig 6.08. Mean number of sextants with periodontal disease in Kerala



The dentition is divided into six sextants, three upper and three lower, for assessment of the periodontal status.

Mean number of healthy sextants was higher in Region 2. Mean number of sextants with pockets more than 6 mm was very low. As the age increases the severity of periodontal disease also increases. The excluded sextants increased in 65-74 year age group. It may be due to missing teeth.

There was no male female or urban rural difference.

Table: 6.07 Percent subjects with bleeding, calculus and/ or pockets by age, sex, and geographical area. State : Kerala

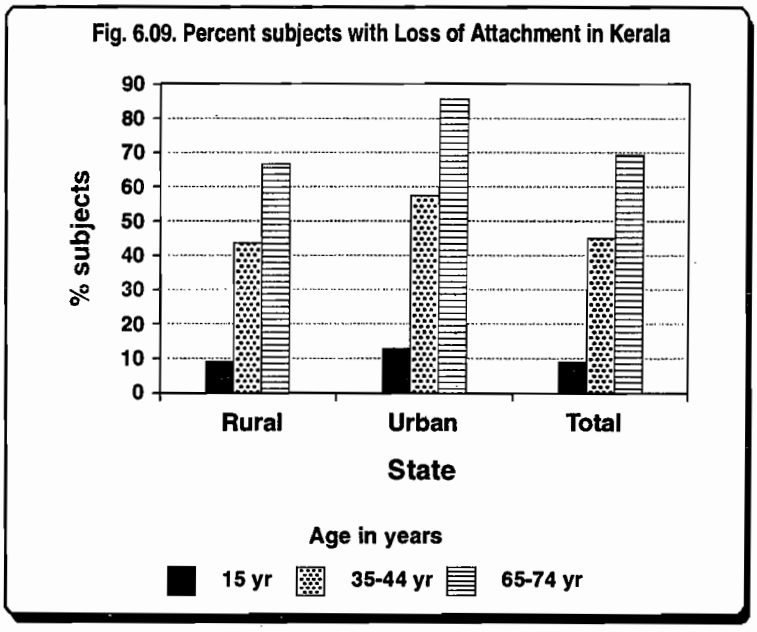
Periodontal Disease		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	11	7	18	103	106	209	126	119	245	142	174	316	80	95	175
With bleeding,calculus, or pockets		9.3	14.5	**11.9**	46.8	57.0	**51.9**	67.5	65.8	**66.7**	95.2	90.0	**92.6**	88.5	84.9	**86.7**
with bleeding		0.0	0.0	**0.0**	3.9	11.6	**7.8**	4.7	2.3	**3.5**	2.9	2.2	**2.6**	0.0	1.1	**0.6**
with calculus		9.3	14.5	**11.9**	35.9	43.5	**39.7**	52.3	56.9	**54.6**	70.6	75.1	**72.9**	66.3	59.5	**62.9**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.7	1.2	**1.0**	6.3	5.3	**5.8**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.2	**1.1**
with bleeding or higher		0.0	0.0	**0.0**	10.9	13.5	**12.2**	15.1	8.9	**12.0**	14.8	10.9	**12.9**	7.3	8.3	**7.8**
with calculus or higher		9.3	14.5	**11.9**	35.9	43.5	**39.7**	52.3	56.9	**54.6**	79.1	77.9	**78.5**	74.9	69.1	**72.0**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.4	1.2	**1.3**	6.3	5.3	**5.8**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.2	**1.1**
Region 2	n=	61	39	100	56	50	106	156	155	311	164	163	327	119	108	227
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	0.0	2.3	**1.2**	9.3	3.4	**6.4**	30.8	29.7	**30.3**	35.8	48.3	**42.1**
with bleeding		0.0	0.0	**0.0**	0.0	2.3	**1.2**	4.9	1.7	**3.3**	9.0	13.5	**11.3**	16.5	30.3	**23.4**
with calculus		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	1.7	**1.8**	8.1	8.7	**8.4**	8.5	7.8	**8.2**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.0	0.0	**0.0**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	3.6	**1.8**
with bleeding or higher		0.0	0.0	**0.0**	0.0	2.3	**1.2**	7.4	1.7	**4.6**	21.9	21.0	**21.5**	27.3	36.9	**32.1**
with calculus or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	1.7	**1.8**	8.1	8.7	**8.4**	8.5	7.8	**8.2**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.0	0.0	**0.0**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	3.6	**1.8**
Region 3	n=	16	10	26	102	97	199	119	110	229	169	165	334	80	77	157
With bleeding,calculus, or pockets		0.9	24.4	**12.7**	73.7	81.4	**77.6**	82.4	81.0	**81.7**	85.9	86.4	**86.2**	80.7	73.3	**77.0**
with bleeding		0.0	0.0	**0.0**	1.4	1.4	**1.4**	3.4	5.0	**4.2**	2.4	0.1	**1.3**	0.2	0.0	**0.1**
with calculus		0.9	24.4	**12.7**	69.6	78.6	**74.1**	77.7	74.6	**76.2**	79.2	80.3	**79.8**	55.8	58.5	**57.2**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	6.2	3.8	**5.0**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.9	**0.9**	4.6	0.0	**2.3**
with bleeding or higher		0.0	0.0	**0.0**	4.2	1.4	**2.8**	4.7	5.2	**5.0**	4.2	2.7	**3.5**	3.2	1.8	**2.5**
with calculus or higher		0.9	24.4	**12.7**	69.6	80.0	**74.8**	77.7	75.8	**76.8**	80.0	82.9	**81.5**	65.1	67.7	**66.4**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	7.7	3.8	**5.8**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.9	**0.9**	4.6	0.0	**2.3**
State Rural		72	45	117	183	181	364	275	262	537	319	340	659	196	195	391
With bleeding,calculus, or pockets		3.9	7.6	**5.8**	44.1	55.1	**49.6**	54.0	46.8	**50.4**	79.5	76.1	**77.8**	72.3	72.8	**72.6**
with bleeding		0.0	0.0	**0.0**	10.4	13.5	**12.0**	12.8	4.1	**8.5**	14.7	11.6	**13.2**	10.1	13.4	**11.8**
with calculus		3.9	7.6	**5.8**	40.7	42.7	**41.7**	50.1	46.0	**48.1**	74.5	72.2	**73.4**	62.3	57.8	**60.1**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.1	**0.1**	6.4	3.8	**5.1**	9.8	11.1	**10.5**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.7	**1.3**	4.3	6.3	**5.3**
with bleeding or higher		0.0	0.0	**0.0**	10.4	13.5	**12.0**	12.8	4.1	**8.5**	14.7	11.6	**13.2**	10.1	13.4	**11.8**
with calculus or higher		3.9	7.6	**5.8**	33.8	41.6	**37.7**	41.2	42.7	**42.0**	63.8	63.2	**63.5**	56.6	52.0	**54.3**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.0	1.2	**1.1**	5.2	4.4	**4.8**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.4	3.0	**1.7**
State Urban		16	11	27	78	72	150	126	122	248	156	162	318	83	85	168
With bleeding,calculus, or pockets		0.4	0.0	**0.2**	40.2	46.0	**43.1**	61.4	72.8	**67.1**	87.5	91.3	**89.4**	87.8	91.6	**89.7**
with bleeding		0.0	0.0	**0.0**	5.6	5.7	**5.7**	13.1	16.9	**15.0**	17.4	13.8	**15.6**	17.7	15.3	**16.5**
with calculus		0.4	0.0	**0.2**	37.4	43.1	**40.3**	54.6	65.6	**60.1**	80.8	82.8	**81.8**	79.4	83.4	**81.4**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	8.8	3.4	**6.1**	15.0	9.9	**12.5**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.8	0.0	**1.9**
with bleeding or higher		0.0	0.0	**0.0**	5.6	5.7	**5.7**	13.1	16.9	**15.0**	17.4	13.8	**15.6**	17.7	15.3	**16.5**
with calculus or higher		0.4	0.0	**0.2**	34.6	40.3	**37.5**	48.3	55.9	**52.1**	68.3	77.5	**72.9**	66.3	72.9	**69.6**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	3.8	3.3	**3.6**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total		88	56	144	261	253	514	401	384	785	475	502	977	279	280	559
With bleeding,calculus, or pockets		2.7	6.2	**4.5**	42.4	51.8	**47.1**	54.4	52.0	**53.2**	79.2	77.9	**78.6**	73.6	75.8	**74.7**
with bleeding		0.0	0.0	**0.0**	8.4	10.5	**9.5**	12.3	7.3	**9.8**	15.1	12.0	**13.6**	12.3	14.5	**13.4**
with calculus		2.7	6.2	**4.5**	39.4	42.8	**41.1**	49.7	49.3	**49.5**	73.9	73.0	**73.5**	63.6	62.0	**62.8**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.1	**0.1**	6.7	3.5	**5.1**	10.8	10.2	**10.5**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.2	0.5	**0.9**	4.1	4.6	**4.4**
with bleeding or higher		0.0	0.0	**0.0**	8.4	10.5	**9.5**	12.3	7.3	**9.8**	15.1	12.0	**13.6**	12.3	14.5	**13.4**
with calculus or higher		2.7	6.2	**4.5**	34.0	41.3	**37.7**	42.1	44.7	**43.4**	62.8	65.1	**64.0**	56.2	55.1	**55.7**
with pockets 4-5 mm or higher		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.2	0.8	**1.0**	4.7	3.9	**4.3**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.4	2.3	**1.4**

Table: 6.08 Mean no. of sextants with bleeding, calculus and pockets by age, sex and geographical area. **State : Kerala**

Periodontal Disease		12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	**129**	**120**	**249**	**127**	**120**	**247**	**142**	**180**	**322**	**120**	**141**	**261**
Mean no. of healthy sextants		3.6	3.8	**3.7**	3.7	3.8	**3.8**	1.6	1.7	**1.7**	0.4	0.6	**0.5**
With bleeding, calculus, pockets		1.1	1.5	**1.3**	2.2	2.1	**2.2**	4.0	3.6	**3.8**	2.2	1.9	**2.1**
with bleeding		0.1	0.3	**0.2**	0.4	0.2	**0.3**	0.3	0.2	**0.3**	0.1	0.1	**0.1**
with calculus		1.0	1.2	**1.1**	1.8	1.9	**1.9**	3.4	3.2	**3.3**	1.9	1.5	**1.7**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.2	**0.3**	0.2	0.2	**0.2**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.2	**0.2**	0.7	0.8	**0.8**
Not recorded		1.3	0.7	**1.0**	0.0	0.1	**0.1**	0.2	0.5	**0.4**	2.7	2.7	**2.7**
Region 2	n=	**161**	**159**	**320**	**157**	**155**	**312**	**164**	**164**	**328**	**156**	**162**	**318**
Mean no. of healthy sextants		2.4	2.1	**2.3**	5.7	5.9	**5.8**	4.8	4.8	**4.8**	3.2	2.3	**2.8**
With bleeding, calculus, pockets		0.0	0.0	**0.0**	0.3	0.1	**0.2**	1.2	1.1	**1.2**	0.8	1.1	**1.0**
with bleeding		0.0	0.0	**0.0**	0.2	0.0	**0.1**	0.5	0.6	**0.6**	0.4	0.8	**0.6**
with calculus		0.0	0.0	**0.0**	0.1	0.0	**0.1**	0.7	0.6	**0.7**	0.3	0.2	**0.3**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Not recorded		3.6	3.9	**3.8**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	2.0	2.6	**2.3**
Region 3	n=	**108**	**108**	**216**	**119**	**111**	**230**	**175**	**167**	**342**	**108**	**112**	**220**
Mean no. of healthy sextants		3.0	2.7	**2.9**	2.7	2.8	**2.8**	1.5	1.6	**1.6**	0.7	0.8	**0.8**
With bleeding, calculus, pockets		2.7	2.9	**2.8**	3.2	3.2	**3.2**	4.0	3.9	**4.0**	2.6	2.1	**2.4**
with bleeding		0.1	0.0	**0.1**	0.2	0.2	**0.2**	0.1	0.1	**0.1**	0.1	0.0	**0.1**
with calculus		2.6	2.8	**2.7**	3.1	3.0	**3.1**	3.8	3.8	**3.8**	2.1	1.8	**2.0**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.3	0.3	**0.3**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.0	**0.1**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.4	**0.4**	1.4	1.2	**1.3**
Not recorded		0.3	0.4	**0.4**	0.0	0.0	**0.0**	0.2	0.1	**0.2**	1.4	1.8	**1.6**
State Rural	n=	**261**	**264**	**525**	**276**	**263**	**539**	**323**	**343**	**666**	**264**	**279**	**543**
Mean no. of healthy sextants		3.3	3.2	**3.3**	4.0	4.5	**4.3**	2.2	2.3	**2.3**	1.1	1.1	**1.1**
With bleeding, calculus, pockets		1.0	1.3	**1.2**	1.9	1.5	**1.7**	3.4	3.1	**3.3**	1.8	1.7	**1.8**
with bleeding		0.1	0.3	**0.2**	0.3	0.1	**0.2**	0.3	0.3	**0.3**	0.1	0.3	**0.2**
with calculus		0.8	1.0	**0.9**	1.6	1.4	**1.5**	2.9	2.7	**2.8**	1.4	1.2	**1.3**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**	0.2	0.2	**0.2**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.2	**0.2**	0.7	0.9	**0.8**
Not recorded		1.7	1.6	**1.7**	0.1	0.0	**0.1**	0.2	0.4	**0.3**	2.3	2.3	**2.3**
State Urban	n=	**137**	**123**	**260**	**127**	**123**	**250**	**158**	**168**	**326**	**120**	**136**	**256**
Mean no. of healthy sextants		3.3	3.9	**3.6**	4.3	3.5	**3.9**	2.3	1.8	**2.1**	0.6	0.6	**0.6**
With bleeding, calculus, pockets		0.9	1.2	**1.1**	1.7	2.4	**2.1**	3.5	3.5	**3.5**	2.2	1.9	**2.1**
with bleeding		0.0	0.1	**0.1**	0.3	0.4	**0.4**	0.4	0.4	**0.4**	0.2	0.2	**0.2**
with calculus		0.9	1.1	**1.0**	1.4	2.0	**1.7**	2.8	3.0	**2.9**	1.8	1.5	**1.7**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.1	**0.2**	0.2	0.2	**0.2**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**
Not recorded		1.8	0.9	**1.4**	0.0	0.0	**0.0**	0.2	0.7	**0.5**	3.0	3.4	**3.2**
State Total	n=	**398**	**387**	**785**	**403**	**386**	**789**	**481**	**511**	**992**	**384**	**415**	**799**
Mean no. of healthy sextants		3.3	3.3	**3.3**	4.1	4.3	**4.2**	2.3	2.3	**2.3**	1.1	1.0	**1.1**
With bleeding, calculus, pockets		1.0	1.2	**1.1**	1.8	1.7	**1.8**	3.4	3.2	**3.3**	1.9	1.7	**1.8**
with bleeding		0.1	0.2	**0.2**	0.3	0.2	**0.3**	0.3	0.3	**0.3**	0.2	0.3	**0.3**
with calculus		0.9	1.0	**1.0**	1.5	1.5	**1.5**	2.8	2.7	**2.8**	1.5	1.2	**1.4**
with pockets(4-5 mm)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**	0.2	0.2	**0.2**
with pockets (6mm or more)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.2	**0.2**	0.6	0.6	**0.6**
Not recorded		1.7	1.5	**1.6**	0.0	0.0	**0.0**	0.2	0.4	**0.3**	2.4	2.6	**2.5**

6.2.2. Loss of attachment

Tables 6.09 and Fig. 6.09 present the per cent subjects with loss of epithelial attachment by severity, and Table 6.10 & Fig. 6.10 present the mean number of teeth with loss of attachment, by severity, respectively.



The destructive and degenerative nature of the periodontal disease was assessed, in addition to the CPI scores, with the measurement of Loss of Attachment for 15 year, 35-44 year and 65-74 year age groups only. The CPI Probe was used to measure pocket depth.

Overall, the proportion of subjects with loss of attachment in one or more sextants was lowest in the 15 year age group and highest in the 65-74 year age group (Fig 6.09). It was almost equally distributed by sex in the age groups of 35-44 year and 65-74 year. The least severe form of loss of attachment (4-5 mm) was the most prevalent across age groups followed by the more severe form of 6-8 mm.

The percentage of subjects with loss of attachment was significantly low in Region 2. In 15 year age group there was no loss of attachment recorded in Region 2. There were no significant differences between male and female or rural and urban populations.

Mean number of sextants with loss of attachment was low in 15 and 65-74 year age group, but comparatively high in 35-44 year age group. In Region 2 the severity of loss of attachment was low in all age groups. There were no male and female or rural and urban differences.

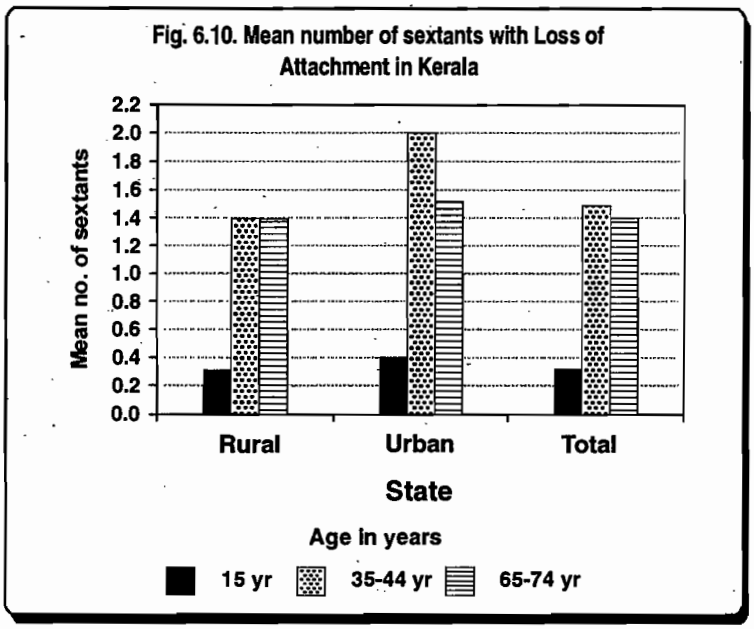


Table 6.09 Percent distribution of subjects with highest scores of loss of attachment by age, sex, and geographical area. State : Kerala

Loss of Attachment (LOA)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	**n=**	**116**	**105**	**221**	**127**	**152**	**279**	**76**	**78**	**154**
With loss of attachment		15.0	11.1	**13.1**	57.6	54.2	**55.9**	84.1	81.8	**83.0**
with LOA 4-5 mm		11.4	8.3	**9.9**	40.0	39.0	**39.5**	44.5	44.7	**44.6**
with LOA 6-8 mm		3.6	2.7	**3.2**	17.6	15.2	**16.4**	39.6	35.9	**37.8**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.2	**0.6**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	**n=**	**144**	**138**	**282**	**116**	**115**	**231**	**82**	**79**	**161**
With loss of attachment		0.0	0.0	**0.0**	8.1	14.7	**11.4**	25.9	44.1	**35.0**
with LOA 4-5 mm		0.0	0.0	**0.0**	5.4	12.0	**8.7**	18.2	41.4	**29.8**
with LOA 6-8 mm		0.0	0.0	**0.0**	2.7	2.8	**2.8**	7.8	2.7	**5.3**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	**n=**	**119**	**110**	**229**	**169**	**163**	**332**	**78**	**77**	**155**
With loss of attachment		14.1	14.1	**14.1**	44.6	42.5	**43.6**	70.7	63.4	**67.1**
with LOA 4-5 mm		11.8	11.6	**11.7**	36.4	32.7	**34.6**	43.2	36.1	**39.7**
with LOA 6-8 mm		2.4	2.5	**2.5**	7.4	8.9	**8.2**	24.2	27.3	**25.8**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.8	0.9	**0.9**	3.2	0.0	**1.6**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Rural	**n=**	**264**	**247**	**511**	**303**	**316**	**619**	**189**	**178**	**367**
With loss of attachment		13.5	5.8	**9.7**	44.2	41.8	**43.0**	66.9	68.6	**67.8**
with LOA 4-5 mm		9.8	4.6	**7.2**	29.4	29.1	**29.3**	35.6	41.9	**38.8**
with LOA 6-8 mm		3.7	1.1	**2.4**	14.7	12.5	**13.6**	31.0	26.7	**28.9**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.3	0.0	**0.2**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Urban	**n=**	**115**	**106**	**221**	**109**	**114**	**223**	**47**	**56**	**103**
With loss of attachment		6.5	18.0	**12.3**	53.8	62.1	**58.0**	83.9	86.1	**85.0**
with LOA 4-5 mm		6.5	12.9	**9.7**	42.3	49.0	**45.7**	50.3	48.8	**49.6**
with LOA 6-8 mm		0.0	5.1	**2.6**	11.5	13.1	**12.3**	33.6	33.5	**33.6**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	3.7	**1.9**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	**n=**	**379**	**353**	**732**	**412**	**430**	**842**	**236**	**234**	**470**
With loss of attachment		10.6	8.8	**9.7**	44.6	45.6	**45.1**	67.8	71.1	**69.5**
with LOA 4-5 mm		8.3	6.7	**7.5**	31.8	33.6	**32.7**	37.9	43.5	**40.7**
with LOA 6-8 mm		2.4	2.1	**2.3**	12.7	12.0	**12.4**	29.6	26.7	**28.2**
with LOA 9-11 mm		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.3	0.9	**0.6**
with LOA 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**

Table 6.10 Mean no. of sextants with loss of attachment by age, sex, and geographical area. State : Kerala

Loss of Attachment (LOA)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	**n=**	**127**	**120**	**247**	**142**	**180**	**322**	**120**	**141**	**261**
With no loss of attachment (0-3 mm)		5.1	4.9	**5.0**	3.1	3.1	**3.1**	0.8	0.8	**0.8**
With loss of attachment		0.4	0.3	**0.4**	2.0	1.5	**1.8**	1.8	1.4	**1.6**
with loss of attachment 4-5 mm		0.3	0.3	**0.3**	1.6	1.2	**1.4**	1.1	0.9	**1.0**
with loss of attachment 6-8 mm		0.1	0.0	**0.1**	0.4	0.3	**0.4**	0.7	0.5	**0.6**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.5	0.4	**0.5**
Not recorded		0.5	0.8	**0.7**	0.9	1.3	**1.1**	2.9	3.4	**3.2**
Region 2	**n=**	**157**	**155**	**312**	**164**	**164**	**328**	**156**	**162**	**318**
With no loss of attachment (0-3 mm)		5.8	5.7	**5.8**	5.1	4.8	**5.0**	2.8	2.0	**2.4**
With loss of attachment		0.0	0.0	**0.0**	0.2	0.4	**0.3**	0.6	1.0	**0.8**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.5	0.9	**0.7**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.0	**0.1**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Not recorded		0.2	0.3	**0.3**	0.7	0.8	**0.8**	2.5	3.0	**2.8**
Region 3	**n=**	**119**	**111**	**230**	**175**	**167**	**342**	**108**	**112**	**220**
With no loss of attachment (0-3 mm)		5.4	5.5	**5.5**	3.6	3.9	**3.8**	1.2	1.4	**1.3**
With loss of attachment		0.6	0.5	**0.6**	1.9	1.5	**1.7**	2.1	1.6	**1.9**
with loss of attachment 4-5 mm		0.5	0.4	**0.5**	1.6	1.2	**1.4**	1.4	1.1	**1.3**
with loss of attachment 6-8 mm		0.1	0.1	**0.1**	0.2	0.4	**0.3**	0.5	0.6	**0.6**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.0	**0.1**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.3	0.4	**0.4**	1.3	1.2	**1.3**
Not recorded		0.0	0.0	**0.0**	0.2	0.1	**0.2**	1.5	1.8	**1.7**
State Rural	**n=**	**276**	**263**	**539**	**323**	**343**	**666**	**264**	**279**	**543**
With no loss of attachment (0-3 mm)		5.1	5.2	**5.2**	3.6	3.6	**3.6**	1.4	1.2	**1.3**
With loss of attachment		0.4	0.1	**0.3**	1.5	1.2	**1.4**	1.5	1.3	**1.4**
with loss of attachment 4-5 mm		0.3	0.1	**0.2**	1.2	0.9	**1.1**	0.9	0.9	**0.9**
with loss of attachment 6-8 mm		0.1	0.0	**0.1**	0.3	0.3	**0.3**	0.6	0.4	**0.5**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.5	0.4	**0.5**
Not recorded		0.5	0.7	**0.6**	0.8	1.2	**1.0**	2.6	3.1	**2.9**
State Urban	**n=**	**127**	**123**	**250**	**158**	**168**	**326**	**120**	**136**	**256**
With no loss of attachment (0-3 mm)		5.7	5.0	**5.4**	3.2	3.1	**3.2**	0.9	0.7	**0.8**
With loss of attachment		0.1	0.6	**0.4**	2.1	1.8	**2.0**	1.6	1.3	**1.5**
with loss of attachment 4-5 mm		0.1	0.6	**0.4**	1.7	1.5	**1.6**	1.1	0.8	**1.0**
with loss of attachment 6-8 mm		0.0	0.1	**0.1**	0.4	0.2	**0.3**	0.5	0.5	**0.5**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**
Not recorded		0.1	0.4	**0.3**	0.7	1.1	**0.9**	3.3	3.8	**3.6**
State Total	**n=**	**403**	**386**	**789**	**481**	**511**	**992**	**384**	**415**	**799**
With no loss of attachment (0-3 mm)		5.3	5.2	**5.3**	3.7	3.6	**3.7**	1.4	1.1	**1.3**
With loss of attachment		0.3	0.3	**0.3**	1.6	1.3	**1.5**	1.5	1.3	**1.4**
with loss of attachment 4-5 mm		0.2	0.2	**0.2**	1.3	1.0	**1.2**	1.0	0.9	**1.0**
with loss of attachment 6-8 mm		0.1	0.0	**0.1**	0.3	0.3	**0.3**	0.5	0.4	**0.5**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with loss of attachment 12 mm or more		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
excluded sextants		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.5	0.3	**0.4**
Not recorded		0.4	0.5	**0.5**	0.7	1.0	**0.9**	2.6	3.2	**2.9**

6.3. MALOCCLUSION STATUS

Table 6.11 and Fig. 6.11 present the malocclusion status of subjects measured by DAI scores.

The Dental Aesthetic Index (DAI), recommended by the WHO, was used to analyze the severity of malocclusion in the surveyed population.

In calculating per cent subjects with malocclusion, only those subjects with a DAI score of 26 or higher were included.

No significant malocclusion was reported in the age group of 5 years where only primary teeth are present.

37.4 and 36.9 per cent subjects respectively from the 12 an d 15 year age groups had definite malocclusion and 25.7 and 25.2 per cent of these age groups had severe malocclusion and about 14.9 and 16.0 per cent had very severe malocclusion in the state. The prevalence of malocclusion was more in urban when compared to the rural population.

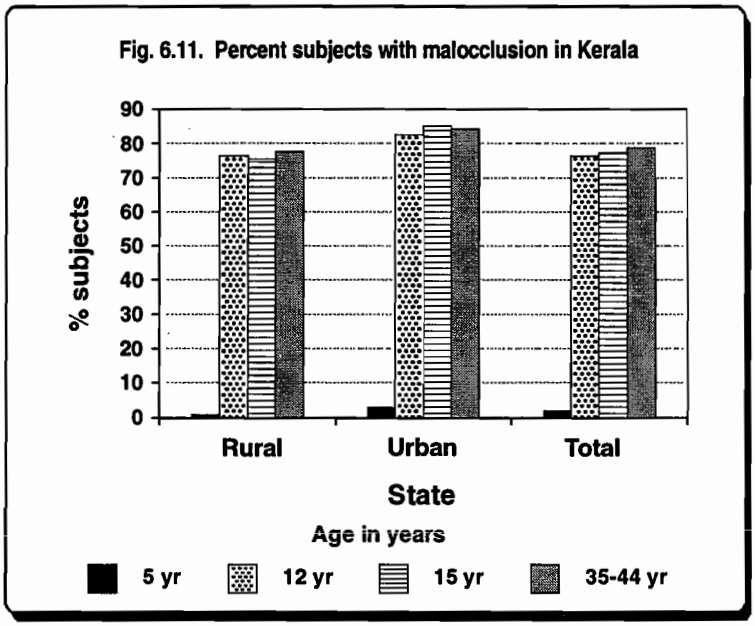


Table 6.11 Percent subjects with malocclusion by age, sex and geographical areas. **State : Kerala**

Malocclusion (DAI Score)		5 years			12 years			15 years			35-44 years		
		M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	100	263	129	120	249	127	120	247	142	180	322
None or minor malocclusion (<25)		97.0	100.0	**98.5**	17.3	24.1	**20.7**	19.6	24.6	**22.1**	22.3	20.5	**21.4**
Malocclusion present		3.0	0.0	**1.5**	82.7	75.9	**79.3**	80.4	75.4	**77.9**	77.7	79.5	**78.6**
Definite (26 -30)		0.0	0.0	**0.0**	33.2	33.7	**33.5**	31.2	29.6	**30.4**	21.0	18.4	**19.7**
Severe (31 - 15)		0.6	0.0	**0.3**	30.8	24.3	**27.6**	31.0	23.2	**27.1**	22.2	22.4	**22.3**
V Severe (36 or more)		2.3	0.0	**1.2**	18.7	17.8	**18.3**	18.2	22.6	**20.4**	34.5	38.7	**36.6**
Region 2	n=	172	143	315	161	159	320	157	155	312	164	164	328
None or minor malocclusion (<25)		100.0	100.0	**100.0**	27.6	25.7	**26.7**	24.3	20.9	**22.6**	20.7	23.6	**22.2**
Malocclusion present		0.0	0.0	**0.0**	72.4	74.3	**73.4**	75.7	79.1	**77.4**	79.3	76.4	**77.9**
Definite (26 -30)		0.0	0.0	**0.0**	46.7	50.6	**48.7**	49.1	59.3	**54.2**	45.7	41.8	**43.8**
Severe (31 - 15)		0.0	0.0	**0.0**	18.7	16.6	**17.7**	19.5	16.6	**18.1**	21.6	26.6	**24.1**
V Severe (36 or more)		0.0	0.0	**0.0**	7.0	7.1	**7.1**	7.0	3.2	**5.1**	12.0	8.0	**10.0**
Region 3	n=	155	109	264	108	108	216	119	111	230	175	167	342
None or minor malocclusion (<25)		97.3	97.3	**97.3**	16.9	19.7	**18.3**	20.4	17.1	**18.8**	11.2	23	**17.1**
Malocclusion present		2.7	2.7	**2.7**	83.1	80.3	**81.7**	79.6	82.9	**81.3**	88.8	77.0	**82.9**
Definite (26 -30)		0.0	0.0	**0.0**	34.3	42.3	**38.3**	33.1	32.8	**33.0**	21.3	18.9	**20.1**
Severe (31 - 15)		0.0	1.3	**0.7**	36.1	18.8	**27.5**	30.1	32.7	**31.4**	39.9	19.8	**29.9**
V Severe (36 or more)		2.7	1.4	**2.1**	12.7	19.2	**16.0**	16.3	17.4	**16.9**	27.6	38.3	**33.0**
State Rural	n=	336	239	575	261	264	525	276	263	539	323	343	666
None or minor malocclusion (<25)		98.5	99.8	**99.2**	22.2	24.3	**23.3**	21.0	27.0	**24.0**	25.2	20.6	**22.9**
Malocclusion present		1.5	0.2	**0.9**	77.8	75.7	**76.8**	79.0	73.0	**76.0**	74.8	79.4	**77.1**
Definite malocclusion (26 -30)		0.0	0.0	**0.0**	35.3	41.5	**38.4**	32.7	34.0	**33.4**	25.7	23.0	**24.4**
Severe malocclusion (31 - 15)		0.6	0.1	**0.4**	26.3	17.0	**21.7**	30.5	21.0	**25.8**	20.9	25.2	**23.1**
V Severe (36 or more)		0.9	0.1	**0.5**	16.2	17.2	**16.7**	16	17.9	**16.8**	28.2	31.3	**29.8**
State Urban	n=	154	113	267	137	123	260	127	123	250	158	168	326
None or minor malocclusion (<25)		94.9	100.0	**97.5**	11.8	24.1	**18.0**	19.6	11.2	**15.4**	10.3	22.8	**16.6**
Malocclusion present		5.1	0.0	**2.6**	88.2	75.9	**82.1**	80.4	88.8	**84.6**	89.7	77.2	**83.5**
Definite (26 -30)		0.0	0.0	**0.0**	38.5	26.3	**32.4**	42.0	43.8	**42.9**	26.6	20	**23.3**
Severe (31 - 15)		0.0	0.0	**0.0**	34.6	40.1	**37.4**	22.7	26.5	**24.6**	30.2	16.3	**23.3**
V Severe (36 or more)		5.1	0.0	**2.6**	15.1	9.5	**12.3**	15.6	18.5	**17.1**	33.0	41.0	**37.0**
State Total	n=	490	352	842	398	387	785	403	386	789	481	511	992
None or minor malocclusion (<25)		97.6	99.8	**98.7**	19.7	24.4	**22.1**	21.2	22.7	**22.0**	20.2	21.5	**20.9**
Malocclusion present		2.4	0.2	**1.3**	80.3	75.6	**78.0**	78.8	77.3	**78.1**	79.8	78.5	**79.2**
Definite (26 -30)		0.0	0.0	**0.0**	36.6	38.2	**37.4**	35.9	37.9	**36.9**	26.6	22.9	**24.8**
Severe (31 - 15)		0.4	0.1	**0.3**	28.5	22.9	**25.7**	27.8	22.5	**25.2**	24.6	22.8	**23.7**
V Severe (36 or more)		2.0	0.1	**1.1**	15.2	14.5	**14.9**	15.1	16.9	**16.0**	28.7	32.8	**30.8**

Note: 'No malocclusion (<25)' includes minor malocclusion.

6.4. ORAL CANCER & ORAL MUCOSAL LESIONS

Table 6.12 and Fig. 6.12 present the number of subjects with oral cancer and other oral mucosal lesions and Table 6.13 present the number of lesions by their location in the mouth of affected subjects.

The prevalence of oral mucosal lesions was quite low in the state and increases with age (Fig 6.12). Only 0.15per cent of 5 year age group, .3per cent of 12 year age group, 1.4per cent in 15 year age group, 3.5 per cent in 35-44 year age group and 8.8 per cent in 65-74 year age group had oral mucosal lesions. In Region 3 there was a significantly increased prevalence of oral mucosal lesions in all age groups. In 65-74 year age group the percentage of subjects with oral mucosal lesions was 25.2per cent of male and 21.2per cent of female population. Even in 5 year age group 1.5per cent was affected with oral mucosal lesions. 0.9per cent of 35-44 year age group females and 1.3per cent of 65-74 year age group females had oral cancer in Region 3.

Six per cent of both male and female subjects were affected by leukoplakia of buccal mucosa and 27per cent of population had other lesions on buccal mucosa. 6 per cent of the population had lichen planus of the buccal mucosa. The rural population was affected more than the urban.

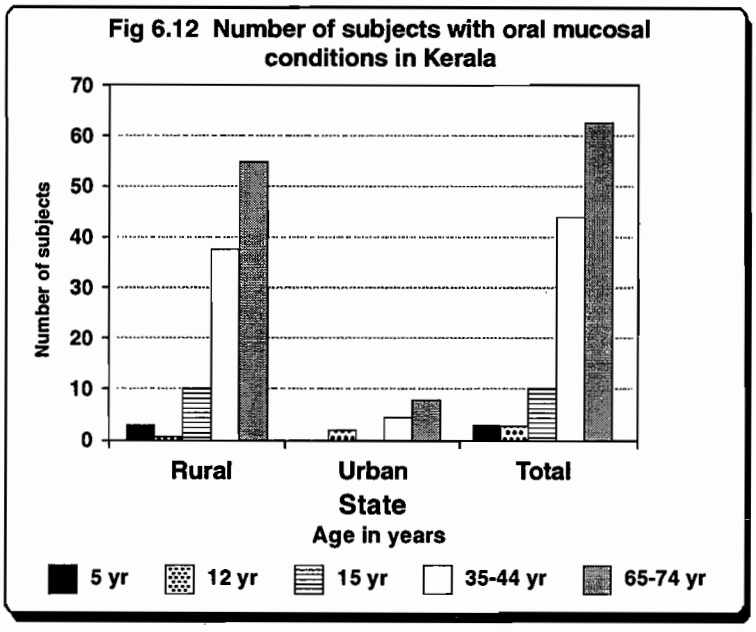


Table 6.12 Numbers of subjects with oral mucosal lesions and type of lesions by age, sex and geographical area. **State : Kerala**

Oral Mucosal Lesions		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	**n=**	**163**	**99**	**262**	**129**	**120**	**249**	**127**	**119**	**246**	**142**	**177**	**319**	**114**	**140**	**254**
Oral mucosal lesions present		0	0	**0**	1	0	**1**	3	1	**4**	3	7	**10**	8	17	**25**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	2	**3**
Lichen planus		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	2	2	**4**
Ulceration		0	0	**0**	1	0	**1**	1	0	**1**	1	4	**5**	1	2	**3**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**
Candidiasis		0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	2	**2**
Abscess		0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**
Any other condition		0	0	**0**	0	0	**0**	2	0	**2**	2	5	**7**	3	12	**15**
Region 2	**n=**	**169**	**143**	**312**	**161**	**159**	**320**	**157**	**155**	**312**	**164**	**163**	**327**	**150**	**154**	**304**
Oral mucosal lesions present		0	0	**0**	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Lichen planus		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Ulceration		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Candidiasis		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Abscess		0	0	**0**	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**
Any other condition		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Region 3	**n=**	**154**	**107**	**261**	**108**	**106**	**214**	**119**	**110**	**229**	**173**	**167**	**340**	**105**	**108**	**213**
Oral mucosal lesions present		2	1	**3**	1	0	**1**	2	3	**5**	18	15	**33**	21	16	**37**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	1	**1**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	4	5	**9**	5	2	**7**
Lichen planus		0	0	**0**	0	0	**0**	0	1	**1**	4	4	**8**	0	1	**1**
Ulceration		0	0	**0**	0	0	**0**	0	1	**1**	0	1	**1**	1	1	**2**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	1	**2**
Candidiasis		1	0	**1**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**
Abscess		1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Any other condition		0	1	**1**	1	0	**1**	2	2	**4**	10	6	**16**	14	12	**26**
State Rural	**n=**	**332**	**239**	**571**	**261**	**263**	**524**	**276**	**262**	**538**	**321**	**341**	**662**	**254**	**269**	**523**
Oral mucosal lesions present		2	1	**3**	1	0	**1**	6	4	**10**	19	19	**38**	25	30	**55**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	1	**1**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	4	5	**9**	5	4	**9**
Lichen planus		0	0	**0**	0	0	**0**	0	1	**1**	4	4	**8**	2	2	**4**
Ulceration		0	0	**0**	0	0	**0**	1	1	**2**	1	3	**4**	1	2	**3**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	1	**2**
Candidiasis		1	0	**1**	0	0	**0**	0	0	**0**	1	0	**1**	0	2	**2**
Abscess		1	0	**1**	0	0	**0**	1	1	**2**	0	0	**0**	0	0	**0**
Any other condition		0	1	**1**	1	0	**1**	4	2	**6**	10	10	**20**	16	22	**38**
State Urban	**n=**	**154**	**110**	**264**	**137**	**122**	**259**	**127**	**122**	**249**	**158**	**166**	**324**	**115**	**133**	**248**
Oral mucosal lesions present		0	0	**0**	2	0	**2**	0	0	**0**	2	3	**5**	4	3	**7**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**
Lichen planus		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**
Ulceration		0	0	**0**	1	0	**1**	0	0	**0**	0	2	**2**	1	1	**2**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**
Candidiasis		0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**
Abscess		0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**
Any other condition		0	0	**0**	0	0	**0**	0	0	**0**	2	1	**3**	1	2	**3**
State Total	**n=**	**486**	**349**	**835**	**398**	**385**	**783**	**403**	**384**	**787**	**479**	**507**	**986**	**369**	**402**	**771**
Oral mucosal lesions present		2	1	**3**	3	0	**3**	6	4	**10**	21	22	**43**	29	33	**62**
Oral Cancer		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	1	1	**2**
Leukoplakia		0	0	**0**	0	0	**0**	0	0	**0**	4	5	**9**	6	4	**10**
Lichen planus		0	0	**0**	0	0	**0**	0	1	**1**	4	4	**8**	2	3	**5**
Ulceration		0	0	**0**	1	0	**1**	1	1	**2**	1	5	**6**	2	3	**5**
ANUG		0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	1	1	**2**
Candidiasis		1	0	**1**	0	0	**0**	0	0	**0**	2	0	**2**	0	2	**2**
Abscess		1	0	**1**	1	0	**1**	1	1	**2**	0	0	**0**	0	0	**0**
Any other condition		0	1	**1**	1	0	**1**	4	2	**6**	12	11	**23**	17	24	**41**

Table 6.13 Distibution of subjects with oral mucosal conditions by location of conditions in the mouth. **State : Kerala**

Location	Oral Mucosal Condition																	
	Oral Cancer		Leuko-plakia		Lichen Planus		Ulceration		ANUG		Candi-diasis		Abscess		Others		Total by Location	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
State Rural																		
Vermilion Border	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**	**1**
Commissures	0	0	4	4	3	0	1	0	0	0	0	0	0	0	2	2	**10**	**6**
Lips	0	0	3	0	0	0	1	1	0	0	0	0	0	0	2	0	**6**	**1**
Sulci	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	**1**	**2**
Buccal mucosa	0	2	6	6	5	7	1	2	0	0	0	0	0	0	25	26	**37**	**43**
Floor of mouth	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	**0**	**2**
Tongue	0	1	2	0	1	1	0	2	0	0	0	2	0	0	4	7	**7**	**13**
Hard/Soft palate	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	**2**	**1**
Alv ridges/ Gingiva	0	0	0	0	0	0	0	0	1	1	0	0	1	0	2	0	**4**	**1**
Rural Total	**0**	**3**	**16**	**13**	**10**	**9**	**3**	**5**	**1**	**1**	**0**	**2**	**1**	**1**	**37**	**36**	**68**	**70**
State Urban																		
Vermilion Border	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Commissures	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**0**
Lips	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**0**
Sulci	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	**0**	**2**
Buccal mucosa	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	2	**1**	**4**
Floor of mouth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Tongue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	**1**	**1**
Hard/Soft palate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	**1**	**1**
Alv ridges/ Gingiva	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	**2**	**2**
Urban Total	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**3**	**0**	**1**	**1**	**0**	**1**	**0**	**3**	**4**	**7**	**10**
State Total																		
Vermilion Border	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**	**1**
Commissures	0	0	5	4	3	0	1	0	0	0	0	0	0	0	2	2	**11**	**6**
Lips	0	0	3	0	0	0	2	1	0	0	0	0	0	0	2	0	**7**	**1**
Sulci	0	0	0	1	0	1	0	1	0	0	0	0	0	1	1	0	**1**	**4**
Buccal mucosa	0	2	6	6	5	8	1	3	0	0	0	0	0	0	26	28	**38**	**47**
Floor of mouth	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	**0**	**2**
Tongue	0	1	2	0	1	1	0	2	0	0	0	2	0	0	5	8	**8**	**14**
Hard/Soft palate	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	1	**3**	**2**
Alv ridges/ Gingiva	0	0	0	0	0	0	0	1	1	2	1	0	2	0	2	0	**6**	**3**
State Total	**0**	**3**	**17**	**13**	**10**	**11**	**4**	**8**	**1**	**2**	**1**	**2**	**2**	**1**	**40**	**40**	**75**	**80**

6.5 FLUOROSIS STATUS

Table 6.14 and Fig. 6.14 present the per cent subjects with dental fluorosis by level of severity.

Fluorosis does not appear as a public health problem in the state.

Prevalence of fluorosis was 1.7 per cent in 5 year age group, 1.4 per cent in 12 year age group, 1.5 per cent in 15 year age group, 1.7 per cent in 35-44 year age group and 0.5 per cent in 65-74 year age group. However, most fluorosis reported was 'questionable' or of a 'very mild' or 'mild' type. There was a higher prevalence in Region 1. Moderate or severe fluorosis was almost nil in the state.

Fig. 6.14. Percent subjects with fluorosis in Kerala

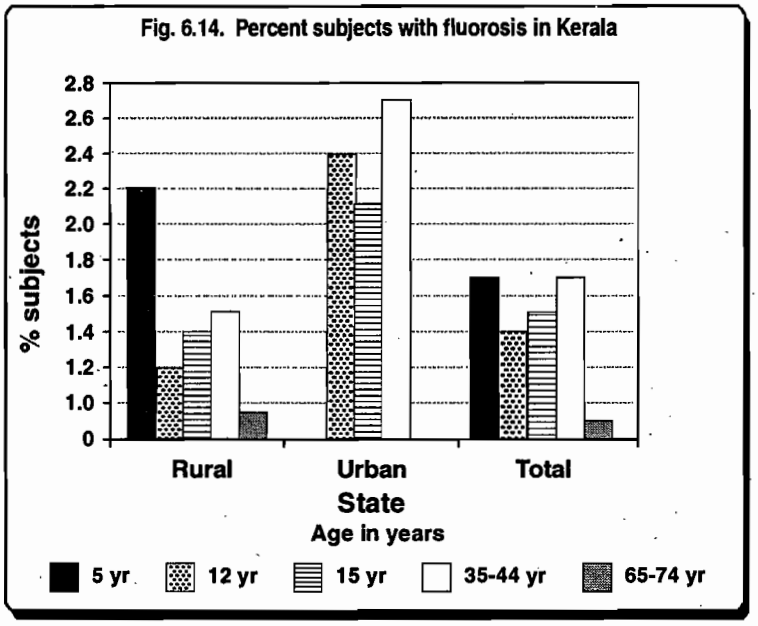


Table 6.14 Percent distribution of subjects with severity of dental fluorosis by age, sex and geographical area. State : Kerala

Dental Fluorosis		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	52	35	87	126	118	244	123	119	242	138	164	302	70	82	152
With Fluorosis		3.9	2.9	**3.4**	0.7	3.4	**2.1**	3.2	0.9	**2.1**	2.2	2.4	**2.3**	1.5	0.0	**0.8**
Questionable		0.0	0.0	**0.0**	0.0	1.8	**0.9**	0.0	0.0	**0.0**	0.0	1.2	**0.6**	0.0	0.0	**0.0**
V Mild & Mild		3.9	2.9	**3.4**	0.0	1.7	**0.9**	3.2	0.9	**2.1**	2.2	1.2	**1.7**	1.5	0.0	**0.8**
Moderate		0.0	0.0	**0.0**	0.7	0.0	**0.4**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	n=	162	136	298	159	159	318	154	144	298	164	158	322	117	104	221
With Fluorosis		0.0	0.0	**0.0**	0.3	0.0	**0.2**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Questionable		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
V Mild & Mild		0.0	0.0	**0.0**	0.3	0.0	**0.2**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Moderate		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	n=	49	30	79	104	102	206	117	105	222	157	158	315	53	53	106
With Fluorosis		3.3	0.0	**1.7**	0.0	0.1	**0.1**	0.0	2.7	**1.4**	0.9	0.0	**0.5**	0.0	0.0	**0.0**
Questionable		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.9	0.0	**0.5**	0.0	0.0	**0.0**
V Mild & Mild		3.3	0.0	**1.7**	0.0	0.1	**0.1**	0.0	1.3	**0.7**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Moderate		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.3	**0.7**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Rural	n=	178	137	315	252	259	511	268	248	516	305	323	628	164	160	324
With Fluorosis		2.7	1.7	**2.2**	0.0	2.4	**1.2**	1.7	1.0	**1.4**	1.6	1.3	**1.5**	1.3	0.0	**0.7**
Questionable		0.0	0.0	**0.0**	0.0	1.6	**0.8**	0.0	0.0	**0.0**	0.1	0.6	**0.4**	0.0	0.0	**0.0**
V Mild & Mild		2.7	1.7	**2.2**	0.0	0.8	**0.4**	1.7	0.9	**1.3**	1.5	0.6	**1.1**	1.3	0.0	**0.7**
Moderate		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Urban	n=	85	64	149	137	120	257	126	120	246	154	157	311	76	79	155
With Fluorosis		0.0	0.0	**0.0**	2.2	2.5	**2.4**	4.1	0.0	**2.1**	1.8	3.6	**2.7**	0.0	0.0	**0.0**
Questionable		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**	0.0	0.0	**0.0**
V Mild & Mild		0.0	0.0	**0.0**	0.2	2.5	**1.4**	4.1	0.0	**2.1**	1.8	1.8	**1.8**	0.0	0.0	**0.0**
Moderate		0.0	0.0	**0.0**	2.0	0.0	**1.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	n=	263	201	464	389	379	768	394	368	762	459	480	939	240	239	479
With Fluorosis		2.0	1.3	**1.7**	0.6	2.2	**1.4**	2.2	0.8	**1.5**	1.5	1.8	**1.7**	0.9	0.0	**0.5**
Questionable		0.0	0.0	**0.0**	0.0	1.1	**0.6**	0.0	0.0	**0.0**	0.1	0.9	**0.5**	0.0	0.0	**0.0**
V Mild & Mild		2.0	1.3	**1.7**	0.0	1.1	**0.6**	2.2	0.7	**1.5**	1.4	0.9	**1.2**	0.9	0.0	**0.5**
Moderate		0.0	0.0	**0.0**	0.6	0.0	**0.3**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Severe		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**

6.6. OTHER LESIONS

6.6.1 Extra oral lesions

Table 6.15 and Fig. 6.15 present the per cent subjects with extra oral lesions by type of lesions.

There were no extra oral lesions detected in 12 year age group. In 5 year age group only 0.5per cent got extraoral lesions.

The percentage of subjects with extraoral lesions was no higher than 0.8 per cent in any age group and was highest in 65-74 year age group (0.8per cent in both male and female). In Region 3 there is a higher prevalence of extraoral lesions in 65-74 year age group (2.5 per cent in male and 1.45per cent in female). The lesions recorded were ulceration, sores, erosions and fissures at various locations; abnormalities of lips; and enlarged lymph glands in the head and neck region. There was an increased prevalence of extraoral lesions in rural areas in all age groups when compared to urban area. There is no marked male and female difference.

Fig. 6.15. Percent subjects with extra oral lesions in Kerala

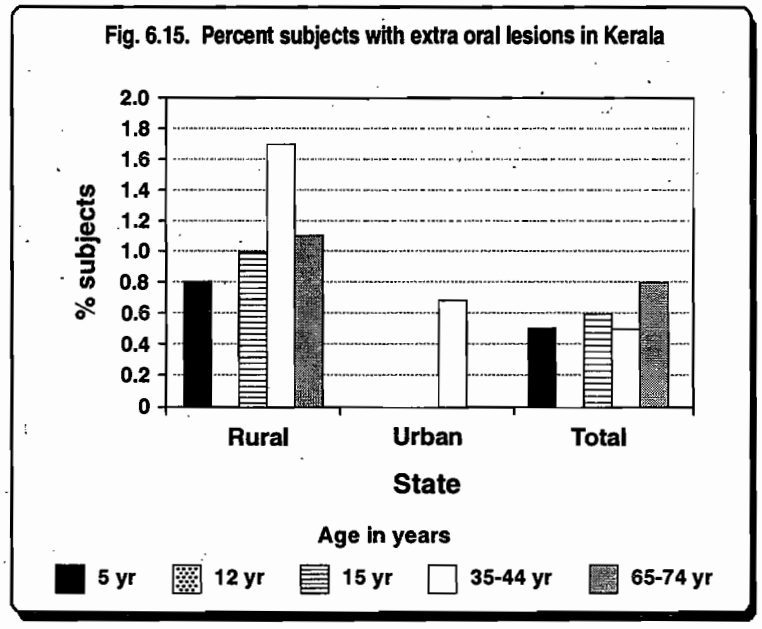


Table 6.15 Percent distribution of subjects with extra oral lesions by age, sex and geographical area. **State : Kerala**

Extra Oral Lesions		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	99	262	129	120	249	125	119	244	142	176	318	115	140	255
With extra oral lesions		0.6	1.0	0.8	0.0	0.0	0.0	1.7	0.0	0.9	0.0	1.2	0.6	0.9	0.7	0.8
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.6	0.0	0.7	0.4
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.6	0.0	0.0	0.0
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Enlarged lymph nodes(head & neck)		0.6	1.0	0.8	0.0	0.0	0.0	1.7	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Region 2	n=	171	143	314	161	159	320	157	155	312	164	163	327	152	155	307
With extra oral lesions		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.8	0.4
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.8	0.4
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.8	0.4
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Enlarged lymph nodes(head & neck)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Region 3	n=	154	108	262	107	106	213	119	110	229	173	167	340	105	110	215
With extra oral lesions		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	2.5	1.4	2.0
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	1.3	0.1	0.7
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.4	0.0	0.0	0.0
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.7
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3
Enlarged lymph nodes(head & neck)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
State Rural	n=	335	238	573	260	263	523	274	262	536	321	340	661	255	271	526
With extra oral lesions		0.6	0.9	0.8	0.0	0.0	0.0	1.9	0.0	1.0	0.1	1.2	0.7	1.0	1.1	1.1
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	1.2	0.7	0.1	1.0	0.6
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	1.2	0.6	0.0	0.2	0.1
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.8	0.4
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Enlarged lymph nodes(head & neck)		0.6	0.9	0.8	0.0	0.0	0.0	1.6	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
State Urban	n=	153	112	265	137	122	259	127	122	249	158	166	324	117	134	251
With extra oral lesions		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Enlarged lymph nodes(head & neck)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
State Total	n=	488	350	838	397	385	782	401	384	785	479	506	985	372	405	777
With extra oral lesions		0.4	0.6	0.5	0.0	0.0	0.0	1.2	0.0	0.6	0.1	0.8	0.5	0.8	0.8	0.8
Ulceration,sores,erosions,fissures		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.8	0.5	0.1	0.7	0.4
head, neck, limbs		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.8	0.4	0.0	0.2	0.1
nose, cheeks, chin		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
commissures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.5	0.3
vermilion border		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Cancrum oris		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormalities of upper & lower lips		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Enlarged lymph nodes(head & neck)		0.4	0.6	0.5	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0

6.6.2. T M joint symptoms and signs

Table 6.16 and Fig. 6.16 present the per cent subjects with temporomandibular joint (TM Joint) symptoms and signs.

None of the male and female subjects in the age group of 5 year and 12 year had any T M Joint symptoms or signs. TMJ symptoms were recorded in 0.3 per cent (15 years); 0.7 per cent (35-44 years); and 3.4 per cent (65-74 years). TMJ signs were present 0.5 per cent (15 years); 2.0 per cent (35-44 years); and 10.1 per cent (65-74 years). The signs were clicking, tenderness and reduced jaw mobility, in that order. In Region 3, 0.1per cent of 12 year age group female had clicking of TMJ and 0.1per cent had tenderness of TMJ. In Region 1, 0.1 per cent of 15 year age group male had tenderness of TMJ. TMJ symptoms were higher in urban than in rural. In the age group of 35-44 year, 1.75 per cent of urban population was having TMJ symptoms while only .3per cent of rural population got the symptoms. In 65-74 year age group, the values were 7.2 per cent and 2.2 per cent for urban and rural respectively. Males were affected more than females.

Fig. 6.16. Percent subjects with signs in T M Joint in Kerala

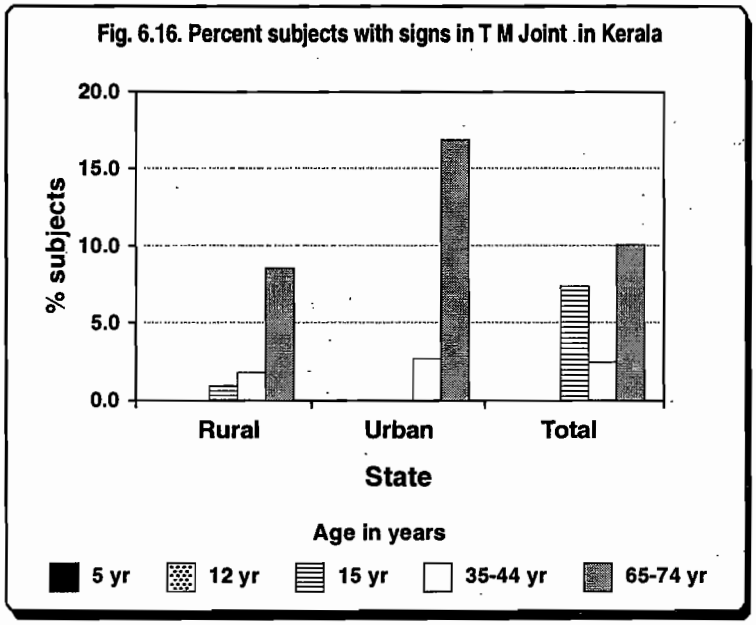
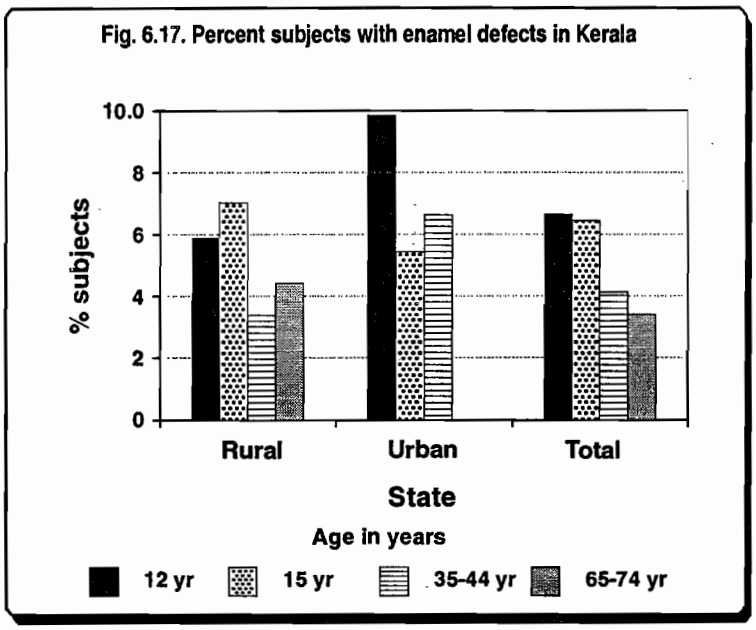


Table 6.16 Percent subjects with symptoms and signs in the tempromandibular joints by age, sex and geographical area State : Kerala

T M Joints Assessment		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	**160**	**99**	**259**	**129**	**120**	**249**	**125**	**118**	**243**	**141**	**175**	**316**	**114**	**137**	**251**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.7	1.1	**0.9**	5.8	2.9	**4.4**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.9	**0.9**	3.5	1.7	**2.6**	14.6	10.8	**12.7**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.9	**0.5**	2.9	1.1	**2.0**	13.7	10.0	**11.9**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.7	0.6	**0.7**	2.5	3.0	**2.8**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	n=	**171**	**143**	**314**	**160**	**159**	**319**	**157**	**151**	**308**	**163**	**163**	**326**	**151**	**155**	**306**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.3	**0.2**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.3	**0.2**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.3	**0.2**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	n=	**150**	**106**	**256**	**107**	**106**	**213**	**119**	**109**	**228**	**173**	**166**	**339**	**104**	**109**	**213**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	3.9	**3.2**
Signs present		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.9	1.7	**1.3**	10.4	19.5	**15.0**
Clicking		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.9	1.7	**1.3**	10.4	15.6	**13.0**
Tenderness		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	9.2	**5.9**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.6	**1.3**
State Rural	n=	**332**	**236**	**568**	**259**	**263**	**522**	**275**	**258**	**533**	**320**	**340**	**660**	**252**	**270**	**522**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.0	0.6	**0.3**	1.9	2.5	**2.2**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.8	**0.8**	2.3	1.3	**1.8**	8.5	7.4	**8.0**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.8	**0.4**	2.3	0.7	**1.5**	7.7	6.4	**7.1**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.0	0.6	**0.3**	1.1	3.7	**2.4**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.2	**0.1**
State Urban	n=	**149**	**112**	**261**	**137**	**122**	**259**	**126**	**120**	**246**	**157**	**164**	**321**	**117**	**131**	**248**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	1.7	**1.8**	12.3	2.2	**7.3**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.6	1.7	**2.7**	19.7	14.1	**16.9**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	1.7	**1.8**	19.7	14.1	**16.9**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	4.9	0.0	**2.5**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	n=	**481**	**348**	**829**	**396**	**385**	**781**	**401**	**378**	**779**	**477**	**504**	**981**	**369**	**401**	**770**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.5	0.0	**0.3**	0.5	0.8	**0.7**	4.5	2.3	**3.4**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.5	0.5	**0.5**	2.5	1.4	**2.0**	11.0	9.2	**10.1**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.5	**0.3**	2.0	1.0	**1.5**	10.4	8.4	**9.4**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.5	0.0	**0.3**	0.5	0.4	**0.5**	2.0	2.6	**2.3**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.2	**0.1**

6.6.3 Enamel defects (opacities, hypoplasia)

Table 6.17 and Fig. 6.17 present the per cent subjects with enamel defects by type of defect and Table 6.18 and Fig. 6.18 present the mean number of teeth affected with enamel defects by type of defects.



Structural enamel defects in teeth were recorded in terms of opacities and hypoplasias, types of opacities and combinations of both. The lower age group of 5 year was excluded from examination.

Overall, there was an even distribution of the enamel defects by age groups and sex in the state of Kerala. The defects appeared to be evenly distributed in rural and urban areas. 6.6per cent of 12 year age group. The proportion of subjects with enamel defects ranged from 3.4 per cent in the age group of 65-74 year to a maximum of 6.6 per cent of 12 year old males.

The most prevalent enamel defect was diffuse opacity followed by demarcated opacity across age groups.

The mean number of teeth affected with enamel defects was less than one tooth each across age groups. It ranged from 0.1 (65-74 years) to 0.3 (12 and 15 years).

There were no major rural and urban or male and female differentials in the pattern of distribution of enamel defects by type.

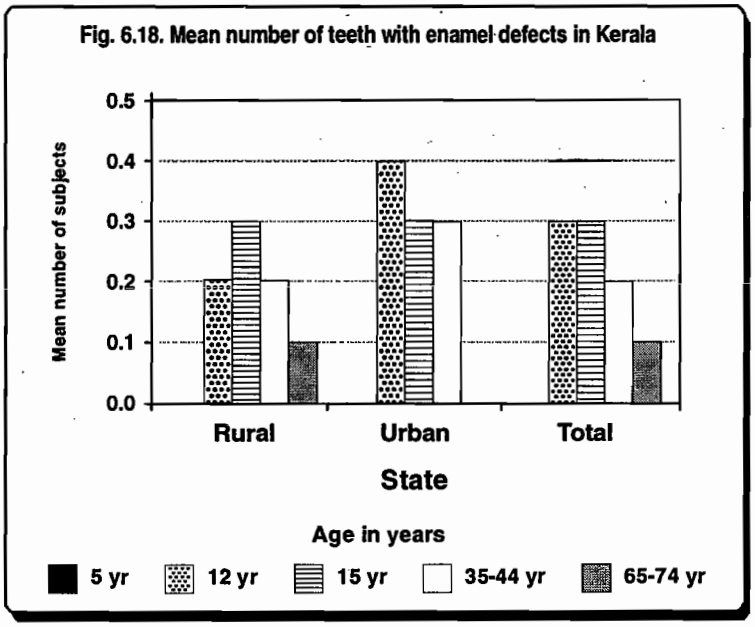


Table 6.17 Percent distribution of subjects with enamel defects (opacities/ hypoplasia) by age, sex & geographical area. State : Kerala

Enamel Opacities/Hypoplasia		12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	**128**	**120**	**248**	**126**	**119**	**245**	**140**	**170**	**310**	**67**	**83**	**150**
With enamel defects		8.4	10.1	**9.3**	11.1	5.2	**8.2**	5.0	5.7	**5.4**	4.6	1.2	**2.9**
with demarcated opacity		2.2	4.1	**3.2**	7.1	1.7	**4.4**	1.5	3.5	**2.5**	3.1	1.2	**2.2**
with diffuse opacity		6.1	5.8	**6.0**	5.6	2.6	**4.1**	3.6	1.1	**2.4**	1.5	0.0	**0.8**
with hypoplasia		0.0	0.0	**0.0**	1.5	0.9	**1.2**	0.7	1.1	**0.9**	0.0	0.0	**0.0**
with other defects		0.7	0.0	**0.4**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.5	0.0	**0.8**
with combinations of opacities and hypoplasia		0.8	0.9	**0.9**	1.7	0.9	**1.3**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	n=	**159**	**159**	**318**	**156**	**153**	**309**	**164**	**163**	**327**	**119**	**106**	**225**
With enamel defects		0.8	0.0	**0.4**	0.2	2.8	**1.5**	0.5	0.5	**0.5**	4.5	6.1	**5.3**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	2.8	**1.4**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.5	**0.4**	3.4	6.1	**4.8**
with combinations of opacities and hypoplasia		0.8	0.0	**0.4**	0.2	0.0	**0.1**	0.2	0.0	**0.1**	2.3	0.0	**1.2**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	n=	**106**	**104**	**210**	**119**	**109**	**228**	**160**	**159**	**319**	**52**	**54**	**106**
With enamel defects		1.6	3.0	**2.3**	9.1	2.8	**6.0**	1.9	1.8	**1.9**	0.0	0.3	**0.2**
with demarcated opacity		1.5	2.7	**2.1**	5.6	1.5	**3.6**	1.8	1.8	**1.8**	0.0	0.0	**0.0**
with diffuse opacity		0.1	1.6	**0.9**	2.2	0.1	**1.2**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.0	**0.1**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.3	**0.2**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	1.2	1.3	**1.3**	0.1	0.0	**0.1**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Rural	n=	**257**	**262**	**519**	**275**	**259**	**534**	**307**	**332**	**639**	**161**	**161**	**322**
With enamel defects		4.4	7.4	**5.9**	8.0	5.9	**7.0**	3.9	3.2	**3.6**	5.6	3.0	**4.3**
with demarcated opacity		0.1	2.6	**1.4**	5.3	1.7	**3.5**	1.7	2.6	**2.2**	2.7	1.2	**2.0**
with diffuse opacity		3.3	4.1	**3.7**	4.2	2.5	**3.4**	2.2	0.0	**1.1**	1.3	0.0	**0.7**
with hypoplasia		0.0	0.0	**0.0**	0.0	1.6	**0.8**	0.7	0.6	**0.7**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	1.8	**2.2**
with combinations of opacities and hypoplasia		1.1	0.8	**1.0**	1.7	0.9	**1.3**	0.0	0.0	**0.0**	0.8	0.0	**0.4**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Urban	n=	**136**	**121**	**257**	**126**	**122**	**248**	**157**	**160**	**317**	**77**	**82**	**159**
With enamel defects		12	7.3	**9.7**	11	0.3	**5.5**	3.9	9.3	**6.6**	0.0	0.0	**0.0**
with demarcated opacity		6.0	4.8	**5.4**	6.2	0.1	**3.2**	0.0	3.6	**1.8**	0.0	0.0	**0.0**
with diffuse opacity		8.0	4.9	**6.5**	4.1	0.0	**2.1**	3.5	3.6	**3.6**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	4.1	0.2	**2.2**	0.0	1.8	**0.9**	0.0	0.0	**0.0**
with other defects		2.0	0.0	**1.0**	0.0	0.0	**0.0**	0.2	0.4	**0.3**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.2	0.0	**0.1**	0.2	0.0	**0.1**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	n=	**393**	**383**	**776**	**401**	**381**	**782**	**464**	**492**	**956**	**238**	**243**	**481**
With enamel defects		6.4	6.8	**6.6**	8.3	4.2	**6.3**	3.6	4.5	**4.1**	4.2	2.5	**3.4**
with demarcated opacity		1.8	3.0	**2.4**	5.3	1.2	**3.3**	1.1	2.7	**1.9**	1.8	0.8	**1.3**
with diffuse opacity		4.4	4.0	**4.2**	3.9	1.6	**2.8**	2.4	0.9	**1.7**	0.9	0.0	**0.5**
with hypoplasia		0.0	0.0	**0.0**	1.1	1.3	**1.2**	0.5	0.9	**0.7**	0.0	0.0	**0.0**
with other defects		0.6	0.0	**0.3**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.1	1.7	**1.9**
with combinations of opacities and hypoplasia		0.7	0.5	**0.6**	1.1	0.6	**0.9**	0.0	0.0	**0.0**	0.8	0.0	**0.4**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**

Table 6.18 Mean number of teeth with enamel defects (opacities/ hypoplasia) by age, sex & geographical area. State : Kerala

Enamel opacities/Hypoplasia		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	163	100	263	129	120	249	127	120	247	142	180	322	120	141	261
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.3	0.4	**0.4**	0.5	0.2	**0.4**	0.2	0.2	**0.2**	0.0	0.0	**0.0**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.2	0.1	**0.2**	0.1	0.2	**0.2**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.3	0.1	**0.2**	0.1	0.1	**0.1**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 2	n=	172	143	315	161	159	320	157	155	312	164	164	328	156	162	318
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Region 3	n=	155	109	264	108	108	216	119	111	230	175	167	342	108	112	220
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.3	0.1	**0.2**	0.0	0.1	**0.1**	0.0	0.0	**0.0**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.1	**0.2**	0.0	0.1	**0.1**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Rural	n=	336	239	575	261	264	525	276	263	539	323	343	666	264	279	543
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.1	0.3	**0.2**	0.4	0.2	**0.3**	0.2	0.1	**0.2**	0.1	0.0	**0.1**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.1	0.2	**0.2**	0.2	0.1	**0.2**	0.1	0.0	**0.1**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Urban	n=	154	113	267	137	123	260	127	123	250	158	168	326	120	136	256
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.4	0.3	**0.4**	0.5	0.0	**0.3**	0.2	0.4	**0.3**	0.0	0.0	**0.0**
with demarcated opacity		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.0	**0.1**	0.0	0.2	**0.1**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.3	0.2	**0.3**	0.3	0.0	**0.2**	0.2	0.2	**0.2**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
State Total	n=	490	352	842	398	387	785	403	386	789	481	511	992	384	415	799
Mean no. of teeth with enamel defects		0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.4	0.1	**0.3**	0.2	0.2	**0.2**	0.1	0.0	**0.1**
with demarcated opacity		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.1	0.1	**0.1**	0.1	0.1	**0.1**	0.0	0.0	**0.0**
with diffuse opacity		0.0	0.0	**0.0**	0.2	0.2	**0.2**	0.2	0.0	**0.1**	0.1	0.1	**0.1**	0.0	0.0	**0.0**
with hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with combinations of opacities and hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
with all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**

6.6.4. Prosthetic status (upper & lower)

The prosthetic status was recorded for subjects 15 years and above. The information was collected to assess the extent to which subjects were wearing dental prostheses including bridge, partial dentures and full dentures. The data was recorded separately for upper arch (maxillary teeth) and the lower arch (mandibular teeth).

Table 6.19 and Table 6.20 and Fig. 6.19 and 6.20 present the per cent subjects with prosthetic status of upper and lower dental arches, respectively, by type of prostheses. Table 6.21 presents the per cent subjects with full mouth removable dentures.

As expected, no subjects were wearing prosthesis in the age group of 15 years. The overall proportion of subjects wearing one or the other type of prostheses in the upper arch was low in the state but the per cent subjects wearing prostheses increased as age advanced.

The per cent subjects wearing prostheses (upper arch) in the age group 35-44 year was about 3.4per cent while it was about 14.6per cent in the age group 65-74 year.

The proportion of subjects wearing prostheses in the lower arch was about 1.7per cent in the age group 35-44 year and 11.5 per cent in the 65-74 year age group.

The full denture was the most prevalent prostheses amongst the 65-74 year age group followed by a much lower prevalence of partial dentures. In the age group 35-44 year, the most prevalent prostheses were the partial dentures.

The prevalence of subjects wearing prostheses was more in urban than in rural areas. In 35-44 year age group. There were more subjects wearing prostheses in upper arch than there were subjects wearing prostheses in the lower arch.

The per cent subjects wearing full mouth removable dentures (Table 6.21) was nearly 10 per cent (9.9 per cent).

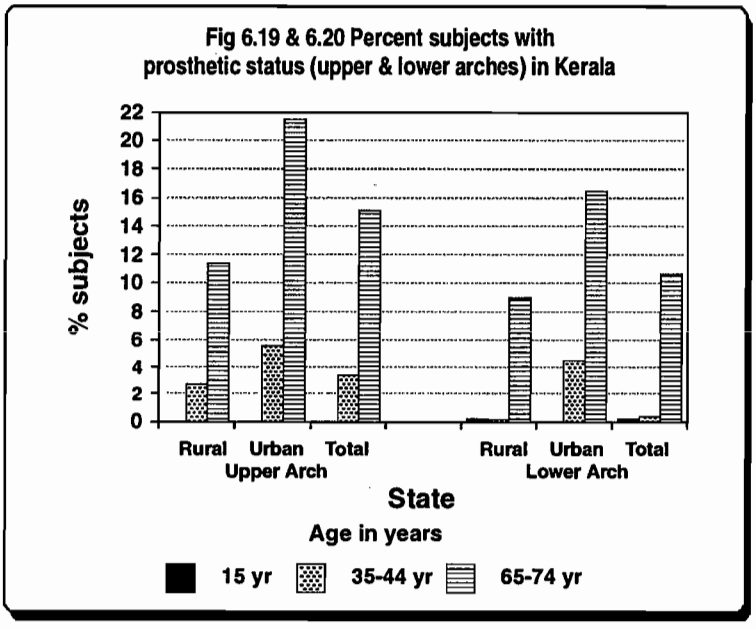


Table 6.19 Percent distribution of subjects with their prosthetic status (upper arch) by age, sex, and geographical area. State : Kerala

Prosthetic Status (Upper)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	*n=*	**127**	**120**	**247**	**142**	**180**	**322**	**120**	**141**	**261**
With Prostheses present		0.0	0.0	**0.0**	4.2	4.3	**4.3**	17.0	12.6	**14.8**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.7	0.0	**0.4**	0.8	0.0	**0.4**
Partial denture		0.0	0.0	**0.0**	2.9	2.8	**2.9**	7.5	5.0	**6.3**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.7	0.0	**0.4**	0.0	0.7	**0.4**
Full removal Denture		0.0	0.0	**0.0**	0.0	1.5	**0.8**	8.7	7.0	**7.9**
Region 2	*n=*	**157**	**155**	**312**	**164**	**164**	**328**	**156**	**162**	**318**
With Prostheses present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	8.7	15.1	**11.9**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	8.7	15.1	**11.9**
Region 3	*n=*	**119**	**111**	**230**	**175**	**167**	**342**	**108**	**112**	**220**
With Prostheses present		0.0	0.0	**0.0**	1.6	5.3	**3.5**	15.6	11.1	**13.4**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.1	0.0	**0.1**
Partial denture		0.0	0.0	**0.0**	1.6	3.4	**2.5**	4.0	2.7	**3.4**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	1.8	**0.9**	11.5	8.4	**10.0**
State Rural	*n=*	**276**	**263**	**539**	**323**	**343**	**666**	**264**	**279**	**543**
With Prostheses present		0.0	0.0	**0.0**	2.3	2.8	**2.6**	11.0	12.2	**11.6**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	2.3	2.6	**2.5**	5.2	3.9	**4.6**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	0.1	**0.1**	5.8	8.4	**7.1**
State Urban	*n=*	**127**	**123**	**250**	**158**	**168**	**326**	**120**	**136**	**256**
With Prostheses present		0.0	0.0	**0.0**	5.3	6.5	**5.9**	27.9	15.4	**21.7**
Bridge or more than one bridge		0.0	0.0	**0.0**	1.8	0.0	**0.9**	2.3	0.0	**1.2**
Partial denture		0.0	0.0	**0.0**	1.8	1.6	**1.7**	6.9	3.8	**5.4**
Both Bridge and partial denture		0.0	0.0	**0.0**	1.8	0.0	**0.9**	0.0	1.9	**1.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	4.8	**2.4**	18.7	9.6	**14.2**
State Total	*n=*	**403**	**386**	**789**	**481**	**511**	**992**	**384**	**415**	**799**
With Prostheses present		0.0	0.0	**0.0**	3.0	3.7	**3.4**	15.6	13.6	**14.6**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.5	0.0	**0.3**	0.6	0.0	**0.3**
Partial denture		0.0	0.0	**0.0**	2.0	2.3	**2.2**	5.3	3.6	**4.5**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.5	0.0	**0.3**	0.0	0.5	**0.3**
Full removal Denture		0.0	0.0	**0.0**	0.0	1.5	**0.8**	9.7	9.4	**9.6**

Note: For information on the status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively.

Table 6.20 Percent distribution of subjects with their prosthetic status (lower arch) by age, sex, and geographical area. State : Kerala

Prosthetic Status (Lower)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	**n=**	**127**	**120**	**247**	**142**	**180**	**322**	**120**	**141**	**261**
Prostheses present		0.0	0.0	**0.0**	1.3	2.7	**2.0**	11.2	9.8	**10.5**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	1.3	0.6	**1.0**	3.3	2.9	**3.1**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	2.1	**1.1**	8.0	6.9	**7.5**
Region 2	**n=**	**157**	**155**	**312**	**164**	**164**	**328**	**156**	**162**	**318**
Prostheses present		0.0	0.8	**0.4**	0.0	0.0	**0.0**	9.0	15.1	**12.1**
Bridge or more than one bridge		0.0	0.8	**0.4**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.3	0.0	**0.2**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	8.7	15.1	**11.9**
Region 3	**n=**	**119**	**111**	**230**	**175**	**167**	**342**	**108**	**112**	**220**
Prostheses present		0.0	0.0	**0.0**	0.8	0.9	**0.9**	11.8	9.8	**10.8**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	0.8	0.9	**0.9**	0.4	1.4	**0.9**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	0.1	**0.1**	11.5	8.4	**10.0**
State Rural	**n=**	**276**	**263**	**539**	**323**	**343**	**666**	**264**	**279**	**543**
Prostheses present		0.0	0.2	**0.1**	0.1	1.3	**0.7**	7.4	10.7	**9.1**
Bridge or more than one bridge		0.0	0.2	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	0.1	0.7	**0.4**	1.7	3.0	**2.4**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	0.6	**0.3**	5.8	7.6	**6.7**
State Urban		**127**	**123**	**250**	**158**	**168**	**326**	**120**	**136**	**256**
Prostheses present		0.0	0.0	**0.0**	3.5	4.8	**4.2**	21.3	11.6	**16.5**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	3.5	0.0	**1.8**	4.9	0.0	**2.5**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	4.8	**2.4**	16.4	11.5	**14.0**
State Total	**n=**	**403**	**386**	**789**	**481**	**511**	**992**	**384**	**415**	**799**
Prostheses present		0.0	0.2	**0.1**	1.1	2.2	**1.7**	11.4	11.5	**11.5**
Bridge or more than one bridge		0.0	0.2	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	1.1	0.5	**0.8**	2.3	2.0	**2.2**
Both Bridge and partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Full removal Denture		0.0	0.0	**0.0**	0.0	1.7	**0.9**	9.1	9.5	**9.3**

Note: For information on the status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively.

Table 6.21 Percent subjects with full mouth removable denture (upper and lower arch) by age, sex and geographical area. State : Kerala

Prosthetic status (Full mouth removal dentures)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	116	105	221	127	155	282	107	117	224
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	1.8	**0.9**	9.0	6.6	**7.8**
Region 2	n=	112	112	224	116	116	232	109	115	224
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	10.0	17.4	**13.7**
Region 3	n=	119	110	229	172	166	338	101	108	209
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	0.1	**0.1**	12.5	8.6	**10.6**
State Rural	n=	264	249	513	305	318	623	244	251	495
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	6.4	8.4	**7.4**
State Urban	n=	83	78	161	110	119	229	73	89	162
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	5.3	**2.7**	18.8	10.7	**14.8**
State Total	n=	347	327	674	415	437	852	317	340	657
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.0	1.5	**0.8**	10.0	9.8	**9.9**

6.6.5. Prosthetic need (upper & lower)

The prosthetic need refers to the unmet need for replacement of lost or missing teeth. Prostheses may include partial or full removable dentures and fixed prostheses including bridges. The data on prosthetic needs (upper and lower arches) should be correlated with the section on Prosthetic Status.

Table 6.22 and Table 6.23 and Fig. 6.22 & 6.23 present the per cent subjects with need for prostheses of upper and lower dental arches, respectively, by type of prostheses.Table 6.24 presents the per cent subjects with need for full mouth removable dentures.

The prostheses need appears marginally higher in lower than in upper arch. Overall, the need for prostheses increased as age advanced from 15 to 65-74 year age group. About 72.5 per cent subjects in the age group of 65-74 year age group needed some prostheses. This figure for 35-44 year old subjects was in the range of 26.7 per cent (upper arch) and 32.8 (lower arch).

There was a higher need for prostheses as the age advanced. Only about 2.8 per cent of the subjects examined required a one-unit prosthesis in the subjects aged 15 year. In the age group 35-44 year, the most prevalent need was for multi-unit prostheses followed by one-unit prostheses. More males than females needed prostheses.

In the highest age group of 65-74 year, the need for full denture prostheses was most prevalent amongst both male and female subjects. The next most prevalent need was for multiunit prosthesis. About 41.7 per cent of 65-74 year age group needed full prostheses (Table 6.24).

When comparing the regions the prosthetic need was significantly low in Region 2, it was nil in 15 year age group.

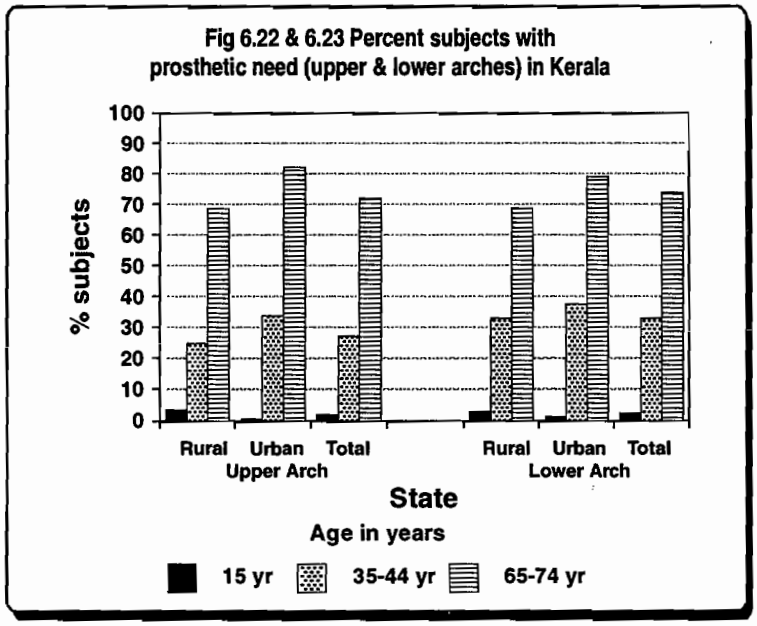


Table 6.22 Percent distribution of subjects with their prosthetic need status (upper arch) by age, sex, and geographical area. State : Kerala

Prosthetic Need (Upper)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	127	120	247	142	180	322	120	141	261
With Prosthetic need		2.4	5.2	3.8	30.1	35.5	32.8	76.4	81.7	79.1
Need for one unit prosthesis		0.7	3.5	2.1	11.7	10.6	11.2	4.1	4.2	4.2
Need for multi unit prosthesis		1.6	1.7	1.7	11.2	12.9	12.1	13.4	13.4	13.4
Need for combination of one and/or MUP		0.0	0.0	0.0	4.9	7.7	6.3	13.1	16.8	15.0
Need for full prosthesis		0.0	0.0	0.0	2.2	4.3	3.3	45.7	47.3	46.5
Region 2	n=	157	155	312	164	164	328	156	162	318
With Prosthetic need		0.0	0.0	0.0	2.6	2.9	2.8	43.9	53.2	48.6
Need for one unit prosthesis		0.0	0.0	0.0	0.0	1.6	0.8	2.5	5.8	4.2
Need for multi unit prosthesis		0.0	0.0	0.0	2.6	1.3	2.0	25.3	30.2	27.8
Need for combination of one and/or MUP		0.0	0.0	0.0	0.0	0.0	0.0	1.7	3.2	2.5
Need for full prosthesis		0.0	0.0	0.0	0.0	0.0	0.0	14.4	14.0	14.2
Region 3	n=	119	111	230	175	167	342	108	112	220
With Prosthetic need		5.6	4.1	4.9	28.0	38.3	33.2	70.3	77.9	74.1
Need for one unit prosthesis		4.5	2.5	3.5	8.6	11.9	10.3	2.4	4.4	3.4
Need for multi unit prosthesis		1.1	1.6	1.4	10.0	16.7	13.4	12.7	11.1	11.9
Need for combination of one and/or MUP		0.0	0.0	0.0	7.2	6.2	6.7	10.1	11.7	10.9
Need for full prosthesis		0.0	0.0	0.0	2.4	3.5	3.0	45.0	50.7	47.9
State Rural	n=	276	263	539	323	343	666	264	279	543
With Prosthetic need		2.1	5.2	3.7	21.6	28.9	25.3	67.2	70.9	69.1
Need for one unit prosthesis		0.4	3.4	1.9	6.6	9.5	8.1	3.4	4.0	3.7
Need for multi unit prosthesis		1.7	1.7	1.7	8.9	11.5	10.2	17.9	17.7	17.8
Need for combination of one and/or MUP		0.0	0.0	0.0	3.7	5.8	4.8	8.7	11.3	10.0
Need for full prosthesis		0.0	0.0	0.0	2.4	2.1	2.3	37.2	38.0	37.6
State Urban	n=	127	123	250	158	168	326	120	136	256
With Prosthetic need		2.1	0.1	1.1	32.1	34.6	33.4	74.5	89.3	81.9
Need for one unit prosthesis		2.1	0.0	1.1	16.0	8.2	12.1	4.6	6.0	5.3
Need for multi unit prosthesis		0.0	0.1	0.1	10.8	10.2	10.5	10.0	14.0	12.0
Need for combination of one and/or MUP		0.0	0.0	0.0	5.3	8.1	6.7	16.1	21.0	18.6
Need for full prosthesis		0.0	0.0	0.0	0.0	8.0	4.0	43.8	48.3	46.1
State Total	n=	403	386	789	481	511	992	384	415	799
With Prosthetic need		2.1	3.5	2.8	23.9	29.5	26.7	68.9	76.2	72.6
Need for one unit prosthesis		1.0	2.4	1.7	9.0	8.9	9.0	3.7	4.7	4.2
Need for multi unit prosthesis		1.1	1.2	1.2	9.2	10.8	10.0	16.6	17.7	17.2
Need for combination of one and/or MUP		0.0	0.0	0.0	4.1	6.2	5.2	10.3	13.6	12.0
Need for full prosthesis		0.0	0.0	0.0	1.6	3.6	2.6	38.3	40.1	39.2

Note: For information on status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively.

Table 6.23 Percent distribution of subjects with their prosthetic need status (lower arch) by age, sex, and geographical area. State : Kerala

Prosthetic Need (Lower)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	**n=**	**127**	**120**	**247**	**142**	**180**	**322**	**120**	**141**	**261**
With Prosthetic need		4.0	3.4	**3.7**	36.4	42.8	**39.6**	78.3	79.4	**78.9**
Need for one unit prosthesis		0.8	2.5	**1.7**	15.4	11.6	**13.5**	4.2	6.4	**5.3**
Need for multi unit prosthesis		3.2	0.9	**2.1**	13.3	17.9	**15.6**	15.2	13.9	**14.6**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	6.3	10.0	**8.2**	14.0	14.0	**14.0**
Need for full prosthesis		0.0	0.0	**0.0**	1.5	3.2	**2.4**	44.9	45.2	**45.1**
Region 2	**n=**	**157**	**155**	**312**	**164**	**164**	**328**	**156**	**162**	**318**
With Prosthetic need		0.0	0.0	**0.0**	5.8	3.7	**4.8**	44.8	52.4	**48.6**
Need for one unit prosthesis		0.0	0.0	**0.0**	2.6	2.7	**2.7**	3.4	5.8	**4.6**
Need for multi unit prosthesis		0.0	0.0	**0.0**	3.2	1.0	**2.1**	27.0	30.2	**28.6**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.7	3.2	**2.5**
Need for full prosthesis		0.0	0.0	**0.0**	0.0	0.0	**0.0**	12.7	13.2	**13.0**
Region 3	**n=**	**119**	**111**	**230**	**175**	**167**	**342**	**108**	**112**	**220**
With Prosthetic need		9.1	9.6	**9.4**	35.4	47.7	**41.6**	67.9	85.4	**76.7**
Need for one unit prosthesis		4.5	5.3	**4.9**	13.7	12.4	**13.1**	2.5	5.6	**4.1**
Need for multi unit prosthesis		4.6	4.3	**4.5**	17.0	24.6	**20.8**	10.0	14.9	**12.5**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	2.4	8.1	**5.3**	7.8	15.6	**11.7**
Need for full prosthesis		0.0	0.0	**0.0**	2.4	2.6	**2.5**	47.5	49.3	**48.4**
State Rural	**n=**	**276**	**263**	**539**	**323**	**343**	**666**	**264**	**279**	**543**
With Prosthetic need		3.9	3.1	**3.5**	27.7	35.7	**31.7**	70.5	69.0	**69.8**
Need for one unit prosthesis		1.2	2.0	**1.6**	11.5	9.8	**10.7**	4.5	6.3	**5.4**
Need for multi unit prosthesis		2.8	1.1	**2.0**	10.6	16.2	**13.4**	19.9	16.4	**18.2**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	3.9	8.3	**6.1**	9.3	10.0	**9.7**
Need for full prosthesis		0.0	0.0	**0.0**	1.7	1.4	**1.6**	36.9	36.2	**36.6**
State Urban	**n=**	**127**	**123**	**250**	**158**	**168**	**326**	**120**	**136**	**256**
With Prosthetic need		2.1	2.6	**2.4**	37.2	39.4	**38.3**	69.9	89.3	**79.6**
Need for one unit prosthesis		0.0	2.5	**1.3**	16.0	11.5	**13.8**	2.3	6.0	**4.2**
Need for multi unit prosthesis		2.1	0.1	**1.1**	14.2	13.3	**13.8**	9.9	19.7	**14.8**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	7.0	8.1	**7.6**	16.1	17.2	**16.7**
Need for full prosthesis		0.0	0.0	**0.0**	0.0	6.4	**3.2**	41.5	46.4	**44.0**
State Total	**n=**	**403**	**386**	**789**	**481**	**511**	**992**	**384**	**415**	**799**
With Prosthetic need		3.4	2.9	**3.2**	29.8	35.7	**32.8**	69.9	75.1	**72.5**
Need for one unit prosthesis		0.9	2.1	**1.5**	12.5	10.1	**11.3**	3.9	6.2	**5.1**
Need for multi unit prosthesis		2.5	0.9	**1.7**	11.6	15.0	**13.3**	17.9	18.7	**18.3**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	4.5	7.9	**6.2**	10.6	11.9	**11.3**
Need for full prosthesis		0.0	0.0	**0.0**	1.2	2.7	**2.0**	37.4	38.3	**37.9**

Note: For information on status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively.

Table 6.24. Percent subjects with need for full mouth removable denture (upper and lower arch) by age, sex and geographical area. State : Kerala

Prosthetic need for full denture (upper & lower arch)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	116	105	221	127	155	282	109	121	230
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	1.6	3.7	2.7	48.6	52.1	50.4
Region 2	n=	112	112	224	116	116	232	105	111	216
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	0.0	0.0	0.0	15.1	15.7	15.4
Region 3	n=	118	110	228	171	167	338	103	109	212
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	2.4	2.6	2.5	47.4	50.1	48.8
State Rural	n=	263	249	512	304	319	623	245	252	497
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	1.9	1.6	1.8	39.8	42.1	41.0
State Urban	n=	83	78	161	110	119	229	72	89	161
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	0.0	7.1	3.6	47.6	51.7	49.7
State Total	n=	346	327	673	414	438	852	317	341	658
Percent subjects needing full mouth removable dentures		0.0	0.0	0.0	1.3	3.1	2.2	40.3	43.1	41.7

6.6.6 Community need for immediate care and referrals

Table 6.25 presents the per cent subjects with life threatening conditions, pain or infection, other conditions, and referrals made.

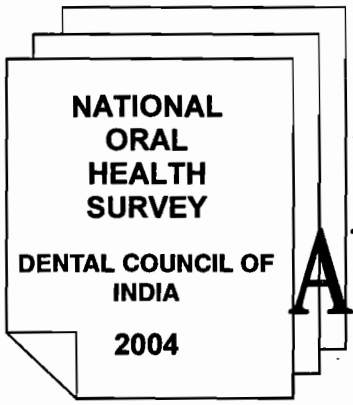
Overall, life threatening and painful or infective conditions were extremely rare in the state. Life threatening conditions were recorded in the state is only 0.1per cent in males in the age group of 5 and 12 year and 0.5per cent in males of 35-45 year age group. There was an increased rate of life threatening condition in urban males in the age group of 35-44 year (3.0 per cent). Pain or infection was relatively high in the 5 year age group (4.9 per cent). In the age group of 65-74 year pain or infection was 3.0 per cent. Pain or infection was found to be in a higher proportion in rural subjects, compared to their urban counterparts.

Referrals were made for almost all conditions recorded.

Table 6.25 Percent distribution of subjects with life threatening and painful conditions requiring immediate care and referral by age, sex and geographical area.

State : Kerala

Need For Care & Referral		5 years			12 years			15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Region 1	n=	159	99	258	129	120	249	127	120	247	141	174	315	92	115	207
Life threatening condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.7	0.0	**0.4**	0.0	0.0	**0.0**
Pain or infection		5.1	7.1	**6.1**	0.0	0.0	**0.0**	0.8	0.9	**0.9**	2.9	1.7	**2.3**	1.1	3.7	**2.4**
Other condition		0.0	1.0	**0.5**	0.8	0.0	**0.4**	0.0	0.9	**0.5**	1.4	0.6	**1.0**	0.0	3.7	**1.9**
Referral		3.8	6.2	**5.0**	0.8	0.0	**0.4**	0.0	1.7	**0.9**	3.7	1.7	**2.7**	0.0	3.7	**1.9**
Region 2	n=	166	142	308	160	157	317	157	155	312	164	164	328	152	154	306
Life threatening condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pain or infection		0.8	0.0	**0.4**	2.5	2.5	**2.5**	1.6	1.7	**1.7**	7.1	4.0	**5.6**	5.3	4.2	**4.8**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.8	**0.4**	0.0	0.8	**0.4**
Referral		0.0	0.0	**0.0**	0.0	0.8	**0.4**	0.0	0.0	**0.0**	0.8	0.0	**0.4**	0.0	0.0	**0.0**
Region 3		155	105	260	107	106	213	119	111	230	170	165	335	94	95	189
Life threatening condition		0.9	0.0	**0.5**	1.3	0.0	**0.7**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pain or infection		10.5	6.6	**8.6**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.6	0.9	**1.3**	0.0	1.6	**0.8**
Other condition		0.9	0.0	**0.5**	0.0	1.3	**0.7**	0.0	0.0	**0.0**	0.9	1.7	**1.3**	2.9	1.6	**2.3**
Referral		10.6	6.6	**8.6**	1.3	1.3	**1.3**	0.0	0.0	**0.0**	0.9	2.6	**1.8**	1.5	1.5	**1.5**
State Rural		329	236	565	259	261	520	276	263	539	318	337	655	235	245	480
Life threatening condition		0.1	0.0	**0.1**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
Pain or infection		5.6	5.3	**5.5**	0.7	0.7	**0.7**	1.3	1.3	**1.3**	5.0	2.2	**3.6**	2.7	4.8	**3.8**
Other condition		0.1	1.0	**0.6**	0.8	0.1	**0.5**	0.0	0.8	**0.4**	0.8	0.9	**0.9**	0.2	3.8	**2.0**
Referral		4.1	5.3	**4.7**	0.9	0.3	**0.6**	0.0	1.6	**0.8**	3.9	1.4	**2.7**	0.1	3.6	**1.9**
State Urban		151	110	261	137	122	259	127	123	250	157	166	323	103	119	222
Life threatening condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	0.0	0.0	**0.0**
Pain or infection		1.8	5.7	**3.8**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.7	**0.9**	0.0	0.0	**0.0**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	0.0	0.0	**0.0**
Referral		1.8	2.8	**2.3**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.7	**0.9**	0.0	0.0	**0.0**
State Total		480	346	826	396	383	779	403	386	789	475	503	978	338	364	702
Life threatening condition		0.1	0.0	**0.1**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.5	0.0	**0.3**	0.0	0.0	**0.0**
Pain or infection		4.6	5.1	**4.9**	0.7	0.7	**0.7**	0.9	1.0	**1.0**	3.7	2.2	**3.0**	2.4	3.6	**3.0**
Other condition		0.1	0.6	**0.4**	0.5	0.1	**0.3**	0.0	0.5	**0.3**	1.1	0.7	**0.9**	0.3	2.6	**1.5**
Referral		3.6	4.4	**4.0**	0.6	0.3	**0.5**	0.0	1.1	**0.6**	2.5	1.5	**2.0**	0.1	2.4	**1.3**



ANNEXURES

DENTAL COUNCIL OF INDIA

EXECUTIVE COMMITTEE

Dr. R K Bali
President
New Delhi

Dr. C. Bhasker Rao,
Vice President,
Dharwad.

Dr. Anil Kohli
New Delhi

Dr. Ravindra Ratolikar,
Hyderabad

Dr. S. G. Damle
Mumbai

Dr. B. H. Sripathi Rao
Mangalore.

Dr. J. R. Sabharwal
New Delhi

Dr. S. P. Agarwal,
New Delhi

OUTGOING MEMBERS

Dr. Mahesh Verma, New Delhi.

Dr. V. Surindra Shetty, Mangalore.

Dr. B. Suresh Chandra, Mangalore.

SUPPORT STAFF

Mr. A. L. Miglani, Secretary (Retd.)

Mr. S.S. Arora, Secretary I/c.

Mr. C.L. Bhatia

Mr. K. V. Abraham

Mr. P. K. De

Mr. Shiv Kumar

Mr. Praveen Kumar

Mr. S. S. Kanyal

Mr. Puneet Bansal

Mr. Anil Kumar

NOHS SECRETARIAT

Mrs. Sarita Verma

ANNEXURE - 1

CENTRAL SURVEY TEAM

Dr. R. K. Bali

Dr. V. B. Mathur

Prof. P. P. Talwar

Mr. H. B. Chanana

ANNEXURE - 2

TECHNICAL WORKING GROUP

Dr. R. K. Bali, President, DCI

Dr. V.B. Mathur

Dr. Shankar Aradhya

Dr. K.V.V. Prasad

Dr. M.B. Aswathnarayana

Prof. P.P. Talwar

Dr. Amrit Tiwari

LIST OF STATES, REGIONS WITHIN STATES AND SELECTED DISTRICTS

ANNEXURE - 3

Sr. No	State	Regions	Region Code	Selected Districts
1	Andhra Pradesh	North Coastal Andhra	01	Vishakapatnam
		South Coastal Andhra	02	Guntur
		Nellore	03	Nellore
		Rayalseema	04	Chittoor
		S Telangana	05	Ranga Reddy
		N Telangana	06	Khammam
2	Assam	N Eastern Hills	01	Karbi Anglong
		Lower Brahamputra	02	Kamrup
		Upper Brahamputra	03	Jorhat
3	Gujarat	S Hills	01	Bulsar
		S Gujarat	02	Surat
		M Gujarat	03	Baroda
		N Gujarat	04	Ahmedabad
		N W Arid	05	Kutch
		N Saurashtra	06	Jamnagar
		Saurashtra	07	Junagarh
4	Haryana	Foot Hills of Shivalik	01	Yamunanagar
		Plains	02	Rohtak
		Arid	03	Sirsa
5	Himachal Pradesh		01	Simla
			02	Kinnaur
6	Punjab	N Punjab	01	Roppas (Ropar)
		C Punjab	02	Patiala
		S Punjab	03	Sangrur
7	Chandigarh	Chandigarh	01	Chandigarh
8	Delhi	Delhi	01	Delhi
9	Karnataka	N Dry Region	01	Dharwad
		Central Region	02	Bangalore
		S Region	03	Mysore
		Hills & Coastal Region	04	Kodagu
10	Kerala	Coastal Midland	01	Malappuram
		Midlands	02	Kottayam
		Hills	03	Wayanad
11	Madhya Pradesh	Bundelkhand	01	Chattarpur
		Chattisgarh Hills	02	Mandla
		Keymora Plateau & Satapura Hills	03	Jabalpur

Sr. No	State	Regions	Region Code	Selected Districts
		Vindhya Plateau	04	Bhopal
		Satpura Plateau	05	Chindwara
		Central Narmada Valley	06	Hoshangabad
		Gird	07	Guna
		Malwa & Nimar (?) Plateau	08	Indore
12	Maharashtra	E Vidharba	01	Bhandara
		W Hills & Plains	02	Nasik
		Scarcity Region	03	Ahmednagar
		C Plateau	04	Amrawati
		C Vidharba	05	Wardha
		Konkan	06	Thane
13	Goa	Goa	01	Goa
14	Orissa	Inland	01	Dhankonal
		N Plateau Hills	02	Keonjar
		S W Hills	03	Koraput
		Coastal	04	Cuttack
		Ganjan	05	Ganjam
15	Rajasthan	N Arid	01	Ganganagar
		S Plains	02	Udaipur
		E Plains	03	Jaipur
		S Plateau	04	Jhalawar
		W Arid	05	Sikar
16	Tamil Nadu	N Region	01	Salem
		C Region	02	Coimbatore
		NE Coastal	03	Chennai
		Delta	04	Thanjavur
		SE Coastal	05	Tirunevalli
		S Region	06	Kanyakumari
		Hills Region	07	Nilgiri
17	U P	N E Plains	01	Gonda
		E Plains	02	Ballia
		C Plains	03	Sitapur
		N W Plains	04	Ghaziabad
		S W Plains	05	Aligarh
		Bundelkhand	06	Banda
18	J & K	Ladhakh	01	Ladakh
		Kashmir Valley	02	Srinagar
		Jammu	03	Jammu
19	Pondicherry	Pondicherry	01	Pondicherry

ANNEXURE - 4

LIST OF PARTICIPATING DENTAL COLLEGES

1.	Regional Dental College, Guwahati, (Assam)
2.	Govt. Dental College & Hospital, Ahmedabad (Gujarat)
3.	Maulana Azad Dental College & Hospital, MAMC, Delhi
4.	B.R.S. Dental College & Hospital Panchkula (Haryana)
5.	Dental College, Rohtak (Haryana)
6.	H.P. Govt. Dental College, Shimla (H.P.)
7.	College of Dental Surgery, Kasturba Medical College, Mangalore (Karnataka)
8.	Govt. Dental College, Bangalore
9.	Bharati Vidyapeeth Dental College & Hospita, Pune
10.	Dental Wing, S.C.B. Medical College, Cuttak (Orissa)
11.	Mahatma Gandhi Dental College & Hospital, Pondicherry
12.	Faculty of Dental Science, C. S. M. S. S. University, Lucknow
13.	College of Dentistry, Indore (M.P)
14.	Sri Sai College of Dental Surgery, Vikarabad – 501 101 (R.R. Dist. – A.P.)
15.	Govt. Dental College, Thiruvananthapuram, Kerala
16.	Govt. Dental College, Calicut, Kerala
17.	Govt. Dental College, Kottayam. Kerala.

ANNEXURE - 5

REGIONAL COORDINATORS

S. No.	State	Regional Coordinator
1.	Andhra Pradesh	Dr. A. Jayakumar, Principal Sri Sai College of Dental Surgery, Vikarabad
2.	Assam	Dr. Rubi Kataki Deptt. of Conservative Dentistry, Regional Dental College, Guwahati
3.	Delhi	Dr. Mahesh Verma, Principal, Dental College & Hospital, Maulana Azad Medical College,New Delhi
4.	Gujarat	Dr. Jayesh K. Parikh Govt. Dental College & Hospital, Ahmedabad.
5.	Himachal Pradesh, Punjab, Haryana, Chandigarh	Dr. N.C. Rao H.P. Govt. Dental College & Hospital, Shimla Deptt. of Community Dentistry,
6.	Jammu & Kashmir	Dr. Tara Singh Govt. Dental College, Srinagar.
7.	Karnataka	Dr. S.S. Hiremath Deptt. Of Community Dentistry, Govt. Dental College, Bangalore.
8.	Kerala	Dr. K. Nanda Kumar, Dental College, Medical Campus, Trivandrum
9.	Madhya Pradesh	Dr. S.V. Dhodapkar, Professor & Head of the Deptt. of Periodontics, College of Dentistry, Indore.
10.	Maharashtra, Goa	Dr. S.G. Damle, Dean, Nair Hospital Dental College, Mumbai.
11.	Orissa	Dr. Ashok K. Mahapatra Deptt. of Community Dentistry, S.C.B. Medical College, Cuttack.
12.	Tamil Nadu, Pondicherry	Dr. M.B. Aswathnarayanan, Deptt. of Community Dentistry, Govt. Dental College & Hospital, Chennai.
13.	Rajasthan	Dr. G. V. N. Ramesh, Principal, Pacific Dental College, Udaipur

ANNEXURE - 6

TEAM MEMBERS (KERALA)

S. No.	Name	Designation
1.	Dr.K.Nanda Kumar	Coordinator
2.	Dr.V.Ravindran	Supervisor
3.	Dr.George Skariah	Regional Coordinator (Malappuram)
4.	Dr.Damodaran	Regional Coordinator (Wayanad)
5.	Dr.K.Hari Kumar	Regional Coordinator (Kottayam)
6.	Dr.Mohammed Saheer	Team Member (Team A)
7.	Dr.Sreejith	Team Member (Team A)
8.	Dr.Nuwais Nooman	Team Member (Team A)
9.	Dr.Shalu Mohan	Team Member (Team B)
10.	Dr. Faisal Latheef	Team Member (Team B)
11.	Dr.Venugopal	Team Member (Team B)
12.	Dr.Babu Sreenath	Team Member (Team C)
13.	Dr.Arun Kumar	Team Member (Team C)
14.	Dr.Dani Boy	Team Member (Team C)

ANNEXURE - 7

DENTAL COUNCIL OF INDIA, NEW DELHI
भारतीय दंत चिकित्सा परिषद, नई दिल्ली
NATIONAL ORAL HEALTH SURVEY & FLUORIDE MAPPING 2002
राष्ट्रीय मुख स्वास्थय सर्वेक्षण तथा फ्लोराइड मैपिंग 2002

(A NATIONAL EPIDEMIOLOGICAL STUDY OF ORAL HEALTH PROBLEMS AND FLUORIDE ESTIMATION IN WATER SAMPLES)
(मुख स्वास्थय समस्याओं सम्बन्धी महामारी विज्ञान का राष्ट्रीय अध्ययन तथा जल–नमूनों में फ्लोराइड एस्टीमेशन)

DATE / तिथि | | | | | 0 | 2 | (DAY) (MONTH) (YEAR)

FORM NO. फार्म संख्या | 1 | 0 | (1-2)

STATE / राज्य | | | (6-7)

TEAM NO. दल संख्या (टीम) | | | | (3-5)

ZONE / क्षेत्र (जोन) | | | (8-9)

DISTRICT / जिला | | (10)

NAME OF VILLAGE / URBAN BLOCK _____ (11-12)
गांव/शहरी ब्लाक का नाम

VILLAGE CODE **R / U /** आर/यू **R = 1, U = 2** | 1 | 2 | (13)
R U

SERIAL NO. OF HOUSEHOLD VISITED | | | | (14-16)
सर्वेक्षण किये गये (सर्वेक्षित) घरों की क्रम संख्या

NAME OF HEAD OF HOUSEHOLD Mr. / Mrs. _____
घर के मुखिया का नाम

NAME OF SPOUSE _____
पत्नी का नाम

ADDRESS OF THE HOUSEHOLD _____
घर का पता

_____

NAME OF INTERVIEWER _____
साक्षात्कार कर्ता का नाम **(NAME) /** नाम **(SIGN) /** हस्ताक्षर

FIELD CHECKED BY _____
क्षेत्र जांचकर्ता **(NAME) /** नाम **(SIGN) /** हस्ताक्षर **(SUPERVISOR) /** (सुपरवाइजर)

SCRUTINISED BY _____
जांचकर्ता **(NAME) /** नाम **(SIGN) /** हस्ताक्षर **(SUPERVISOR) /** (सुपरवाइजर)

CHECKED BY _____
जांचकर्ता **(NAME) /** नाम **(SIGN) /** हस्ताक्षर **(COORDINATOR) /** (संयोजक)

A. SOCIO-ECONOMIC & DEMOGRAPHIC CHARACTERISTICS OF THE FAMILY
अ. परिवार की सामाजिक–आर्थिक विशिष्टताएं

FORM NO. फार्म संख्या | 1 | 1 |

S. No./ क्रम सं.	Question / प्रश्न	Code / कोड	
1.	***Name of Respondent and his/her relationship with Head of HH*** उत्तरदाता का नाम तथा घर के मुखिया से उसका सम्बन्ध	***(Head of Household)*** ***Self/*** स्वयं ..... ***1*** ***FATHER/*** पिता ..... ***2*** ***MOTHER/*** माता ..... ***3*** ***BROTHER/*** भाई ..... ***4*** ***OTHER/*** अन्यं ***5***	
2.	***Age of Respondent (in completed years)*** उत्तरदाता की आयु (पूर्ण वर्षों में)	☐☐ ***Yrs./*** वर्ष	(17-18)
3.	***Sex of the Respondent*** उत्तरदाता का लिंग	***M=1/*** पु. ☐ ***M=2/*** स्त्री ☐	(19)
4.	***Religion of the Household*** धर्म *(Tick One)/* (एक पर चिन्ह लगायें)	***Hindu/*** हिन्दू ..... ***1*** ***Muslim/*** मुस्लिम ..... ***2*** ***Sikh/*** सिख ..... ***3*** ***Christian/*** ईसाई ..... ***4*** ***Others/*** अन्यं ***5***	(20)
5.	***Caste of the Household*** जाति *(Tick One)/* (एक पर चिन्ह लगायें)	***SC/*** अनु. जाति ..... ***1*** ***ST/*** आदिम जाति ..... ***2*** ***OBC/*** अन्य पिछड़ा वर्ग ..... ***3*** ***Others/*** अन्यं ***4***	(21)
6.	***What is the highest educational level completed by the Head of the HH?*** मुखिया का शिक्षा स्तर	***Illiterate*** अशिक्षित ..... ***1*** ***Primary*** प्राईमरी ..... ***2*** ***Middle*** मिडिल ..... ***3*** ***High School*** हाईस्कूल ..... ***4*** ***Graduate*** स्नातक ..... ***5*** ***Professional*** व्यवसायिक ***6***	(22)
7.	***How much is the TOTAL Monthly Expenditure of the Household?*** घर का कुल मासिक व्यय कितना है?	***TOTAL Rs.*** कुल रु. ☐☐☐☐☐	(23-27)
8.	***Type of House (Observe & record)*** मकान किस प्रकार का है? (देखें व लिखें)	***Kuccha/*** कच्चा ..... ***1*** ***Semi-Pucca/*** आधा–पक्का ..... ***2*** ***Pucca/*** पक्का ***3***	(28)

S. No./ क्रम सं.	Question / प्रश्न	Code / कोड	
9.	***Total No. of members in the family (probe and record the number)*** परिवार में कुल सदस्यों की संख्या (जांच करें व लिखें)	***M*** / पु. ***F*** / स्त्री	(29-30)
10.	***No. of persons 5 years old*** पांच वर्ष की आयु के व्यक्तियों की संख्या	***M*** / पु. ***F*** / स्त्री	(31-32)
11.	***No. of persons 12 years old*** बारह वर्ष की आयु के व्यक्तियों की संख्या	***M*** / पु. ***F*** / स्त्री	(33-34)
12.	***No. of persons 15 years old*** पन्द्रह वर्ष की आयु के व्यक्तियों की संख्या	***M*** / पु. ***F*** / स्त्री	(35-36)
13.	***No. of persons 35-44 years old*** 35–44 वर्ष की आयु के व्यक्तियों की संख्या	***M*** / पु. ***F*** / स्त्री	(37-38)
14.	***No. of persons 65-74 years old*** 65–74 वर्ष की आयु के व्यक्तियों की संख्या	***M*** / पु. ***F*** / स्त्री	(39-40)

B. FOOD HABITS / खाद्य सम्बन्धी आदतें

S. No./ क्रम सं.	Question / प्रश्न	Code / कोड	
15.	***What is your staple (main) food in the Household?*** आपका मुख्य अन्न क्या है? *(Tick One)/* (एक पर चिन्ह लगायें)	***Wheat*** / गेंहू ..... ***1*** ***Rice*** / चावल ..... ***2*** ***Maize*** / मक्का ..... ***3*** ***Jowar*** / ज्वार ..... ***4*** ***Bajra*** / बाजरा ..... ***5*** ***Others*** / अन्य ***6***	(41)
16.	***What is your main source of drinking water? (Take a sample of water in the given jar if the source of water is different from the one where earlier sample was collected)*** आपका पीने के पानी का मुख्य स्रोत क्या है? (पूर्व घर में एकत्रित नमूने से यदि यहाँ का स्रोत भिन्न है तो जार में पानी का नमूना लें) *(Tick One)/* (एक पर चिन्ह लगायें)	***Pipe/Tap*** / पाईप/टोटी ..... ***1*** ***Tubewell/Handpump*** / ट्यूबवैल ..... ***2*** ***Draw Well*** / हैंड पम्प ..... ***3*** ***Pond*** / कूआं ..... ***4*** ***River*** / नदी ..... ***5*** ***Others*** / अन्य ***6***	(42)
17.	***Identification of the drinking water source as marked on jar or bottle in which sample collected from this HH source or one before (if source is same)*** पानी के नमूने की संख्या?		(43)
18.	***Is your family predominantly Veg./Non-Veg.*** क्या आपका परिवार मुख्य रूप से शाकाहारी/सामिश्र है? *(Tick One)/* (एक पर चिन्ह लगायें)	***Veg.*** / शाकाहारी ..... ***1*** ***Non-Veg.*** / सामिश्र ***2***	(44)

FORM NO. फार्म संख्या | 1 | 2 |

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		Interviewee's Age / साक्षात्कार देने वाले की आयु					
					5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
A.	**Socio-demographic cherecteristics of the individual**									
अ.	व्यक्ति की सामाजिक विशिष्टताएं									
19.	***Name of Individual (Interviewee) /*** साक्षात्कार देने वाले व्यक्ति का नाम									
20.	***Name of Respondent and his/her relationship with Individual (Interviewee)/*** उत्तरदाता का व्यक्ति से संबंध	***Self /*** स्वयं ..... ***1*** ***FATHER/*** पिता ..... ***2*** ***MOTHER/*** माता ..... ***3*** ***BROTHER/*** भाई ..... ***4*** ***OTHER/*** अन्य ***5***				***N.A.***	***N.A.***	***N.A.***	***N.A.***	(45-49)
21.	***Age of Individual (Interviewee) (in completed years) /*** साक्षात्कार देने वाले की आयु (पूर्ण वर्षों में)				***5 Yrs.***	***12 Yrs.***	***15 Yrs.***			(50-59)
22.	***Sex /*** लिंग	***M=1*** ***F=2*** पुरुष–1 स्त्री–2			***M = 1*** ***F = 2***	***M = 1*** ***F = 2***	***M = 1*** ***F = 2***	***M = 1*** ***F = 2***	***M = 1*** ***F = 2***	(60-64)
23.	***What is the level of Education attained by you? /*** आप की शिक्षा का स्तर क्या है? *(Tick One)/* (एक पर चिन्ह लगायें)	***Illiterate /*** अशिक्षित ..... ***1*** ***Primary /*** प्राइमरी ..... ***2*** ***Middle /*** मिडिल स्कूल ..... ***3*** ***High School /*** हाई स्कूल ..... ***4*** ***Graduate /*** स्नातक ..... ***5*** ***Professional /*** व्यवसायिक ***6***			***NOT TO BE ASKED***	***(MENTION CODE 1-6 AS APPLICABLE AGAINST EACH AGE GROUP)***				(65-69)

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
24.	Your occupation or Profession ? / आपका रोजगार या व्यवसाय?	Farmer ..... 1 कृषक Agriculture Labour ..... 2 कृषि श्रमिक Business ..... 3 व्यापार Professional ..... 4 व्यवसाय White Collar Worker ..... 5 व्हाईट–कालर कार्य Skilled Worker ..... 6 सीखा हुआ कर्मचारी Unskilled Worker ..... 7 बिना सीखा हुआ कर्मचारी Other (Specify) ..... 8 अन्य			SKIPPED	SKIPPED				(70-74)
25.	How often do you read a Newspaper? / आप समाचार–पत्र कब पढ़ते है?	Daily ..... 1 प्रतिदिन Sometime ..... 2 कभी–कभी Not at all ..... 3 कभी नहीं			BE	BE				(75-79)
26.	How often do you listen to Radio? / आप रेडियो कब सुनते हैं?	Daily ..... 1 प्रतिदिन Sometime ..... 2 कभी–कभी Not at all ..... 3 कभी नहीं			TO	TO				(80-84)
27.	How often do you watch to TV? / आप टी वी कब देखते हैं?	Daily ..... 1 प्रतिदिन Sometime ..... 2 कभी–कभी Not at all ..... 3 कभी नहीं			NOT	NOT				(85-89)
28.	How often do you watch Cinema in a Hall? / आप सिनेमा हाल में कब देखते हैं? (Tick One)	Once in 3 months ..... 1 3 माह में एक बार Less often ..... 2 बहुत कम Not at all ..... 3 कभी नहीं								(90-94)

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
B.	**Abnormal Oral Habits**									
ब.	मुख सम्बन्धी असामान्य आदतें									
29.	***Does the interviewee generally breathe by nose or mouth ? /*** आप साधारणतया नाक से सांस लेते हैं या मुँह से?	***Nose/*** नाक	***1***							(95-99)
		Mouth/ मुँह	***2***							
		Can't Say/ कह नहीं सकता	***3***							
30.	***Did/does the interviewee have a habit of sucking or biting his/her fingers or Thumb?*** क्या आपको अपनी उँगली चूसने या दांतों से दबाने की आदत हैं या थी? (देखें और लिखें)	***No/*** नहीं	***1***							(100-104)
		Yes/ हां	***2***							
		Can't Say/ कह नहीं सकता	***3***							
31.	***Did/does the interviewee have a habit of thrusting his/her tongue on his/her teeth? (Observe & Record) /*** क्या आपको अपनी जीभ दांतों पर दबाने की आदत है या थी? (देखें और लिखें)	***No/*** नहीं	***1***							(105-109)
		Yes/ हां	***2***							
		Can't Say/ कह नहीं सकता	***3***							
32.	***Did/does the interviewee have a habit of bitting nails, lips or objects like a pencil*** क्या साक्षात्कार देने वाले को नाखून, होंठ या पेन्सिल जैसी चीजें चबाने की आदत है या थी?	***No/*** नहीं	***1***							(110-114)
		Yes/ हां	***2***							
		Can't Say/ कह नहीं सकता	***3***							
33.	***Did/does the interviewee have a habit of gritting or grinding his/her teeth consciously, unconsciously, during sleep or moments of stress? /*** क्या आपको जाने–अनजाने सोते समय या किसी दबाव के समय अपने दांत रगड़ने की आदत है या थी?	***No Habit/*** आदत नहीं	***1***							(115-119)
		In Sleep/ नींद में	***2***							
		In Stress/ दबाव में	***3***							
		Can't Say/ कह नहीं सकता	***4***							
C.	**Eating Habits**									
स.	खान–पान की आदतें									
34.	***How many times between today & yesterday have you taken anything sweet? (Help to recall number of times sweet taken during last 24 hrs.) /*** आपने कल और आज के बीच कितनी बार मीठा खाया? (पिछले 24 घंटों के दौरान कितनी बार मीठा खाया, याद दिलाने में सहायता करें)	***1 times/*** एक बार	***1***							(120-124)
		2 times/ 2 बार	***2***							
		3 times/ 3 बार	***3***							
		4 times/ 4 बार	***4***							
		5 times/ 5 बार	***5***							
		> 5 times/ 6 बार	***6***							
		Not taken/ नहीं खाई	***7***							

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
35.	When were these sweet eaten ? / मीठा कब–कब खाया गया?	During Meals ..... भोजन के समय	1							(125-129)
		In Between Meals ..... भोजन के समय के बीच	2							
		During & In Between Meals ..... भोजन के समय व बीच में	3							
		N.A. / लागू नहीं होता	4							

D. Oral Hygiene Practices
द. मुख की सफाई

36.	How do you generally clean your teeth?/ सामान्यतः आप अपने दांत कैसे साफ करते हैं?	Finger/ उंगली से	1	If Code chosen either 3 or 4, go to Q. 42.						(130-134)
		Brush/ ब्रुश से	2							
		Datun/ दातुन	3							
		Others (Specify) ..... अन्य	4							
37.	How often do you clean your teeth in a day ? / दिन में आप कितनी बार दांत साफ करते हैं?	Once/ दिन में एक बार	1							(135-139)
		Twice/ दिन में दो बार	2							
		After every meal ..... प्रति भोजन के बाद	3							
		Don't clean every day ..... प्रतिदिन साफ नहीं करते	4							
38.	What are your timings of cleaning teeth ? / दांत साफ करने का समय क्या है?	Morning only/ केवल प्रातःकाल	1							(140-144)
		Night only (before going to bed) ..... केवल रात में सोने से पहले	2							
		Morning & Night ..... प्रातःकाल व रात	3							
		After meals ..... भोजन के बाद	4							
		Others (Specify) ..... अन्य	5							
39.	What material do you generally use to clean teeth ? / सामान्यतः आप अपने दांत किस चीज से साफ करते हैं?	Toothpaste ..... टूथपेस्ट	1	If Code chosen 3, go to Q. 41						(145-149)
		Toothpowder ..... टूथपाउडर	2							
		Others (Specify) ..... अन्य	3							

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
40.	***Check tooth paste/powder used and record whether it is fluoridated or non-fluoridated?*** प्रयुक्त किये गए टूथ पेस्ट/पाउडर को चैक करें व लिखें वह फ्लोराइड–युक्त है या फ्लोराइड रहित?	***Fluoridated*** ..... फ्लोराइड–युक्त ***Non-Fluoridated*** ..... फ्लोराइड–रहित ***Can't Say*** ..... कह नहीं सकता ***None***	***1*** ***2*** ***3*** ***4***							(150-154)
41.	***(Ask only if code in Q. 36 was 2.)*** ***How often do you change your toothbrush?*** आप अपना टूथ ब्रश कितने समय बाद बदलते हैं?	***1-3 months/*** 1–3 माह ..... ***4-6 months/*** 4–6 माह ..... ***6 + months/*** ..... 6 से अधिक ***NA (Not using/ Brush)***	***1*** ***2*** ***3*** ***4***							(155-159)
42.	***How often you rinse your mouth with water after eating? /*** क्या भोजन करने के बाद आप पानी से कुल्ला करते हैं।	***Never*** ..... कभी नहीं ***Sometimes*** ..... कभी–कभी ***Always*** ..... सर्वदा	***1*** ***2*** ***3***							(160-164)
43.	***Do you use any other oral hygiene aids?*** क्या आप मुँह साफ करने के लिए किसी अन्य साधन का इस्तेमाल करते हैं? ***(Tick as many as reported)*** (जितना बताएं सब लिखें)	***Dental Floss*** ..... डेन्टल फ्लॉश ***Interdental Brush*** ..... इन्टरडेन्टल ब्रुश ***Toothpicks*** ..... टूथ पिक्स ***Fluoride Mouthrinse*** ..... फ्लोराइड माउथरिन्स ***Other*** ..... ***Mouthwash/Rinse (Specify)*** अन्य माउथवाश/रिन्स लिखें ***None/*** कोई नहीं	***1*** ***2*** ***3*** ***4*** ***5*** ***6***							(165-184)

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	

E. Pattern of Practices for Dental Treatment

द. दंत–चिकित्सा के तरीके

44.	*Have you suffered from any mouth or teeth problems in the last one year?/* क्या पिछले एक वर्ष में आपको मुख या दांत सम्बन्धी कोई बीमारी हुई है?	*No/* नहीं ..... 1 *Yes* / हां ..... 2 *Can't Say/* ..... 3 कह नहीं सकता		If No. Go to Q. 47						(185-189)
45.	*What were or was the problem?* यदि हां, तो समस्या क्या थी या है? *(Tick as many as reported)* (जितना बताएं सब लिखें)	*Dental decay* ..... 1 दंत–क्षय *Gum disease* ..... 2 मसूड़ों की बीमारी *Foul breath* ..... 3 दुर्गन्धित सांस *Bleeding gums* ..... 4 मसूड़ों से खून बहना *Trauma* ..... 5 ट्रोमा (चोट) *Abscess* ..... 6 एबसेस (फोड़ा) *Crooked teeth* ..... 7 टेढ़े–मेढ़े दांत *Ulcer* ..... 8 अल्सर *Others (Specify)* ..... 9 अन्य (लिखें)								(190-209)
46.	*Who was or were consulted?* आपने किससे राय ली? *(Tick as many as reported)* (जितना बताएं सब लिखें)	*None/* कोई नहीं ..... 1 *Friend/Neighbour* ..... 2 मित्र / पड़ोसी *Relative/* रिश्तेदार ..... 3 *Med. Practitioner* ..... 4 मेडिकल प्रेक्टिश्नर *Pharmacist/* ..... 5 *Chemist* फारमासिस्ट / कैमिस्ट *Untrained Dentist* ..... 6 अनट्रेण्ड डेन्टिस्ट *Trained Dentist* ..... 7 ट्रेण्ड डेन्टिस्ट *Others (Specify)* ..... 8 अन्य								(210-229)

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
47.	*Are you suffering or have you ever suffered from one or more of the following :* क्या आपको कभी निम्न बीमारियाँ थीं या हैं? *(Tick as many as reported)* (जितना बताएं सब लिखें)	*None/* कोई नहीं	1							(230-249)
		Hypertension हाईपरटेन्शन	2							
		Diabetes डाईबिटीज़	3							
		Epilepsy एपिलेप्सी	4							
		Jaundice जोन्डिस	5							
		Asthma अस्थमा	6							
		Others (Specify) अन्य	7							
		Can't Say/ कह नहीं सकता	8							
48.	*What is or are the availability of dental treatment facilities in your area? /* आपके क्षेत्र में दंत–चिकित्सा सम्बन्धी क्या सुविधाएं उपलब्ध हैं? *(Tick as many as reported)* (जितना बताएं सब लिखें)	*None/* कोई नहीं	1							(250-269)
		Govt. Hosp./ Dispensary सरकारी हस्पताल / डिस्पेन्सरी	2							
		Private Hospitals निजी हस्पताल	3							
		Private Practitioner प्राइवेट प्रेक्टिशनर	4							
		Don't Know नहीं जानते	5							
49.	*How accessible are the Oral health facilities with available transport?* उपलब्ध परिवहन द्वारा मुख–स्वास्थ्य सुविधाओं तक पहुंच का समय।	*Less than ½ hour* आधा घण्टा से कम	1							(270-274)
		½ to 1 hour आधा से 1 घण्टा	2							
		> 1 hour 1 घण्टा से अधिक	3							
		Can't Say कह नहीं सकता	4							

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	

F. Awareness and Knowledge of Dental Health Problems

एफ. दंत–स्वास्थ्य समस्याओं की जानकारी व जागरूकता

50.	***What, in your opinion, are the common problems associated with mouth and teeth? /*** आपकी राय में मुख व दांतों से सम्बन्धित सामान्य समस्याएँ क्या हैं? ***(Tick as many as reported)*** (जितना बताएं सब लिखें)	***Tooth Decay*** ..... दंत–क्षय	1		ASKED					(275-294)
		Gum Disease ..... मसूड़ों की बीमारी	2							
		Bad Smell ..... दुर्गन्ध	3							
		Crooked teeth ..... टेढ़े–मेढ़े दांत	4							
		Mouth Ulcers ..... मुख का अल्सर	5							
		Stained teeth ..... गन्दे दांत	6							
		Others (Specify) ..... अन्य	7							
		Don't Know ..... नहीं जानता	8							
51.	***What, in your opinion, are the major factors which cause dental problems?/*** आपकी राय में, किन मुख्य कारणों से दांतों की समस्याएँ पैदा होती हैं? ***(Tick as many as reported)*** (जितना बताएं सब लिखें)	***Eating sweets icecreams/chocolates*** मिठाई/आइसक्रीम/ चाकलेट खाना	1		NOT TO BE					(295-314)
		Not brushing regularly नियमित रूप से ब्रुश न करना	2							
		Not rinsing ..... पानी से मुख साफ न करना	3							
		Consuming Tobacco products/ तम्बाकू उत्पाद खाना	4							
		Others (Specify) ..... अन्य	5							
		Don't Know ..... नहीं जानता	6							

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
52.	***How can you prevent dental problems?/*** आप किस प्रकार दांतों की बीमारियों को रोक सकते हैं? ***(Tick as many as reported)*** (जितना बताएं सब लिखें)	***Not consuming tobacco products /*** तम्बाकू उत्पादों का इस्तेमाल न करके ***Regular cleaning of teeth with brush*** ब्रुश द्वारा दांतों की नियमित सफाई ***Visiting dentist regularly*** दंत–चिकित्सक द्वारा नियमित जांच ***Using Fluoride Toothpaste*** फ्लोराइड टूथ–पेस्ट का इस्तेमाल ***Avoiding sweets icecreams/chocolates*** मिठाई, आइसक्रीम व चाकलेट छोड़कर ***Others (Specify)*** अन्य तरीके ***Don't Know*** नहीं जानता	***1*** ***2*** ***3*** ***4*** ***5*** ***6*** ***7***		A S K E D					(315-334)

G. Tobacco Smoking and Chewing Habits
जी. तम्बाकू चबाने व पीने की आदतें

53.	***Do you smoke? /*** क्या आप धूम्रपान करते हैं?	***No/*** नहीं ***Yes/*** हां	***1*** ***2***	**In case NO go to Q. 61**	B O					(335-339)
54.	***What do you smoke? /*** आप कौन सा धूम्रपान करते हैं? ***(Tick as many as reported)*** (जितना बताएं सब लिखें)	***Chillum/*** चिलम ***Hookah/*** हुक्का ***Cigars/*** सिगार ***Cigarettes/*** सिगरेट ***Bidis/*** बिड़ी ***Others (Specify)/*** अन्य	***1*** ***2*** ***3*** ***4*** ***5*** ***6***		N O T T O					(340-359)

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड		5 Yrs. / 5 वर्ष	12 Yrs. / 12 वर्ष	15 Yrs. / 15 वर्ष	35-44 Yrs./ 35–44 वर्ष	65-74 Yrs./ 65–74 वर्ष	
55.	**Whether it is with or without Filter?** क्या यह फिल्टर सहित हैं या फिल्टर रहित?	**With Filter/** फिल्टर युक्त **Without Filter/** फिल्टर रहित **Don't Know/** नहीं जानता	1 2 3		D					(360-364)
56.	**How many times a day do you normally Smoke? /** एक दिन में सामान्यतः कितनी बार धूम्रपान करते हैं?	**< 5 times/** पांच बार तक **5-10 times/** पांच से दस बार **10-20 times/** दस से बीस बार **> 20 times/** बीस से अधिक	1 2 3 4		E K					(365-369)
57.	**Did you or do you chew pan with tobacco? /** क्या आप पान तम्बाकू के साथ चबाते हैं या चबाते थे?	**No/** नहीं **Yes/** हाँ **Don't Know/** पता नहीं	1 2 3	**If No, Go to Q. 61**	S A					(370-374)
58.	**Did you or do you chew pan-masala with tobacco? /** क्या आप पान–मसाला तम्बाकू के साथ चबाते हैं या चबाते थे?	**No/** नहीं **Yes/** हाँ **Don't Know/** पता नहीं	1 2 3		E					(375-379)
59	**How long have you been in the habit of chewing pan or pan masala with tobacco? /** आप कब से पान या पान–मसाला तम्बाकू के साथ चबाते रहें हैं? (एक पर टिक लगायें)	**< 5 Yrs./** 5 साल से **5-10 Yrs./** 5–10 साल से **> 10 Yrs./** 10 साल से अधिक	1 2 3		B					(380-384)
60.	**How often do you chew tobacco in a day? /** एक दिन में आप तम्बाकू कितनी बार चबाते हैं? (एक पर टिक लगायें)	**< 5 times/** 5 बार **5-10 times/** 5–10 बार **> 10 times/** 10 से अधिक	1 2 3		O T					(385-389)
61.	**Did you or do you take Alcohol? /** क्या आप अल्कोहल (शराब) लेते थे या लेते हैं? (एक पर टिक लगायें)	**No/** नहीं **Yes/** हाँ	1 2	**If No, End the interview here**	N O T					(390-394)
62.	**How often do you take Alcohol/** आप अल्कोहल (शराब) कितनी बार लेते हैं या लेते थे? (एक पर टिक लगायें)	**Daily/** प्रतिदिन **3 times a week/** सप्ताह में 3 बार **Occasionally/** कभी–कभी **< 3 times a week/** सप्ताह में 3 बार से अधिक	1 2 3 4							(395-399)

DENTAL COUNCIL OF INDIA, NEW DELHI

NATIONAL ORAL HEALTH SURVEY & FLUORIDE MAPPING

(A NATIONAL EPIDEMIOLOGICAL STUDY OF ORAL HEALTH PROBLEMS AND FLUORIDE ESTIMATION IN WATER SAMPLES)

DATE | | | | | 0 | 4 | (DAY) (MONTH) (YEAR)

FORM NO. | 2 | 0 | (1-2)

STATE | | | (6-7)

ZONE | | | (8-9)

TEAM NO. | | | | (3-5)

DISTRICT | | (10)

NAME OF VILLAGE / URBAN BLOCK _____ | | (11-12)

CODE

RURAL / URBAN | 1 (R) | 2 (U) | (13)

SERIAL NO. OF HOUSEHOLD VISITED | | | | (14-16)

NAME OF HEAD OF HOUSEHOLD Mr. / Mrs. _____

NAME OF SPOUSE _____

ADDRESS OF THE HOUSEHOLD _____

_____

EXAMINER _____ (NAME) (SIGN)

RECORDER _____ (NAME) (SIGN)

NAME OF INTERVIEWER _____ (NAME) (SIGN)

FIELD CHECKED BY _____ (NAME) (SIGN)

SCRUTINISED BY _____ (NAME) (SIGN)

CHECKED BY _____ (NAME) (SIGN)

WHO ORAL HEALTH ASSESSMENT FORM (1997)

GENERAL INFORMATION

Name .....

Date of birth (17) Year Month (20)

Age in years (21) (22)

Sex (M = 1, F = 2) (23)

Ethnic group (24)

Occupation (25)

Geographical location (26) (27)

Location type : (28)

1 = Urban
2 = Periurban
3 = Rural

OTHER DATA (specify and provide codes)

..... (29)

..... (30)

CONTRAINDICATION TO EXAMINATION

Reason..... (31)

..... 0 = No 1 = yes

CLINICAL ASSESSMENT (32)

EXTRA-ORAL EXAMINATION

0 = Normal extra-oral appearance
1 = Ulceration, sores, erosions, fissures (head, neck, limbs)
2 = Ulceration, sores, erosions, fissures (nose, checks, chin)
3 = Ulceration, sores, erosions, fissures (commissures)
4 = Ulceration, sores, erosions, fissures (vermilion border)
5 = Cancrum oris
6 = Abnormalities of upper and lower lips
7 = Enlarged lymph nodes (head, neck)
8 = Other swellings of face and jaws

TEMPOROMANDIBULAR JOINT ASSESSSMENT

SYMPTOMS
0 = NO
1 = Yes
9 = Not recorded
(33)

SIGNS
0 = No
1 = Yes
9 = Not recorded

Clicking (34)
Tenderness (on palpation) (35)
Reduced jaw mobility (< 30 mm opening) (36)

ORAL MUCOSA

CONDITION

0 = No abnormal condition
1 = Malignant turmour (oral cancer)
2 = Leukoplakia
3 = Lichen Planus
4 = Ulceration (aphthous, herpetic, traumatic)
5 = Acute necrotizing gingivitis
6 = Candidiasis
7 = Abscess
8 = Other condition (specify if possible).....
9 = Not recorded

(37) ☐ ☐ (40)
(38) ☐ ☐ (41)
(39) ☐ ☐ (42)

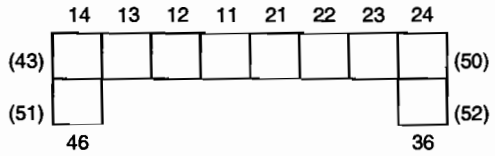
LOCATION

0 = Vermilion border
1 = Commissures
2 = Lips
3 = Sulci
4 = Buccal Mucosa
5 = Floor of mouth
6 = Tongue
7 = Hard and / or soft palate
8 = Alveolar ridges / gingiva
9 = Not recorded

ENAMEL OPACITIES/HYPOPLASIA

Permanent teeth

0 = Normal
1 = Demarcated opacity
2 = Diffuse opacity
3 = Hypoplasia
4 = Other defects
5 = Demarcated and diffuse opacities
6 = Demarcated opacity and hypoplasia
7 = Diffuse opacity and hypoplasia
8 = All three conditions
9 = Not recorded



LOSS OF ATTACHMENT*

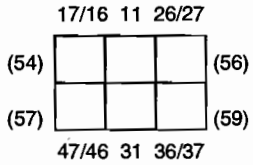
0 = Normal
1 = Questionable
2 = Very mild
3 = Mild
4 = Moderate
5 = Severe
8 = Excluded
9 = Not recorded

☐ (53)

COMMUNITY PERIODONTAL INDEX (CPI)

0 = Healthy
1 = Bleeding
2 = Calculus
3 = Pocket 4-5 mm (black band on probe) partially visible)
4*= Pocket 6 mm or more (black band on probe not visible)
X = Excluded sextant
9 = Not recorded

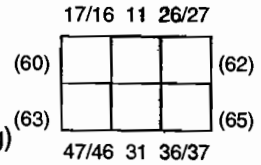
*Not recorded under 15 years of age



LOSS OF ATTACHMENT*

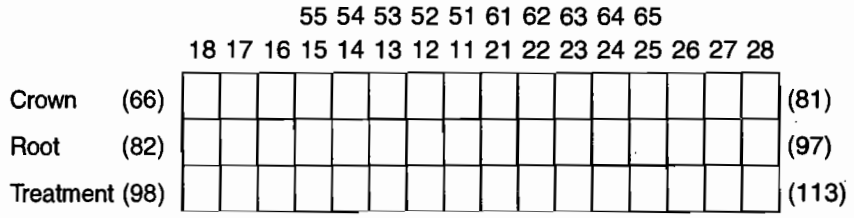
0 = Healthy
1 = 4-5 mm (cementoenamel junction (CEJ) within black band)
2 = 6-8 mm (CEJ between upper limit of black band and 8.5 mm ring)
3 = 9-11 mm (CEJ between 8.5 mm and 11.5 mm rings)
4 = 12 mm or more (CEJ beyond 11.5 mm ring)
X = Excluded sextant
9 = Not recorded

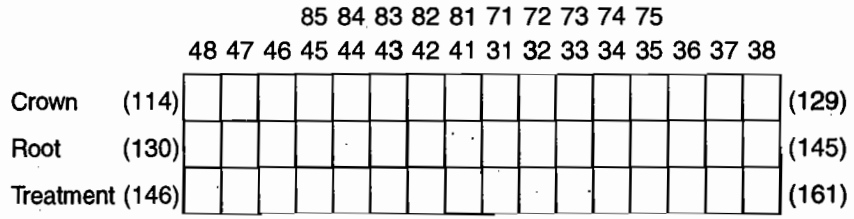
*Not recorded under 15 years of age



DENTITION STATUS AND TREATMENT NEED

Identification Number





Primary teeth Crown	Permanent teeh Crown/Root		STATUS
A	0	0	Sound
B	1	1	Decayed
C	2	2	Filled, with decay
D	3	3	Filled, no decay
E	4	-	Missing, as a result of caries
-	5	-	Missing, any other reason
F	6	-	Fissure sealant
G	7	7	Bridge abutment special crown or veneer/implant
-	8	8	Unerupted tooth, (Crown) / unexposed root
T	T	-	Trauma (fracture)
-	9	9	Not recorded

TREATMENT

0 = None
P = Preventive, caries arresting care
F = Fissure sealant
1 = One surface filling
2 = Two or more surface fillings
3 = Crown for any reason
4 = Veneer or laminate
5 = Pulp care and restoration
6 = Extraction
7 = Need for other care (specify).....
8 = Need for other care (specify).....
9 = Not recorded

PROSTHETIC STATUS

Upper Lower
(162) (163)

0 = No Prosthesis
1 = Bridge
2 = More than one bridge
3 = Partial denture
4 = Both bridge (s) and partial denture (s)
5 = Full removable denture
9 = Not recorded

PROSTHETIC NEED

Upper Lower
(164) (165)

0 = No Prosthesis needed
1 = Need for one-unit prosthesis
2 = Need for multi-unit prosthesis
3 = Need for a combination of one- and/or multi-unit prostheses
4 = Need for full prosthesis (replacement of all teeth)
9 = Not recorded

DENTOFACIAL ANOMALIES

DENTITION

☐ (166) ☐ (167) Missing incisor, canine and premolar teeth-maxillary and mandibular - enter number of teeth

SPACE

☐ (168)
Crowding in the incisal segments.
0 = No crowding
1 = One segment crowding
2 = Two segments crowding

☐ (169)
Spacing in the incisal segments:
0 = No spacing
1 = One segment spaced
2 = Two segments spaced

☐ (170)
Diastema in mm

☐ (171)
Largest anterior maxillary irregulaity in mm

☐ (172)
Largest anterior mandibular irregularity in mm

OCCLUSION

☐ (173)
Anterior maxillary overjet in mm

☐ (174)
Anterior mandibular overjet in mm

☐ (175)
Vertical anterior openbite in mm

☐ (176)
Antero-posterior molar relation :

0 = Normal
1 = Half cusp
2 = Full cusp

NEED FOR IMMEDIATE CARE AND REFERRAL

Life-threatening condition ☐ (177)
Pain or infection ☐ (178)
Other condition (specify)..... ☐ (179)

0 = Absent
1 = Present
2 = Not recorded

Referral
0 = No
1 = Yes
9 = Not recorded

☐ (180)

NOTES