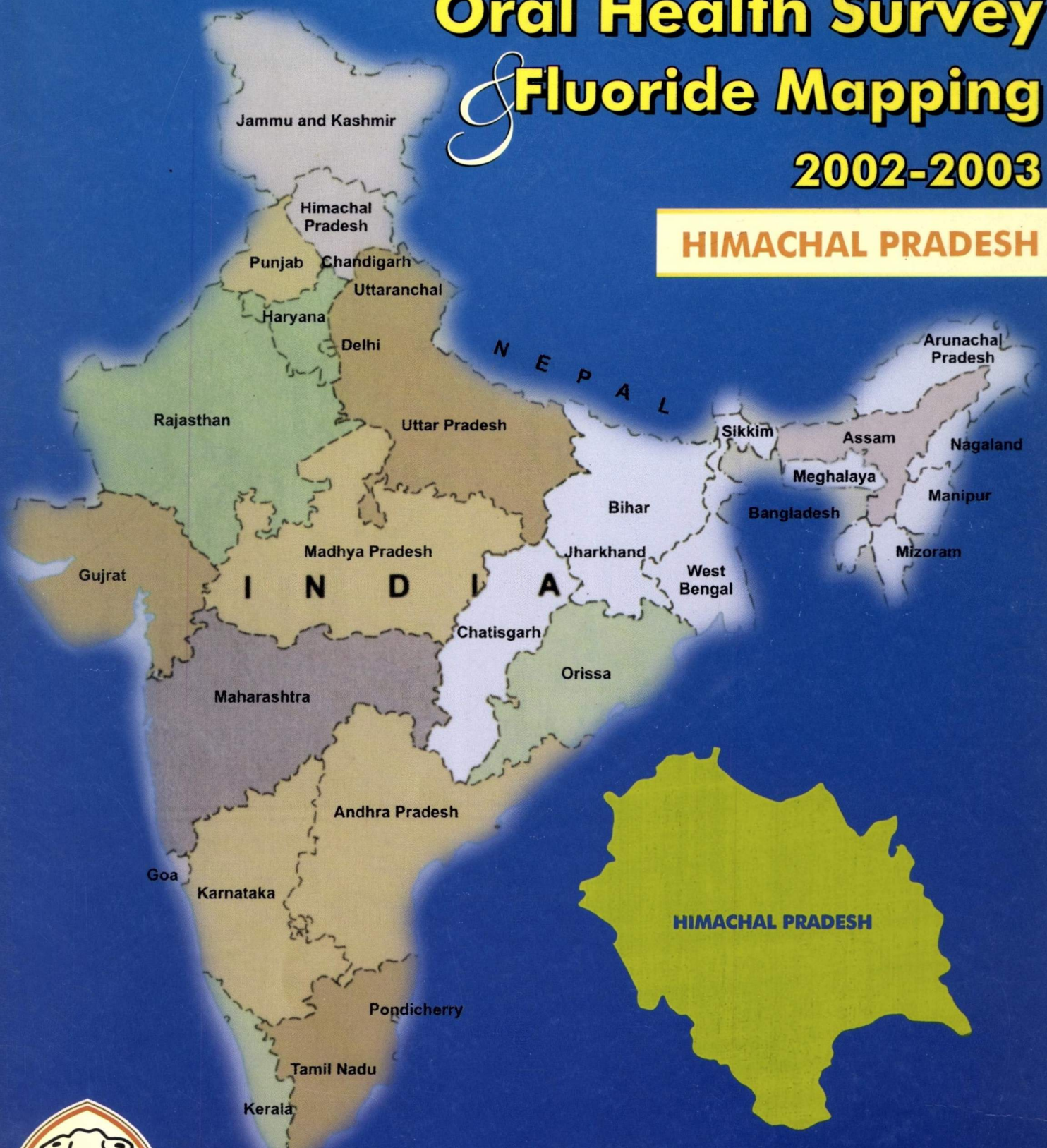
National Oral Health Survey & Fluoride Mapping 2002-2003

HIMACHAL PRADESH



Dental Council of India
New Delhi
2004

NATIONAL ORAL HEALTH SURVEY & FLUORIDE MAPPING

2002-2003

HIMACHAL PRADESH

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DENTAL COUNCIL OF INDIA
NEW DELHI
2004

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Project Supported by :

Colgate - Palmolive Co. U.S.A.
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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
MPH	Master in Public Health
MSc	Master in Science
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
mnt/ MNT	Mean number of teeth (primary/ permanent)
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
ppm	Parts per million (of fluorides)

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 Praveen Kumar, Mr. 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

The National Oral Health Survey & Fluoride Mapping 2002 of the Dental Council of India (DCI) is the first ever national level epidemiological survey in our country. The survey will have far-reaching influence on planning manpower, resources and oral health care services for the people of Himachal Pradesh. The massive initiative could not have been successfully carried out without the partnership, participation, cooperation, support and help from a number of institutions, organizations and individuals who have directly or indirectly assisted in this magnanimous task.

I gratefully acknowledge the help and assistance rendered by a number of colleagues and friends, who participated in this survey so willingly. This list is long but I would wish to record my gratitude, appreciation and thanks to all the organizations and individuals who have contributed towards the success of this survey in myriad ways. I am indebted to Padmashri. Dr. R.K. Bali, President, Dental Council of India, for giving me this opportunity to be a part of this mammoth project as a Regional Coordinator for the northern region, comprising of three states viz., Himachal Pradesh, Punjab and Haryana, and one Union Territory, i.e. Chandigarh.

I wish to express my profound recognition of the constant help of the Central Survey Team headed by Padmashri. Dr. R. K. Bali and Dr. V. B. Mathur, Project Officer, for all the support and assistance during various stages of the survey. The expertise and input of Prof. P. P. Talwar and Mr. H. B. Chanana in sampling design and data scrutiny and statistical analysis, developing protocols for questionnaires etc. is gratefully acknowledged.

Furthermore, the help afforded by Shri Vineet Chaudhary, Health Secretary to the Govt. of Himachal Pradesh, Dr. Asha Goel, Director of Medical Education and Dr. S. K. Dhiman, Director of Health Services (H.P.), during the entire survey is greatly appreciated.

I am grateful to Shri Anoop Garg, chairman of the B.R.S. Dental College and Hospital, Kotbilla, Haryana, who readily agreed to host the 2-day Training & Calibration Workshop for the northern region, along with hospitality, at BRS Dental College & Hospital.

I gratefully acknowledge the help rendered by Shri. R.S. Thakur, Deputy Director, Census Operations (HP), in providing all data regarding the logistics of field work. I would also like to thank Shri Sohan Lal, Shimla Municipal Corporation, for providing relevant information about the urban Municipal Corporation wards.

Warm thanks to the Deputy Commissioners of Shimla and Kinnaur districts for their overall support and co-operation during the survey.

I would like to express my sincere gratitude to the Management and Principal of Himachal Dental College, Sunder Nagar (H.P.) for their valuable support and co-operation during the survey, by providing personnel for the survey teams.

My special thanks are due to the village head men and the large hearted people of the two districts of Himachal Pradesh for their co-operation and hospitality, and above all for the outstanding contribution of the team members and the general assistance rendered by the secretarial staff, drivers and assistants.

A special word of thanks to the team members for their dedication and co-operation during the data collection, despite inhospitable terrain, torrential rains, frequent landslides, road blocks and above all biting cold often dipping to sub-zero temperatures. The teams had to trek on kuccha roads or hilly tracks for 2-3 hours or an average every day from the nearest road head in this mountainous state of Himachal Pradesh.

Without the support of various governmental agencies for accommodating the field teams in their guest houses/rest houses, the field work would have been impossible. I would like to express thanks to them all.

I also thank the fourth estate for playing a significant role in the dissemination of information about the survey and its relevance through the regional dailies especially the Hindi local daily Amar Ujala, Shimla.

I wish to record my appreciation of the invaluable assistance rendered by Dr. C.L. Dileep, Supervisor, under my guidance and supervision, in all the aspects of the survey including co-ordination with other supervisors from the region and the Central Survey Team, managing logistics, training & calibration and field work.

While every person associated with the survey has worked and made an invaluable and selfless contribution to this national project, I wish to place on record the spectial contribution of Shri H.S. Pundir, S.D.O. (Civil) choupal, Shri H.O.P. Gupta, D.F.O. Chaupal, Shri Rohit Jamwal, Project Officer, Integrated Tribal Development Project (I.T.D.P), Kinnaur District and Shri. Anupam Kashyap, S.D.M. Kalpa, for their extraordinary generosity and help rendered during the field work.

Though I have tried to acknowledge a few organistaitons and individuals by name, there are several others whose names could not be included here for the sake of brevity. To them, I gratefully acknowledge their selfless help, benign support and timely contributions.

Dr. N.C. Rao
Regional Co-ordinator
Northern Region
(Himachal Pradesh)
National Oral Health Survey and
Fluoride Mapping 2002

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CHAPTER 0

EXECUTIVE SUMMARY

1. GENESIS

Oral health is a very important component of the general health of the people. However, it is one segment about which very little is known and the implications of which are not so clearly understood. The high prevalence of dental diseases, like dental caries, periodontal diseases, various stages of malocclusion, and lack of access to needed services, leads to significant absenteeism and economic loss, apart from ill-affects on the health of the person afflicted. The adverse effects of poor oral health make it important to take preventive measures and create the needed 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 the formulation of oral health policies and implementation of appropriate programmes to improve the awareness and knowledge of people on the preventive aspects of oral health, create needed services and train necessary dental manpower to meet those needs.

The Dental Council of India has been greatly concerned about this gap in knowledge and the resultant lack of appropriate policies and programmes. A need has long been felt to conduct an epidemiological study on oral health problems, which will also include a study of the related oral health practices and a mapping of fluoride levels in drinking water from various sources in the country, to help such concerns and issues. Such a study may help bring about a balance between the oral health needs of the people and the services provided. It could help plan and organise need-based services so that the level of oral health of the people could improve. The present study is a community-based survey with the objectives of assessment of (1) awareness and knowledge of people on 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.

Keeping this in view, the Dental Council of India undertook a national-level epidemiological study, "National Oral Health Survey and Fluoride Mapping," to assess oral health problems of the people and practices they adopt in this regard. The survey was initiated in 2002; the aim was to know the ground situation and 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:

- Prevalence of oral health problems,
- Fluoride levels in drinking water,
- Eating habits affecting oral health,

- Dental cleaning practices,
- Awareness and knowledge of people on factors affecting oral health, and
- Treatment-seeking behaviour of people for their oral health problems.

It must be noted that this survey delved into areas much beyond the usual oral health surveys that generally focused on levels and problems of oral health in the community. This survey collected data on many dimensions so as to enable an understanding of the practices people adopt that cause oral health problems and the steps they 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 so designed and conducted that state-wise oral health problems and related practices could be determined. This was expected to help the formulation and implementation of state-wise policies and programmes.

3.1 Sample size

Three considerations were made in deciding 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 within the limited budget available. With this in view, 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 the rural areas and 105 from the urban areas. Thus, 105 males and 105 females were examined in each of the five age groups in rural areas, and 53 males and 53 females in each age group in 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 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 a population similar to that of a ward). In the next stage, 7 households were selected from each CEB. Again, examination was to be done for 105 subjects from each age group (5, 12, 15, 35-44 and 65-74), with half of them being males and half females.

4. STUDY TOOLS

In order to cover all the aims 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.

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 etiological factors.

The quality of data was given utmost consideration. Besides a state coordinator, supervisors were appointed to move with the teams when went for data collection. The supervisors, who were senior members of the dental colleges, were given total responsibility for scrutiny and checking of the data. The data was scrutinized at three levels, in the field, in the state coordinator's office and at the central level, before processing.

Water samples were taken from the selected households for testing fluoride levels. Such tests for all water samples were conducted in a laboratory in Mumbai.

6. CALIBRATION AND TRAINING WORKSHOPS

A three-day calibration and training workshop was organized where all the coordinators and supervisors were given training in field logistics, data collection and standardization of the assessment of oral health problems. The last was very important and a very thorough training was given for it, so that all field teams adopted uniform assessment methods to record dental problems. Another workshop on report writing was organized in Mumbai to standardize the format of each state report.

7. AREA COVERAGE IN SURVEY

The National Oral Health Survey was designed to cover all Agro-Climatic regions of States. This state was divided into two regions and both were covered in the survey.

8. FINDINGS (FOOD HABITS AND ORAL HEALTH PRACTICES)

8.1 Characteristics of households surveyed

(i) About 71 percent of respondents, more in rural, had semi-pucca houses while 25 percent, more in urban, had pucca houses in the state.

More had pucca houses in Region 1, whereas more had semi-pucca houses in Region 2.

(ii) 75 percent of respondents reported monthly expenditure of Rs. 2500-5500.

(iii) 98 percent of households in the state belonged to Hindus.

(iv) 70 percent of households belonged to higher castes in the state.

(v) About 81 percent of the households were getting piped/tap water for drinking in the state.

(vi) Households were equally divided by type of staple food and nature of food.

8.2 Profile of population across age groups

(i) Except 40 percent of aged (65-74) years, more than 95 percent of respondents belonging to the remaining ages/age groups had education up to middle and above.

(ii) A few, across all ages, had the habit of reading newspaper daily.

(iii) About 50-60 percent, across age groups listened to the radio sometimes only.

(iv) Only 20 percent, across age groups, reported watching TV daily.

(v) A negligible percent of respondents across age/age groups had watched cinema.

8.3 Abnormal oral habits across age groups

(i) The prevalence of each of the practices was, generally low but slightly higher in case of habits of "biting nails, lips or objects like pencil" and "grinding/gritting teeth".

(ii) Grinding or gritting habit was more prevalent in rural areas.

(iii) Urban children aged 5 years showed higher prevalence of abnormal habits like "sucking fingers or thumb", "biting nails, lips or objects like pencil" and "thrusting tongue on the teeth", than their rural counterparts. "Biting nails, lips or objects like pencil" was predominant habit found among the younger age groups while the habit of "grinding or gritting of teeth" was more prevalent among 35-year-olds and older.

(iv) Overall, more males across age groups reported these habits than females.

8.4 Eating habits across age groups

There was no difference in sugar taking habits of males and females. The maximum percentage of subjects, except those belonging to older age groups across both sexes, had taken sugar two times in the last one day.

8.5 Oral hygiene practices across age groups

(i) The practice of cleaning teeth was universal.

(ii) More than 75 percent across all ages/age groups, except the age groups of 35-44 and 65-74 year, across both sexes and more in urban, reported using tooth brush to clean teeth. It was so in both the regions.

(iii) More than 90 percent across both sexes and places of residence had cleaned teeth once a day. In urban areas, some reported cleaning teeth twice a day.

(iv) More than 95 percent subjects, across all ages and both sexes, except the 65-74 year age group, reported the use of toothpaste. The use of toothpaste was almost similar across regions also.

(v) About 60 percent, across all ages and both sexes and more in urban areas, reported the use of fluoridated toothpaste/powder. Region 1 reported greater use of fluoridated tooth paste/powder than Region 2. A higher percentage of subjects (19 percent) in the 65-74 year age group did not know whether the tooth paste/powder they were using was fluoridated or not than the other age groups (3 percent).

(vi) About 44 percent of subjects across all ages, except the 65-74 year age group, more in urban, changed tooth brush once in 1-3 months. The change of toothbrushes was less frequent in rural areas.

(vii) Mouth rinsing after eating was not very popular among the subjects. Around 39 percent of the respondents across all ages and both sexes reported rinsing their mouth sometimes after eating. About 24 percent of the subjects across all ages and both sexes, more in urban areas, had rinsed mouth always.

8.6 Dental problems and treatment practices across age groups

(i) About 17 percent of subjects of age 15 years and below, and about 70 percent of the age 35 years and above, across both sexes, more in urban areas, had suffered from oral health problems in the last one year. It was so in both the regions. Almost all those who reported oral health problems, across ages, reported the problem of dental decay. About 48 percent of the subjects in the ages 15 and below years and 79 percent in the higher age groups reported the problem of gum disease. About 49 percent subjects of the ages 35 years and above reported the problem of foul breath.

(ii) About 40 percent of subjects across ages consulted a trained dentist and there were large regional differences regarding this practice. Less than one percent of the respondents, across ages and both sexes and more in urban, reported knowledge of availability of governmental dental care facility places.

(iii) Respondents in urban areas reported less than half an hour's time to reach the facility places.

8.7 Awareness of dental health problems across age groups

(1) About 94 percent of subjects across ages and both sexes were aware of oral health problems in the state as well as in both the regions.

(2) About 91 percent of subjects across ages and both sexes, more in urban areas, reported their awareness of factors that cause oral health problems, in the state as well as in both the regions. Most of them reported factors such as not brushing regularly (77-95 percent) followed by eating sweets/ice creams or chocolates (57-71 percent) and not rinsing (36-71 percent). Tobacco as a factor was reported by a higher percentage in Region 2 than in Region 1.

(3) About 98 percent, a little less in the case of 12-year-olds, were aware of the preventive measures. A large percentage of them across age groups, both sexes and places of residence, reported cleaning of teeth regularly. This is followed by the measure next pointed out, that of visiting dentist regularly. Nearly one-third in earlier age groups and fifty percent in older age group reported not consuming tobacco.

8.8 Tobacco smoking and chewing habits across age groups

(i) About 40-45 percent, more males and more in rural areas, across age groups, had the habit of smoking. Not much difference was observed between the two regions. About half of smokers, more in rural areas, reported smoking bidis. This was followed by those smoking hookah, who were more in rural areas, Fortunately, almost all smokers, across both sexes and place of residence, were smoking less than ten times a day.

(ii) About 7 percent of subjects, across age groups and place of residence, were chewing pan/ pan masala with tobacco. About 87 percent of them, across the age groups and both sexes and place of residence, had been chewing tobacco for the past 5 years and more.

(iii) About 42 percent, across age groups, more males and more in rural areas had the habit of drinking alcohol.

9. FINDINGS (ORAL HEALTH ASSESSMENT)

9.1 Dental caries status

- Overall, the mean number of teeth present in the mouth of individuals decreased as age advanced. While almost the full complements of teeth were present in the younger age groups, 3-4 teeth were missing on an average in the 35-44 year age group. In the 65-74 year age group it dropped to 10.8 teeth, indicating a loss of more than two – thirds of that normally present in an average mouth.
- The prevalence of caries experience in 5 year olds was 51 percent. The dmft value of 1-3 was most prevalent among 33 percent subjects caries experience was higher in Region – 1 than Region – 2.

- Caries experience among 12 and 15 year olds was 72-76 percent and more than 96 percent among the older age groups. The DMFT value was 29 or more for 48 percent of the subjects in the 65-74 year age group.
- The prevalence of caries was higher in urban areas of Region -1 than Region- 2.
- The DT component contributed the most to DMFT scores for all age groups, except for the 65-74 year age group where missing teeth score was the contributing factor.
- The mean DMFT value appeared to rise steadily with age.
- The Significant Caries Index (SIC), which provides a measure of the mean DMFT of the one-third of the subjects with the highest mean scores of DMFT, was consistently high across all age groups and was highest (32 teeth) for the 65-74 year age group.
- Around 19-25 percent subjects among the older age groups had tooth caries. There were no subjects with root fillings.

The high levels of mean number of teeth decayed and missing, together with negligible numbers of filled teeth indicate that either there was little priority for treatment of decayed teeth or it was not affordable for most people. Another possibility is the inaccessibility (difficult to reach facilities) or non-availability of dental services in the area where the subjects resided (97 percent).

9.2 Treatment need

- Overall, a direct correlation existed between age and treatment need, except for the 65-74 year age group. The need was highest for the 35-44 year age group (98 percent).
- The need for 1 or more surface filling was 80-90 percent for the 12 & 15 year olds and the 35-44 year age groups.
- The need for extraction was least among 5 year olds (less than 2 percent) and highest in the 65-74 year age group (34 percent).
- A majority of the subjects (63-85 percent) were indicated for other, but unspecified treatment care, which was predominantly a need for prosthesis.
- The need for pulp care was seen more in the 15 and 35-44 year age groups than the other age groups.
- There was a higher need for treatment in rural areas of Region-1 than Region-2.

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 the status of periodontal health.
- There was no indication of periodontal disease among 5 year olds. The prevalence was highest in the 35-44 year age group (97 percent) and lowest in the 65-74 year age group (40 percent).

- Invariably, across all age groups, bleeding and calculus emerged as the most prevalent condition.
- The mean number of healthy sextants was highest among the 12 year olds (3 sextants). The mean number with bleeding, calculus and pockets was highest for the 35-44 year age group (5 sextants)
- Gingival bleeding was a more prevalent condition among the lower age groups and accumulated calculus was increasingly a problem as age advanced.
- Overall, the prevalence proportion of subjects with loss of attachment in one or more sextants was lowest among 15 year olds (0.2 percent) and highest in the 35-44 year age group (30 percent). The form of loss of attachment among the 65-74 year age group was that of 6-8 mm in depth.
- Rural residents from Region-2 had a higher prevalence of loss of attachment than those from Region -1.

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.
- The proportion of subjects with malocclusion increased as age advanced. There was no significant malocclusion among the 5 year olds.
- About 87 percent subjects among the 12 and 15 year olds had none or minor malocclusion and it was 46 percent among the 35-44 year age group. Definite malocclusion (DAI Scores 26-30) was seen among 13 percent each among the 12 and 15 year olds.
- Very sever (handicapping) form of malocclusion was observed among 18 percent subjects in the 35-44 year age group.

9.5 Oral cancer and oral mucosal lesion

- The prevalence of oral mucosal lesions was quite low. The mean number of subjects with oral mucosal lesions was 2 and 5 subjects among 12 and 15 year olds, respectively.
- A majority of the lesions comprised of ulceration and leukoplakia.
- Oral cancer was detected in 6 rural residents. The lesions were located on the vermillion border and buccal mucosa.
- Leukoplakia was detected in the older age groups and seen more in rural areas.

9.6 Dental fluorosis status

- Detnal fluorosis was seen across all age groups. It was 8.5 percent among the 5 year olds and 20-23 percent among other age groups except for the 65-74 year age groups where the prevalence was 16 percent.

- 5-16 percent of the subjects across the ages had questionable fluorosis.
- Sever fluorosis was seen only among 0.1 percent females in the 65-74 year age group.
- Dental fluorosis was seen more among rural residents from Region-2 than Region-1.

9.7 Other lesions

9.7.1 Extra oral lesions

- Ther were no extra oral lesions detected among the 5 year olds. The prevalence was 28 percent and 42 percent among the 35-44 and 65-74 year age groups, respectively. The lesions were mainly ulceration, sores, erosions or fissures.

9.7.2 T.M. joint symptoms and signs

- None of the subjects from the younger age groups had any T.M. Joint Symptoms or signs. Symptoms were reported by 8 and 24 percent subjects among the 35-44 and 65-74 year age groups, respectively.
- The main sign elicited was clicking (20 percent) followed by reduced jaw mobility (10 percent).
- The prevalence of signs were more in rural areas of Region – 2 than Region -1.

9.7.2 Enamel defects (opacities and hypoplasia)

- The enamel defects were seen among all age groups (17-30 percent)
- The most prevalent enamel defect was demarcated opacity (16 percent) followed by diffuse opacity (4 percent) across all ages.
- The prevalence of enamel defects was higher in rural residents from Region-2 than Region-1

9.8 Prosthetic status & need

- The dental prosthetic status and need for both upper and lower dental arches was recorded for subjects 15 yrs. 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.
- None of the subjects were wearing prosthesis among the 15 year olds. Among the 35-44 and 65-74 year age groups, 4 and 17 percent subjects were wearing an upper prosthesis, respectively.
- Full denture prosthesis was the most commonly seen prosthesis followed by partial dentures.
- About 2 percent and 16 percent subjects among the 35-44 and 65-74 year age groups, respectively, were wearing a lower prosthesis.

- In the 35-44 year age group the most prevalent prosthesis was bridge.
- There were no 15 year olds wearing full mouth dentures and only 1 percent males in the 35-44 year age group were wearing the same. In the 65-74 year age group 15 percent subjects were wearing full dentures.
- There was a higher need for prosthesis as age advanced. In the 35-44 year age group 54 percent subjects had a prosthetic need, especially for one-unit prosthesis. The need was 80 percent among the 65-74 year age group and a majority needed full mouth dentures (48 percent) followed by a need for multi-unit prosthesis (15 percent).
- There appeared to be a greater need for prosthesis in the lower arch. The need for lower prosthesis was more for the 65-74 year age group (81 percent). The most prevalent need among the 35-44 year age group was that for one-unit prosthesis.
- About 3 percent and 47 percent subjects among the 35-44 and 65-74 year age groups, respectively, required full mouth dentures.

8.9 Community need for immediate care and referrals

- Overall, life threatening and painful or infective conditions were extremely rare. Life threatening conditions were seen only among 0.7 percent subjects among the older age groups.
- Pain or infection was recorded in all the age groups and was about 17-24 percent in the older age groups.
- Referrals were made for almost all the conditions recorded for the population.

Summary of findings of important oral health conditions and practices by age in Himachal Pradesh.

	Findings	Age in years				
		5	12	15	35-44	65-74
1.	**Oral disease conditions**					
1.1	Dental Caries					
	% Prevalence	51.1	72.5	75.4	96.5	99.2
	Mean DMFT	2.0	2.7	3.4	9.6	24.1
	SiC Index	4.2	5.1	6.1	13.7	32.0
1.2	Periodontal disease					
	Bleeding, calculus or pockets					
	% Prevalence	0.0	76.8	88.6	96.6	39.7
	Mean no of Sextants affected	0.0	3.0	3.7	5.0	1.9
1.3	Loss of attachment					
	% Prevalence	NA	NA	0.2	30.3	27.0
	Mean no of Sextants affected	NA	NA	0.0	0.7	1.0
1.4	Malocclusion (% prevalence)	0.1	13.1	13.6	53.7	NA
1.5	Dental Fluorosis (% prevalence)	8.5	20.1	22.8	20.4	16.1
1.6	Oral mucosal conditions (%)	1	2	5	49	109
1.7	Oral Cancer (%)	1	0	0	1	2
1.8	Edentulousness (%)	NA	NA	NA	2.6	46.9
2	**Oral Health Practices**					
2.1	Sugar Intake in last 24 hours					
	Once	17.9	14.2	11.9	13.0	6.8
	Two & more times	77.5	77.7	67.6	21.7	8.2
2.2	Clean teeth with					
	Tooth Brush	86.4	87.9	87.3	80.2	17.1
	Fingers	1.9	0.3	1.0	0.0	10.7
2.3	Rinsing mouth					
	Always	8.6	14.1	22.5	35.8	38.1
	Sometimes	16.8	24.4	26.4	49.6	60.7
2.4	Tobacco smoking	NA	NA	NA	37.5	45.5
2.5	Frequency of tobacco smoking					
	Less than 10 times	NA	NA	NA	100.0	87.6
	10 or more times	NA	NA	NA	0.0	12.5

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND OF THE STATE

1.1.1 Geographical location of the state

On 15 April 1948, almost one year after the independence of India in August 1947, the erstwhile rulers of 30 princely states (26 Shimla hill states and 4 Punjab hill states) decided to amalgamate their petty principalities into a single integrated hill province which they named Himachal Pradesh. The new province had its headquarters in Shimla. The Government of India first designated this new province a Chief Commissioners Province, but later (on 26th January 1950) upgrades its status to a Part-C state of India. In 1954, the nearby princely state of Bilaspur was merged with it and on 1 November 1956, the state was given the status of a Union Territory. Ten years later, under the Punjab reorganization act of 1996, the adjoining hilly areas of the post-independence composite state of Punjab, an area almost equal to the size of pre-existing Himachal Pradesh, were also merged into the state. It was only in January 1971, as a result of the persistent demands of local leaders, that Himachal Pradesh was finally granted the status of full-fledged state of the Indian Union (Gupta et al., 1975).

The topography of Himachal Pradesh includes mountain ranges, hills, and valleys. Only about 11 percent of its total geographical area in suitable for crop production. Forests and pastures account for 62 percent of the total geographical area of the state.

1.1.2 Population and demographic profile

The total population of Himachal Pradesh was 4.3 million in 1981, 5.2 million in 1991, and 6.1 million in 2001.The decadal population growth rate decreased from 20.8 percent in 1981-91 to 17.5 percent in 1991-2001. The decadal percentage increase of population in Himachal Pradesh is lower than the national average and is lowest among all of its neighboring states. Population density per km^2 in Himachal Pradesh increased from 77 in 1981 to 93 in 1991 and 109 in 2001. The relatively low population density in the state has implications for suitably locating health centres accessible to people.

Except for a few towns, Himachal Pradesh is not particularly urbanized, although the share of the urban population has been growing slowly. The proportion of the population living in urban areas was 7 percent in 1971, 8 percent in 1981, and 0percent in 1991 (compared with 26 percent for India as a whole in 1991). According to the 1991 Census, the proportion of the total population designated as scheduled caste is 25 percent, which is higher than for the country as a whole (17 percent). The scheduled-caste population increased slightly from 22 percent of the total population of Himachal Pradesh in 1971 to 25 percent in 1991. Four percent of the population belongs to the scheduled tribes.

Himachal Pradesh is one of the more literate states in India. The PROBE Team report on basic education in India (1999) lists high levels of parental and state commitment to education as important factors contributing to the increasing level of education in the state. According to the provisional estimates of the 2001 Census, the literacy rate among the population age seven and

above is 77 percent, compared with 65 percent for India as a whole. The literacy rate is 86 percent for males and 68 percent for females in Himachal Pradesh, compared with 76 and 54 percent for males and females, respectively, for India. Notably, the gender gap in literacy in Himachal Pradesh remains large. Women in Himachal Pradesh have a high rate of participation in farm and non-farm activities and enjoy a great deal of freedom, compared with women of neighbouring states (Bhati and Singh, 1987). The sex ratio (number of females per thousand males) in Himachal Pradesh, though still unfavorable to females, rose from 938 in 1961 to 976 in 1991. According to the 2001 census provisional estimates, however, the sex ratio in Himachal Pradesh has fallen in the last decade to 970. Nonetheless, the sex ratio in Himachal Pradesh continues to be higher than the all India sex ratio of 933 (Office of the Registrar General and census Commissioner, 2001).

The crude birth and death rates estimated by the Sample Registration System (SRS) in 1999 for Himachal Pradesh, 23.8 and 7.3 per 1,000 population, respectively, are lower than the corresponding all-India rates of 26.1 and 8.7 (Registrar General, 2001). Between 1971 and 1999, fertility declined substantially in the state. The crude birth rate declined from 37.3 per 1,000 population in 1971 to 23.8 per 1,000 in 1999, a decline of 36 percent. The total fertility rate in 1997, as estimated by the SRS, is 2.4 children, compared with 3.3 children for the country as a whole. The couple protection rate (defined as the percentage of eligible couples effectively protected against pregnancy by various methods of contraception) in Himachal Pradesh was 50 percent in 1998, compared with the all-India estimate of 49 percent. The couple protection rate in Himachal Pradesh more than tripled, from 16 percent in 1980 to 58 percent in 1995, and then declined (Ministry of Health and Family Welfare, 1999a). Life expectancy in Himachal Pradesh was estimated at 64.6 years for males and 65.2 years for females for the period 1993-97.

1.1.3 Socio-economic characteristics the state

Following full statehood, Himachal Pradesh started making concerted efforts to improve the economic conditions of the state. The state has made significant strides in developing an educational and health infrastructure and transport and communication networks. These advances have had a positive impact on the socio-economic and demographic status of the state. From the very beginning the local leadership in the state recognized the importance of family welfare programmes and has implemented them vigorously.

Although the Himachal Pradesh economy is dominated by a growing agricultural sector, other sectors of the economy are growing much faster. Thus, the relative contribution of the agricultural sector to the net state domestic product (NSDP) declined from 37 percent in 1980-81 to 28 percent in 1995-96. By contrast, the manufacturing sector which contributed 5 percent to the state domestic product in 1980-81, increased its share substantially to 12 percent in 1995-96. The share of other sectors increased only marginally from 58 percent in 1980-81 to 60 percent in 1995-96 (EPW research Foundation, 1998). At the time of the 1991 census, the agricultural sector provided livelihood to 57 percent of the working population in the state, as cultivators and agricultural labourers (Office of the Registrar General and Census Commissioner, 1992).

Kharif and Rabi crops and its major agricultural produce consists of maize, wheat, rice, potatoes, vegetables, and fruits. Cultivation is done on mountain slopes in small-sized fields arranged in terraces. The small size of landholdings is becoming an increasing problem in Himachal Pradesh. The increasing population has accelerated sub-division of land holdings, so that the average size

of land holdings per household has fallen from the already low 1.5 hectares in 1970 to 1.2 hectares in 1990. Only one-fifth of farm land is irrigated. However, due to the persistent efforts of farmers combined with technical and financial support from the government, the farm economy of the state has adapted by diversifying into activities outside the traditional production of cereals and pulses for subsistence. The main emerging sub-sector within the agricultural sector is horticulture, which produces high value crops namely fruits, vegetables, and flowers. Himachal Pradesh also has extensive forests, which are a good source of revenue for the state (contributing about 6 percent to the state domestic product) and provide employment to about 4 percent of the labour force (Economic and Statistical Department of Himachal Pradesh, 1998).

Three areas of comparative advantage have helped Himachal Pradesh in achieving a relatively rapid rate of development. First, its hilly terrain with sufficient water has helped the state become a surplus hydroelectric power generating state. Consequently the state is almost entirely electrified with electricity provided to its villages at relatively cheap rates. In addition, Himachal Pradesh has surplus electric power that it sells to other states. Second, the semi-temperate cool climate of the state is suitable for production of temperate fruits and off-season vegetables, which are sold at premium prices in the plains in the seasons when they are not locally produced there. Third, because of topographical and other factors it has a relatively dust-free climate which is suitable for producing electronic industrial goods. Nonetheless, Himachal Pradesh continues to be industrially backward with its full potential yet to be still realized. Given the scenic beauty of Himachal Pradesh, tourism is also an important sector of the economy. The total number of tourists who visited Himachal Pradesh in 1998 was 4.3 million, which includes 75,000 tourists from other countries (Economic and Statistical Department of Himachal Pradesh, 1998).

According to per capita income, Himachal Pradesh ranks 11th among the Indian states. The average annual per capita net domestic product in the states increased from Rs 1,704 in 1980-81 to Rs 2,518 in 1995-96 at constant (1980-81) prices or Rs 8,747 at current prices (EPW Research Foundation, 1998). As per the estimates provided by the Planning Commission for 1993-94, 30 percent of the rural population and 9 percent of the urban population in Himachal Pradesh was living below the poverty line (Central Statistical Organization, 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 per cent of children and 95-100 per cent of the adult population suffers from periodontal disease at any given point of time. About 35 per cent of children suffer from misaligned teeth and jaws, which affects their proper functioning. These children lose school time and suffer from pain of dental origin. This not only affects their normal life but also causes a good deal of discomfort to their parents in several ways. These dental problems are initially painless but can become chronic and self-destructive, eventually leading to tooth loss. Dental caries has a

crippling effect on the functional components of oral cavity that leads to malnutrition because of one's incapacity to chew any coarse food. Unfortunately, this is still not considered a public health problem and thus no action has been taken to correct it. In other words, there is need to make people aware of the preventive and curative aspects of oral health so that quality of their life can be improved.

Oral diseases also have an adverse effect on other vital organs of the body. Pus oozing pockets in advanced periodontal disease in adults act as a focus of infection for other vital organs of body like the kidney, heart, lungs, brain, etc. Limited information available from micro-level studies suggests that 35-40 per cent of all 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 has now been recognised and thus all efforts should be undertaken to improve the oral health of the people.

Several adverse effects of poor oral health necessitate preventive, curative and educational services/ activities. These necessitate a proper understanding of people's knowledge, awareness and attitudes towards oral health and oral health practices, besides the magnitude of the problems and the corrective and treatment-seeking measures that people adopt. This information is basic for the formulation of policy, developing strategic measures and meeting appropriate manpower needs, and creating programs for improvement of the 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 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. These services range from rudimentary and 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 existing services on the oral health of the people. The vacuum of an effective monitoring and evaluation system is being felt; dental professionals are very keen to fill the gap between emerging needs and existing services. A strong need exists to understand oral health care practices and treatment-seeking behaviour of the people and to assess the existing oral health care services. An appropriate and relevant oral health policy for the country should address local problems in the broad context of the 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, toothpaste or any other source. This will help to bring out area-specific policies to meet the fluoride needs of the people.

In conclusion, it was felt that two types of studies were needed. One, on the incidence/ prevalence of oral health problems and the knowledge and behavioural practices of people for the prevention/ treatment of such problems. Second, an assessment the existing facilities and infrastructure for their cost effectiveness and utilisation patterns. Such studies and their analysis, it was felt, would

ultimately help in bringing about a balance between the needs and the services required to meet such 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 this important area, and, on the other, been raising its concern with the Government on the poor oral health situation prevailing in the country. The idea is to work with both the stakeholders in improving oral health in the country. It has also been making recommendations and suggesting ways and means to bring about an improvement in the overall oral health situation in the country.

1.4 NATIONAL ORAL HEALTH SURVEY

As indicated above, it was felt that there was a need to conduct two types of studies on oral health to bring about a balance between the oral health needs of the people and the services needed to meet such needs. The first involved a community survey to assess (i) the knowledge of the people on appropriate dental health promoting behaviours, including treatment seeking behaviours, and (ii) the oral health status of the population. The second was a survey and assessment of available dental care services. The Dental Council of India undertook a community survey, the National Oral Health Survey, to assess the dental problems and practices related to oral health in 2002. This report presents the results of this survey, where a representative sample of community members in all the states were contacted to assess their dental service needs and understand their knowledge and behaviour with regard to practices affecting oral health. The priority and the need for such a survey had first been emphasised in 1991 in the National Workshop on "Exploring New Frontiers in Dental Public Health: Planning for the Future" that had been organised by the Dental Council of India under the Presidentship of Dr. R.K. Bali. This workshop had highlighted the lack of data and framework for planning oral health manpower and services in the country and had recommended a nation-wide oral health survey to assess the current status of oral health. As a follow up of this recommendation, the Dental Council of India, again under the Presidentship of Dr. R.K. Bali, developed a proposal to conduct a National Oral Health Survey to assess oral health problems in the country and the behavioural practices affecting them. Mapping of the fluoride levels in the country was also made a part of this survey. It approached several individuals and agencies for technical and financial support for undertaking this national survey.

1.4.1 Support of Government of India

The proposal to conduct a National Oral Health Survey was submitted to Ministry of Health & Family Welfare, Government of India for (i) seeking their formal approval, and (ii) grant of financial assistance and necessary logistical support. While the Government recognised the need and importance for national survey after several meetings between the President of the Dental Council of India and officials of the Ministry of Health & Family Welfare, it, however, could not provide financial assistance for the survey in view of its other more pressing commitments. However, the Ministry of Heath & Family Welfare agreed to support the Council's efforts to seek financial and technical support from other agencies.

1.4.2 Support from Colgate India/International

The President of the Dental Council of India, Dr. R K Bali, subsequently approached Colgate India and Colgate International for funding this survey. After a series of meetings in New Delhi, Mumbai and in the US, the company management agreed to grant a major financial assistance for this national survey.

1.4.3 Support of individuals and dental colleges in India

The Dental Council of India did not have the manpower to manage such a large survey by itself and thus decided to undertake it in collaboration with dental colleges in India and the Indian Association of Public Health Dentistry (IAPHD). A bare minimum technical unit was set up for this purpose. It consisted of Dr. R.K. Bali as Chairman and Project Coordinator, Dr. V.B. Mathur as Project Officer and Mr. H.B. Chanana as Statistician. Professor P.P.Talwar, an eminent expert in statistics and demography, was appointed as the consultant for survey methodology. **Annexure-1** Collectively, they formed the Central Survey Team for the National Oral Health Survey & Fluoride Mapping and were located in the office of the Dental Council of India in New Delhi. It was also decided that the Central Survey Team would involve Principals/ Deans/ Heads of Dental Colleges at Regional/ State levels and a few members of the IAPHD for technical development of the survey, data collection in their states and subsequently for report writing. This model was thought to be the best for inducing a sense of ownership and commitment among the dental colleges. Accordingly, the President of the Dental Council of India sent a copy of the proposal/ protocol of the National Oral Health Survey to these colleges, seeking their active support and participation. On their part, the colleges enthusiastically took part in the survey and generated, shared and pooled local level resources to supplement the grant for the survey. In fact, almost all resource persons and Deans/ Principals of the dental colleges agreed with his request and expressed willingness to participate in this national endeavour.

The Dental Council of India also 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 the survey could provide scientific estimates of the prevalence of various oral health problems and the knowledge and behavioural practices of the people. The members of the committee are listed in the annexure to this report. **Annexure-2**

1.5 SCOPE OF THE SURVEY

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

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

The scope of data collection was enlarged in the sense that it would collect data not only on the 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.

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

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

1.6 OBJECTIVES

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

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

1.6.1 To collect-wise 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 the treatment-seeking behaviour of the people for their oral health problems.

It was presumed that the data collected would lead to development of programmes 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 dental programmes could be assessed in future years.

1.7 CHAPTERIZATION PLAN

The report for each state comprise 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. Food habits and Oral Health Practices
6. Status of Oral Health

CHAPTER II

METHODOLOGY AND DATA COLLE`CTION

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:

(i) The estimates should be valid at state level, and

(ii) 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 18 major states 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 (other than 18), 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. **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.

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, 350 or more to cover 28350 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 1,41,750. The actual coverage comes to a minimum of 18585 households. That is, 92925 examinations were done. Their state-wise, rural/urban distribution is shown Table 2.1.

Table 2.1 States Number of regions and sample of rural/urban households.

Sl. No.	State	Coverage as per design				Actual coverage			
		No. of regions	No. of households		Total	No. of regions	No. of households		Total
			Rural	Urban			Rural	Urban	
1.	Andhra Pradesh	6	1260	630	1890	6	1260	630	1890
2.	Assam	3	630	315	945	2	420	210	630
3	Bihar	3	630	315	945	Not covered			
4.	Jharkhand	2	420	210	630	Not covered			
5.	Gujarat	7	1470	735	2205	7	1470	735	2205
6.	Haryana	3	630	315	945	3	630	315	945
7.	Himachal Pradesh	2	420	210	630	2	420	210	630
8.	Karnataka	4	840	420	1260	4	840	420	1260
9.	Kerala	3	630	315	945	3	630	315	945
10.	Madhya Pradesh	8	1680	840	2520	4	840	420	1260
11.	Chattisgarh	3	630	315	945	Not covered			
12.	Maharashtra	6	1260	630	1890	5	1050	525	1575
13.	Orissa	5	1050	525	1575	5	1050	525	1575
14.	Punjab	3	630	315	945	3	630	315	945
15.	Rajasthan	5	1050	525	1575	3	630	315	945
16.	Tamil Nadu	7	1470	735	2205	7	1470	735	2205
17.	Uttar Pradesh,	6	1260	630	1890	2	420	210	630
18.	Uttranchal	2	420	210	630	Not Covered			
19.	W. Bengal	6	1260	630	1890	Not Covered			
20.	Jammu & Kashmir	3	630	315	945	3	630	315	945
21.	Chandigarh	1	105	210	315	1	105	210	315
22.	Delhi	1	105	210	315	1	105	210	315
23.	Goa	1	105	210	315	1	105	210	315
24.	Pondicherry	1	105	210	315	1	105	210	315
	Total	**91**	**18690**	**9975**	**28665**	**63**	**12810**	**7035**	**19845**

Note : Names of the regions and selected districts are shown in Annexure-3

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.

In this case HP, it was divided into two regions. Various districts with selected district within the region is shown in Table 2.1 (a).

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

				Coverage as per design			*Actual Coverage*		
				No. of Households			*No. of Households*		
Code	Region	Districts	Sampled District	Rural	Urban	Total	Rural	Urban	Total
1	1	i) Bilaspur	Simla						
		ii) Chamba							
		iii) Hamirpur							
		iv) Kangra							
		v) Kulie		210	105	315	210	105	315
		vi) Mandi							
		vii) Shimla							
		viii) Sirmaur							
		ix) Solan							
		x) Una							
2	2	i) Kinnaur	Kinnaur						
		ii) Lahul		210	105	315	210	105	315
		iii) Spiti							
Total	**2**	**13**	**2**	**420**	**210**	**630**	**420**	**210**	**630**

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 appended 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 food habits and oral health 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. 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 taken on deputation from the Delhi Municipal Corporation, 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. The Technical Committee of the survey identified them. These Coordinators were asked to find out senior dental surgeons from the dental colleges as their field team supervisors at the ratio of one supervisor for four teams. Annexure -5

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 9 dentists involved in the field work) 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. For such training and standardization exercise, the Dental Council of India collaborated with the Manipal Academy of Higher Education (MAHE). A three-day Calibration workshop was organized 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 & 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 Assessment; Enamel Opacities and Hypoplasia; Prosthetic Status & 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 years, 15 years and 35-44 years 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 to M/s Medlar Laboratories Pvt Ltd., (a Unit of M/s CIPLA), Mumbai by the various Regional Coordinators Dr. P M Dixit, Chief Chemist, has prouded— the following in function 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 analyzer:

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- Mis Dionex Corp., USA.
5. 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 FIELDWORK EXPERIENCE

2.8.1 Pre-fieldwork activity

In order to get help and support in the field work, it was felt necessary to get Government clearances. All the concerned authorities were approached and permissions were taken. The Census office was also approached for getting maps for the Census Enumeration Blocks (CEBs) for taking sample of households.

2.8.2 Identification and training the field teams

Three teams were formed, each consisting of two dentists and one social scientist. The dentists were taken from the dental faculty of the Regional Dental College. The Social scientists were taken from the faculty of social sciences of the University. **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 to fill the questionnaires and clinical examination of the dental problems. Once it was found that the teams had understood all the issues related to field work and were in a situation 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 to overcome those problems. Very soon the teams acquired the required confidence and the field work became a smooth operation.

The supervisors were very alert to make sure that data was complete and consistent. They made sure that all the forms were scrutinized and corrected before they were submitted to the Coordinator.

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

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 for 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, all the work relating to data entry, validity checks and production of desired tables (as per analysis plan) was contracted out to TNS MODE, an organisation with research experience in studies related to health. All efforts were also made to monitor work quality at this stage. The Central Survey Unit had worked out the type of tables needed, and 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 related. These blank tables were given to the agency (TNS MODE) to complete. In order to ensure that the values given in each cell 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 THE SURVEYED POPULATION

3.1 CHARACTERISTICS OF HOUSEHOLDS

The data were collected from two regions of Himachal Pradesh, namely, Region 1 (Shimla) and Region 2 (Kinnaur).

The characteristics of households surveyed are shown in Table 3.1. This shows that about 71 percent of households live in semi-pucca houses: 75 percent in rural and 35 percent in the urban. Only about one-fourth of the households live in pucca houses in the state. About 3 percent of the households had kuccha houses in the state. But a large difference was seen in the two regions. Region 2 had comparatively more semi-pucca houses while Region 1 had more pucca houses.

About 75 percent of respondents had a monthly expenditure (proxy for household income) of Rs. 2501 to Rs. 5500, while 4 percent mostly living in urban area, had monthly expenditure of Rs. 5501 to Rs. 10,000. Another 21 percent, more in rural, reported their monthly expenditure as Rs. 2500/- and below. No large differences were noticed with regard to monthly expenditure between the two regions.

About 98 percent of households in the state were of Hindus. A microscopic minority comprised Muslims, Sikhs and Christians, being 0.1, 0.3 and 0.4 percent respectively. About 15 percent of households in the state belonged to Scheduled Tribes (ST) and it was much higher (93 percent) in Kinnaur (Region 2) compared to Shimla (Region 1) (13 percent), Schedule Castes (SC) and Other Backward Castes (OBC) formed about 7 percent each. There were large differences in the percentage of SC, ST, OBCs, within castes and between the two regions.

Almost 81 percent of the households were getting piped/tap water, while another 15 percent of the households was dependent on other sources of water like river or bowli (a natural water source in a mountainous regions). Only 3 percent of the households reported getting drinking water from tube well/hand pumps. The supply of piped/ tap water was much lower in Region 2 compared to Region 1. Fortunately, a lower supply of piped water in Kinnaur is partly compensated by a greater use of water from other sources.

About 45 percent of the household reported rice as their staple food followed by 43 percent who reported wheat their staple food. There were large differences in respect of staple food between the regions.

About 54 percent of the households reported non-vegetarianism with large differences between the regions. The percentage of vegetarians in Region 2 was much less (5 percent) compared to Region 1 (47 percent).

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

STATE : Himachal Pradesh

	Household Charactersties		REGIONS			STATE	
			1	2	R	U	T
1	**Type of household**	n=	**427**	**412**	**696**	**143**	**839**
	Kuccha		3.2	9.0	3.7	0.0	3.3
	Semi Pucca		70.8	89.5	75.2	34.5	71.3
	Pucca		26.1	1.5	21.2	65.5	25.4
2	**Monthly expenditure (in Rs.)**						
	<= 2500		21.9	5.4	22.6	10.6	21.4
	2,501 - 5,500		73.9	94.2	73.9	79.6	74.6
	5,501 - 10,000		3.5	0.5	2.7	9.9	3.4
	10,000 +		0.6	0.0	0.7	0.0	0.6
3	**Religon**						
	Hindus		98.8	85.4	98.9	94.4	98.4
	Muslims		0.1	0.7	0.0	0.7	0.1
	Sikhs		0.3	0.0	0.0	3.5	0.3
	Christians		0.5	0.0	0.3	1.4	0.4
4	**Caste**						
	Scheduled Caste		7.2	1.9	7.6	2.1	7.0
	Scheduled Tribe		12.8	92.7	15.9	4.9	15.3
	Other Backward Classes		7.9	1.7	8.6	0.0	7.7
	Others		72.1	3.6	67.9	93.0	70.0
5	**Sources of drinking water**						
	Pipe/tap		82.1	57.4	80.4	91.5	81.3
	Tubewell/handpump		3.2	3.2	2.8	6.3	3.2
	Others		14.8	39.4	16.8	2.1	15.5
6	**Staple food**						
	Wheat		44.5	1.7	44.4	34.5	43.2
	Rice		43.8	96.4	44.0	55.6	45.4
7	**Nature of food**						
	Vegetarian		47.4	4.6	46.1	47.9	46.1
	Non-vegetarian		52.6	95.4	53.9	52.1	53.9

Characteristics of Surveyed Households

(i) About 71 percent of respondents, more in rural, had semi-pucca houses while 25 percent, more in urban had pucca houses in the state.

More had pucca houses in Region 1, whereas more had semi-pucca houses in Region 2.

(ii) 75 percent of respondents reported monthly expenditure of Rs. 2500-5500.

(iii) 98 percent of households in the state belonged to Hindus.

(iv) 70 percent of households belonged to higher castes in the state.

(v) About 81 percent of the households were getting piped/tap water for drinking in the state.

(vi) Households were equally divided by type of staple food and nature of food.

3.2 PROFILE OF POPULATION

3.2.2 12 year olds

3.2.2.1 Educational level

Almost all respondents of this age, across both sexes and places of residence, had education up to middle school in the state as well as in both regions (Table 3.2.2).

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

AGE: 12 yrs **STATE : Himachal Pradesh**

	Educational level & Media Exposure		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Educational level**	n=	159	157	262	54	316	155	158	261	52	313	629
	Illiterate		0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Upto middle		99.1	99.4	99.1	100.0	99.4	100.0	100.0	100.0	100.0	100.0	**99.7**
	High school & above		0.9	0.0	0.9	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**

3.2.3 15 year olds

3.2.3.1 Educational level

The level of literacy of this age group across both sexes and places of residence was 99 percent. About 98 percent of respondents of this age group had education up to high school and above in the state as well as in both the regions (Table 3.2.2)

3.2.3.2 Exposure to media

About 72 percent of respondents of this age group, more males and more in rural, did not read newspaper at all. This percentage in the rural areas was as high as 78-81, more males than females. About 26 percent of the subjects of this age group, more females and more in urban, reported reading newspaper sometimes. 2 percent, across both sexes had the habit of reading newspapers daily.

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

AGE: 15 yrs STATE : Himachal Pradesh

	Educational level & Media Exposure		MALE					FEMALE					STATE
			REGIONS		STATE			REGIONS		STATE			TOTAL
			1	2	R	U	T	1	2	R	U	T	
1	**Educational level**	n=	157	157	262	52	314	157	158	260	55	315	629
	Illiterate		0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Upto middle		3.4	2.6	3.7	0.0	2.5	0.9	1.3	1.0	0.0	0.6	**1.6**
	High school & above		96.6	96.8	96.2	100.0	97.5	99.1	98.7	99.0	100.0	99.4	**98.5**
2	**Newspaper reading habits**												
	Daily		1.2	0.0	0.9	3.9	1.9	0.6	0.0	0.0	5.5	1.9	**1.9**
	Sometimes		19.4	17.3	17.9	33.3	22.9	24.6	18.4	22.4	41.8	29.2	**26.1**
	Not at all		79.4	82.7	81.2	62.7	75.2	74.8	81.6	77.6	52.7	68.9	**72.1**
3	**Radio listening habits**												
	Daily		2.6	5.8	2.9	0.0	2.0	5.6	5.1	5.9	3.6	5.1	**3.6**
	Sometimes		35.0	54.5	34.6	45.1	38.0	35.3	62.7	35.2	43.6	38.1	**38.1**
	Not at all		62.4	39.7	62.5	54.9	60.1	59.1	32.3	59.0	52.7	56.8	**58.5**
4	**TV watching habits**												
	Daily		12.9	6.4	10.3	37.3	19.0	13.9	9.5	10.7	40.0	20.9	**20.0**
	Sometimes		19.3	23.1	20.8	5.9	16.0	24.6	24.1	26.4	9.1	20.4	**18.2**
	Not at all		67.7	70.5	68.9	56.9	65.0	61.5	66.5	62.9	50.9	58.7	**61.9**
5	**Cinema watching habits**												
	Once in 3 months		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Less often		2.8	0.0	1.8	11.8	5.0	2.4	0.6	1.0	14.5	5.7	**5.4**
	Not at all		97.2	100.0	98.2	88.2	95.0	97.6	99.4	99.0	85.5	94.3	**94.7**

The exposure to radio was limited. About 59 percent across both sexes, more in rural, did not listen to radio at all. Exposure to television was also limited. Only 20 percent of the respondents, across both sexes and more in urban, reported watching television daily. About 62 percent, more males and more in rural, had no exposure to television at all. Almost 95 percent of the subjects across both sexes and more in rural, had no exposure to cinema. In other words, television, particularly in urban areas, reported high viewership. The exposure to other media was limited, except radio, which was more in urban and less in rural areas (Table 3.2.3).

3.2.4 35-44 year olds

3.2.4.1 Educational level

Only 4 percent of the subjects of this age group reported illiterate. They were more in rural than in urban areas. About 48 percent had education up to middle school level and an equal percentage of respondents had education up to high school and above. More males had been to high school and above while more females had education up to middle school.

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 : Himachal Pradesh**

	Educational level & Media Exposure		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Educational level**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Illiterate		4.3	4.5	4.8	0.0	3.2	3.9	7.6	4.0	3.9	3.9	**3.6**
	Upto middle		40.0	33.1	39.6	41.8	40.4	60.4	67.5	62.6	41.2	55.6	**48.0**
	High school & above		55.6	62.4	55.6	58.2	56.5	35.7	24.8	33.4	54.9	40.4	**48.5**
2	**Newspaper reading habits**												
	Daily		8.9	7.6	7.8	18.2	11.4	3.5	0.6	1.9	17.6	7.0	**9.2**
	Sometimes		36.1	28.7	36.6	29.1	34.0	24.3	27.4	23.2	35.3	27.2	**30.6**
	Not at all		55.1	63.7	55.6	52.7	54.6	72.3	72.0	74.9	47.1	65.8	**60.2**
3	**Radio listening habits**												
	Daily		6.1	10.2	6.9	0.0	4.5	3.2	8.3	3.0	5.9	4.0	**4.3**
	Sometimes		77.5	73.9	77.6	76.4	77.1	66.2	66.2	64.5	82.4	70.3	**73.7**
	Not at all		16.4	15.9	15.5	23.6	18.3	30.7	25.5	32.5	11.8	25.7	**22.0**
4	**TV watching habits**												
	Daily		13.8	9.6	10.6	40.0	20.8	15.3	7.6	12.4	41.2	21.8	**21.3**
	Sometimes		34.7	29.9	36.7	16.4	29.7	24.3	24.2	25.0	17.6	22.6	**26.2**
	Not at all		51.5	60.5	52.7	43.6	49.5	60.4	68.2	62.7	41.2	55.6	**52.6**
5	**Cinema watching habits**												
	Once in 3 months		0.4	0.0	0.0	3.6	1.3	0.2	0.0	0.0	2.0	0.6	**1.0**
	Less often		1.6	1.3	1.0	7.3	3.2	2.9	0.0	1.9	11.8	5.1	**4.2**
	Not at all		98.0	98.7	99.0	89.1	95.6	96.9	100.0	98.1	86.3	94.3	**95.0**

3.2.4.2 Exposure to media

Only 9 percent had the habit of reading newspaper daily. These were more males and more in urban areas of the state. About 60 percent of respondents, more females and more in rural, did notread newspaper at all.

About 74 percent of the respondents reported listening to radio sometimes. The exposure to the radio daily was only among 4 percent of the respondents, across both sexes and more in rural. Surprisingly, television viewership in this group of subjects was low in rural areas. 53 percent, more females and more in rural, did not have the habit of watching TV at all. 21 percent of the subjects reported watching the television daily. Not much exposure to cinema was found. Only about 1 percent of urbanites had watched cinema once in three months in the state (Table 3.2.4).

3.2.5 65-74 year olds

3.2.5.1 Educational level

59 percent of the subjects, more females of this age group were illiterate (43 percent males and 76 percent females). The literacy levels were almost similar in urban and rural areas. As expected, the literacy level was higher in Region 1 than in Region 2.

3.2.5.2 Exposure to media

The educational levels have a direct effect on the habit of reading newspaper. Only 3 percent of respondents all males, mostly living in urban areas, reported reading newspaper daily. Other 11 percent, more males, had the habit of reading newspaper sometimes. 86 percent of the respondents, more females and more in rural, did not read newspaper at all. Both the regions had almost similar readership of newspapers.

About 60 percent of the respondents reported listening to the radio sometimes, while 35 percent, more females and more in urban, reported no exposure at all. Exposure to the radio was lower in urban than in rural areas without much regional differences. Exposure to the television was also low: 65 percent of the respondents reported no exposure to television. The viewership was higher in the urban areas compared to in rural areas. There were not many regional differentials.

Exposure to cinema particularly in rural area was also very low in the state as well as in both the regions. Only 3 percent of respondents in urban areas had watched cinema less often in the state (Table 3.2.5).

PROFILE OF POPULATION ACROSS AGE GROUPS (SUMMING UP)

(i) Except 40 percent of those aged 65-74 years, more than 95 percent of respondents belonging to the remaining ages/age groups had education up to middle school and above.

(ii) A few, across all ages, had the habit of reading newspaper daily.

(iii) About 50-60 percent, across age groups was listening to the radio sometimes only.

(iv) Only 20 percent, across age groups, reported watching TV daily.

(v) A negligible percent of respondents, across age/age groups, reported watched cinema.

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 : Himachal Pradesh**

	Educational level & Media Exposure		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Educational level**	n=	159	155	260	54	314	156	160	264	52	316	630
	Illiterate		44.8	66.5	46.3	37.0	43.2	74.5	71.9	74.0	78.8	75.6	**59.4**
	Upto middle		31.3	27.1	30.4	38.9	33.3	17.6	27.5	18.6	11.5	16.2	**24.8**
	High school & above		23.8	6.5	23.3	24.1	23.6	7.9	0.6	7.5	9.6	8.2	**15.9**
2	**Newspaper reading habits**												
	Daily		4.6	0.0	3.7	11.1	6.2	0.0	0.6	0.0	0.0	0.0	**3.1**
	Sometimes		17.4	7.1	17.8	11.1	15.5	5.3	3.1	4.8	9.6	6.4	**11.0**
	Not at all		78.1	92.9	78.5	77.8	78.3	94.7	96.3	95.2	90.4	93.6	**86.0**
3	**Radio listening habits**												
	Daily		9.1	8.4	9.5	5.6	8.2	3.5	6.3	3.9	0.0	2.6	**5.4**
	Sometimes		64.4	65.8	64.8	61.1	63.6	57.3	58.8	57.7	53.8	56.4	**60.0**
	Not at all		26.5	25.8	25.7	33.3	28.3	39.2	35.0	38.4	46.2	40.9	**34.6**
4	**TV watching habits**												
	Daily		10.4	4.5	7.5	35.2	16.9	7.9	6.9	5.8	26.9	12.8	**14.9**
	Sometimes		25.1	27.1	26.7	11.1	21.4	19.9	16.9	20.1	17.3	19.2	**20.3**
	Not at all		64.5	68.4	65.8	53.7	61.7	72.2	76.3	74.1	55.8	68.0	**64.9**
5	**Cinema watching habits**												
	Once in 3 months		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Less often		2.0	0.0	0.9	11.1	4.4	0.4	0.0	0.0	3.8	1.3	**2.9**
	Not at all		98.0	####	99.1	88.9	95.6	99.6	###	####	96.2	98.7	**97.2**

CHAPTER IV

MAPPING OF THE FLUORIDE LEVELS

4.1 INTRODUCTION

As stated in the section on objectives (chapter 2), 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 water samples from the households they visited for collection of information related to oral health practices and the current situation of the oral health. This chapter presents results of the analysis of the fluoride levels from those 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 will carry along with them a set of sterilized plastic bottles supplied to them when they go to the field. These bottles were ordered from a manufacturer in Hyderabad specially for this purpose and had the following characteristics:

   (1) Its capacity was 500 ml as per recommendations of the Medlab, Mumbai, India where the water samples were to be analyzed for fluoride levels. (This lab, now has agreed that a sample of even 200 ml would have been enough).This quantity of water was decided to take account of the possible spillage of water during transportation.

   (2) The quality of plastic for bottles was so decided that they could stand the pressure of transportation from Hyderabad to each state where survey was conducted, travel with the field teams and then dispatched to Mumbai for analysis.

   (3) It was sterilized to ensure that collected water did not get contaminated from any source, and

   (4) The bottles had two corks to make sure that spillage of water was minimum and the Medlab got quantity of water sufficient to analyze its fluoride levels.

2. Every field team was instructed to collect water samples from the first household they visited every day. Water sample was collected from the next household only if the source of drinking water of the household was different from the previous household from where water sample was collected. In other words, water samples were collected from all the sampled households that had different sources of drinking water in the area of coverage. If the source of drinking water in the household was the same as collected previously then water sample was not collected. It means that water samples were collected from a representative sample of households of the villages/urban blocks and one knew number of household in the sampled area who were using water of the specific ppm level. 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 and the results give distribution of household with different levels of ppm.

3. All water sample bottles had identification particulars of the household including its state, zone and serial number of the household, which were numbered within each zone.

4. Since a specified number of households were covered from each zone, the field teams were instructed to number the households in each zone serially, starting from 1 to the last number in a zone. Thus, every household covered had a unique serial number within a zone. The water sample bottles had this number recorded; thus, each water sample was uniquely matched with the household so that the water sample could be linked to the household from where other information on oral health was collected.

5. The collected water samples were transported to Medlab, Mumbai, India for analysis.

This collection of water sample and its linking with the household was done for two purposes. The first was that the collected household drinking water samples represent the situation of rural and urban households of the zone and ultimately of the state (by giving proper weights to the rural and urban areas of the zone/state). This analysis would help to map the fluoride levels in different areas of the state and the country as the sampled areas and households were a representative sample of the total areas. The other purpose was to try to relate the fluoride levels of drinking water, oral health related dental practices and the actual status of the oral health of the households and individuals.

4.3. ANALYSIS OF WATER SAMPLES

Since analysis of water samples for its fluoride levels requires special equipment, the President, Dental Council of India, Dr. R.K.Bali contacted the Colgate-India for help in the analysis. They have been supportive to the total effort of the Dental Council of India in the conduct of the National Oral Health Survey including the funding they provided. They agreed to the request of the Dental Council of India for the analysis of the water samples for fluoride levels and identified Medlab, Mumbai for such analysis.

The methodology they adopted in analysis of 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 and urban areas and Himachal Pradesh are shown in Table 4.1.

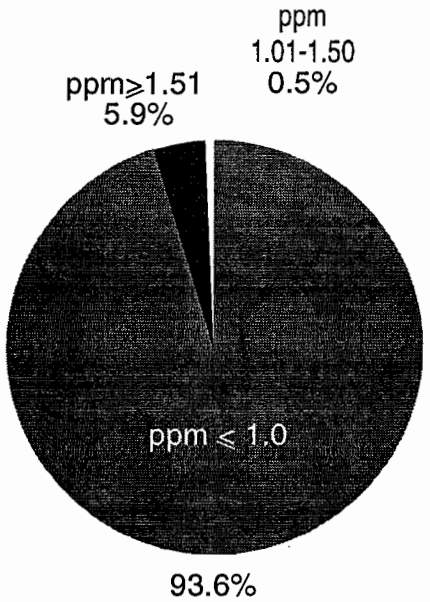
Table 4.1 Percent distribution of drinking water levels of fluoride (ppm) by region, rural, urban and state - Himachal Pradesh.

Levels of ppm	Regions		State		
	I	II	Rural	Urban	Total
0.0 –0.5	74.5	11.9	71.3	87.2	72.6
0.51 –1.00	19.9	55.2	22.5	5.7	21.0
1.01 –1.50	0.0	16.1	0.5	0.0	0.5
1.51 –2.00	3.3	4.4	2.9	7.1	3.3
2.01 –4.00	2.3	12.4	2.8	0.0	2.6
4.01-8.00	0.0	0.0	0.0	0.0	0.0
8.00 +	0.0	0.0	0.0	0.0	0.0

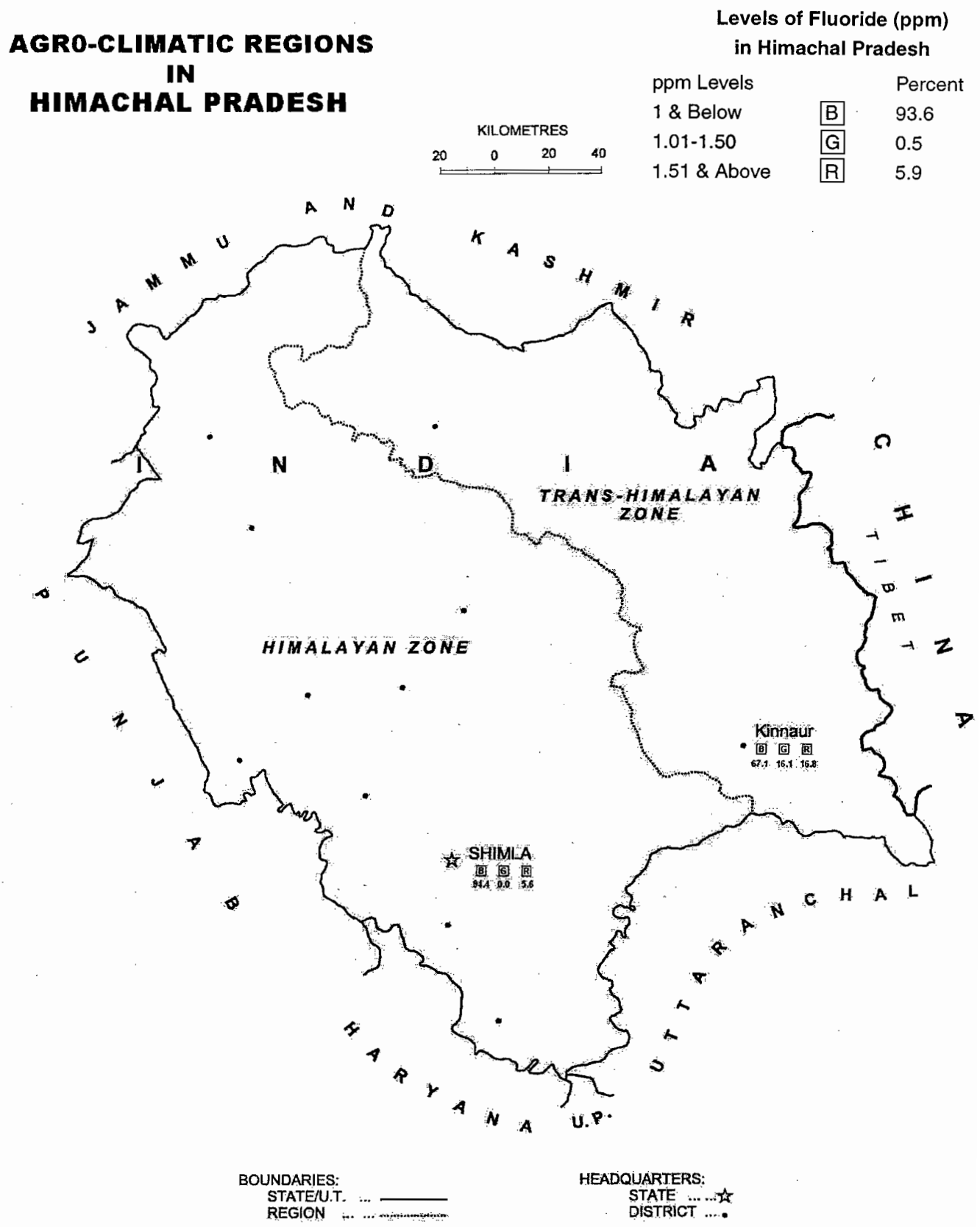
Note: Boundaries of two regions namely (1) Shimla, (2) Kinnaur in which Himachal Pradesh has been divided and districts within them are shown in the State map.

Almost 95 percent households in HP use drinking water with fluoride levels of less than 1.5 ppm; it is true, both for rural and urban areas. The fluoride levels in region II is relatively high (than region I) –about one-sixth of the households there have fluoride levels of 1.5 ppm and above.

Fig. 4.1 Drinking water levels of fluoride in Himachal Pradesh



Drinking Water levels of Fluoride (ppm) in the Himachal Pradesh, INDIA



CHAPTER V

FOOD HABITS AND ORAL HEALTH PRACTICES

A series of questions were asked on food habits and other habits/practices that could affect oral health. Prevalence of each of these practices sorted by different ages/age groups, males and females, rural and urban areas and for each region has been discussed in this chapter. The analysis of the oral health risk practices could be suggestive for promotion of appropriate educational activities to 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 asked of each respondents (for a child, from his/her caretaker). The responses are reported in Table 5.1 and are discussed in this section.

5.1.1 5 year olds

As regards pr evalence of abnormal habits in respondents, about 20 percent of respondents (children) across both sexes and more in urban reported the habit of "biting nails/lips/object like pencil. Another 13 percent of the children, across both sexes and more in rural reported the habit of "grinding/gritting teeth". The prevalence each of other abnormal habits was low. A mere less than one percent, more males and more in urban, had the habit of "breathing from mouth". Another 6 percent, more females, and another 4 percent, more males and more in urban, reported the habit of "thrusting tongue on teeth and "biting nails/lips/object like pencil" respectively in the state.

5.1.2 12 year olds

About 32 percent of children across both sexes and more in rural reported the habit of "biting nails, lips or objects like pencil". Other about 18 percent of children more females and more in urban reported the habit of "grinding/gritting teeth" consciously or unconsciously, during sleep or moments of stress in the state. The occurrence of each of abnormal habit irrespective of sex was more in Region 1 compared to Region 2.

5.1.3 15 year olds

About 21 percent children across both sexes and more in rural reported the habit of "biting nails, lips or objects like pencil". Another 10 percent, across both sexes and more in urban, reported the habit of "grinding/gritting teeth". The occurrence of each of the remaining abnormal habit was comparatively low. More, irrespective of sex, reported the habits of "biting nails/lips/object like pencils" and "grinding/gritting teeth" in Region 1 than in Region 2.

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

AGE: 5 yrs — STATE : Himachal Pradesh

	Habits affecting Oral Health		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	158	160	263	55	318	157	155	261	51	312	630
1	Breathing from mouth		1.1	1.9	1.0	1.9	1.3	0.0	1.9	0.1	0.0	0.0	0.7
2	Sucking or biting fingers/thumb		4.0	8.2	4.0	5.6	4.5	6.7	9.0	6.7	7.8	7.1	5.8
3	Thrusting tongue on teeth		3.7	1.9	2.9	11.1	5.7	0.6	1.9	0.1	5.9	1.9	3.8
4	Biting nails/lips/objects like pencil		18.0	7.5	17.0	24.1	19.4	14.8	3.2	12.0	39.2	20.8	20.1
5	Grinding / gritting teeth		13.9	2.5	14.1	9.3	12.4	16.1	3.9	16.6	7.8	13.8	13.1

AGE: 12 yrs — STATE : Himachal Pradesh

	Habits affecting Oral Health		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	159	157	262	54	316	155	158	261	52	313	629
1	Breathing from mouth		3.4	7.0	3.9	0.0	2.6	4.3	6.4	4.9	0.0	3.3	3.0
2	Sucking or biting fingers/thumb		12.7	7.6	13.2	7.4	11.2	14.0	6.4	14.2	9.8	12.8	12.0
3	Thrusting tongue on teeth		13.6	0.6	13.9	7.4	11.7	9.3	1.3	8.4	15.7	10.8	11.3
4	Biting nails/lips/objects like pencil		34.0	10.8	33.6	31.5	32.9	35.1	13.4	35.8	21.6	31.2	32.1
5	Grinding / gritting teeth		16.7	2.5	16.7	13.0	15.4	16.7	4.5	15.1	29.4	19.7	17.6

AGE: 15 yrs — STATE : Himachal Pradesh

	Habits affecting Oral Health		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	157	157	262	52	314	157	158	260	55	315	629
1	Breathing from mouth		0.9	2.6	1.0	0.0	0.7	0.9	2.5	1.0	0.0	0.7	0.7
2	Sucking or biting fingers/thumb		6.3	4.5	6.5	3.9	5.7	4.4	7.6	5.0	0.0	3.3	4.5
3	Thrusting tongue on teeth		3.7	2.6	2.8	11.8	5.7	1.5	2.5	1.0	5.5	2.6	4.2
4	Biting nails/lips/objects like pencil		25.9	9.6	26.8	11.8	22.0	19.2	10.8	18.4	23.6	20.2	21.1
5	Grinding / gritting teeth		7.5	0.6	6.4	15.7	9.4	9.2	1.9	8.6	12.7	10.0	9.7

AGE: 35-44 yrs — STATE : Himachal Pradesh

	Habits affecting Oral Health		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	158	158	260	56	316	155	157	261	51	312	628
1	Breathing from mouth		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Sucking or biting fingers/thumb		0.2	1.3	0.0	1.8	0.7	0.9	1.3	1.0	0.0	0.7	0.7
3	Thrusting tongue on teeth		1.9	0.0	1.9	1.8	1.9	0.0	0.0	0.0	0.0	0.0	1.0
4	Biting nails/lips/objects like pencil		6.7	2.5	6.7	5.5	6.2	5.6	6.4	5.8	3.9	5.2	5.7
5	Grinding / gritting teeth		13.2	0.0	12.2	18.2	14.3	5.3	1.3	4.7	9.8	6.4	10.4

AGE: 65-74 yrs — STATE : Himachal Pradesh

	Habits affecting Oral Health		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	159	155	260	54	314	156	160	264	52	316	630
1	Breathing from mouth		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
3	Thrusting tongue on teeth		0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.9	0.0	0.6	0.3
4	Biting nails/lips/objects like pencil		0.9	0.0	0.9	0.0	0.6	1.1	0.0	0.9	1.9	1.3	1.0
5	Grinding / gritting teeth		13.2	1.3	13.9	3.7	10.5	11.3	3.1	12.2	0.0	8.2	9.4

5.1.4 35-44 year olds

Except the habit of "grinding/gritting teeth" consciously or unconsciously, during sleep or moments of stress, in about 10 percent of the subjects, more males and more in urban, the occurrence of each of the other abnormal habits in this group of respondents was very low or even nil in the state as well as in each region.

5.1.5 65-74 year olds

Except the habit of "grinding/gritting teeth" in 9 percent of subjects, consciously or unconsciously, during sleep or moments of stress, the occurrence of each of the other abnormal habits in this group of respondents was negligible in the state as well as in regions.

ABNORMAL ORAL HABITS ACROSS AGE GROUPS (SUMMING UP)

(i) The prevalence of each of the practices was generally low but slightly higher in case of habits of "biting nails, lips or objects like pencil" and "grinding/gritting teeth".

(ii) Grinding or gritting habit was more prevalent in rural areas.

(iii) Urban children aged 5 years showed higher prevalence of abnormal habits like "sucking fingers or thumb", "biting nails, lips or objects like pencil" and "thrusting tongue on the teeth" than their rural counterparts. "Biting nails, lips or objects like pencil" was a predominant habit found among the younger age groups while the habit of "grinding or gritting of teeth" was more prevalent among 35 and above year olds.

(iv) Overall, more males across age groups reported these habits than females.

5.2 EATING HABITS

Since sugar-eating habits affect the oral health, the respondents were asked about the frequency with which they had consumed sugar during the last one day. Their responses are shown in Table 5.2 and are discussed below.

5.2.1 5 year olds

The respondents were asked about the frequency with which they had consumed sugar during the last one day. About 53 percent of the children, more males and more in urban, reported having taken sugar two times in last one day and another 24 percent of the children, more females and more in urban, had taken sugar more than two times in last one day. Only 5 percent of the children, more females, across places of residence, had not taken sugar in the last one day in the state. More males reported had taken sugar two times while more females had taken sugar more than two times in last one day in regions 1 and 2.

5.2.2 12 year olds

About 40 percent of the children more males and more in urban reported having taken sugar two times in last one day, while 38 percent of the children across both sexes more in urban had taken sugar more than two times in last one day. Only 8 percent had not taken sugar in last one day in the state. More females reported having taken sugar two and more times in last one day in both the regions.

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

AGE: 5 yrs — STATE : Himachal Pradesh

	Pattern of sugar intake in last one day		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	158	160	263	55	318	157	155	261	51	312	630
1	Not taken		3.0	3.1	2.9	3.7	3.2	6.5	5.8	6.6	5.9	6.4	4.8
2	Taken one time		22.7	6.3	23.5	11.1	19.3	20.2	9.7	21.3	5.9	16.4	17.9
3	Taken two times		52.6	64.8	51.4	66.7	56.6	48.6	53.5	48.3	52.9	49.8	53.2
4	Taken 2+ times		21.7	25.8	22.2	18.5	21.0	24.7	31.0	23.8	35.3	27.5	24.3

AGE: 12 yrs — STATE : Himachal Pradesh

	Pattern of sugar intake in last one day		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	159	157	262	54	316	155	158	261	52	313	629
1	Not taken		8.8	8.3	8.6	11.1	9.4	6.8	4.5	6.7	7.8	7.0	8.2
2	Taken one time		20.2	12.1	21.6	5.6	16.2	14.5	10.2	15.2	5.9	12.2	14.2
3	Taken two times		39.1	54.8	40.4	31.5	37.4	45.6	53.5	47.3	31.4	42.1	39.8
4	Taken 2+ times		31.8	24.8	29.4	51.9	37.0	33.1	31.8	30.8	54.9	38.7	37.9

AGE: 15 yrs — STATE : Himachal Pradesh

	Pattern of sugar intake in last one day		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	157	157	262	52	314	157	158	260	55	315	629
1	Not taken		14.9	11.5	13.2	31.4	19.0	20.4	14.6	19.5	27.3	22.2	20.6
2	Taken one time		15.5	22.4	17.1	2.0	12.2	14.4	14.6	15.7	3.6	11.5	11.9
3	Taken two times		44.7	50.6	45.4	39.2	43.4	44.2	55.7	45.4	36.4	42.3	42.9
4	Taken 2+ times		24.8	15.4	24.3	27.5	25.3	21.0	15.2	19.5	32.7	24.1	24.7

AGE: 35-44 yrs — STATE : Himachal Pradesh

	Pattern of sugar intake in last one day		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	158	158	260	56	316	155	157	261	51	312	628
1	Not taken		59.1	47.8	55.1	90.9	67.5	57.3	56.7	54.9	80.4	63.2	65.4
2	Taken one time		14.8	30.6	16.9	0.0	11.1	18.6	21.0	20.2	3.9	14.9	13.0
3	Taken two times		17.3	19.7	18.5	7.3	14.6	19.7	21.7	21.2	5.9	16.2	15.4
4	Taken 2+ times		8.9	1.9	9.5	1.8	6.8	4.4	0.6	3.8	9.8	5.7	6.3

AGE: 65-74 yrs — STATE : Himachal Pradesh

	Pattern of sugar intake in last one day		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
		n=	159	155	260	54	314	156	160	264	52	316	630
1	Not taken		78.5	80.0	77.2	90.7	81.8	85.8	81.9	84.5	96.2	88.4	85.1
2	Taken one time		9.8	14.8	10.6	3.7	8.3	6.3	13.1	6.9	1.9	5.3	6.8
3	Taken two times		6.4	3.9	6.6	3.7	5.6	4.5	5.0	4.8	1.9	3.9	4.8
4	Taken 2+ times		5.3	1.3	5.6	1.9	4.3	3.5	0.0	3.7	0.0	2.5	3.4

5.2.3 15 year olds

About 43 percent of the subjects of this age group, across both sexes and more in rural, had taken sugar two times in last one day. Another 21 percent of the subjects more males and more in urban subjects had not taken sugar in the last one day. Another 25 percent across both sexes and more in urban had taken sugar more than two times in last one day in the state. More females did not take sugar while more males had taken sugar in last one day in regions 1 and 2.

5.2.4 35-44 year olds

Almost 65 percent of the subjects had not taken sugar in last one day. The percentage was markedly higher in the urban than in rural areas.

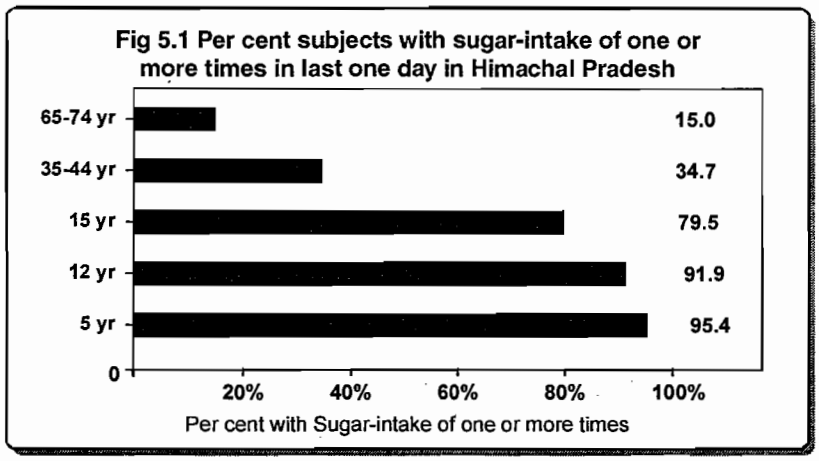


Fig 5.1 Per cent subjects with sugar-intake of one or more times in last one day in Himachal Pradesh

5.2.5 65-74 year olds

Almost 85 percent respondents had not taken sugar in last one day. These were more females and more in urban. However there were no major differences between the regions in this regard.

EATING HABITS ACROSS AGE GROUPS (SUMMING UP)

There was no difference in sugar taking habits of males and females. The maximum percentage of subjects except those belonging to older age groups, across both sexes had taken sugar two times in last one day.

5.3 ORAL HYGIENE PRACTICES

A series of questions were asked about oral hygiene practices, covering aspects like how the teeth were cleaned, what material was used to clean, whether it was fluoridated, how often teeth were cleaned and whether and how often the mouth was rinsed after meals. The responses to these questions are shown in Tables 5.3.1 to 5.3.5 and are discussed in this section.

5.3.1 5 year olds

86 percent of the children, across both sexes, and more in urban, reported the use of toothbrush to clean teeth in the state as well as in the regions. It was very encouraging to note that 97 percent, across both sexes and more in rural had cleaned teeth once a day in the state as well as in each region. Only 3 percent mostly living in urban had cleaned teeth twice a day.

96 percent of the children reported the use of toothpaste while the rest (4 percent) had used tooth powder. The situation was same across both the sexes and Regions. More in urban areas than in rural reported the use of toothpaste.

About 61 percent, across both sexes and more in urban, reported the use of fluoridated toothpaste, while 36 percent, across both sexes and more in rural, had used non-fluoridated tooth paste/powder.

As regards change of tooth brushes, 55 percent of the children had changed toothbrushes once in 1-3 months, followed by other 34 percent reported change of tooth brushes once in 4-6 months. Another 11 percent across both sexes reported the change of toothbrushes once after six months of use. It may be seen that a majority of users in rural areas changed toothbrushes once in 4-6 months, while more in urban areas changed, once in 1-3 months period.

When asked about mouth rinsing practice after eating, only 17 percent of the children had rinsed mouth sometimes, while 9 percent reported rinsing mouth after every meal. The practice was higher in urban areas than in rural areas and slightly more in males than in females. It was found that the practice of mouth rinsing was higher in Region 2 than in Region 1 (Table 5.3.1).

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

AGE: 5 yrs **STATE : Himachal Pradesh**

	Oral Hygiene Practices		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Clean teeth with**	n=	**158**	**160**	**263**	**55**	**318**	**157**	**155**	**261**	**51**	**312**	**630**
	finger		1.7	2.5	1.9	0.0	1.3	3.4	0.6	3.7	0.0	2.5	**1.9**
	brush		81.0	97.5	79.4	100.0	86.4	81.2	98.7	79.8	100.0	86.3	**86.4**
	datun		17.3	0.0	18.6	0.0	12.3	15.4	0.6	16.5	0.0	11.2	**11.8**
	others		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=	**138**	**160**	**243**	**55**	**298**	**139**	**154**	**242**	**51**	**293**	**591**
	Once a day		98.6	98.7	100.0	88.9	95.7	97.0	100.0	96.7	100.0	97.9	**96.8**
	Twice a day		1.4	1.3	0.0	11.1	4.3	3.0	0.0	3.3	0.0	2.1	**3.2**
	After every meal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
3	**Material used for cleaning teeth**												
	Tooth paste		95.4	95.6	95.3	96.3	95.7	95.0	96.1	94.4	100.0	96.4	**96.1**
	Tooth powder		4.6	4.4	4.7	3.7	4.3	5.0	3.2	5.6	0.0	3.6	**4.0**
4	**Type of toothpaste / powder**	n=	**138**	**160**	**243**	**55**	**298**	**139**	**153**	**241**	**51**	**292**	**590**
	Flouridated		55.9	44.7	53.2	72.2	60.6	56.2	38.6	52.9	78.4	62.2	**61.4**
	Non flouridated		40.5	54.1	43.3	24.1	35.8	41.8	59.5	44.8	21.6	36.4	**36.1**
5	**Change of toothbrush once in**	n=	**136**	**155**	**237**	**54**	**291**	**135**	**153**	**237**	**51**	**288**	**579**
	1-3 months		44.2	12.3	38.0	79.6	54.4	44.8	14.4	38.4	86.3	56.3	**55.4**
	4-6 months		40.9	65.8	44.7	20.4	35.2	40.3	67.3	44.9	11.8	32.5	**33.9**
	6 + months		14.9	21.9	17.3	0.0	10.5	14.7	18.3	16.7	0.0	10.5	**10.5**
6	**Rinse mouth after eating**	n=	**158**	**160**	**263**	**55**	**318**	**157**	**155**	**261**	**51**	**312**	**630**
	Sometimes		13.2	27.7	12.0	27.8	17.4	13.3	28.4	12.7	23.5	16.2	**16.8**
	Always		6.3	4.4	5.7	11.1	7.6	6.1	6.5	4.8	19.6	9.6	**8.6**

5.3.2 12 year olds

About 88 percent of the children across both sexes, 100 percent in urban and 82 percent in rural, reported using tooth brush to clean teeth. Finger was used for cleaning teeth by less than one percent, and all were females. Datun (twigs of medicinal plants) were used by 12 percent, across both sexes and all in the rural areas. This practice was significantly higher in Region 1 than in Region 2.

96 percent of the subjects across both sexes and places of residence had cleaned teeth once a day in the state as well as in each region. More subjects brushed teeth twice a day in the urban areas than in rural areas. The practice of brushing after every meal was seen in less than one percent males living in urban areas.

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

AGE: 12 yrs **STATE : Himachal Pradesh**

	Oral Hygiene Practices		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Clean teeth with**	n=	**159**	**157**	**262**	**54**	**316**	**155**	**158**	**261**	**52**	**313**	**629**
	finger		0.0	0.0	0.0	0.0	0.0	0.9	0.6	1.0	0.0	0.6	**0.3**
	brush		83.7	98.7	82.4	100.0	88.3	82.6	99.4	81.3	100.0	87.4	**87.9**
	datun		16.3	1.3	17.6	0.0	11.7	16.5	0.0	17.7	0.0	11.9	**11.8**
	others		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=	**140**	**155**	**241**	**54**	**295**	**136**	**158**	**242**	**52**	**294**	**589**
	Once a day		95.0	100.0	95.5	92.6	94.4	97.5	96.8	97.6	96.1	97.0	**95.7**
	Twice a day		4.8	0.0	4.5	5.6	4.9	2.5	3.2	2.4	3.9	3.0	**4.0**
	After every meal		0.2	0.0	0.0	1.9	0.7	0.0	0.0	0.0	0.0	0.0	**0.4**
3	**Material used for cleaning teeth**												
	Tooth paste		95.7	94.8	95.3	98.1	96.4	97.5	96.2	97.6	96.1	97.0	**96.7**
	Tooth powder		4.3	4.5	4.6	1.9	3.6	2.5	3.8	2.4	3.9	3.0	**3.3**
4	**Type of toothpaste / powder**	n=	**140**	**154**	**240**	**54**	**294**	**136**	**158**	**242**	**52**	**294**	**588**
	Flouridated		55.2	43.5	52.0	75.9	61.1	58.6	42.7	56.0	74.5	62.8	**62.0**
	Non flouridated		40.7	55.8	43.5	24.1	36.1	38.9	54.8	41.7	21.6	34.2	**35.2**
5	**Change of toothbrush once in**	n=	**140**	**155**	**241**	**54**	**295**	**135**	**156**	**240**	**51**	**291**	**586**
	1-3 months		25.0	12.3	21.7	46.3	31.1	22.3	14.1	18.9	47.1	29.4	**30.3**
	4-6 months		56.1	65.2	57.3	50.0	54.5	54.9	65.4	56.3	47.1	52.8	**53.7**
	6 + months		18.8	22.6	21.0	3.7	14.4	22.8	20.5	24.8	5.9	17.8	**16.1**
6	**Rinse mouth after eating**	n=	**159**	**157**	**262**	**54**	**316**	**155**	**158**	**261**	**52**	**313**	**629**
	Sometimes		25.0	69.4	27.0	18.5	24.1	26.0	67.5	28.1	17.6	24.7	**24.4**
	Always		11.5	15.9	10.6	20.4	13.9	8.9	10.2	6.8	29.4	14.2	**14.1**

About 97percent of the subjects had used toothpaste in the state as well as in each region. 62 percent used fluoridated toothpaste/powder as compared to the 35 percent using non-fluoridated toothpaste/ powder. The use of the former was higher in the urban areas. However there was not much difference observed in the use of fluoridated and non-fluoridated tooth paste/powder between the two regions.

About 54 percent of the subjects reported changing toothbrushes once in 4-6 months. These were more in rural than in urban areas. Another one-third, across both sexes and more in urban, had changed toothbrushes once in 1-3 months. When asked about mouth rinsing habits, 24 percent of the subjects reported rinsing mouth sometimes and another 14 percent of the subjects reported rinsing mouth always. More rural subjects reported rinsing mouth than their urban counterparts. The practice was more common in the predominantly rural Region 2 than in Region 1 (Table 5.3.2).

5.3.3 15 year olds

About 87 percent of the respondents across both sexes reported the use of toothbrush to clean teeth (all in urban and about 80 percent in rural areas). About 12 percent of the subjects mostly in the rural reported using datun to clean teeth. Almost 95 percent of the children had cleaned teeth once a day in the state as well as in each region. About 98 percent across both sexes and places of residence reported the use of toothpaste as the material for cleaning teeth in the state as well as in each region.

63 percent more females and more in urban had used fluoridated tooth paste/powder. Non-fluoridated tooth paste/powder was used by 35 percent of the subjects, more males and more in rural.

About 46 percent of the children more males and more in rural reported change of tooth brushes once in 4-6 months. They were more in Region 2 than in Region 1.

Another 36 percent, more females and more in urban had changed toothbrushes once in 1-3 months in the state. More changed toothbrushes once in 1-3 months in Region 1 than in Region 2. About 18 percent, more females and more in rural, had changed toothbrushes once in after six months of use in the state as well as in each region. In general, it appears that more changed tooth brushes, once in 4 and more months, in rural than in urban areas.

The habit of rinsing the mouth after eating, sometimes, was found in 26 percent of the children, more in rural than in urban areas. About 22 percent, more females and more in urban, rinsed mouth always. Comparatively more rinsed mouth sometimes and always in Region 2 than in Region 1 (Table 5.3.3).

5.3.4 35-44 year olds

About 78 percent of the respondents, more females and more in urban, reported using tooth brush to clean teeth. Datun was used by 20 percent of the subjects, irrespective of sex, and more in rural than in urban areas. About 91 percent of the subjects, across both sexes and more in rural, reported cleaning teeth once a day. Another 9 percent, across both sexes and more in urban, cleaned teeth twice a day. Toothpaste was the material of choice for use among 97 percent of the subjects. About 64 percent of the subjects reported the use of fluoridated toothpaste/powder. Another 33 percent,

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

AGE: 15 yrs STATE : Himachal Pradesh

	Oral Hygiene Practices		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Clean teeth with**	n=	157	157	262	52	314	157	158	260	55	315	629
	finger		0.9	1.9	1.0	0.0	0.7	1.8	1.3	1.9	0.0	1.3	**1.0**
	brush		82.1	97.4	80.7	100.0	86.9	82.5	98.1	80.9	100.0	87.6	**87.3**
	datun		17.1	0.6	18.3	0.0	12.4	15.8	0.6	17.1	0.0	11.2	**11.8**
	others		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=	137	156	241	52	293	139	157	241	55	296	589
	Once a day		96.8	99.4	97.7	90.2	95.0	97.4	97.5	98.8	87.3	94.3	**94.7**
	Twice a day		3.2	0.6	2.3	9.8	5.0	2.4	2.5	1.2	10.9	5.0	**5.0**
	After every meal		0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.7	**0.4**
3	**Material used for cleaning teeth**												
	Tooth paste		97.7	94.8	97.6	98.0	97.7	96.9	97.5	96.5	100.0	97.8	**97.8**
	Tooth powder		2.3	5.2	2.4	2.0	2.3	3.1	2.5	3.5	0.0	2.2	**2.3**
4	**Type of toothpaste / powder**	n=	137	156	241	52	293	139	157	241	55	296	589
	Flouridated		55.7	46.5	53.2	72.5	60.4	59.0	41.4	55.4	80.0	65.0	**62.7**
	Non flouridated		40.2	51.6	42.2	27.5	36.8	38.9	56.7	42.2	20.0	33.5	**35.2**
5	**Change of toothbrush once in**	n=	136	152	237	51	288	137	155	237	55	292	580
	1-3 months		25.1	10.5	20.8	54.9	33.5	29.0	12.9	24.0	60.0	38.3	**35.9**
	4-6 months		52.4	67.1	54.6	39.2	48.9	46.7	67.1	49.5	32.7	42.8	**45.9**
	6 + months		22.5	22.4	24.6	5.9	17.7	24.3	20.0	26.6	7.3	18.9	**18.3**
6	**Rinse mouth after eating**	n=	157	157	262	52	314	157	158	260	55	315	629
	Sometimes		33.1	51.9	35.4	15.7	29.0	29.0	42.4	31.7	9.1	23.8	**26.4**
	Always		15.0	41.7	15.0	23.5	17.7	21.8	48.1	20.5	40.0	27.3	**22.5**

more males and more in rural, had used non-fluoridated tooth paste/powder. About 40 percent of the subjects, across both sexes and more in urban, had replaced tooth brushes once in 1-3 months, while 43 percent of subjects across both sexes and more in rural, reported replacement of tooth brushes once in 4-6 months. in the state. More changed toothbrushes once in 4-6 months in Region 2 than in Region 1 while more changed toothbrushes once in 1-3 months in Region 1 than in Region 2.

About 36 percent of subjects, across both sexes and more in urban, always rinsed mouth. More rinsed mouth always in Region 2 than in Region 1.

The habit of mouth rinsing sometimes was reported by 49 percent of the subjects. Large differences were found across the regions, but there were not many gender differences (Table 5.3.4).

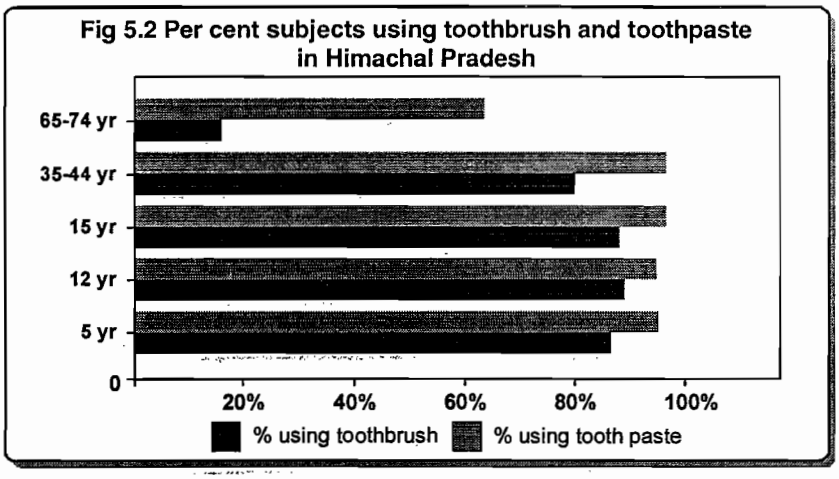


Fig 5.2 Per cent subjects using toothbrush and toothpaste in Himachal Pradesh

5.3.5 65-74 year olds

The pattern of cleaning teeth was significantly dissimilar in this age group of respondents from respondents belonging to earlier age groups. About 30 percent of the subjects, more females and more in rural, were using datum to clean teeth, while 42 percent, across both sexes and more in urban, had used some other material to clean teeth. The use of toothbrush was relatively low in this age group. About 17 percent of subjects, more males and more in urban, had used toothbrush to clean teeth.

About 95 percent of the subjects of this age group, across both sexes and more in urban, had cleaned teeth once a day in the state as well as in each region. Only 2 percent, more males and more in rural, had cleaned teeth twice a day. About 64 percent of the subjects, more males and more in urban, had used toothpaste for cleaning teeth in the state. Comparatively more reported the use of toothpaste in Region 2 than in Region 1 and more had used tooth powder in Region 1 than in Region 2. About 59 percent of subjects, across both sexes and more in urban, had used fluoridated toothpaste/powder while 22 percent more males and more in rural reported the use of non-fluoridated tooth paste/powder.

About 57 percent of the subjects, more males and more in rural, had changed tooth brushes once in 4-6 months, while another 20 percent, more females and more in urban, had changed tooth brushes once in 1-3 months. Another 23 percent, across both sexes and more in rural, had changed toothbrushes once in after six months of use. More in Region 1 had changed toothbrushes once in 4-6 months, while more changed toothbrushes once in six months in Region 2. About 61 percent of the subjects had rinsed mouth sometimes after eating. This is followed by another 38 percent of the subjects who were rinsing mouth always. There was not much difference in the habit of rinsing mouth sometimes or always either by sex or places of residence in the state, but there were larger differences between regions (Table- 5.3.5).

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

AGE: 35-44 yrs STATE : Himachal Pradesh

	Oral Hygiene Practices		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Clean teeth with**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	finger		0.9	0.0	0.9	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**
	brush		69.0	84.1	66.6	94.5	76.2	74.4	85.4	72.5	96.1	80.2	**78.2**
	datun		28.2	15.3	30.6	3.6	21.3	24.7	14.6	26.6	3.9	19.2	**20.3**
	others		1.9	0.6	1.9	1.8	1.9	0.9	0.0	0.9	0.0	0.6	**1.3**
2	**Frequency of cleaning teeth**	n=	**121**	**133**	**201**	**53**	**254**	**124**	**134**	**209**	**49**	**258**	**512**
	Once a day		89.0	97.0	88.7	92.3	90.3	93.8	97.0	94.7	87.8	92.0	**91.2**
	Twice a day		11.0	3.0	11.3	7.7	9.7	6.2	3.0	5.3	12.2	8.0	**8.9**
	After every meal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
3	**Material used for cleaning teeth**												
	Tooth paste		99.7	94.7	99.8	98.1	99.1	93.9	97.0	93.5	98.0	95.2	**97.2**
	Tooth powder		0.3	5.3	0.2	1.9	0.9	6.1	3.0	6.5	2.0	4.8	**2.9**
4	**Type of toothpaste / powder**	n=	**121**	**133**	**201**	**53**	**254**	**124**	**134**	**209**	**49**	**258**	**512**
	Flouridated		55.4	45.5	51.9	75.0	61.7	59.5	44.8	55.6	83.7	66.6	**64.2**
	Non flouridated		40.6	53.0	43.8	23.1	35.0	38.2	53.7	41.8	16.3	31.8	**33.4**
5	**Change of toothbrush once in**	n=	**120**	**133**	**200**	**53**	**253**	**124**	**134**	**209**	**49**	**258**	**511**
	1-3 months		30.5	12.1	24.5	63.5	41.2	28.7	11.2	23.5	61.2	38.3	**39.8**
	4-6 months		48.8	61.4	51.8	32.7	43.6	44.0	64.9	46.0	34.7	41.6	**42.6**
	6+ months		20.7	26.5	23.6	3.8	15.2	27.3	23.1	30.4	4.1	20.1	**17.7**
6	**Rinse mouth after eating**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Sometimes		50.0	10.2	49.3	45.5	48.0	53.5	17.8	53.7	41.2	49.6	**48.8**
	Always		33.4	89.2	34.7	36.4	35.3	32.0	81.5	32.3	43.1	35.8	**35.6**

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

AGE: 65-74 yrs STATE : Himachal Pradesh

	Oral Hygiene Practices		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Clean teeth with**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	finger		11.7	4.5	12.2	5.6	9.9	12.2	3.1	12.2	9.6	11.4	**10.7**
	brush		18.8	31.0	17.5	33.3	22.9	9.3	30.6	9.3	15.4	11.3	**17.1**
	datun		34.0	22.6	35.8	14.8	28.7	35.9	33.1	37.4	21.2	32.0	**30.4**
	others		35.5	41.9	34.5	46.3	38.5	42.6	33.1	41.1	53.8	45.3	**41.9**
2	**Frequency of cleaning teeth**	n=	**52**	**55**	**86**	**21**	**107**	**35**	**54**	**76**	**13**	**89**	**196**
	Once a day		94.4	100.0	93.8	100.0	96.3	92.0	98.1	91.3	100.0	94.4	**95.4**
	Twice a day		5.6	0.0	6.2	0.0	3.7	0.0	1.9	0.1	0.0	0.1	**1.9**
	After every meal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
3	**Material used for cleaning teeth**												
	Tooth paste		61.6	74.5	58.6	85.7	69.5	55.3	88.9	56.2	61.5	58.1	**63.8**
	Tooth powder		29.9	23.6	32.0	14.3	24.9	12.5	9.3	9.1	38.5	19.8	**22.4**
4	**Type of toothpaste / powder**	n=	**49**	**54**	**82**	**21**	**103**	**27**	**53**	**67**	**13**	**80**	**183**
	Flouridated		43.5	40.7	35.9	90.5	59.0	53.3	45.3	49.7	69.2	58.8	**58.9**
	Non flouridated		36.8	57.4	43.4	0.0	25.0	29.7	50.9	36.8	0.0	19.6	**22.3**
5	**Change of toothbrush once in**	n=	**36**	**48**	**66**	**18**	**84**	**17**	**49**	**58**	**8**	**66**	**150**
	1-3 months		6.0	4.2	0.2	33.3	16.5	8.2	0.0	0.0	50.0	22.5	**19.5**
	4-6 months		64.7	43.8	65.5	55.6	60.6	61.9	69.4	66.9	37.5	53.7	**57.2**
	6 + months		29.3	52.1	34.3	11.1	22.9	29.9	28.6	32.9	12.5	23.7	**23.3**
6	**Rinse mouth after eating**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	630
	Sometimes		58.6	10.3	56.7	63.0	58.8	65.5	16.9	64.8	57.7	62.5	**60.7**
	Always		41.4	89.7	43.3	37.0	41.2	31.0	81.9	31.4	42.3	35.0	**38.1**

ORAL HYGIENE PRACTICES ACROSS AGE GROUPS (SUMMING UP)

(i) The practice of cleaning teeth was universal.

(ii) More than 75 percent across all ages/age groups, except the age groups of 35-44 and 65-74 years, across both sexes and more in urban, reported using tooth brush to clean teeth. It was so in both the regions.

(iii) More than 90 percent across both sexes and places of residence had cleaned teeth once a day. In urban areas, some reported cleaning teeth twice a day.

(iv) More than 95 percent subjects, across all ages and both sexes, except in the 65-74 year age group, reported the use of toothpaste. The use of toothpaste was almost similar across regions also.

(v) About 60 percent, across all ages and both sexes and more in urban areas, reported the use of fluoridated tooth paste/powder. Region 1 reported greater use of fluoridated tooth paste/powder than Region 2. A higher percentage of subjects (19 percent) among 65-74 year age group did not know whether the tooth paste/powder they were using was fluoridated or not, than the subjects belonging to other age groups (3 percent).

(vi) About 44 percent of subjects, across all ages except the 65-74 year age group, more in urban, changed tooth brush once in 1-3 months. The change of toothbrushes was less frequent in rural areas.

(vii) Mouth rinsing after eating was not very popular among the subjects. Around 39 percent of the respondents across all ages and both sexes reported rinsing their mouth sometimes after eating. About 24 percent of the subjects across all ages and both sexes, more in urban areas, had rinsed mouth always.

5.4 DENTAL PROBLEMS AND TREATMENT PRACTICES

The respondents were asked whether they had had any dental problem in the last one year and whom they consulted for the problem they had. Further more, they were asked about the access they had to the dental facility. They were also asked whether they ever had any of the conditions or diseases of hypertension, diabetes, epilepsy, jaundice or asthma. Responses on all these aspects are shown in Tables 5.4.1 to 5.4.5 and are discussed in this section.

5.4.1 5 year olds

It was surprising that only 5 percent of the subjects of this age group, across both sexes and more in urban, had reported (through their guardians) oral health problems during the last one year.

As regards type of problems, 64 percent more females and more in rural had dental decay. Another 30 percent more males and more in urban had gum disease. The practice of consulting as expected was much less in rural areas. 42 percent of subjects, more males and more in urban, consulted trained dentists. More consulted trained dentist in Region 1 than in Region 2.

About 98 percent of the subjects had no knowledge of a dental care facility in their areas. But almost all respondents reported less than half an hour's time to reach the dental facility in the state as well as in each region (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 : Himachal Pradesh

	Nature of Dental Problems and Treatment related aspects		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Suffered from oral health**	n=	**158**	**160**	**263**	**55**	**318**	**157**	**155**	**261**	**51**	**312**	**630**
	problems in last one year		3.5	2.5	2.9	9.3	5.0	3.0	2.6	1.9	13.7	5.7	**5.4**
2	**Type of oral health problems**	n=	**8**	**4**	**7**	**5**	**12**	**9**	**4**	**6**	**7**	**13**	**25**
	Dental decay		59.5	50.0	66.2	40.0	49.9	87.6	75.0	99.0	71.4	77.7	**63.8**
	Gum disease		16.1	50.0	1.3	60.0	37.9	12.4	0.0	0.0	28.6	22.1	**30.0**
	Foul breath		5.4	0.0	0.0	20.0	12.5	6.2	0.0	0.0	14.3	11.1	**11.8**
	Bleeding gums		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Others		29.8	0.0	32.5	20.0	24.7	0.0	0.0	0.0	0.0	0.0	**12.4**
3	**Consulted (out of those suffered)**												
	None		54.2	50.0	66.2	20.0	37.4	59.3	50.0	50.0	71.4	66.6	**52.0**
	Trained dentist		45.8	0.0	32.5	80.0	62.1	12.4	0.0	0.0	28.6	22.1	**42.1**
4	**Availaibility of dental facility**	n=	**158**	**160**	**263**	**55**	**318**	**157**	**155**	**261**	**51**	**312**	**630**
	None		99.4	95.0	99.8	94.4	98.0	99.3	95.5	99.9	92.2	97.4	**97.7**
	Govt. facility		0.0	4.4	0.1	0.0	0.1	0.0	4.5	0.1	0.0	0.1	**0.1**
	Pvt. facility		0.6	0.6	0.0	5.6	1.9	0.7	0.0	0.0	7.8	2.5	**2.2**
	Do not know		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
5	**Time taken to reach the facility**	n=	**3**	**8**	**8**	**3**	**11**	**4**	**7**	**7**	**4**	**11**	**22**
	Less than 1/2 hr.		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	**100.0**
	1/2 - 1 hr.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	> 1 hr.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Cannot say		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=	**158**	**160**	**263**	**55**	**318**	**157**	**155**	**261**	**51**	**312**	**630**
	Hypertension		0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	**0.0**
	Diabetes		0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Epilepsy		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Jaundice		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Asthma		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

5.4.2 12 year olds

About 19 percent of this age group, across both sexes and more in urban, had dental problems in the last one year. As regards type of problems, about 89 percent reported problems of dental decay followed by another 65 percent, more in urban, who had gum disease. Another 30 percent across both sexes and more in urban had foul breath. Only 18 percent of those who had had problems consulted trained dentists. More of these were living in urban areas. More females consulted a trained dentist in Region 1 while more males consulted in Region 2.

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 : Himachal Pradesh**

	Nature of Dental Problems and Treatment related aspects		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Suffered from oral health**	n=	**159**	**157**	**262**	**54**	**316**	**155**	**158**	**261**	**52**	**313**	**629**
	problems in last one year		16.7	8.9	15.1	29.6	20.0	13.0	10.8	10.6	35.3	18.7	**19.4**
2	**Type of oral health problems**	n=	**32**	**14**	**30**	**16**	**46**	**29**	**17**	**28**	**18**	**46**	**92**
	Dental decay		73.3	57.1	68.5	93.8	81.2	93.3	52.9	89.7	100.0	96.1	**88.7**
	Gum disease		69.9	42.9	68.3	75.0	71.7	45.8	23.5	36.0	72.2	58.4	**65.1**
	Foul breath		22.1	35.7	19.0	37.5	28.3	28.9	29.4	27.3	33.3	31.0	**29.7**
	Bleeding gums		0.0	28.6	0.5	0.0	0.3	1.5	0.0	0.0	5.6	3.4	**1.9**
	Others		5.1	7.1	6.3	0.0	3.1	0.0	23.5	0.7	0.0	0.3	**1.7**
3	**Consulted (out of those suffered)**												
	None		56.3	50.0	56.1	56.3	56.2	42.9	29.4	36.2	61.1	51.6	**53.9**
	Trained dentist		6.8	14.3	0.3	37.5	18.9	17.8	0.0	17.6	16.7	17.0	**18.0**
4	**Availaibility of dental facility**	n=	**159**	**157**	**262**	**54**	**316**	**155**	**158**	**261**	**52**	**313**	**629**
	None		99.4	94.9	99.8	94.4	98.0	99.2	95.5	99.9	92.2	97.3	**97.7**
	Govt. facility		0.0	4.5	0.1	0.0	0.1	0.0	4.5	0.1	0.0	0.1	**0.1**
	Pvt. facility		0.6	0.6	0.0	5.6	1.9	0.8	0.0	0.0	7.8	2.6	**2.3**
	Do not know		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
5	**Time taken to reach the facility**	n=	**3**	**8**	**8**	**3**	**11**	**4**	**7**	**7**	**4**	**11**	**22**
	Less than 1/2 hr.		100.0	87.5	87.5	100.0	99.4	100.0	100.0	100.0	100.0	100.0	**99.7**
	1/2 - 1 hr.		0.0	12.5	12.5	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**
	> 1 hr.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Cannot say		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=	**159**	**157**	**262**	**54**	**316**	**155**	**158**	**261**	**52**	**313**	**629**
	Hypertension		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Diabetes		0.0	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	**0.0**
	Epilepsy		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Jaundice		0.0	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	**0.0**
	Asthma		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

About 98 percent across both sexes and places of living were unaware of dental care facilities. But almost all reported less than half an hour's time to reach the dental care facility places in the state as well as in each region (Table 5.4.2).

5.4.3 15 year olds

About a quarter of subjects across both sexes and regions had dental problems in last one year. As regards type of oral health problems, 81 percent reported dental decay and another 71 percent reported gum disease. 41 percent of the subjects had foul breath. A significantly higher percentage of subjects in urban areas as compared to in rural areas reported suffering from dental decay and gum disease.

Comparatively more reported suffered from dental and gum disease in Region 1 than in Region 2, but more reported suffering from foul breath in Region 2 than in Region 1. Only 20 percent of the subjects, across both sexes and more in urban, consulted a trained dentist, whereas 47 percent did not consult anybody. Almost 98 percent of the subjects reported no knowledge of dental care facilities in their area. But a majority of the subjects (99 percent) reported less than half an hour's time to reach the dental care facility places. There was no difference in occurrence of mentioned activities either between the regions, or regions and the state (Table 5.4.3).

5.4.4 35-44 year olds

About 64 percent of the respondents of this age group, across both sexes and more in urban, had suffered from oral health problems in the last one year in the state. More reported suffered from oral health problems in Region 1 as compared to Region 2. Most of the subjects had dental decay (79 percent), followed by gum disease (82 percent). A large proportion of subjects (49 percent) reported the problem of foul breath. Reporting of each of these problems by subjects was higher in Region 1 compared to Region 2.

The practice of consultation by this group of respondents was more or less similar to that of the earlier ages/age group. About 19 percent more in urban and more males consulted trained dentists. More consulted a trained dentist in Region 1 than in Region 2.

About 98 percent of the subjects, more in rural, reported no knowledge of a dental care facility in their area. But 90 percent, more males and more in urban, reported half hour's travel-time to reach dental care facility places in the state as well as in each region.

About 8 percent and 9 percent of subjects reported ever suffered from hypertension and jaundice respectively. Further, a small percent reported having suffered from asthma and diabetes. Those ever suffered were more in urban than in rural areas. The prevalence of these diseases was comparatively higher in Region 1 than in Region 2 (Table 5.4.4).

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 : Himachal Pradesh

	Nature of Dental Problems and Treatment related aspects		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Suffered from oral health**	n=	157	157	262	52	314	157	158	260	55	315	629
	problems in last one year		25.1	23.1	23.6	39.2	28.6	22.5	20.9	19.6	47.3	29.3	**29.0**
2	**Type of oral health problems**	n=	45	37	61	21	82	46	33	53	26	79	161
	Dental decay		76.2	44.4	71.2	100.0	83.9	67.2	63.6	60.1	92.3	78.2	**81.1**
	Gum disease		67.1	52.8	63.7	85.0	73.1	63.8	45.5	59.5	76.9	69.3	**71.2**
	Foul breath		31.3	36.1	28.2	50.0	37.9	38.3	45.5	35.3	50.0	43.6	**40.8**
	Bleeding gums		6.4	13.9	4.3	20.0	11.2	15.9	18.2	15.1	19.2	17.4	**14.3**
	Others		10.2	19.4	12.2	0.0	6.8	7.8	15.2	10.2	0.0	4.5	**5.7**
3	**Consulted (out of those suffered)**												
	None		32.0	30.6	28.1	55.0	40.0	48.7	39.4	44.8	61.5	54.2	**47.1**
	Trained dentist		12.0	2.8	7.9	35.0	19.9	13.8	6.1	9.9	26.9	19.5	**19.7**
4	**Availaibility of dental facility**	n=	157	157	262	52	314	157	158	260	55	315	629
	None		99.4	94.9	99.9	94.1	98.0	99.2	93.0	99.8	92.7	97.3	**97.7**
	Govt. facility		0.0	5.1	0.1	0.0	0.1	0.0	4.4	0.1	0.0	0.1	**0.1**
	Pvt. facility		0.6	0.0	0.0	5.9	1.9	0.8	0.6	0.0	7.3	2.5	**2.2**
	Do not know		0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.1	0.0	0.0	**0.0**
5	**Time taken to reach the facility**	n=	3	8	8	3	11	4	8	8	4	12	23
	Less than 1/2 hr.		100.0	87.5	87.5	100.0	99.4	100.0	87.5	87.5	100.0	99.5	**99.5**
	1/2 - 1 hr.		0.0	0.0	0.0	0.0	0.0	0.0	12.5	12.5	0.0	0.5	**0.3**
	> 1 hr.		0.0	12.5	12.5	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**
	Cannot say		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=	157	157	262	52	314	157	158	260	55	315	629
	Hypertension		0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Diabetes		0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	**0.0**
	Epilepsy		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Jaundice		0.0	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	**0.0**
	Asthma		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

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 : Himachal Pradesh

	Nature of Dental Problems and Treatment related aspects		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Suffered from oral health**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	problems in last one year		61.3	22.3	59.1	70.9	63.2	61.9	35.7	59.8	74.5	64.6	**63.9**
2	**Type of oral health problems**	n=	**101**	**35**	**97**	**39**	**136**	**101**	**56**	**119**	**38**	**157**	**293**
	Dental decay		70.4	34.3	67.4	89.7	76.1	74.5	50.0	71.0	97.4	81.0	**78.6**
	Gum disease		77.8	51.4	75.5	92.3	82.0	77.3	46.4	74.1	97.4	82.9	**82.5**
	Foul breath		52.2	22.9	51.3	56.4	53.3	38.2	41.1	35.0	63.2	45.6	**49.5**
	Bleeding gums		24.7	37.1	24.3	28.2	25.8	32.8	41.1	33.5	28.9	31.8	**28.8**
	Others		1.4	8.6	1.7	0.0	1.0	2.8	5.4	3.2	0.0	2.0	**1.5**
3	**Consulted (out of those suffered)**												
	None		17.3	28.6	16.3	25.6	19.9	24.7	35.7	24.0	31.6	26.9	**23.4**
	Trained dentist		14.3	5.7	11.2	35.9	20.8	9.9	5.4	6.3	36.8	17.8	**19.3**
4	**Availaibility of dental facility**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	None		99.2	93.6	99.8	92.7	97.4	99.0	94.9	99.8	90.2	96.7	**97.1**
	Govt. facility		0.0	5.1	0.2	0.0	0.1	0.2	5.1	0.2	2.0	0.7	**0.4**
	Pvt. facility		0.6	0.0	0.0	5.5	1.9	0.8	0.0	0.0	7.8	2.6	**2.3**
	Do not know		0.2	1.3	0.0	1.8	0.7	0.0	0.0	0.0	0.0	0.0	**0.4**
5	**Time taken to reach the facility**	n=	**3**	**8**	**8**	**3**	**11**	**5**	**8**	**8**	**5**	**13**	**24**
	Less than 1/2 hr.		100.0	87.5	87.5	100.0	99.4	80.0	87.5	87.5	80.0	80.2	**89.8**
	1/2 - 1 hr.		0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	19.4	**9.7**
	> 1 hr.		0.0	12.5	12.5	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.3**
	Cannot say		0.0	0.0	0.0	0.0	0.0	0.0	12.5	12.5	0.0	0.4	**0.2**
6	**Ever suffered from**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Hypertension		10.3	0.6	10.4	7.3	9.3	6.0	3.2	5.7	7.8	6.4	**7.9**
	Diabetes		1.3	0.0	0.9	3.6	1.9	1.1	1.9	1.0	2.0	1.3	**1.6**
	Epilepsy		0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Jaundice		8.3	0.0	7.5	12.7	9.3	8.6	1.3	8.4	7.8	8.2	**8.8**
	Asthma		1.1	0.0	0.9	1.8	1.2	5.2	1.3	5.6	0.0	3.8	**2.5**

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 : Himachal Pradesh

	Nature of Dental Problems and Treatment related aspects		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Suffered from oral health**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	problems in last one year		65.9	36.1	63.9	75.9	68.0	74.2	40.0	72.1	84.6	76.2	**72.1**
2	**Type of oral health problems**	n=	**109**	**56**	**124**	**41**	**165**	**120**	**64**	**140**	**44**	**184**	**349**
	Dental decay		55.7	26.8	54.0	65.9	58.4	60.6	31.3	60.0	61.4	60.5	**59.5**
	Gum disease		74.9	32.1	72.8	85.4	77.6	68.9	34.4	65.3	93.2	75.5	**76.6**
	Foul breath		38.0	23.2	35.1	58.5	43.9	40.5	29.7	35.4	79.5	51.6	**47.8**
	Bleeding gums		29.0	33.9	28.0	36.6	31.3	29.5	39.1	29.1	34.1	30.9	**31.1**
	Others		4.2	0.0	4.3	2.4	3.6	4.7	4.7	5.3	0.0	3.3	**3.5**
3	**Consulted (out of those suffered)**												
	None		11.9	23.2	10.5	24.4	15.7	13.6	28.1	12.1	27.3	17.7	**16.7**
	Trained dentist		12.9	8.9	8.8	43.9	22.0	13.6	3.1	9.1	47.7	23.3	**22.7**
4	**Availaibility of dental facility**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	None		98.4	94.2	98.9	92.6	96.8	98.4	95.0	98.9	92.3	96.7	**96.8**
	Govt. facility		0.2	5.2	0.2	1.9	0.7	0.0	4.4	0.1	0.0	0.1	**0.4**
	Pvt. facility		0.6	0.6	0.0	5.6	1.9	0.8	0.0	0.0	7.7	2.5	**2.2**
	Do not know		1.0	0.0	0.9	1.9	1.2	0.9	0.6	1.0	0.0	0.6	**0.9**
5	**Time taken to reach the facility**	n=	**4**	**9**	**9**	**4**	**13**	**4**	**7**	**7**	**4**	**11**	**24**
	Less than 1/2 hr.		100.0	77.8	77.8	100.0	99.0	100.0	100.0	100.0	100.0	100.0	**99.5**
	1/2 - 1 hr.		0.0	11.1	11.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**0.3**
	> 1 hr.		0.0	11.1	11.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**0.3**
	Cannot say		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=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	Hypertension		41.4	13.5	39.2	53.7	44.1	40.3	23.1	37.1	65.4	46.4	**45.3**
	Diabetes		6.0	4.5	6.6	0.0	4.4	3.5	5.6	3.9	0.0	2.6	**3.5**
	Epilepsy		0.0	0.0	0.0	0.0	0.0	1.1	1.9	1.0	1.9	1.3	**0.7**
	Jaundice		20.8	2.6	17.6	44.4	26.7	26.8	2.5	25.2	34.6	28.3	**27.5**
	Asthma		10.5	23.2	10.8	11.1	10.9	22.4	23.8	22.2	25.0	23.1	**17.0**

5.4.5 65-74 year olds

About 72 percent of the respondents more females and more in urban had oral health problems in the last one year in the state. Comparatively more reported having suffered in Region 1 than in Region 2 in the last one year.

As regards type of problems, about 77 percent of the subjects across both sexes and more in urban reported suffering from gum disease and a large percent of subjects (60 percent) reported suffering from dental decay, foul breath (48 percent) and bleeding gums (31 percent). These were equally divided by sex and were more in urban areas of the state.

More reported suffering from each of these diseases in Region 1 than in Region 2. About 23 percent of the subjects had consulted a trained dentist. A majority of the subjects (97 percent) had no knowledge of dental care facilities in their area. But almost all reported less than half hour's travel-time to reach the facility places in the state as well as in each region.

Around 45 percent of the subjects reported to having ever suffered from hypertension followed by (28 percent) from jaundice and (17 percent) from asthma (Table- 5.4.5).

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

(i) About 17 percent of subjects of age 15 years and below, and about 70 percent of subjects of the age 35 years and above, across both sexes, more in urban areas, had suffered from oral health problems in the last one year. It was so in both the regions. Almost all those who reported oral health problems, across ages, reported the problem of dental decay. About 48 percent of the subjects in the ages 15 and below years, and 79 percent in the higher age groups reported the problem of gum disease. About 49 percent subjects of the ages 35 years and above reported the problem of foul breath.

(ii) About 40 percent of subjects across ages consulted a trained dentist and there were large regional differences regarding this practice. Less than one percent of the respondents, across ages and both sexes and more in urban, reported knowledge of availability of governmental dental care facility places.

(iii) Respondents in urban areas reported less than half an hour's time to reach the facility places.

5.5 AWARENESS OF DENTAL HEALTH PROBLEMS

Three questions were asked about the awareness of dental health problems. The first asked about the common dental problems, the second about the major factors responsible for the problems and the third about how these problems could be prevented. The responses on these questions are shown in Tables 5.5.2 to 5.5.5 and are discussed below.

5.5.2 12 year olds

It is encouraging to note that about 87 percent of the children, across both sexes and places of residence reported knowledge of dental health problems. Most of them (67 percent) told dental decay and (77 percent) gum disease and a small percentage reported oral health problems like stained teeth (2 percent). As expected, the children in Shimla (Region 1) had a greater awareness of oral health problems than in the predominantly rural region of Kinnaur.

Almost 84 percent of the subjects, across both sexes and places of residence reported knowledge of factors that cause oral health problems. The level of awareness in this regard was less in Region 1 than in Region 2. Most of them cited factors causing dental problems such as not brushing regularly (77 percent), eating sweets/ice creams or chocolates (68 percent), followed by 36 percent of respondents who reported not rinsing.

When asked about the preventive measures, 80 percent subjects across both sexes and places of residence reported cleaning teeth regularly as a measure to prevent oral health problems. Other preventive measures reported were visiting the dentist regularly (44 percent), not consuming tobacco (25 percent), and avoid sweet items (27 percent). About 17 percent of the respondents irrespective of places of living did not know about the preventive measures. They were more in Region 1 than in Region 2 (Table- 5.5.2).

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 : Himachal Pradesh**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Awareness of Oral Health Problems**	n=	159	157	262	54	316	155	158	261	52	313	629
	No knowledge		13.3	10.2	13.2	13.0	13.1	14.2	8.9	14.3	11.8	13.4	**13.3**
	Tooth decay		70.3	72.6	72.4	51.9	65.5	70.1	72.0	71.2	60.8	67.8	**66.7**
	Gum disease		76.2	70.1	76.0	75.9	76.0	76.6	67.5	75.7	82.4	77.9	**77.0**
	Bad smell		29.8	63.1	27.7	57.4	37.8	36.4	65.0	35.5	52.9	41.2	**39.5**
	Stained teeth		0.9	18.5	1.5	0.0	1.0	2.6	19.1	3.4	0.0	2.3	**1.7**
	Others		0.0	1.3	0.0	0.0	0.0	0.0	2.5	0.1	0.0	0.1	**0.1**
2	**Factors that cause Oral Health Problems**												
	Eating sweets/ice cream		65.1	64.3	64.7	68.5	66.0	70.5	68.2	71.1	64.7	69.0	**67.5**
	Not brushing regularly		78.1	83.4	78.3	77.8	78.1	75.3	80.3	75.2	78.4	76.2	**77.2**
	Not rinsing		34.2	70.7	33.5	50.0	39.1	27.1	64.3	26.2	47.1	33.0	**36.1**
	Consuming tobacco		8.5	54.1	9.0	16.7	11.6	8.8	58.0	10.1	9.8	10.0	**10.8**
	Do not know		17.8	8.3	17.8	14.8	16.8	16.1	8.9	16.1	13.7	15.3	**16.1**
3	**Reported Preventive Measures**												
	Not consuming Tobacco		25.3	28.7	24.0	38.9	29.0	18.8	29.9	18.6	23.5	20.2	**24.6**
	Cleaning teeth regularly		77.6	87.9	77.5	81.5	78.8	81.8	84.1	81.8	82.4	82.0	**80.4**
	Visiting dentist regularly		41.7	54.1	41.3	48.1	43.6	41.4	58.6	40.9	51.0	44.2	**43.9**
	Using flouride paste / powder		6.9	40.8	7.7	9.3	8.2	9.1	39.5	9.6	13.7	10.9	**9.6**
	Avoid sweet items		28.6	56.7	30.3	20.4	27.0	30.8	58.6	33.5	13.7	27.0	**27.0**
	Do not know		17.8	10.2	17.9	14.8	16.8	16.5	8.3	16.1	17.6	16.6	**16.7**

5.5.3 15 year olds

Similar to the age group of 12 years, about 97 percent of the children more females and more in rural were aware of oral health problems. Most of them reported awareness of gum disease (85 percent); tooth decay (73 percent) and bad smell (64 percent) and a small percentage cited stained teeth (8 percent).

As regards factors causing oral health problems, 94 percent reported not brushing regularly and other 71 percent cited eating sweets/ice creams or chocolates. Other causative factors reported were not rinsing (62 percent) and consuming tobacco (23).

About 98 percent of the subjects reported knowledge of preventive measures, such as cleaning teeth regularly (96 percent) and visiting the dentist regularly (67percent) (Table 5.5.3).

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 : Himachal Pradesh**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Awareness of Oral Health Problems**	n=	157	157	262	52	314	157	158	260	55	315	629
	No knowledge		3.8	5.1	3.8	3.9	3.8	2.1	5.1	2.1	3.6	2.6	3.2
	Tooth decay		74.6	75.6	75.5	66.7	72.6	77.5	74.7	79.3	61.8	73.2	72.9
	Gum disease		83.2	77.6	81.9	94.1	85.9	82.4	72.8	81.1	90.9	84.5	85.2
	Bad smell		60.4	66.7	58.7	78.4	65.1	57.6	63.9	55.2	80.0	63.8	64.5
	Stained teeth		9.6	24.4	10.8	2.0	7.9	7.1	27.8	7.5	9.1	8.1	8.0
	Others		1.7	1.9	1.9	0.0	1.3	1.9	3.8	2.0	1.8	1.9	1.6
2	**Factors that cause Oral Health Problems**												
	Eating sweets/ice cream		70.9	77.6	71.0	72.5	71.5	67.0	76.6	66.0	78.2	70.3	70.9
	Not brushing regularly		93.1	91.0	93.3	90.2	92.3	96.1	90.5	95.9	96.4	96.1	94.2
	Not rinsing		52.2	77.6	49.9	82.4	60.4	61.2	75.3	60.3	72.7	64.6	62.5
	Consuming tobacco		25.8	44.9	27.0	19.6	24.6	23.3	48.7	25.3	12.7	20.9	22.8
	Do not know		5.3	3.2	5.6	2.0	4.4	2.8	2.5	2.9	1.8	2.5	3.5
3	**Reported Preventive Measures**												
	Not consuming Tobacco		25.3	33.3	23.9	41.2	29.5	26.7	31.0	24.7	45.5	31.9	30.7
	Cleaning teeth regularly		94.1	91.0	94.2	92.2	93.6	97.2	92.4	96.9	98.2	97.4	95.5
	Visiting dentist regularly		63.1	62.2	61.3	80.4	67.5	61.3	60.1	58.9	81.8	66.8	67.2
	Using flouride paste / powder		19.2	44.2	20.5	13.7	18.3	19.9	39.2	21.2	14.5	18.9	18.6
	Avoid sweet items		34.7	60.9	36.6	23.5	32.4	43.0	66.5	45.8	25.5	38.7	35.6
	Do not know		3.6	4.5	3.8	2.0	3.2	0.9	4.4	1.1	0.0	0.7	2.0

5.5.4 35-44 year olds

Almost all the respondents of this age group were aware of oral health problems and it was almost similar across the regions.

As regards their awareness on the nature of problems, about 88 percent of subjects reported gum disease and other about 75 percent cited bad smell as oral health problems. Besides these about 71 percent of subjects reported dental decay.

As regards factors causing oral health problems 95 percent reported not brushing regularly, 75 percent, not rinsing, and 45 percent, consuming tobacco.

About 57 percent of the subjects reported eating sweets/ice creams or chocolates as factors responsible for oral health problems.

Almost all (99 percent) of the subjects reported knowledge of measures to prevent oral health problems: 93 percent reported cleaning teeth regularly, 70 percent visiting the dentist regularly, 53 percent avoiding sweet items, and 36 percent not consuming tobacco (Table 5.5.4).

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 : Himachal Pradesh**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Awareness of Oral Health Problems**	n=	158	158	260	56	316	155	157	261	51	312	628
	No knowledge		0.0	1.3	0.0	0.0	0.0	1.7	0.6	1.9	0.0	1.3	**0.7**
	Tooth decay		70.7	79.6	71.1	69.1	70.4	72.0	75.8	72.2	70.6	71.7	**71.1**
	Gum disease		88.1	79.0	87.1	94.5	89.7	82.3	75.2	80.6	96.1	85.7	**87.7**
	Bad smell		71.3	77.7	70.1	83.6	74.8	73.1	72.6	72.1	82.4	75.5	**75.2**
	Stained teeth		26.5	53.5	27.0	29.1	27.7	24.8	50.3	24.8	31.4	27.0	**27.4**
	Others		5.2	3.8	5.8	0.0	3.8	5.6	3.8	5.7	3.9	5.1	**4.5**
2	**Factors that cause Oral Health Problems**												
	Eating sweets/ice cream		56.3	72.0	56.8	56.4	56.6	59.8	73.2	61.0	52.9	58.3	**57.5**
	Not brushing regularly		96.2	96.8	97.1	89.1	94.3	95.3	95.5	95.2	96.1	95.5	**94.9**
	Not rinsing		72.3	80.9	72.1	76.4	73.6	68.4	77.1	65.7	96.1	75.7	**74.7**
	Consuming tobacco		46.0	51.0	45.8	49.1	46.9	46.6	59.2	48.4	33.3	43.5	**45.2**
	Do not know		0.9	2.5	1.0	0.0	0.7	2.8	0.0	2.8	2.0	2.5	**1.6**
3	**Reported Preventive Measures**												
	Not consuming Tobacco		41.9	44.6	42.8	34.5	39.9	33.9	49.0	35.0	27.5	32.6	**36.3**
	Cleaning teeth regularly		95.1	96.2	95.2	94.5	95.0	90.1	93.6	89.5	96.1	91.7	**93.4**
	Visiting dentist regularly		62.8	56.7	60.1	85.5	68.9	65.2	61.8	62.5	90.2	71.5	**70.2**
	Using flouride paste / powder		21.7	42.0	22.9	16.4	20.7	27.8	40.1	28.3	27.5	28.0	**24.4**
	Avoid sweet items		55.5	72.6	57.7	40.0	51.6	54.4	68.8	55.2	51.0	53.8	**52.7**
	Do not know		0.0	1.3	0.0	0.0	0.0	1.7	0.6	1.9	0.0	1.3	**0.7**

5.5.5 65-74 year olds

98 percent of the respondents reported knowledge of oral health problems. Most of them cited gum disease (86 percent), bad small (74 percent), and tooth decay (64 percent).

In response to a query on the factors responsible for dental problems, most of the respondents cited factors such as not brushing regularly (89 percent), nor rinsing (70 percent), eating sweets/ice creams or chocolates (64 percent) and consuming tobacco (58 percent). The knowledge of these factors was more among urban than rural residents. This might be due to their greater exposure to the media.

When asked about the measures to prevent oral health problems, about 98 percent of the respondents reported knowledge of the preventive measures. About 90 percent cited regular cleaning of teeth, followed by avoid of sweet items (70 percent), visiting dentist regularly (56 percent), and not consuming tobacco (56 percent) as the measures to prevent oral health problems (Table- 5.5.5).

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 : Himachal Pradesh**

	Awareness of Oral Health Problems, Causes and Preventive Measures		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Awareness of Oral Health Problems**	n=	159	155	260	54	314	156	160	264	52	316	630
	No knowledge		1.0	0.6	0.9	1.9	1.3	3.5	1.9	3.8	0.0	2.5	**1.9**
	Tooth decay		64.4	77.4	65.1	61.1	63.8	65.7	70.0	66.5	59.6	64.2	**64.0**
	Gum disease		86.7	83.9	86.6	87.0	86.7	84.5	71.9	83.3	92.3	86.3	**86.5**
	Bad smell		74.6	67.7	74.1	77.8	75.3	68.0	73.1	66.6	82.7	71.9	**73.6**
	Stained teeth		34.2	61.3	33.2	50.0	38.9	30.1	65.6	29.0	50.0	36.0	**37.5**
	Others		3.6	1.9	3.8	1.9	3.1	8.0	0.0	8.4	1.9	6.3	**4.7**
2	**Factors that cause Oral Health Problems**												
	Eating sweets/ice cream		62.3	63.9	61.0	74.1	65.4	62.8	59.4	62.4	65.4	63.4	**64.4**
	Not brushing regularly		89.2	89.0	88.6	94.4	90.6	84.9	87.5	83.8	96.2	87.9	**89.3**
	Not rinsing		66.0	80.6	64.3	85.2	71.4	65.4	85.0	64.1	82.7	70.3	**70.9**
	Consuming tobacco		63.6	80.6	66.2	44.4	58.8	59.0	77.5	60.2	53.8	58.1	**58.5**
	Do not know		1.0	0.6	0.9	1.9	1.3	3.5	1.9	3.8	0.0	2.5	**1.9**
3	**Reported Preventive Measures**												
	Not consuming Tobacco		61.2	79.4	63.3	46.3	57.6	57.9	73.1	60.0	42.3	54.2	**55.9**
	Cleaning teeth regularly		91.1	92.3	90.5	96.3	92.5	84.2	87.5	82.8	98.1	87.9	**90.2**
	Visiting dentist regularly		49.3	32.3	45.3	81.5	57.5	48.0	44.4	45.2	73.1	54.4	**56.0**
	Using flouride paste / powder		22.2	34.8	23.2	16.7	21.0	26.0	43.8	27.4	17.3	24.1	**22.6**
	Avoid sweet items		72.2	80.0	72.6	70.4	71.9	64.6	71.9	63.7	75.0	67.5	**69.7**
	Do not know		0.0	0.6	0.0	0.0	0.0	4.3	2.5	4.7	0.0	3.2	**1.6**

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

(i) About 94 percent of subjects across ages and both sexes were aware of oral health problems in the state as well as in both the regions.

(ii) About 91 percent of subjects across ages and both sexes, more in urban areas, reported their awareness of factors that cause oral health problems in the state as well as in both the regions. Most of them reported factors such as not brushing regularly (77-95 percent), followed by eating sweets/ice creams or chocolates (57-71 percent), and not rinsing (36-71 percent). Tobacco as a factor was reported by a higher percentage in Region 2 than in Region 1.

(iii) About 98 percent, except a little less in the case of 12-year-olds, was aware of the preventive measures. A large percent of them across age groups, both sexes and places of residence, reported cleaning of teeth regularly. This was followed, as the measure pointed out, by visiting dentist regularly. Nearly one-third in earlier age groups and fifty percent in older age group cited not consuming tobacco.

5.6 TOBACCO SMOKING AND CHEWING HABITS

Since smoking and chewing tobacco have a great affect on oral health, a set of questions on these aspects was asked. These questions were related to smoking habits, chewing pan with tobacco and drinking alcohol. This section discusses the findings of these questions, which were asked from subjects aged 35-44 years and 65-74 years since these age groups were considered relevant for the present study. It was assumed that a negligible fraction of people of young ages 5, 12, 15, have these habits. The responses that were obtained are presented in Tables 5.6.4 and 5.6.5 and are discussed here.

5.6.4 35-44-year-olds

About 38 percent of the respondents (72 percent males and 3 percent females and more in rural) reported the habit of smoking. Not much difference was noticed between the two regions. However there was more male than female smokers in both the regions. As regards nature of smoking, 54 percent, more females than males and more in rural reported smoking bidis. Another 25 percent all males and more in urban reported smoking cigarettes, while about 10 percent mostly females and in rural had the habit of smoking hookah. The remaining 12 percent of respondents, all males, had the habit of smoking cigars and chillum. As regards regions, there were comparatively more male smokers of cigarettes and more female smoker of Bidi in both regions.

When asked about the frequency of smoking, almost all reported smoking less than ten times a day. It was good to note that there were no heavy smokers in this age group.

The practice of chewing pan/pan masala with tobacco was very low (4.7 percent) and the practice was found entirely in rural areas. This practice of chewing pan/pan masala was higher in Region 1 than in Region 2. This was more in males (5.6 percent) than in females (3.8 percent). A majority of those who chewed pan/pan masala with tobacco reported having chewed it for the past 5-10 years (78 percent). Around 80 percent of the subjects reported chewing tobacco for less than 5 times in a day. These were more in Region 1 than in Region 2.

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 : Himachal Pradesh

	Tobacco Smoking or Chewing with Pan masala and Alcohol taking habits		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Smoking Habits**		**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Subjects smoking tobacco		73.8	84.7	75.1	65.5	71.7	4.3	5.1	4.8	0.0	3.2	**37.5**
2	**Nature of Smoking**		**113**	**134**	**210**	**37**	**247**	**5**	**8**	**13**	**0**	**13**	**260**
	Chillum		9.9	0.0	10.0	5.6	8.6	0.0	0.0	0.0	0.0	0.0	**4.3**
	Hookah		1.2	0.0	1.3	0.0	0.9	20.0	37.5	20.6	0.0	20.6	**10.3**
	Cigars		3.9	1.5	2.6	16.7	7.0	0.0	0.0	0.0	0.0	0.0	**8.4**
	Cigarettes		41.2	49.6	40.6	50.0	43.6	0.0	0.0	0.0	0.0	0.0	**25.0**
	Bidis		43.8	48.9	45.6	27.8	40.0	80.0	62.5	79.4	0.0	79.4	**53.6**
3	**Number of times Smoking in a day**												
	< 10 times		96.5	92.5	96.0	100.0	97.2	100.0	87.5	99.6	0.0	99.6	**99.8**
	10-20 times		3.5	7.5	4.0	0.0	2.8	0.0	12.5	0.4	0.0	0.4	**0.2**
	20 + times		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
4	**Chewing pan/pan masala habits**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Chew pan or pan masala with		7.8	1.9	8.5	0.0	5.6	5.2	1.9	5.7	0.0	3.8	**4.7**
5	**Number of years of chewing pan or**												
	pan masala with Tobacco	n=	**9**	**3**	**12**	**0**	**12**	**6**	**3**	**9**	**0**	**9**	**21**
	Less than 5 years		11.1	0.0	11.0	0.0	11.0	16.7	0.0	16.5	0.0	16.5	**13.8**
	5 - 10 years		88.9	####	89.0	0.0	89.0	66.7	####	67.0	0.0	67.0	**78.0**
	> 10 years		0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.5	0.0	16.5	**8.3**
6	**Number of times of chewing tobacco in a day**												
	Less than 5 times		77.8	33.3	77.5	0.0	77.5	83.3	0.0	82.5	0.0	82.5	**80.0**
	5 - 10 times		22.2	66.7	22.5	0.0	22.5	16.7	####	17.5	0.0	17.5	**20.0**
	> 10 times		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
7	**Alcohol consumption habits**	n=	**158**	**158**	**260**	**56**	**316**	**155**	**157**	**261**	**51**	**312**	**628**
	Consumption of alcohol		82.7	91.7	83.7	76.4	81.2	0.9	2.5	1.0	0.0	0.7	**41.0**
8	**Frequency of alcohol consumption**	n=	**128**	**145**	**230**	**43**	**273**	**1**	**4**	**5**	**0**	**5**	**278**
	Daily		0.0	5.6	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	**0.1**
	3 times a week		16.8	20.8	16.4	21.4	18.1	0.0	0.0	0.0	0.0	0.0	**9.1**
	Occasionally		78.6	66.0	78.6	73.8	77.1	100.0	####	###	0.0	###	**88.6**

41 percent (82 percent males and only 0.7 percent females) reported the habit of taking alcohol. These were more in Region 2 than in Region 1. Most of them (88.6 percent), more females than males and more in rural, were consuming it occasionally. Another 9 percent, all males and more in rural, reported taking alcohol three times a week. There were more taking alcohol in Region 1 than in Region 2 (Table- 5.6.4).

5.6.5 65-74 year olds

About 46 percent of the respondents, more males and more in rural, reported the habit of smoking. As regards nature of smoking, 46 percent of respondents, more males and more in rural, reported smoking Bidis. Another 14 percent, more males and more in urban, had the habit of smoking cigarettes. This is followed by another 35 percent (53 percent females compared to 16 percent males) reported smoking hookah.

As regards frequency of smoking, about 89 percent of subjects, 91 percent males, across places of residence, and 86 percent females, all in rural areas, reported smoking less than 10 times in a day. It is surprising to find that 13 percent of urbanites, females and no males, were smoking 20 and more times per day.

Perhaps this trend might reflect the influence of media and other emergent social pressures in an urban set up.

About 8 percent of males and 11 percent of females, more in rural than urban areas, reported chewing pan/pan masala with tobacco. About 47 percent of the subjects reported having had this habit for the past 5-10 years and another 41 percent had had this habit for more than 10 years. About half of the respondents reported chewing tobacco 5-10 times in a day.

About 85 percent of males and only 3 percent of females reported the habit of consuming alcohol. About 64 percent of these reported taking alcohol occasionally while 25 percent were consuming alcohol daily. They were more in urban than in rural areas (Table 5.6.5).

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

(i) About 40-45 percent, more males and more in rural areas, across age groups, had the habit of smoking. Not much difference was observed between the two regions. About half of smokers, more in rural areas, reported smoking bidis. This was followed by those smoking hookah, which were more in rural areas. Fortunately, almost all smokers, across both sexes and place of residence, were smoking less than ten times a day.

(ii) About 7 percent of subjects, across age groups and place of residence, were chewing pan/ pan masala with tobacco. About 87 percent of them, across age groups and both sexes and place of residence, had been chewing tobacco for the past 5 and more years.

(iii) About 42 percent, across age groups, more males, and more in rural areas, had the habit of drinking 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 : Himachal Pradesh

	Tobacco Smoking or Chewing with Pan masala and Alcohol taking habits		MALE					FEMALE					STATE TOTAL
			REGIONS		STATE			REGIONS		STATE			
			1	2	R	U	T	1	2	R	U	T	
1	**Smoking Habits**		**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	Subjects smoking tobacco		83.7	91.6	85.0	74.1	81.3	11.6	9.4	12.4	3.8	9.6	**45.5**
2	**Nature of Smoking**		**129**	**142**	**231**	**40**	**271**	**15**	**15**	**28**	**2**	**30**	**301**
	Chillum		8.1	0.0	7.6	10.0	8.3	0.0	0.0	0.0	0.0	0.0	**4.2**
	Hookah		18.3	4.9	18.7	10.0	16.0	47.9	33.3	45.9	100.0	53.1	**34.6**
	Cigars		2.3	2.1	2.2	2.5	2.3	0.0	0.0	0.0	0.0	0.0	**1.2**
	Cigarettes		19.1	24.6	18.2	30.0	21.8	7.4	0.0	7.5	0.0	6.5	**14.2**
	Bidis		52.3	68.3	53.3	47.5	51.5	44.6	66.7	46.6	0.0	40.4	**46.0**
3	**Number of times Smoking in a day**												
	< 10 times		91.9	81.0	91.8	90.0	91.2	96.7	66.7	99.2	0.0	86.0	**88.6**
	10-20 times		8.1	16.9	8.2	10.0	8.7	0.0	33.3	0.8	0.0	0.7	**4.7**
	20 + times		0.0	2.1	0.1	0.0	0.0	3.3	0.0	0.0	100.0	13.3	**6.7**
4	**Chewing pan/pan masala habits**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	Chew pan or pan masala with		9.8	5.8	10.3	3.7	8.1	12.9	8.1	13.3	7.7	11.4	**9.8**
5	**Number of years of chewing pan or**												
	pan masala with Tobacco	n=	**13**	**9**	**20**	**2**	**22**	**18**	**13**	**27**	**4**	**31**	**53**
	Less than 5 years		8.7	11.1	9.1	0.0	7.7	20.2	7.7	21.2	0.0	16.5	**12.1**
	5 - 10 years		47.5	55.6	45.6	100.0	54.0	41.8	61.5	43.2	25.0	39.2	**46.6**
	> 10 years		43.7	33.3	45.3	0.0	38.3	38.0	30.8	35.6	75.0	44.4	**41.4**
6	**Number of times of chewing tobacco in a day**												
	Less than 5 times		43.7	44.4	45.4	0.0	38.4	41.8	30.8	42.6	25.0	38.7	**38.6**
	5 - 10 times		54.4	44.4	54.4	50.0	53.7	48.5	38.5	49.8	25.0	44.3	**49.0**
	> 10 times		1.9	11.1	0.2	50.0	7.9	9.7	30.8	7.6	50.0	17.0	**12.5**
7	**Alcohol consumption habits**	n=	**159**	**155**	**260**	**54**	**314**	**156**	**160**	**264**	**52**	**316**	**630**
	Consumption of alcohol		86.6	96.1	87.9	77.8	84.5	2.8	6.9	3.0	1.9	2.6	**43.6**
8	**Frequency of alcohol consumption**	n=	**134**	**149**	**241**	**42**	**283**	**4**	**11**	**14**	**1**	**15**	**298**
	Daily		1.4	12.8	1.5	4.8	2.5	37.9	0.0	31.0	100.0	47.6	**25.1**
	3 times a week		15.8	18.1	15.3	21.4	17.2	0.0	9.1	0.6	0.0	0.5	**8.9**
	Occasionally		79.8	65.1	79.9	73.8	78.0	62.1	72.7	67.1	0.0	51.0	**64.5**

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) which helps identify the one third of the population with the highest caries (mean DMFT value) and the mean DMFT for this group. This identifies the group of population with the highest caries experience by number of teeth affected and therefore the high risk 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 only; its greatest significance lies in the ageing population in the 50-60 years or higher age groups.

6.1.1 Coronial caries

Table 6.01 presents 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. The dmft (deft)/ and DMFT values indicate the number of teeth in a mouth which have had caries experience until the time of examination.

Table 6.02 presents the mean number of teeth decayed missing and filled (mean dmft and mean DMFT) in the surveyed population and includes the Significant Caries Index (SIC). The table also gives the mean number of teeth present in the mouth and the percent subjects who are edentulous. Figure 6.01 present the caries prevalence by age and geographical location.

The prevalence proportion of caries experience in 5 year old subjects (primary teeth) was 51.1 percent. The dmft value of 1 to 3 was most prevalent among 33.4 percent of subjects (32.1 percent males and 34.6 percent females). About 10.8 percent of the subjects had experienced caries in upto one quarter of their teeth (dmft = 4 to 5). Around 5.9 percent of the subjects had experienced caries in more than one quarter but not more than one half of their teeth (dmft or deft value = 6 to 10).

Table 6.01. Percent subjects (with permanent teeth) with caries and with dmft/ DMFT values by age, sex and geographical area.

State: Himachal Pradesh

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=	158	157	315	**Region 1**	n=	159	155	314	157	157	314	158	155	313	159	156	315
With caries		62.0	57.3	59.7	With caries		89.9	81.3	85.6	89.8	87.3	88.6	100.0	96.8	98.4	99.4	100.0	99.7
dmft value 1-3		37.3	37.6	37.5	DMFT value 1-3		59.7	51.6	55.7	43.3	41.4	42.4	4.4	5.8	5.1	0.0	0.0	0.0
dmft value 4-5		14.6	12.1	13.4	DMFT level 4-8		26.4	28.4	27.4	38.9	38.9	38.9	33.5	32.9	33.2	4.4	5.8	5.1
dmft value 6-10		7.0	6.4	6.7	DMFT value 9-16		3.8	1.3	2.6	7.6	7.0	7.3	53.8	52.9	53.4	22.0	18.6	20.3
dmft value 11-15		2.5	1.3	1.9	DMFT value 17-24		0.0	0.0	0.0	0.0	0.0	0.0	5.1	5.2	5.2	13.8	13.5	13.7
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	0.6	0.0	0.3	8.2	7.1	7.7
					DMFT value 29 or more		0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	1.3	50.9	55.1	53.0
Region 2	n=	160	154	314	**Region 2**	n=	157	158	315	157	158	315	158	157	315	155	160	315
With caries		38.1	47.1	42.6	With caries		52.9	65.8	59.4	56.1	68.4	62.3	93.7	95.5	94.6	98.1	99.4	98.8
dmft value 1-3		26.9	31.6	29.3	DMFT value 1-3		28.0	35.4	31.7	22.3	32.3	27.3	19.6	14.6	17.1	3.2	0.6	1.9
dmft value 4-5		8.8	7.7	8.3	DMFT level 4-8		24.2	27.2	25.7	26.8	30.4	28.6	39.9	39.5	39.7	5.2	6.9	6.1
dmft value 6-10		2.5	7.7	5.1	DMFT value 9-16		0.6	3.2	1.9	7.0	5.7	6.4	31.6	39.5	35.6	18.7	22.5	20.6
dmft value 11-15		0.0	0.0	0.0	DMFT value 17-24		0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.9	20.6	25.6	23.1
dmft value 16 or more		0.0	0.0	0.0	DMFT value 25-28		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	3.8	4.8
					DMFT value 29 or more		0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.3	44.5	40.0	42.3
State Rural	n=	263	260	523	**State Rural**	n=	262	261	523	262	260	522	260	261	521	260	264	524
With caries		48.3	52.5	50.4	With caries		68.7	72.4	70.6	69.8	75.8	72.8	96.2	96.6	96.4	98.5	99.6	99.1
dmft value 1-3		34.2	34.9	34.6	DMFT value 1-3		42.4	41.4	41.9	32.1	35.8	34.0	13.1	10.7	11.9	1.9	0.4	1.2
dmft value 4-5		9.1	10.3	9.7	DMFT level 4-8		24.4	28.7	26.6	30.9	34.6	32.8	38.8	38.7	38.8	5.4	7.2	6.3
dmft value 6-10		4.2	7.3	5.8	DMFT value 9-16		1.9	2.3	2.1	6.9	5.4	6.2	39.6	43.3	41.5	20.4	21.2	20.8
dmft value 11-15		0.4	0.0	0.2	DMFT value 17-24		0.0	0.0	0.0	0.0	0.0	0.0	2.7	3.8	3.3	17.3	21.2	19.3
dmft value 16 or more		0.4	0.0	0.2	DMFT value 25-28		0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	6.9	5.7	6.3
					DMFT value 29 or more		0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.8	46.5	43.9	45.2
State Urban	n=	55	51	106	**State Urban**	n=	54	52	106	52	55	107	56	51	107	54	52	106
With caries		58.2	51.0	54.6	With caries		85.2	78.8	82.0	88.5	87.3	87.9	100.0	94.1	97.1	100.0	100.0	100.0
dmft value 1-3		21.8	33.3	27.6	DMFT value 1-3		51.9	53.8	52.9	36.5	41.8	39.2	7.1	7.8	7.5	0.0	0.0	0.0
dmft value 4-5		23.6	7.8	15.7	DMFT level 4-8		29.6	23.1	26.4	42.3	34.5	38.4	26.8	23.5	25.2	1.9	1.9	1.9
dmft value 6-10		7.3	5.9	6.6	DMFT value 9-16		3.7	1.9	2.8	9.6	10.9	10.3	57.1	60.8	59.0	20.4	17.3	18.9
dmft value 11-15		5.5	3.9	4.7	DMFT value 17-24		0.0	0.0	0.0	0.0	0.0	0.0	7.1	2.0	4.6	16.7	11.5	14.1
dmft value 16 or more		0.0	0.0	0.0	DMFT value 25-28		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	3.8	5.6
					DMFT value 29 or more		0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.9	53.7	65.4	59.6
State Total	n=	318	311	629	**State Total**	n=	316	313	629	314	315	629	316	312	628	314	316	630
With caries		50.0	52.2	51.1	With caries		71.5	73.5	72.5	72.9	77.8	75.4	96.8	96.2	96.5	98.7	99.7	99.2
dmft value 1-3		32.1	34.6	33.4	DMFT value 1-3		44.0	43.5	43.8	32.8	36.8	34.8	12.0	10.3	11.2	1.6	0.3	1.0
dmft value 4-5		11.6	9.9	10.8	DMFT level 4-8		25.3	27.8	26.6	32.8	34.6	33.7	36.7	36.2	36.5	4.8	6.3	5.6
dmft value 6-10		4.7	7.1	5.9	DMFT value 9-16		2.2	2.2	2.2	7.3	6.3	6.8	42.7	46.2	44.5	20.4	20.6	20.5
dmft value 11-15		1.3	0.6	1.0	DMFT value 17-24		0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.5	3.5	17.2	19.6	18.4
dmft value 16 or more		0.3	0.0	0.2	DMFT value 25-28		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	7.0	5.4	6.2
					DMFT value 29 or more		0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.8	47.8	47.5	47.7

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. Related Tables : **6.02** and **6.03.**

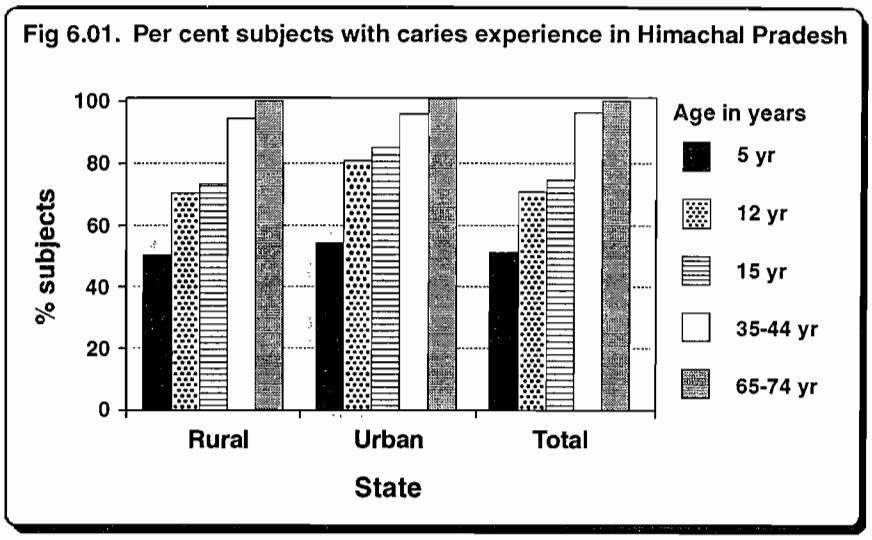
Table 6.02. Mean number of teeth decayed, missng, filled by age, sex and geographical area.

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313	158	156	314
Mean no. of teeth present (mnt/MNT)		20.0	20.0	20.0	28.0	27.8	27.9	28.0	27.9	28.0	27.5	28.6	28.1	10.3	9.8	10.1
Mean dmft and Mean DMFT		2.3	1.8	2.1	2.9	2.5	2.7	3.5	3.5	3.5	10.2	9.2	9.7	24.2	25.0	24.6
Mean no. of Decayed teeth (dt/DT)		2.2	1.7	2.0	2.7	2.4	2.6	3.3	3.2	3.3	5.2	5.0	5.1	2.3	2.7	2.5
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	4.5	3.4	4.0	21.7	22.2	22.0
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	0.5	0.8	0.7	0.2	0.0	0.1
SIC Index		5.4	4.3	4.9	5.4	4.9	5.2	6.4	6.4	6.4	15.7	13.8	14.8	32.0	32.0	32.0
No. of subjects edentulous		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	68	73	70.5
Region 2	n=	160	154	314	157	158	315	157	158	315	158	157	315	155	160	315
Mean no. of teeth present (mnt/MNT)		20.0	19.9	20.0	28.0	28.0	28.0	28.0	28.0	28.0	30.5	30.4	30.5	11.8	13.1	12.5
Mean dmft and Mean DMFT		1.1	1.6	1.4	1.9	2.4	2.2	2.4	2.7	2.6	6.9	7.5	7.2	22.7	22.0	22.4
Mean no. of Decayed teeth (dt/DT)		1.1	1.6	1.4	1.9	2.4	2.2	2.4	2.7	2.6	5.4	5.9	5.7	2.5	3.1	2.8
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	1.5	1.6	1.6	20.2	18.9	19.6
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	0.0	0.0	0.0	0.0	0.0	0.0
SIC Index		3.2	3.9	3.6	4.7	5.2	5.0	6.0	5.8	5.9	12.2	12.5	12.4	32.0	32.0	32.0
No. of subjects edentulous		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	67	59	63.0
State Rural	n=	263	260	523	262	261	523	262	260	522	260	261	521	259	264	523
Mean no. of teeth present (mnt/MNT)		20.0	20.0	20.0	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.3	0.4	0.4
Mean dmft and Mean DMFT		2.0	1.8	1.9	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.7	0.7	0.7
Mean no. of Decayed teeth (dt/DT)		2.0	1.6	1.8	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1
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	0.0	0.0	0.0	0.6	0.6	0.6
Mean no. of Filled teeth (ft/FT)		0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SIC Index		3.8	3.9	3.9	4.9	5.1	5.0	6.0	5.9	6.0	13.6	13.1	13.4	32.0	32.0	32.0
No. of subjects edentulous		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	110	104	107.0
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Mean no. of teeth present (mnt/MNT)		19.9	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean dmft and Mean DMFT		2.7	2.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean no. of Decayed teeth (dt/DT)		2.6	2.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean no. of Missing teeth (mt/MT)		0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0	0.0
SIC Index		6.4	5.1	5.8	6.1	4.9	5.5	6.8	7.1	7.0	15.5	13.5	14.5	32.0	32.0	32.0
No. of subjects edentulous		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25	28	26.5
State Total	n=	318	311	629	316	313	629	314	315	629	316	312	628	313	316	629
Mean no. of teeth present (mnt/MNT)		20.0	20.0	20.0	28.0	27.9	28.0	28.0	28.0	28.0	27.8	28.6	28.2	10.8	10.8	10.8
Mean dmft and Mean DMFT		2.1	1.8	2.0	2.8	2.5	2.7	3.4	3.4	3.4	10.0	9.1	9.6	23.9	24.3	24.1
Mean no. of Decayed teeth (dt/DT)		2.1	1.7	1.9	2.7	2.4	2.6	3.2	3.1	3.2	5.6	5.4	5.5	2.6	3.0	2.8
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	4.2	3.4	3.8	21.2	21.2	21.2
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	0.2	0.4	0.3	0.1	0.0	0.1
SIC Index		4.3	4.1	4.2	5.1	5.1	5.1	6.1	6.1	6.1	14.1	13.3	13.7	32.0	32.0	32.0
No. of subjects edentulous		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	135	132	133.5

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

About 4.7 percent males and 7.1 percent females had dmft value of 6 to 10. Caries experience was higher in Region -1 as compared to Region-2. There were no major urban/rural differentials.



The proportion of subjects with caries experience (permanent teeth) having one or more decayed, missing or filled teeth (DMFT>0) was around 72 to 76 percent in the ages 12 and 15 years. The proportion of subjects with caries experience appeared to rise rapidly in the age groups of 35-44 and 65-74 years with 96.5 and 99.2 percent subjects being affected, respectively

The DMFT value of 1 to 3 was most prevalent for the ages 12 and 15 years. The DMFT value of 9 to 16 was prevalent for the age group 35-44 years (44.5 percent) and the DMFT value was 29 or more for a majority of subjects in the 65-74 years age group (47.7 percent).

The prevalence of caries was higher in the urban as compared to the rural areas. Caries prevalence was significantly higher in Region-1 as compared to Region-2, especially for the age groups of 12 and 15 years.

Among the 5 years olds the mean dmft for male and female subjects was 2.1 and 1.8 teeth, respectively. The decayed teeth (dt) component contributed to almost whole of the dmft score in this age group.

The mean DMFT value for the 12 and 15 year olds was about 2.7 and 3.4 teeth, respectively. For the age groups 35-44 and 65-74 years the mean DMFT was about 9.6 and 24.1 teeth, respectively. The DT component contributed the most to DMFT scores for all age groups, except for 65-74 year age group where mean MT was the main contributing factor. The pattern of distribution was almost similar in rural and urban areas. The mean DMFT value appeared to rise steadily with age and was highest for the 65-74 year age group. This indicated a high cumulative level of caries experience as age advanced in the subjects surveyed. The Significant Caries Index (SIC) was consistently high across all age groups and was highest (32 teeth) for the 65-74 year age group. The figures were slightly higher in urban areas compared to rural areas.

The number of teeth present in the mouth of individuals surveyed decreased as age advanced. While almost the full complement of teeth were present in subjects 5, 12 and 15 years, three to four teeth were missing on an average among subjects of the 35-44 year age group. However, in the 65-74 year age group the mean number of teeth present apparently dropped to 10.8 teeth indicating a loss of more than two-thirds of that normally present 32 teeth in an average mouth. These findings suggest a cumulative high tooth mortality due to dental caries, periodontal disease, orthodontic reasons or other causes as age advanced.

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

Missing Teeth		35-44 years			65-74 years		
		M	F	T	M	F	T
Region 1	n=	**158**	**155**	**313**	**158**	**156**	**314**
Mean no. of teeth missing due to caries		4.1	3.0	**3.6**	20.9	21.9	**21.4**
Mean no. of teeth missing due to other reasons		0.4	0.3	**0.4**	0.8	0.3	**0.6**
Region 2	n=	**158**	**157**	**315**	**155**	**160**	**315**
Mean no. of teeth missing due to caries		1.4	1.5	**1.5**	20.0	18.8	**19.4**
Mean no. of teeth missing due to other reasons		0.1	0.1	**0.1**	0.3	0.1	**0.2**
State Rural	n=	**260**	**261**	**521**	**259**	**264**	**523**
Mean no. of teeth missing due to caries		3.8	3.1	**3.5**	20.2	20.5	**20.4**
Mean no. of teeth missing due to other reasons		0.4	0.3	**0.4**	0.8	0.4	**C.6**
State Urban	n=	**56**	**51**	**107**	**54**	**52**	**106**
Mean no. of teeth missing due to caries		4.5	2.8	**3.7**	22.2	24.7	**23.5**
Mean no. of teeth missing due to other reasons		0.4	0.3	**0.4**	0.9	0.0	**0.5**
State Total	n=	**316**	**312**	**628**	**313**	**316**	**629**
Mean no. of teeth missing due to caries		3.9	3.1	**3.5**	20.4	20.9	**20.7**
Mean no. of teeth missing due to other reasons		0.4	0.3	**0.4**	0.8	0.4	**0.6**

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. Related Tables : **6.01 and 6.02.**

The data on the mean number of teeth missing due to caries or other reasons for only two age groups 35-44 and 65-74 year age group, are presented. The mean number was 3.9 teeth (4.3 teeth for males and 3.4 teeth for females) in the 35-44 year age group. For the 65-74 year age group it was 21.3 teeth (21.2 teeth for males and 21.3 teeth for females). Most of the missing teeth were due to dental caries, more in urban than rural areas and more in Region-1 than in Region-2.

6.1.2 Root caries

The data on the percent subjects with root caries and fillings, if any, and the mean number of teeth with root caries and fillings, if any, are presented in Table 6.04. Since root caries does not appear in children and young adults, the data on root caries is presented only for the two age groups of 35-44 and 65-74 years.

The proportion of subjects with root caries was 19.7 percent and 25.1 percent for the 35-44 and 65-74 year age groups, respectively.

There was no subjects with root fillings. The prevalence of root caries was slightly higher among females than males, for both the age groups. There were no major differentials in urban/rural areas and across the regions.

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

Root Caries		35-44 years			65-74 years		
		M	F	T	M	F	T
Region 1	n=	158	155	313	159	156	315
% Subjects with Root caries		18.6	26.7	22.7	23.5	28.8	26.2
Mean nos of teeth with Root Caries		0.4	0.6	0.5	0.9	1.3	1.1
% 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 2	n=	158	157	315	155	160	315
% Subjects with Root caries		16.6	19.1	17.9	18.7	30.0	24.4
Mean nos of teeth with Root Caries		0.3	0.4	0.4	0.6	0.9	0.8
% 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=	260	261	521	260	264	524
% Subjects with Root caries		17.2	22.2	19.7	20.5	29.6	25.1
Mean nos of teeth with Root Caries		0.4	0.5	0.5	0.8	1.1	1.0
% 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=	56	51	107	54	52	106
% Subjects with Root caries		20.0	15.7	17.9	20.4	28.8	24.6
Mean nos of teeth with Root Caries		0.5	0.5	0.5	0.8	1.1	1.0
% 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 Total	n=	316	312	628	314	316	630
% Subjects with Root caries		17.3	22.0	19.7	20.5	29.6	25.1
Mean nos of teeth with Root Caries		0.4	0.5	0.5	0.8	1.1	1.0
% 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

6.1.3 Treatment need

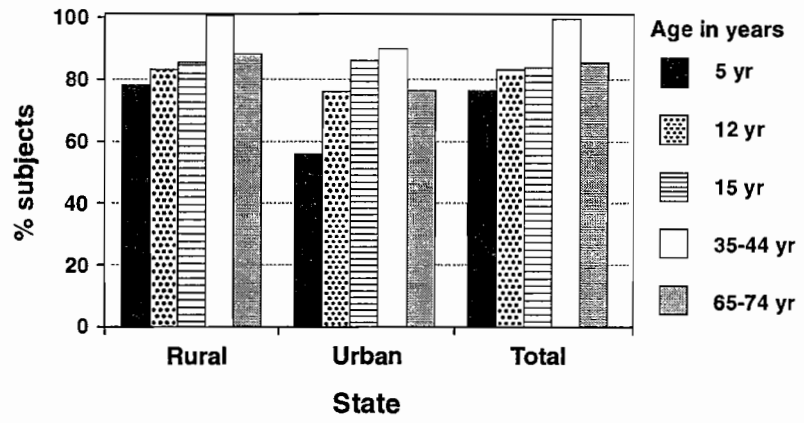
Table 6.05 presents the percent subjects requiring preventive and curative care by type of treatment needed and Table 6.06 presents the mean number of teeth requiring treatment, by type of treatment. Fig. 6.05 and 6.06 present the high points of prevalence and mean number of teeth with treatment need by age and location in the state.

The subjects were clinically assessed for their need for both preventive and curative care, based on their caries experience and dentition status. Preventive care need 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.

Overall a direct correlation existed between age and treatment need, except for the 65-74 year age group (Figure 6.05). The 5 year olds had the least treatment need (76.2 percent) while the need was highest for the 35-44 year age group (97.7 percent).

The type of treatment varied with age. The need for one or more surface filling was very high (80 to 90 percent) for the age groups of 12, 15 and 35-44 years. The need for extraction was directly related to age so that the lowest age group of 5 years required the least extractions (1.7 percent) while the need was highest in the highest age group of 65-74 years (34 percent).

Fig 6.05. Per cent subjects with treatment need in Himachal Pradesh

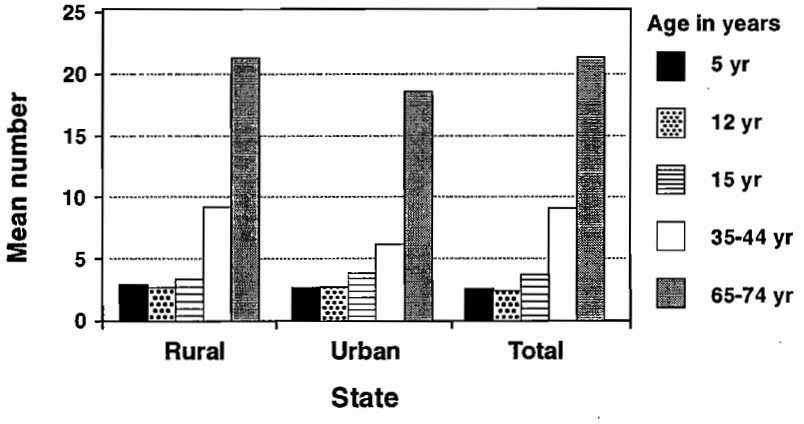


Preventive care and fissure sealant was recommended by the examining dentists for only 18.7 percent subjects among the 5 year olds and for none of the male or female subjects in any other age group.

There was a significant proportion of subjects in the higher age groups of 35 years and above who were indicated for other, but unspecified treatment care (63-85 percent), which was predominantly 'need for other care' rose gradually across the age groups from 0.1percent to 84.5 percent. The need for pulp care was seen more in the 15 and 35-44 year age group than among other age groups. The need for treatment was more in rural than urban areas. There was no significant difference in the pattern of need by type of need between male and female subjects. The need for care was more in Region-1 than in Region-2, except for the 65-74 year age group.

The high levels of mean number of teeth-decayed and missing, together with negligible numbers of filled teeth indicated that either there was scant priority for treatment of decayed teeth or it was not affordable for most people. Another possibility was the inaccessibility (difficult to reach dental facilities) or non-availability (97 percent) of dental services in the area where the subjects resided. Lack of priority on the part of subjects to avail the services appeared to be the primary cause for their neglect of dental health. Intensive motivational health education might perhaps, help in raising the sense of priority of oral health care in the peoples mind.

Fig 6.06. Mean number of teeth with treatment need in Himachal Pradesh



The mean number of teeth requiring treatment was highest (20.6 teeth) in the age group of 65-74 years (19.6 teeth for males and 21.6 teeth for females). The mean number of teeth requiring treatment was

Table 6.05. Percent subjects with treatment need by age, sex and geographical area.

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313	159	156	315
Treatment needed		79.4	75.0	**77.2**	89.8	81.5	**85.7**	89.7	85.5	**87.6**	98.2	97.5	**97.9**	82.4	91.4	**86.9**
Preventive care & fissure sealant		20.7	17.9	**19.3**	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		69.9	61.4	**65.7**	88.0	78.0	**83.0**	87.1	82.0	**84.6**	90.3	88.4	**89.4**	30.3	28.4	**29.4**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.9	**1.0**	0.2	0.2	**0.2**	1.7	0.0	**0.9**
Pulp care		6.1	1.2	**3.7**	6.4	9.1	**7.8**	13.7	13.1	**13.4**	12.8	15.5	**14.2**	2.8	0.2	**1.5**
Extraction		1.7	1.7	**1.7**	2.8	1.9	**2.4**	1.7	0.2	**1.0**	27.7	31.4	**29.6**	32.1	36.3	**34.2**
Need for other care		0.2	0.0	**0.1**	0.9	1.1	**1.0**	2.1	3.4	**2.8**	64.7	63.3	**64.0**	80.2	88.8	**84.5**
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315	155	160	315
Treatment needed		39.0	50.3	**44.7**	52.2	66.2	**59.2**	56.4	69.0	**62.7**	93.0	94.3	**93.7**	91.0	93.1	**92.1**
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		38.4	50.3	**44.4**	52.2	66.2	**59.2**	55.8	67.7	**61.8**	89.2	94.3	**91.8**	40.0	45.6	**42.8**
Crown & Veneer		0.0	1.3	**0.7**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.6	0.6	**0.6**	0.0	0.0	**0.0**
Pulp care		1.3	1.3	**1.3**	0.6	2.5	**1.6**	3.2	2.5	**2.9**	7.0	7.6	**7.3**	1.3	3.8	**2.6**
Extraction		0.0	0.0	**0.0**	0.0	0.6	**0.3**	1.3	0.0	**0.7**	19.1	24.2	**21.7**	21.9	33.1	**27.5**
Need for other care		0.0	0.0	**0.0**	0.0	0.6	**0.3**	2.6	1.9	**2.3**	33.8	36.9	**35.4**	85.2	85.0	**85.1**
State Rural	n=	263	261	524	262	261	523	262	260	522	260	261	521	260	264	524
Treatment needed		80.4	76.6	**78.5**	89.3	82.2	**85.8**	88.7	84.8	**86.8**	98.8	98.0	**98.4**	84.0	92.3	**88.2**
Preventive care & fissure sealant		22.4	19.2	**20.8**	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		70.2	61.9	**66.1**	87.5	78.5	**83.0**	85.9	81.0	**83.5**	91.2	88.6	**89.9**	31.7	30.3	**31.0**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.9	**1.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**
Pulp care		5.6	1.0	**3.3**	6.5	9.4	**8.0**	13.8	12.4	**13.1**	12.5	14.2	**13.4**	2.8	0.1	**1.5**
Extraction		1.9	1.8	**1.9**	2.8	1.9	**2.4**	1.9	0.0	**1.0**	27.9	32.4	**30.2**	32.1	36.4	**34.3**
Need for other care		0.0	0.0	**0.0**	0.9	1.0	**1.0**	1.9	2.9	**2.4**	66.0	63.6	**64.8**	82.0	89.3	**85.7**
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Treatment needed		59.3	52.9	**56.1**	83.3	70.6	**77.0**	90.2	87.3	**88.8**	90.9	92.2	**91.6**	70.4	82.7	**76.6**
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		59.3	52.9	**56.1**	83.3	70.6	**77.0**	90.2	87.3	**88.8**	81.8	88.2	**85.0**	20.4	15.4	**17.9**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**	1.8	2.0	**1.9**	0.0	0.0	**0.0**
Pulp care		9.3	3.9	**6.6**	3.7	3.9	**3.8**	9.8	16.4	**13.1**	14.5	25.5	**20.0**	1.9	1.9	**1.9**
Extraction		0.0	0.0	**0.0**	1.9	2.0	**2.0**	0.0	1.8	**0.9**	23.6	19.6	**21.6**	29.6	34.6	**32.1**
Need for other care		1.9	0.0	**1.0**	0.0	2.0	**1.0**	3.9	7.3	**5.6**	45.5	52.9	**49.2**	64.8	82.7	**73.8**
State Total	n=	318	312	630	316	313	629	314	315	629	316	312	628	314	316	630
Treatment needed		78.1	74.2	**76.2**	88.5	81.0	**84.8**	88.6	85.0	**86.8**	98.0	97.4	**97.7**	82.7	91.4	**87.1**
Preventive care & fissure sealant		20.0	17.3	**18.7**	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		68.9	61.0	**65.0**	86.9	77.6	**82.3**	86.1	81.5	**83.8**	90.2	88.6	**89.4**	30.6	28.9	**29.8**
Crown & Veneer		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.9	**1.0**	0.2	0.2	**0.2**	1.7	0.0	**0.9**
Pulp care		6.0	1.2	**3.6**	6.2	8.8	**7.5**	13.4	12.8	**13.1**	12.6	15.3	**14.0**	2.7	0.3	**1.5**
Extraction		1.7	1.6	**1.7**	2.7	1.9	**2.3**	1.7	0.2	**1.0**	27.4	31.2	**29.3**	31.8	36.2	**34.0**
Need for other care		0.2	0.0	**0.1**	0.8	1.0	**0.9**	2.1	3.4	**2.8**	63.7	62.4	**63.1**	80.3	88.6	**84.5**

Note: Related Table 6.06.

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

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313	158	156	314
Treatment needed		3.0	2.5	**2.8**	3.8	3.5	**3.7**	4.5	4.5	**4.5**	9.2	8.4	**8.8**	19.6	21.7	**20.7**
Preventive care/ fissure sealant		0.8	0.7	**0.8**	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	1.8	**2.0**	3.6	3.2	**3.4**	4.3	4.2	**4.3**	4.7	4.2	**4.5**	1.4	1.3	**1.4**
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		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.2	0.2	**0.2**	0.2	0.2	**0.2**	0.0	0.0	**0.0**
Extraction		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.0	0.0	**0.0**	1.1	1.2	**1.2**	2.4	2.5	**2.5**
Need for other care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	3.3	2.7	**3.0**	15.7	17.9	**16.8**
Region 2	n=	160	153	313	157	158	315	157	158	315	158	157	315	155	160	315
Treatment needed		1.2	1.6	**1.4**	0.8	1.0	**0.9**	1.0	1.1	**1.1**	6.3	7.0	**6.7**	19.8	19.1	**19.5**
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		1.1	1.6	**1.4**	0.8	1.0	**0.9**	1.0	1.1	**1.1**	4.9	5.3	**5.1**	1.8	2.1	**2.0**
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		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.0	0.0	**0.0**
Extraction		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.4	0.5	**0.5**	0.8	1.2	**1.0**
Need for other care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.9	1.1	**1.0**	17.1	15.8	**16.5**
State Rural	n=	263	259	522	262	261	523	262	260	522	260	261	521	259	264	523
Treatment needed		3.0	2.5	**2.8**	2.8	2.6	**2.7**	3.2	3.2	**3.2**	9.4	8.6	**9.0**	20.0	21.6	**20.8**
Preventive care/ fissure sealant		0.9	0.7	**0.8**	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		2.0	1.8	**1.9**	2.6	2.4	**2.5**	3.0	3.0	**3.0**	4.9	4.3	**4.6**	1.5	1.4	**1.5**
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		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.1	0.2	**0.2**	0.2	0.2	**0.2**	0.0	0.0	**0.0**
Extraction		0.0	0.0	**0.0**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	1.1	1.3	**1.2**	2.4	2.5	**2.5**
Need for other care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.3	2.7	**3.0**	16.0	17.8	**16.9**
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Treatment needed		2.7	2.0	**2.4**	2.7	2.2	**2.5**	3.6	3.5	**3.6**	6.5	6.0	**6.3**	15.8	21.6	**18.7**
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		2.4	2.0	**2.2**	2.6	2.0	**2.3**	3.5	3.3	**3.4**	3.3	3.3	**3.3**	0.4	0.8	**0.6**
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**	0.0	0.0	**0.0**
Pulp care		0.2	0.0	**0.1**	0.0	0.0	**0.0**	0.1	0.2	**0.2**	0.2	0.3	**0.3**	0.0	0.0	**0.0**
Extraction		0.0	0.0	**0.0**	0.0	0.1	**0.1**	0.0	0.0	**0.0**	0.7	0.5	**0.6**	1.8	2.2	**2.0**
Need for other care		0.1	0.0	**0.1**	0.0	0.0	**0.0**	0.0	0.1	**0.1**	2.3	1.7	**2.0**	13.6	18.7	**16.2**
State Total	n=	318	310	628	316	313	629	314	315	629	316	312	628	313	316	629
Treatment needed		3.0	2.5	**2.8**	2.8	2.5	**2.7**	3.3	3.2	**3.3**	9.1	8.3	**8.7**	19.6	21.6	**20.6**
Preventive care/ fissure sealant		0.8	0.7	**0.8**	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	1.8	**2.0**	2.6	2.4	**2.5**	3.1	3.0	**3.1**	4.7	4.3	**4.5**	1.4	1.4	**1.4**
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		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.1	0.2	**0.2**	0.2	0.2	**0.2**	0.0	0.0	**0.0**
Extraction		0.0	0.0	**0.0**	0.1	0.0	**0.1**	0.0	0.0	**0.0**	1.0	1.2	**1.1**	2.3	2.4	**2.4**
Need for other care		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.2	2.6	**2.9**	15.8	17.8	**16.8**

Note: Related Table 6.05.

lowest (2.7 teeth) in subjects aged 12 years (2.8 teeth for males and 2.5 teeth for females). The scenario was almost similar for both rural and urban areas and across the regions.

The mean number of teeth indicated for extraction was highest (2.4 teeth) for the 65-74 year age group (2.3 teeth for males and 2.4 teeth for females).

A relatively high mean number of teeth (about 16.8 teeth) among the 65-74 year olds, were indicated for other, but unspecified care which was mainly prosthetic need. The pattern was similar for both males and females, for rural and urban areas and across regions.

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. In a addition, the loss of epithelial attachment was also measured to provide an indication of the status of periodontal health.

Table 6.07 presents the percent subjects with their periodontal status (bleeding, Calculus and pockets) by level of severity and Table 6.08 present the mean number of teeth with bleeding, calculus and pockets. Fig. 6.07 & 6.08 presents the charted data.

The prevalence of periodontal disease among 5 year olds was nil and was high among other age groups. The prevalence was highest in the 35-44 year age group (about 96.6 percent) and lowest in the 65-74 year age group (39.7 percent).

Invariably, across all age groups, bleeding and calculus emerged as the most prevalent conditions except for the 65-74 year age group, where the calculus (21 percent) was most prevalent than bleeding. The pattern was almost similar for males and females and for rural and urban areas.

Fig 6.07. Per cent subjects with periodontal disease in Himachal Pradesh

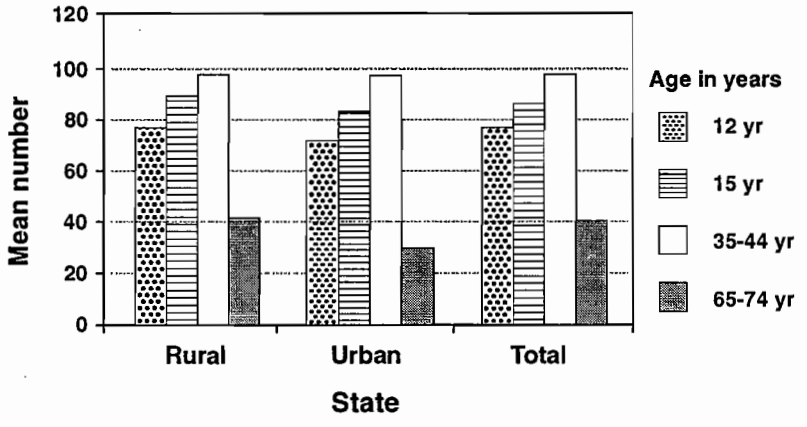


Table: 6.07 Percent subjects with bleeding, calculus and/ or pockets by age, sex, and geographical area.

State: Himachal Pradesh

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=	5	7	12	158	153	311	156	157	313	154	155	309	159	155	314
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	76.3	78.7	**77.5**	91.1	88.1	**89.6**	96.0	97.0	**96.5**	36.6	41.5	**39.1**
with bleeding		0.0	0.0	**0.0**	16.8	20.2	**18.5**	15.5	9.1	**12.3**	0.9	2.7	**1.8**	0.9	0.9	**0.9**
with calculus		0.0	0.0	**0.0**	7.2	13.4	**10.3**	7.6	11.8	**9.7**	7.8	8.4	**8.1**	2.5	2.6	**2.6**
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**	0.0	4.7	**2.4**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.0	0.2	**1.1**	3.8	8.6	**6.2**
with bleeding or higher		0.0	0.0	**0.0**	69.1	65.3	**67.2**	81.8	76.4	**79.1**	65.0	67.3	**66.2**	17.6	8.2	**12.9**
with calculus or higher		0.0	0.0	**0.0**	7.2	13.4	**10.3**	9.3	11.8	**10.6**	25.5	26.7	**26.1**	9.5	14.8	**12.2**
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**	3.6	2.8	**3.2**	5.7	9.9	**7.8**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.0	0.2	**1.1**	3.8	8.6	**6.2**
Region 2	n=	1	0	1	157	158	315	157	158	315	157	157	314	150	156	306
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	49.0	63.1	**56.1**	55.8	62.7	**59.3**	95.5	99.4	**97.5**	57.3	62.2	**59.8**
with bleeding		0.0	0.0	**0.0**	21.0	25.5	**23.3**	21.8	30.4	**26.1**	3.8	5.7	**4.8**	0.0	0.0	**0.0**
with calculus		0.0	0.0	**0.0**	3.2	4.5	**3.9**	8.3	7.0	**7.7**	26.3	19.1	**22.7**	2.7	1.9	**2.3**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.3	0.6	**1.0**	1.3	0.6	**1.0**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.8	3.8	**3.8**	35.3	41.0	**38.2**
with bleeding or higher		0.0	0.0	**0.0**	45.9	58.6	**52.3**	47.4	55.7	**51.6**	46.8	54.1	**50.5**	8.0	3.8	**5.9**
with calculus or higher		0.0	0.0	**0.0**	3.2	4.5	**3.9**	8.3	7.0	**7.7**	43.6	38.2	**40.9**	8.0	14.7	**11.4**
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**	1.3	3.2	**2.3**	6.0	2.6	**4.3**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	3.8	3.8	**3.8**	35.3	41.0	**38.2**
State Rural	n=	2	4	6	261	259	520	262	260	522	256	261	517	255	260	515
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	76.1	78.9	**77.5**	91.4	87.5	**89.5**	96.0	97.2	**96.6**	37.7	43.8	**40.8**
with bleeding		0.0	0.0	**0.0**	69.5	64.5	**67.0**	82.0	74.9	**78.5**	64.4	66.0	**65.2**	17.8	8.5	**13.2**
with calculus		0.0	0.0	**0.0**	60.5	61.0	**60.8**	77.0	78.9	**78.0**	86.9	91.1	**89.0**	23.5	20.1	**21.8**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.9	0.0	**0.5**	2.7	0.0	**1.4**	38.5	40.1	**39.3**	18.8	22.7	**20.8**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	27.9	28.0	**28.0**	22.7	25.0	**23.9**
with bleeding or higher		0.0	0.0	**0.0**	69.5	64.5	**67.0**	82.0	74.9	**78.5**	64.4	66.0	**65.2**	17.8	8.5	**13.2**
with calculus or higher		0.0	0.0	**0.0**	6.6	14.4	**10.5**	9.4	12.6	**11.0**	25.6	28.2	**26.9**	9.5	15.4	**12.5**
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**	3.9	2.9	**3.4**	5.7	10.3	**8.0**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.1	0.1	**1.1**	4.7	9.6	**7.2**
State Urban	n=	4	3	7	54	52	106	51	55	106	55	51	106	54	51	105
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	70.4	72.5	**71.5**	78.0	87.3	**82.7**	96.3	96.1	**96.2**	31.5	25.5	**28.5**
with bleeding		0.0	0.0	**0.0**	59.3	70.6	**65.0**	70.0	83.6	**76.8**	64.8	76.5	**70.7**	13.0	3.9	**8.5**
with calculus		0.0	0.0	**0.0**	40.7	29.4	**35.1**	50.0	67.3	**58.7**	92.6	82.4	**87.5**	20.4	11.8	**16.1**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**	18.5	17.6	**18.1**	11.1	11.8	**11.5**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**	16.7	5.9	**11.3**	13.0	15.7	**14.4**
with bleeding or higher		0.0	0.0	**0.0**	59.3	70.6	**65.0**	70.0	83.6	**76.8**	64.8	76.5	**70.7**	13.0	3.9	**8.5**
with calculus or higher		0.0	0.0	**0.0**	11.1	2.0	**6.6**	8.0	3.6	**5.8**	29.6	15.7	**22.7**	9.3	9.8	**9.6**
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**	0.0	2.0	**1.0**	5.6	3.9	**4.8**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	2.0	**2.0**	3.7	7.8	**5.8**
State Total	n=	6	7	13	315	311	626	313	315	628	311	312	623	309	311	620
With bleeding,calculus, or pockets		0.0	0.0	**0.0**	75.4	78.2	**76.8**	89.9	87.3	**88.6**	96.0	97.1	**96.6**	37.2	42.2	**39.7**
with bleeding		0.0	0.0	**0.0**	68.3	65.1	**66.7**	80.7	75.7	**78.2**	64.4	66.9	**65.7**	17.3	8.0	**12.7**
with calculus		0.0	0.0	**0.0**	58.4	57.8	**58.1**	74.3	77.4	**75.9**	87.5	90.2	**88.9**	23.1	19.3	**21.2**
with pockets 4-5 mm		0.0	0.0	**0.0**	0.8	0.0	**0.4**	2.5	0.2	**1.4**	36.3	37.9	**37.1**	18.0	21.6	**19.8**
with pockets 6 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.2	**0.1**	26.7	25.9	**26.3**	21.8	24.3	**23.1**
with bleeding or higher		0.0	0.0	**0.0**	68.3	65.1	**66.7**	80.7	75.7	**78.2**	64.4	66.9	**65.7**	17.3	8.0	**12.7**
with calculus or higher		0.0	0.0	**0.0**	7.1	13.1	**10.1**	9.3	11.6	**10.5**	26.1	27.1	**26.6**	9.5	14.8	**12.2**
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**	3.5	2.8	**3.2**	5.7	9.7	**7.7**
with pockets 6mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.0	0.3	**1.2**	4.8	9.6	**7.2**

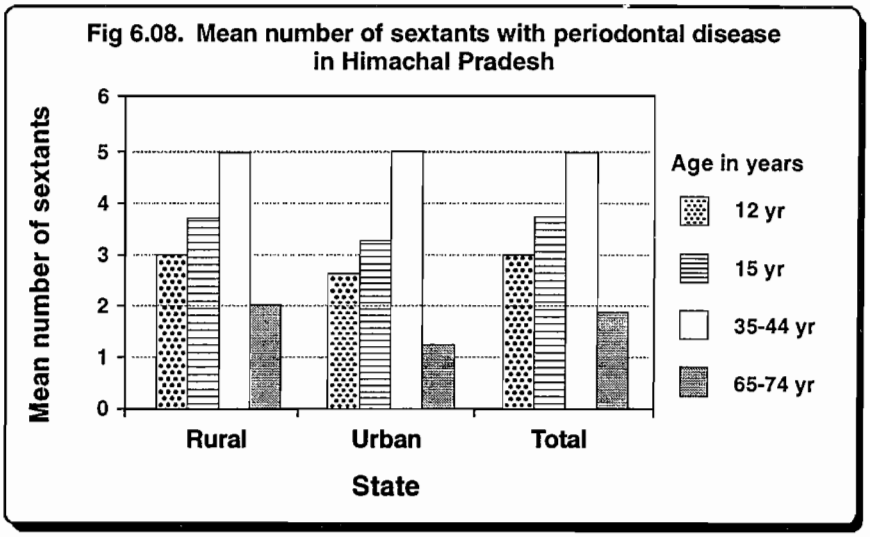
Note: Related Table 6.08.

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

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313	159	156	315
Mean no. of healthy sextants		0.1	0.2	0.2	2.9	3.0	3.0	2.2	2.3	2.3	0.7	0.7	0.7	0.1	0.1	0.1
With bleeding, calculus, pockets		0.0	0.0	0.0	3.1	2.9	3.0	3.8	3.7	3.8	4.9	5.1	5.0	1.8	1.9	1.9
with bleeding		0.0	0.0	0.0	1.8	1.6	1.7	2.1	2.1	2.1	1.4	1.7	1.6	0.3	0.1	0.2
with calculus		0.0	0.0	0.0	1.2	1.3	1.3	1.6	1.6	1.6	2.2	2.0	2.1	0.5	0.4	0.5
with pockets(4-5 mm)		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.8	0.9	0.9	0.4	0.4	0.4
with pockets (6mm 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	0.7	0.9	0.8
Excluded sextants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	3.9	3.7	3.8
Not recorded		5.9	5.8	5.9	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.3
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315	155	160	315
Mean no. of healthy sextants		0.0	0.0	0.0	4.3	3.9	4.1	4.1	3.9	4.0	1.7	1.3	1.5	0.1	0.0	0.1
With bleeding, calculus, pockets		0.0	0.0	0.0	1.7	2.1	1.9	1.9	2.1	2.0	4.3	4.7	4.5	2.2	2.6	2.4
with bleeding		0.0	0.0	0.0	1.1	1.4	1.3	1.2	1.5	1.4	1.1	1.3	1.2	0.1	0.0	0.1
with calculus		0.0	0.0	0.0	0.6	0.7	0.7	0.6	0.5	0.6	2.0	2.0	2.0	0.3	0.3	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	0.5	0.6	0.6	0.2	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	0.7	0.8	0.8	1.6	2.0	1.8
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	2.5	2.2	2.4
Not recorded		6.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2
State Rural	n=	263	261	524	262	261	523	262	260	522	260	261	521	260	264	524
Mean no. of healthy sextants		0.1	0.2	0.2	2.9	3.0	3.0	2.2	2.3	2.3	0.8	0.7	0.8	0.1	0.1	0.1
With bleeding, calculus, pockets		0.0	0.0	0.0	3.1	2.9	3.0	3.8	3.7	3.8	4.9	5.1	5.0	1.9	2.0	2.0
with bleeding		0.0	0.0	0.0	1.8	1.6	1.7	2.1	2.0	2.1	1.3	1.6	1.5	0.3	0.2	0.3
with calculus		0.0	0.0	0.0	1.3	1.4	1.4	1.6	1.6	1.6	2.2	2.0	2.1	0.5	0.5	0.5
with pockets(4-5 mm)		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.8	0.9	0.9	0.4	0.4	0.4
with pockets (6mm 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	0.7	1.0	0.9
Excluded sextants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	3.8	3.6	3.7
Not recorded		5.9	5.8	5.9	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.3
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Mean no. of healthy sextants		0.4	0.4	0.4	3.3	3.3	3.3	3.0	2.2	2.6	0.6	0.9	0.8	0.3	0.0	0.2
With bleeding, calculus, pockets		0.0	0.0	0.0	2.7	2.7	2.7	2.9	3.8	3.4	5.1	5.0	5.1	1.1	1.1	1.1
with bleeding		0.0	0.0	0.0	1.9	2.3	2.1	1.9	2.8	2.4	2.0	2.3	2.2	0.2	0.1	0.2
with calculus		0.0	0.0	0.0	0.7	0.4	0.6	0.9	0.9	0.9	2.4	2.1	2.3	0.4	0.1	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	0.4	0.4	0.4	0.2	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	0.4	0.2	0.3	0.3	0.6	0.5
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	4.1	4.4	4.3
Not recorded		5.6	5.6	5.6	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.1	0.2	0.5	0.4	0.5
State Total	n=	318	312	630	316	313	629	314	315	629	316	312	628	314	316	630
Mean no. of healthy sextants		0.1	0.2	0.2	2.9	3.0	3.0	2.3	2.3	2.3	0.8	0.7	0.8	0.1	0.1	0.1
With bleeding, calculus, pockets		0.0	0.0	0.0	3.0	2.9	3.0	3.7	3.7	3.7	4.9	5.1	5.0	1.8	1.9	1.9
with bleeding		0.0	0.0	0.0	1.8	1.6	1.7	2.1	2.1	2.1	1.4	1.7	1.6	0.3	0.1	0.2
with calculus		0.0	0.0	0.0	1.2	1.3	1.3	1.6	1.6	1.6	2.2	2.0	2.1	0.5	0.4	0.5
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	0.9	0.9	0.4	0.4	0.4
with pockets (6mm 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	0.7	0.9	0.8
Excluded sextants		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	3.8	3.7	3.8
Not recorded		5.9	5.8	5.9	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.3

Note: Related Table 6.07.



The dentition is divided into six sextants, three upper and three lower, for assessment of the periodontal status. The mean number of healthy sextants (those sextants with no bleeding, calculus or pockets) was highest for the 12 year olds (3 sextants) with 2.9 sextants for males and 3 sextants for females. The mean number with bleeding, calculus and pockets was highest for the 35-44 year age group (5 sextants) with 4.9 sextants for males and 5.1 sextants for females. The mean number with bleeding, calculus and pockets was 3.7 sextants for both males and females among 15 year olds. The mean number of healthy sextants was highest (3 sextants) among the 12 year olds, more in urban than rural areas.

Assessment of the sextants for signs of periodontal disease showed that while gingival bleeding was a more prevalent condition among the lower age groups, accumulated calculus became an increasingly high problem as the age advanced. The number of sextants with shallow or deep pockets was very low.

6.2.2 Loss of attachment

Table 6.09 presents the percent subjects with Loss of epithelial attachement by severity and Table 6.10 presents the mean number of teeth with loss of attachment by severity. The destructive and degenerative nature of periodontal disease was assessed, in addition to the CPI scores, with the measurement of Loss of Attachment for 15, 35-44 and 65-74 year age groups only. The CPI probe was used to measure pocket depth.

Overall, the prevalence proportion of subjects with loss of attachement in one or more sextants was lowest among 15 year olds (0.2 percent) and highest in the 35-44 year age group (30.3 percent). It was almost equally distributed in both genders, in the age groups of 35 years and above.

About 27 percent of the subjects in the 65-74 year age group had loss of attachment. The form of loss of attachment most prevalent was that of 6 to 8 mm. Rural residents had higher levels of Loss of attachment than urbanites, but the pattern of distribution of severity of the condition remained similar in urban and rural areas and Region-2 had a higher prevalence of the condition than Region-1.

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

State: Himachal Pradesh

Loss of Attachment (LOA)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	155	157	312	154	155	309	157	155	312
With no loss of attachment (0-3 mm)		99.8	99.8	99.8	67.8	65.9	66.9	8.8	9.1	9.0
With loss of attachment		0.2	0.2	0.2	30.4	30.5	30.5	25.7	26.2	26.0
with LOA 4-5 mm		0.0	0.2	0.1	16.2	14.1	15.2	12.0	6.9	9.5
with LOA 6-8 mm		0.2	0.0	0.1	13.3	15.3	14.3	9.9	11.7	10.8
with LOA 9-11 mm		0.0	0.0	0.0	0.9	0.9	0.9	0.0	4.4	2.2
with LOA 12 mm or more		0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9
Region 2	n=	157	158	315	157	157	314	109	125	234
With no loss of attachment (0-3 mm)		100.0	100.0	100.0	74.4	69.4	71.9	9.2	7.2	8.2
With loss of attachment		0.0	0.0	0.0	25.6	30.6	28.1	67.0	68.8	67.9
with LOA 4-5 mm		0.0	0.0	0.0	5.1	5.7	5.4	0.9	1.6	1.3
with LOA 6-8 mm		0.0	0.0	0.0	19.9	24.2	22.1	29.4	34.4	31.9
with LOA 9-11 mm		0.0	0.0	0.0	0.0	0.6	0.3	1.8	1.6	1.7
with LOA 12 mm or more		0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.5
State Rural	n=	261	260	521	256	261	517	213	228	441
With no loss of attachment (0-3 mm)		100.0	100.0	100.0	66.3	63.6	65.0	7.7	9.6	8.7
With loss of attachment		0.0	0.0	0.0	31.8	32.6	32.2	27.8	28.2	28.0
with LOA 4-5 mm		0.0	0.0	0.0	16.6	15.1	15.9	12.3	6.7	9.5
with LOA 6-8 mm		0.0	0.0	0.0	14.2	16.6	15.4	11.0	13.1	12.1
with LOA 9-11 mm		0.0	0.0	0.0	1.0	1.0	1.0	0.0	4.8	2.4
with LOA 12 mm or more		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	1.0
State Urban	n=	51	55	106	55	51	106	53	52	105
With no loss of attachment (0-3 mm)		98.0	98.2	98.1	83.3	88.2	85.8	18.9	3.8	11.4
With loss of attachment		2.0	1.8	1.9	16.7	9.8	13.3	15.1	17.3	16.2
with LOA 4-5 mm		0.0	1.8	0.9	9.3	2.0	5.7	7.5	7.7	7.6
with LOA 6-8 mm		2.0	0.0	1.0	7.4	5.9	6.7	3.8	3.8	3.8
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
State Total	n=	312	315	627	311	312	623	266	280	546
With no loss of attachment (0-3 mm)		99.8	99.8	99.8	68.1	66.0	67.1	8.8	9.1	9.0
With loss of attachment		0.2	0.2	0.2	30.2	30.4	30.3	26.7	27.3	27.0
with LOA 4-5 mm		0.0	0.2	0.1	15.8	13.8	14.8	11.7	6.7	9.2
with LOA 6-8 mm		0.2	0.0	0.1	13.5	15.6	14.6	10.3	12.3	11.3
with LOA 9-11 mm		0.0	0.0	0.0	0.9	0.9	0.9	0.0	4.3	2.2
with LOA 12 mm or more		0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.8	0.9

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

State: Himachal Pradesh

Loss of Attachment (LOA)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	157	157	314	158	155	313	159	156	315
With no loss of attachment (0-3 mm)		5.9	6.0	**6.0**	5.0	5.1	**5.1**	1.2	1.0	**1.1**
With loss of attachment		0.0	0.0	**0.0**	0.7	0.7	**0.7**	0.8	1.0	**0.9**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.4	0.4	**0.4**	0.6	0.6	**0.6**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.2	0.4	**0.3**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**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**	0.1	0.2	**0.2**	3.9	3.9	**3.9**
Not recorded		0.1	0.0	**0.1**	0.2	0.0	**0.1**	0.1	0.1	**0.1**
Region 2	n=	157	158	315	158	157	315	155	160	315
With no loss of attachment (0-3 mm)		6.0	6.0	**6.0**	5.2	5.2	**5.2**	0.6	0.6	**0.6**
With loss of attachment		0.0	0.0	**0.0**	0.7	0.8	**0.8**	1.7	2.0	**1.9**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.4	0.4	**0.4**	0.8	1.0	**0.9**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.4	0.4	**0.4**	0.8	1.0	**0.9**
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**	1.4	1.6	**1.5**
Not recorded		0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.3	1.8	**2.1**
State Rural	n=	262	260	522	260	261	521	260	264	524
With no loss of attachment (0-3 mm)		5.9	6.0	**6.0**	4.9	5.1	**5.0**	1.1	1.0	**1.1**
With loss of attachment		0.0	0.0	**0.0**	0.7	0.7	**0.7**	0.9	1.1	**1.0**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.4	0.4	**0.4**	0.6	0.6	**0.6**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.3	0.3	**0.3**	0.3	0.4	**0.4**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**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**	0.1	0.2	**0.2**	3.8	3.7	**3.8**
Not recorded		0.1	0.0	**0.1**	0.2	0.0	**0.1**	0.2	0.2	**0.2**
State Urban	n=	52	55	107	56	51	107	54	52	106
With no loss of attachment (0-3 mm)		5.8	6.0	**5.9**	5.3	5.6	**5.5**	1.2	0.5	**0.9**
With loss of attachment		0.1	0.0	**0.1**	0.4	0.3	**0.4**	0.3	0.7	**0.5**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.3	0.1	**0.2**	0.3	0.6	**0.5**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.1	0.1	**0.1**	0.1	0.1	**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**	4.1	4.6	**4.4**
Not recorded		0.1	0.0	**0.1**	0.3	0.1	**0.2**	0.4	0.2	**0.3**
State Total	n=	314	315	629	316	312	628	314	316	630
With no loss of attachment (0-3 mm)		5.9	6.0	**6.0**	5.0	5.1	**5.1**	1.1	1.0	**1.1**
With loss of attachment		0.0	0.0	**0.0**	0.7	0.7	**0.7**	0.8	1.1	**1.0**
with loss of attachment 4-5 mm		0.0	0.0	**0.0**	0.4	0.4	**0.4**	0.6	0.6	**0.6**
with loss of attachment 6-8 mm		0.0	0.0	**0.0**	0.2	0.3	**0.3**	0.2	0.4	**0.3**
with loss of attachment 9-11 mm		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**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**	0.1	0.2	**0.2**	3.8	3.8	**3.8**
Not recorded		0.1	0.0	**0.1**	0.2	0.0	**0.1**	0.2	0.2	**0.2**

The prevalence proportion of subjects with Loss of attachment in one or more sextants was very low for the age group 35-44 years (0.7 sextants). The less severe form of Loss of attachment (4-5 mm) was prevalent across the age groups 35-44 and 65-74 years. The pattern of distribution of this condition was almost similar in both the genders and regions.

6.3 MALOCCLUSION STATUS

Table 6.11 presents the malocclusion status of subjects measured by Dental Aesthetics Index scores. The index recommended by the WHO, was used to analyze the severity of malocclusion in the surveyed population. In calculating percent subjects with malocclusion, only those subjects with a DAI score of 26 or higher were included.

No significant malocclusion was reported among the 5 year olds where only primary teeth are present. The proportion of subjects with malocclusion increased as the age advanced.

Table 6.11. Percent subjects with malocclusion by age, sex and geographical areas.

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313
None or minor malocclusion (<25)		99.8	100	99.9	86.5	87.1	86.8	86.7	86.2	86.5	42.2	47.7	45.0
Malocclusion present		0.2	0.0	0.1	13.5	12.9	13.2	13.3	13.8	13.6	57.8	52.3	55.1
Definite (26 -30)		0.0	0.0	0.0	12.4	11.9	12.2	11.3	11	11.2	28.4	19.7	24.1
Severe (31 - 15)		0.0	0.0	0.0	0.2	0.2	0.2	1.2	1.1	1.2	12.4	13.2	12.8
V Severe (36 or more)		0.2	0.0	0.1	0.9	0.9	0.9	0.9	1.8	1.4	17	19.4	18.2
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315
None or minor malocclusion (<25)		100	100	100.0	86.6	90.5	88.6	88.5	84.8	86.7	75.3	79	77.2
Malocclusion present		0.0	0.0	0.0	13.4	9.5	11.5	11.5	15.2	13.4	24.7	21	22.9
Definite (26 -30)		0.0	0.0	0.0	12.7	8.2	10.5	9.6	13.3	11.5	13.9	14	14.0
Severe (31 - 15)		0.0	0.0	0.0	0.0	1.3	0.7	1.3	1.3	1.3	4.4	3.8	4.1
V Severe (36 or more)		0.0	0.0	0.0	0.6	0.0	0.3	0.6	0.6	0.6	6.3	3.2	4.8
State Rural	n=	263	261	524	262	261	523	262	260	522	260	261	521
None or minor malocclusion (<25)		100	100	100.0	86.7	86.7	86.7	87.8	86.2	87.0	41.8	48.1	45.0
Malocclusion present		0.0	0.0	0.0	13.3	13.3	13.3	12.2	13.8	13.0	58.2	51.9	55.1
Definite (26 -30)		0.0	0.0	0.0	12.4	12.4	12.4	10.4	10.9	10.7	28.7	18.1	23.4
Severe (31 - 15)		0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	12.4	14.1	13.3
V Severe (36 or more)		0.0	0.0	0.0	0.9	0.9	0.9	0.9	1.9	1.4	17.1	19.7	18.4
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107
None or minor malocclusion (<25)		98.2	100	99.1	85.2	92.3	88.8	76.9	85.5	81.2	55.4	52.9	54.2
Malocclusion present		1.8	0.0	0.9	14.8	7.7	11.3	23.1	14.5	18.8	44.6	47.1	45.9
Definite (26 -30)		0.0	0.0	0.0	13	5.8	9.4	19.2	12.7	16.0	21.4	33.3	27.4
Severe (31 - 15)		0.0	0.0	0.0	1.9	1.9	1.9	3.8	1.8	2.8	10.7	2	6.4
V Severe (36 or more)		1.8	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	12.5	11.8	12.2
State Total	n=	318	312	630	316	313	629	314	315	629	316	312	628
None or minor malocclusion (<25)		99.8	100	99.9	86.5	87.3	86.9	86.8	86.1	86.5	43.9	48.7	46.3
Malocclusion present		0.2	0.0	0.1	13.5	12.7	13.1	13.2	13.9	13.6	56.1	51.3	53.7
Definite (26 -30)		0.0	0.0	0.0	12.5	11.6	12.1	11.1	11.1	11.1	27.6	19.6	23.6
Severe (31 - 15)		0.0	0.0	0.0	0.2	0.2	0.2	1.2	1.1	1.2	12.1	12.9	12.5
V Severe (36 or more)		0.2	0.0	0.1	0.8	0.8	0.8	0.8	1.7	1.3	16.4	18.8	17.6

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

About 87 percent of the subjects among the 12 and 15 year olds had none or minor malocclusion, while 46.3 percent of subjects in the 35-44 year age group had none or minor malocclusion. The prevalence of malocclusion as indicated by the DAI scores was 13.1 percent for 12 year olds and 13.6 percent for the 15 year olds and was predominantly definite malocclusion (DAI scores 26-30).

Definite and severe forms of malocclusion were higher for the 35-44 year age group, and very severe (handicapping) form of malocclusion was observed in 17.6 percent subjects (16.4 percent for males and 18.8 percent for females).

There were no significant differences in the prevalence of malocclusion in the urban and rural areas, and was more in Region-1 than in Region-2.

6.4 ORAL CANCER AND ORAL MUCOSAL LESIONS

Table 6.12 presents the number of subjects with oral cancer and other muscosal conditions and Table 6.13 presents the number of lesions by their location in the mouth of affected subjects.

The prevalence of oral mucosal lesions was quite low. Among 5 year olds only two males and both from rural areas had mucosal lesions. The mean number of subjects with oral mucosal lesions was 2 subjects and 5 subjects for 12 and 15 year olds, respectively.

Only 49 subjects in the 35-44 year age group had oral mucosal lesions and a large part comprised ulceration and leukoplakia, followed by abscess. A relatively high number of 109 subjects in the 65-74 year age group had oral muscosal lesions, most of them being ulceration or leukoplakia.

Oral cancer was detected in 3 subjects each among the genders, resident in rural areas. The lesions were located on the vermillion border and buccal mucosa. Leukoplakia is the most common precancerous lesion while lichen planus is categorized as a probable precancerous lesion (Mehta & Hammer, 1993). Leukoplakia was detected in the 35 year and above age groups. It was located on almost all the locations in the mouth and observed more in rural than urban areas.

A broad analysis of the lesions by location on the oral mucosa showed that the most prevalent condition was ulceration, appearing on the lips and buccal mucosa, followed by Leukoplakia distributed mainly on the buccal mucosa. The other more prevalent but still a very rare condition was abscess, occurring on the alveolar ridges or gingival.

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

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	157	155	312	159	156	315
Oral mucosal lesions present		1	0	1	0	1	1	3	3	3	36	33	35	59	58	59
Oral Cancer		0	0	0	0	0	0	0	0	0	1	0	1	1	3	2
Leukoplakia		0	0	0	0	0	0	0	0	0	14	5	10	31	21	26
Lichen planus		0	0	0	0	0	0	0	0	0	3	0	2	1	4	3
Ulceration		0	0	0	0	0	0	0	1	1	14	20	17	34	46	40
ANUG		0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
Candidiasis		0	0	0	0	1	1	1	0	1	6	3	5	6	5	6
Abscess		1	0	1	0	0	0	1	0	1	7	7	7	7	3	5
Any other condition		0	0	0	0	1	1	2	2	2	6	9	8	5	7	6
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315	155	160	315
Oral mucosal lesions present		1	0	1	1	2	2	3	0	2	10	19	15	47	53	50
Oral Cancer		1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Leukoplakia		0	0	0	0	0	0	0	0	0	1	3	2	24	15	20
Lichen planus		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Ulceration		1	0	1	1	0	1	1	0	1	3	11	7	25	34	30
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	1	1	1	3	2	3
Abscess		0	0	0	0	2	1	2	0	1	3	5	4	2	8	5
Any other condition		0	0	0	0	0	0	0	0	0	2	3	3	4	4	4
State Rural	n=	263	261	524	262	261	523	262	260	522	259	261	520	260	264	524
Oral mucosal lesions present		2	0	1	1	3	2	5	2	4	44	49	47	96	103	100
Oral Cancer		1	0	1	0	0	0	0	0	0	1	0	1	1	3	2
Leukoplakia		0	0	0	0	0	0	0	0	0	15	8	12	53	34	44
Lichen planus		0	0	0	0	0	0	0	0	0	4	1	3	2	5	4
Ulceration		1	0	1	1	0	1	1	1	1	16	30	23	53	76	65
ANUG		0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
Candidiasis		0	0	0	0	1	1	1	0	1	6	4	5	9	6	8
Abscess		1	0	1	0	2	1	3	0	2	10	11	11	9	11	10
Any other condition		0	0	0	0	1	1	1	1	1	8	11	10	7	10	9
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Oral mucosal lesions present		0	0	0	0	0	0	1	1	1	2	3	3	10	8	9
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	2	2	2
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	1	1	1	6	4	5
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	1	0	1	0	1	1
Abscess		0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Any other condition		0	0	0	0	0	0	1	1	1	0	1	1	2	1	2
State Total	n=	318	312	630	316	313	629	314	315	629	315	312	627	314	316	630
Oral mucosal lesions present		2	0	1	1	3	2	6	3	5	46	52	49	106	111	109
Oral Cancer		1	0	1	0	0	0	0	0	0	1	0	1	1	3	2
Leukoplakia		0	0	0	0	0	0	0	0	0	15	8	12	55	36	46
Lichen planus		0	0	0	0	0	0	0	0	0	4	1	3	2	5	4
Ulceration		1	0	1	1	0	1	1	1	1	17	31	24	59	80	70
ANUG		0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
Candidiasis		0	0	0	0	1	1	1	0	1	7	4	6	9	7	8
Abscess		1	0	1	0	2	1	3	0	2	10	12	11	9	11	10
Any other condition		0	0	0	0	1	1	2	2	2	8	12	10	9	11	10

Table 6.13. Distibution of subjects with oral mucosal conditions by location of conditions in the mouth.

State: Himachal Pradesh

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	2	2	13	15	3	2	8	9	2	0	4	6	0	0	1	2	**33**	**36**
Commissures	0	0	3	1	0	0	9	13	0	0	1	0	0	0	0	0	**13**	**14**
Lips	0	0	14	4	1	1	33	56	0	0	0	0	0	0	0	0	**48**	**61**
Sulci	0	0	2	5	0	0	11	21	0	0	0	0	0	0	0	0	**13**	**26**
Buccal mucosa	1	0	42	18	3	3	20	31	0	0	7	2	0	0	1	0	**74**	**54**
Floor of mouth	0	0	6	4	0	0	3	5	0	0	2	0	0	0	0	0	**11**	**9**
Tongue	0	0	3	1	0	0	2	5	0	0	2	1	0	0	9	13	**16**	**20**
Hard/Soft palate	0	0	2	3	0	0	0	0	0	0	0	0	0	0	1	2	**3**	**5**
Alv ridges/ Gingiva	0	0	2	0	0	0	3	1	0	0	2	0	20	21	0	1	**27**	**23**
Rural Total	**3**	**2**	**87**	**51**	**7**	**6**	**89**	**141**	**2**	**0**	**18**	**9**	**20**	**21**	**12**	**18**	**238**	**248**
State Urban																		
Vermilion Border	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**0**
Commissures	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**0**
Lips	0	0	0	0	0	0	6	5	0	0	0	0	0	0	0	0	**6**	**5**
Sulci	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	**1**	**3**
Buccal mucosa	0	0	2	1	0	0	0	0	0	0	1	1	0	0	0	0	**3**	**2**
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	1	0	0	2	0	0	0	1	1	0	0	3	1	**6**	**3**
Hard/Soft palate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**0**	**1**
Alv ridges/ Gingiva	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	**1**	**2**
Urban Total	**0**	**0**	**3**	**2**	**0**	**0**	**10**	**8**	**0**	**0**	**3**	**2**	**0**	**1**	**3**	**3**	**19**	**16**
State Total																		
Vermilion Border	2	2	13	15	3	2	9	9	2	0	4	6	0	0	1	2	**34**	**36**
Commissures	0	0	3	1	0	0	10	13	0	0	1	0	0	0	0	0	**14**	**14**
Lips	0	0	14	4	1	1	39	61	0	0	0	0	0	0	0	0	**54**	**66**
Sulci	0	0	3	5	0	0	11	24	0	0	0	0	0	0	0	0	**14**	**29**
Buccal mucosa	1	0	44	19	3	3	20	31	0	0	8	3	0	0	1	0	**77**	**56**
Floor of mouth	0	0	6	4	0	0	3	5	0	0	2	0	0	0	0	0	**11**	**9**
Tongue	0	0	3	2	0	0	4	5	0	0	3	2	0	0	12	14	**22**	**23**
Hard/Soft palate	0	0	2	3	0	0	0	0	0	0	0	0	0	0	1	3	**3**	**6**
Alv ridges/ Gingiva	0	0	2	0	0	0	3	1	0	0	3	0	20	22	0	2	**28**	**25**
State Total	**3**	**2**	**90**	**53**	**7**	**6**	**99**	**149**	**2**	**0**	**21**	**11**	**20**	**22**	**15**	**21**	**257**	**264**

6.5 DENTAL FLUOROSIS STATUS

Table 6.14 presents the percentage subjects with dental fluorosis by level of severity.

The prevalence of dental fluorosis was seen across all age groups. Fluorosis in the 5 year old subjects was low (8.5 percent) and was 20-23 percent for the other age groups, except for the 65-74 year age group where the prevalence of dental fluorosis was 16.1 percent. A high percentage of subjects across all age groups had questionable fluorosis (5-16 percent) followed by those with very mild to moderate fluorosis. Severe forms of fluorosis was virtually absent except in 0.1 percent females in the 65-74 year age group.

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

State: Himachal Pradesh

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=	**158**	**157**	**315**	**159**	**155**	**314**	**157**	**157**	**314**	**152**	**154**	**306**	**84**	**78**	**162**
With Fluorosis		5.4	9.4	**7.4**	19.9	16.5	**18.2**	19.0	22.8	**20.9**	20.1	16.5	**18.3**	14.5	13.3	**13.9**
Questionable		3.6	6.0	**4.8**	13.0	12.2	**12.6**	14.7	17.5	**16.1**	13.8	8.7	**11.3**	8.0	8.3	**8.2**
V Mild & Mild		1.7	3.4	**2.6**	6.8	3.5	**5.2**	4.3	5.3	**4.8**	6.3	7.8	**7.1**	6.4	5.0	**5.7**
Moderate		0.0	0.0	**0.0**	0.0	0.9	**0.5**	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=	**159**	**154**	**313**	**157**	**158**	**315**	**157**	**158**	**315**	**157**	**156**	**313**	**83**	**100**	**183**
With Fluorosis		39.9	46.8	**43.4**	79.0	79.6	**79.3**	78.8	83.5	**81.2**	84.0	80.8	**82.4**	73.5	75.0	**74.3**
Questionable		13.9	22.1	**18.0**	22.3	23.6	**23.0**	24.4	26.6	**25.5**	18.6	24.4	**21.5**	18.1	18.0	**18.1**
V Mild & Mild		24.7	24.7	**24.7**	49.0	52.9	**51.0**	50.0	50.6	**50.3**	59.0	47.4	**53.2**	49.4	47.0	**48.2**
Moderate		0.6	0.0	**0.3**	7.0	3.2	**5.1**	4.5	6.3	**5.4**	5.8	7.7	**6.8**	4.8	7.0	**5.9**
Severe		0.6	0.0	**0.3**	0.6	0.0	**0.3**	0.0	0.0	**0.0**	0.6	1.3	**1.0**	1.2	3.0	**2.1**
State Rural	n=	**262**	**260**	**522**	**262**	**261**	**523**	**262**	**260**	**522**	**255**	**260**	**515**	**139**	**155**	**294**
With Fluorosis		6.8	11.4	**9.1**	23.6	20.1	**21.9**	22.4	27.3	**24.9**	24.1	20.1	**22.1**	17.8	16.7	**17.3**
Questionable		4.1	7.0	**5.6**	14.5	13.8	**14.2**	16.3	19.8	**18.1**	15.3	10.1	**12.7**	9.2	9.4	**9.3**
V Mild & Mild		2.6	4.4	**3.5**	8.8	5.3	**7.1**	6.0	7.3	**6.7**	8.7	9.8	**9.3**	8.4	6.9	**7.7**
Moderate		0.0	0.0	**0.0**	0.2	1.0	**0.6**	0.1	0.2	**0.2**	0.2	0.2	**0.2**	0.1	0.3	**0.2**
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	0.1	**0.1**
State Urban	n=	**55**	**51**	**106**	**54**	**52**	**106**	**52**	**55**	**107**	**54**	**50**	**104**	**28**	**23**	**51**
With Fluorosis		1.9	0.0	**1.0**	1.9	0.0	**1.0**	2.0	0.0	**1.0**	1.9	0.0	**1.0**	0.0	0.0	**0.0**
Questionable		1.9	0.0	**1.0**	1.9	0.0	**1.0**	2.0	0.0	**1.0**	1.9	0.0	**1.0**	0.0	0.0	**0.0**
V Mild & Mild		0.0	0.0	**0.0**	0.0	0.0	**0.0**	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**
State Total	n=	**317**	**311**	**628**	**316**	**313**	**629**	**314**	**315**	**629**	**309**	**310**	**619**	**167**	**178**	**345**
With Fluorosis		6.5	10.5	**8.5**	21.7	18.5	**20.1**	20.8	24.8	**22.8**	22.2	18.6	**20.4**	16.3	15.8	**16.1**
Questionable		4.0	6.5	**5.3**	13.3	12.5	**12.9**	15.0	17.8	**16.4**	13.9	9.2	**11.6**	8.4	8.7	**8.6**
V Mild & Mild		2.5	4.1	**3.3**	8.2	5.1	**6.7**	5.7	6.8	**6.3**	8.1	9.1	**8.6**	7.8	6.7	**7.3**
Moderate		0.0	0.0	**0.0**	0.2	0.9	**0.6**	0.1	0.2	**0.2**	0.2	0.3	**0.3**	0.2	0.3	**0.3**
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	0.1	**0.1**

A major difference was seen between the two regions – a higher prevalence was seen in Region -2 than in Region-1. The prevalence of fluorosis was higher in rural than urban residents, with no significant difference between the genders.

6.6 OTHER LESIONS

6.6.1 Extra oral lesions

Table 6.15 presents the percent subjects with extra oral lesions by type of lesions.

There were no extra oral lesions detected among the 5 year olds and 12 year old males. Only about 0.1 to 1 percent of females among 12 and 15 year olds had extra oral lesions. The prevelance was 27.5 percent in the 35-44 year age group and 41.7 percent in the 65-74 year age group. The lesions were mostly ulceration, sores, erosions or fissures located predominantly on the commissures and vermillion border.

About 0.5 to 2 percent of the subjects had abnormalities of upper and lower lips and enlarged lymph nodes of head and neck.

The prevalence of extra oral lesions was higher in the rural than urban areas and there were not much gender differences in the pattern of distribution of the extra oral lesions.

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

State: Himachal Pradesh

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 6	n=	125	123	248	133	131	264	133	127	260	130	132	262	130	132	262
With extra oral lesions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.9	0.0	**0.5**	26.8	28.8	**27.8**	41.5	42.0	**41.8**
Ulceration,sores,erosions,fissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.9	0.0	**0.5**	23.7	26.8	**25.3**	38.6	37.2	**37.9**
head, neck, limbs		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.9	0.0	**0.5**	2.0	2.0	**2.0**	4.1	1.0	**2.6**
nose, cheeks, chin		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	11.4	14.1	**12.8**	2.9	6.9	**4.9**
commissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	6.1	5.9	**6.0**	18.1	16.6	**17.4**
vermilion border		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	4.3	4.9	**4.6**	13.4	12.7	**13.1**
Cancrum oris		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.0	**0.5**	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**	1.0	0.0	**0.5**	1.0	2.9	**2.0**
Enlarged lymph nodes(head & neck)		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	1.0	**1.5**
Region 7	n=	66	72	138	66	75	141	68	75	143	66	78	144	71	82	153
With extra oral lesions		1.5	0.0	**0.8**	3.0	4.1	**3.6**	1.5	2.7	**2.1**	9.2	17.9	**13.6**	38.0	45.1	**41.6**
Ulceration,sores,erosions,fissures		1.5	0.0	**0.8**	3.0	4.1	**3.6**	1.5	2.7	**2.1**	7.7	15.4	**11.6**	38.0	45.1	**41.6**
head, neck, limbs		1.5	0.0	**0.8**	3.0	2.7	**2.9**	1.5	1.3	**1.4**	3.1	2.6	**2.9**	7.0	6.1	**6.6**
nose, cheeks, chin		0.0	0.0	**0.0**	0.0	1.4	**0.7**	0.0	0.0	**0.0**	3.1	5.1	**4.1**	12.7	9.8	**11.3**
commissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	6.4	**3.2**	16.9	17.1	**17.0**
vermilion border		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.3	**0.7**	1.5	1.3	**1.4**	1.4	12.2	**6.8**
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**	1.5	2.6	**2.1**	0.0	0.0	**0.0**
State Rural	n=	153	159	312	159	171	330	165	164	329	155	172	327	165	178	343
With extra oral lesions		0.0	0.0	**0.0**	0.0	0.1	**0.1**	1.0	0.0	**0.5**	28.6	30.6	**29.6**	43.5	44.8	**44.2**
Ulceration,sores,erosions,fissures		0.0	0.0	**0.0**	0.0	0.1	**0.1**	1.0	0.0	**0.5**	25.3	28.5	**26.9**	40.4	39.7	**40.1**
head, neck, limbs		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.0	0.0	**0.5**	2.2	2.1	**2.2**	4.3	1.1	**2.7**
nose, cheeks, chin		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	12.1	14.7	**13.4**	3.3	7.3	**5.3**
commissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	6.6	6.4	**6.5**	19.1	17.7	**18.4**
vermilion border		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	4.4	5.3	**4.9**	13.6	13.5	**13.6**
Cancrum oris		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.0	**0.5**	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**	1.1	0.0	**0.6**	1.0	3.1	**2.1**
Enlarged lymph nodes(head & neck)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.2	0.0	**1.1**	2.1	1.0	**1.6**
State Urban	n=	38	36	74	40	35	75	36	38	74	41	38	79	36	36	72
With extra oral lesions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	5.0	5.3	**5.2**	16.7	8.3	**12.5**
Ulceration,sores,erosions,fissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	5.0	5.3	**5.2**	16.7	8.3	**12.5**
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**	2.8	0.0	**1.4**
nose, cheeks, chin		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	5.3	**3.9**	0.0	2.8	**1.4**
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**	5.6	2.8	**4.2**
vermilion border		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	0.0	**1.3**	8.3	2.8	**5.6**
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=	191	195	386	199	206	405	201	202	403	196	210	406	201	214	415
With extra oral lesions		0.0	0.0	**0.0**	0.0	0.1	**0.1**	1.0	0.1	**0.6**	26.4	28.5	**27.5**	41.4	42.0	**41.7**
Ulceration,sores,erosions,fissures		0.0	0.0	**0.0**	0.0	0.1	**0.1**	1.0	0.1	**0.6**	23.4	26.6	**25.0**	38.5	37.3	**37.9**
head, neck, limbs		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.0	0.0	**0.5**	2.0	2.0	**2.0**	4.2	1.1	**2.7**
nose, cheeks, chin		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	11.2	13.9	**12.6**	3.1	7.0	**5.1**
commissures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	6.0	5.9	**6.0**	18.1	16.6	**17.4**
vermilion border		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	4.2	4.8	**4.5**	13.2	12.7	**13.0**
Cancrum oris		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.0	**0.5**	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**	1.0	0.0	**0.5**	1.0	2.8	**1.9**
Enlarged lymph nodes(head & neck)		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.0	0.0	**1.0**	1.9	0.9	**1.4**

6.6.2 Temporomandibular joint symptoms and signs

Table 6.16 presents the percent subjects with temporo mandibular joint (TM Joint) symptoms and signs.

None of the children in the ages 5, 12, and 15 years had any TM Joint symptoms or signs. In the age group of 35-44 years, symptoms were reported by 8 percent of subjects (10.6 percent for males and 5.4 percent for females) and 24.1 percent of subjects in the 65-74 year age group reported symptoms (23.3 percent for males and 24.8 percent for females). The prevalence of symptoms were more in those resident in rural areas (25.1 percent) than urban areas (14.1 percent), more in Region-2 than in Region-1.

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

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=*	**158**	**157**	**315**	**159**	**155**	**314**	**156**	**155**	**311**	**157**	**154**	**311**	**159**	**156**	**315**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	10.7	5.3	**8.0**	23.3	24.3	**23.8**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	11.6	7.0	**9.3**	28.4	26.5	**27.5**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	7.0	4.4	**5.7**	19.1	19.3	**19.2**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	5.5	0.9	**3.2**	12.1	10.8	**11.5**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**	9.5	11.5	**10.5**
Region 2	*n=*	**160**	**155**	**315**	**157**	**158**	**315**	**157**	**158**	**315**	**158**	**157**	**315**	**155**	**160**	**315**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	7.0	11.5	**9.3**	25.8	38.1	**32.0**
Signs present		0.0	0.0	**0.0**	0.6	0.0	**0.3**	0.0	0.0	**0.0**	8.3	11.5	**9.9**	29.7	43.1	**36.4**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	7.6	8.3	**8.0**	24.5	34.4	**29.5**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	2.5	3.8	**3.2**	11.6	17.5	**14.6**
Reduced jaw mobility		0.0	0.0	**0.0**	0.6	0.0	**0.3**	0.0	0.0	**0.0**	0.6	1.3	**1.0**	4.5	8.1	**6.3**
State Rural	*n=*	**263**	**261**	**524**	**262**	**261**	**523**	**261**	**259**	**520**	**259**	**260**	**519**	**260**	**264**	**524**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	11.6	6.0	**8.8**	23.9	26.3	**25.1**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	12.6	7.9	**10.3**	29.5	28.3	**28.9**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	7.8	5.0	**6.4**	20.1	20.6	**20.4**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	5.8	1.1	**3.5**	12.4	11.7	**12.1**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.9	**1.0**	9.4	12.4	**10.9**
State Urban	*n=*	**55**	**51**	**106**	**54**	**52**	**106**	**52**	**54**	**106**	**56**	**51**	**107**	**54**	**52**	**106**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	18.5	9.6	**14.1**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.8	0.0	**0.9**	18.5	13.5	**16.0**
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**	11.1	11.5	**11.3**
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**	9.3	3.8	**6.6**
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**	9.3	1.9	**5.6**
State Total	*n=*	**318**	**312**	**630**	**316**	**313**	**629**	**313**	**313**	**626**	**315**	**311**	**626**	**314**	**316**	**630**
Symptoms present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	10.6	5.4	**8.0**	23.3	24.8	**24.1**
Signs present		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	11.5	7.1	**9.3**	28.4	27.0	**27.7**
Clicking		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	7.0	4.5	**5.8**	19.3	19.8	**19.6**
Tenderness		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	5.3	1.0	**3.2**	12.0	11.0	**11.5**
Reduced jaw mobility		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.7	**0.9**	9.3	11.3	**10.3**

Signs were present among both the genders. The main sign recorded was clicking (19.6 percent) followed by tenderness of TM Joint (11.5 percent) and reduced jaw mobility (10.3 percent). The prevalence of signs was more in rural than urban areas, almost equally distributed among the genders. Regions-2 had a higher prevalence of signs compared to Region-1, except for the sign of reduced jaw mobility.

6.6.3 Enamel defects (opacities and hypoplasia)

Table 6.17 presents the percent subjects with enamel defects by type of defect and Table 6.18 presents the mean number of teeth affected with enamel defects by type of defects. Structural enamel defects in the teeth were recorded in terms of opacities and hypoplasia, types of opacities and combinations of both. The lower age group of 5 years was excluded from the examination.

The enamel defects appeared to be distributed among all the age groups. The percent distribution of subjects with enamel defects was 17 to 30 percent. The most prevalent enamel defect was demarcated opacity (15.8 percent) followed by diffuse opacity (3.8 percent) cross all age goups. About 0.6 percent of the subjects in the 35-44 year age group had combinations of opacities and hypoplasia.

The prevalence of enamel defects was considerably more in the rural residents compared to urbanites, with Region-2 having a higher prevalence of enamel defects than Region-1. They were almost evenly distributed among the genders.

A total of ten index teeth were used for assessing the mean number of teeth with enamel defects percent individual. The defects appeared to be evenly distributed in all the age groups and the mean number of teeth affected by enamel defects was about one tooth. The most prevalent enamel defect was demarcated opacity (0.3 teeth) followed by diffuse opacity (0.1 teeth), across all age groups. No combinations of opacities and hypoplasia were recorded. The prevalence of enamel defects was higher in Region-2 than Region-1. There were no major urban and rural or gender 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: Himachal Pradesh

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=	159	155	314	157	157	314	154	155	309	78	71	149
With enamel defects		27.1	28.2	**27.7**	26.5	28.9	**27.7**	22.0	23.6	**22.8**	15.8	14.6	**15.2**
demarcated opacity		21.8	26.4	**24.1**	24.8	24.5	**24.7**	20.1	19.3	**19.7**	14.1	14.6	**14.4**
diffuse opacity		6.2	3.5	**4.9**	5.1	6.1	**5.6**	2.7	6.1	**4.4**	5.1	0.0	**2.6**
hypoplasia		2.6	0.9	**1.8**	0.0	0.9	**0.5**	2.9	0.9	**1.9**	1.7	0.0	**0.9**
other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.8	**0.9**
combinations of opacities and hypoplasia		0.9	0.0	**0.5**	0.0	0.0	**0.0**	0.0	0.9	**0.5**	0.0	0.0	**0.0**
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=	157	158	315	157	158	315	157	157	314	76	95	171
With enamel defects		80.3	81.5	**80.9**	83.3	85.4	**84.4**	85.3	80.9	**83.1**	77.6	78.9	**78.3**
demarcated opacity		71.3	72.0	**71.7**	74.4	71.5	**73.0**	70.5	66.9	**68.7**	53.9	54.7	**54.3**
diffuse opacity		37.6	38.9	**38.3**	35.3	43.0	**39.2**	47.4	33.8	**40.6**	36.8	35.8	**36.3**
hypoplasia		20.4	13.4	**16.9**	24.4	20.3	**22.4**	28.2	15.3	**21.8**	13.2	9.5	**11.4**
other defects		0.0	0.6	**0.3**	0.6	1.3	**1.0**	1.3	1.3	**1.3**	0.0	3.2	**1.6**
combinations of opacities and hypoplasia		2.5	0.6	**1.6**	1.3	1.3	**1.3**	1.9	7.6	**4.8**	1.3	6.3	**3.8**
all three conditions		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.6	0.0	**0.3**	0.0	0.0	**0.0**
State Rural	n=	262	261	523	262	260	522	256	261	517	129	145	274
With enamel defects		31.0	32.3	**31.7**	29.9	34.0	**32.0**	25.9	27.6	**26.8**	18.7	18.3	**18.5**
demarcated opacity		25.2	30.1	**27.7**	27.8	28.8	**28.3**	23.5	22.5	**23.0**	16.2	17.4	**16.8**
diffuse opacity		7.6	4.9	**6.3**	6.5	8.0	**7.3**	4.4	7.5	**6.0**	6.5	1.3	**3.9**
hypoplasia		3.4	1.3	**2.4**	0.7	1.6	**1.2**	3.8	1.4	**2.6**	2.2	0.4	**1.3**
other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.0	**1.0**
combinations of opacities and hypoplasia		1.0	0.0	**0.5**	0.0	0.0	**0.0**	0.1	1.2	**0.7**	0.0	0.2	**0.1**
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=	54	52	106	52	55	107	55	51	106	25	21	46
With enamel defects		5.6	3.9	**4.8**	9.8	0.0	**4.9**	5.6	2.0	**3.8**	4.0	0.0	**2.0**
demarcated opacity		3.7	3.9	**3.8**	9.8	0.0	**4.9**	3.7	2.0	**2.9**	4.0	0.0	**2.0**
diffuse opacity		1.9	0.0	**1.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**
hypoplasia		0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	0.0	**1.0**	0.0	0.0	**0.0**
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**
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**
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=	316	313	629	314	315	629	311	312	623	154	166	320
With enamel defects		28.8	29.9	**29.4**	28.3	30.7	**29.5**	24.1	25.5	**24.8**	17.7	17.3	**17.5**
demarcated opacity		23.3	27.9	**25.6**	26.4	26.1	**26.3**	21.7	20.8	**21.3**	15.3	16.3	**15.8**
diffuse opacity		7.2	4.6	**5.9**	6.1	7.4	**6.8**	4.2	7.0	**5.6**	6.1	1.5	**3.8**
hypoplasia		3.1	1.3	**2.2**	0.8	1.5	**1.2**	3.7	1.3	**2.5**	2.1	0.4	**1.3**
other defects		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.9	**1.0**
combinations of opacities and hypoplasia		0.9	0.0	**0.5**	0.0	0.0	**0.0**	0.1	1.1	**0.6**	0.0	0.3	**0.2**
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**

Note: Related Table 6.18.

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

State: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	158	155	313	159	156	315
Mean no. of teeth with enamel defects		0.2	0.7	**0.5**	0.9	0.9	**0.9**	0.9	1.0	**1.0**	0.8	1.1	**1.0**	0.4	0.3	**0.4**
with demarcated opacity		0.2	0.4	**0.3**	0.6	0.7	**0.7**	0.7	0.7	**0.7**	0.7	0.7	**0.7**	0.3	0.3	**0.3**
with diffuse opacity		0.0	0.3	**0.2**	0.2	0.1	**0.2**	0.1	0.2	**0.2**	0.0	0.3	**0.2**	0.1	0.0	**0.1**
with hypoplasia		0.1	0.0	**0.1**	0.1	0.1	**0.1**	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	0.1	**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**	0.0	0.0	**0.0**
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315	155	160	315
Mean no. of teeth with enamel defects		3.2	3.4	**3.3**	6.6	6.3	**6.5**	6.4	6.9	**6.7**	7.0	6.5	**6.8**	2.6	3.4	**3.0**
with demarcated opacity		1.9	2.5	**2.2**	4.3	4.2	**4.3**	4.3	4.2	**4.3**	4.0	4.0	**4.0**	1.4	1.8	**1.6**
with diffuse opacity		1.1	0.8	**1.0**	1.7	1.7	**1.7**	1.5	2.1	**1.8**	2.1	1.5	**1.8**	1.0	1.0	**1.0**
with hypoplasia		0.1	0.1	**0.1**	0.5	0.3	**0.4**	0.6	0.6	**0.6**	0.7	0.4	**0.6**	0.2	0.2	**0.2**
with other defects		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	0.1	**0.1**
with combinations of opacities and hypoplasia		0.1	0.0	**0.1**	0.2	0.1	**0.2**	0.0	0.1	**0.1**	0.1	0.6	**0.4**	0.1	0.4	**0.3**
with all three conditions		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	0.0	**0.0**
State Rural	n=	263	261	524	262	261	523	262	260	522	260	261	521	260	264	524
Mean no. of teeth with enamel defects		0.3	0.9	**0.6**	1.2	1.1	**1.2**	1.1	1.3	**1.2**	1.1	1.3	**1.2**	0.5	0.4	**0.5**
with demarcated opacity		0.2	0.5	**0.4**	0.8	0.9	**0.9**	0.9	0.9	**0.9**	0.9	0.9	**0.9**	0.4	0.3	**0.4**
with diffuse opacity		0.1	0.4	**0.3**	0.3	0.1	**0.2**	0.2	0.3	**0.3**	0.1	0.3	**0.2**	0.1	0.0	**0.1**
with hypoplasia		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.0	0.1	**0.1**	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	0.0	**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	0.1	**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**	0.0	0.0	**0.0**
State Urban	n=	55	51	106	54	52	106	52	55	107	56	51	107	54	52	106
Mean no. of teeth with enamel defects		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.2	0.0	**0.1**	0.1	0.0	**0.1**	0.0	0.0	**0.0**
with demarcated opacity		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.2	0.0	**0.1**	0.1	0.0	**0.1**	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**	0.0	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=	318	312	630	316	313	629	314	315	629	316	312	628	314	316	630
Mean no. of teeth with enamel defects		0.3	0.8	**0.6**	1.1	1.0	**1.1**	1.0	1.2	**1.1**	1.0	1.2	**1.1**	0.5	0.4	**0.5**
with demarcated opacity		0.2	0.5	**0.4**	0.7	0.8	**0.8**	0.9	0.8	**0.9**	0.8	0.8	**0.8**	0.3	0.3	**0.3**
with diffuse opacity		0.1	0.3	**0.2**	0.2	0.1	**0.2**	0.2	0.3	**0.3**	0.1	0.3	**0.2**	0.1	0.0	**0.1**
with hypoplasia		0.1	0.0	**0.1**	0.1	0.1	**0.1**	0.0	0.1	**0.1**	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	0.0	**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	0.1	**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**	0.0	0.0	**0.0**

Note: Related Table 6.17.

6.6.4 Prosthetic status

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 mouth dentures. The data was recorded separately for upper arch (maxillary teeth) and the lower arch (mandibular teeth).

Table 6.19 presents the percent subjects with prosthetic status of upper dental arch by type of prosthesis.

Table 6.20 presents the percent subjects with prosthetic status of lower dental arch by type of prosthesis.

None of the subjects were wearing a prosthesis among the 15 year olds. The overall proportion of subjects wearing one or the other type of prosthesis in the upper arch increased as age advanced. Subjects wearing prosthesis in the 35-44 and 65-74 year age groups was 4.4 percent and 17.1 percent, respectively.

Full denture prosthesis was the most commonly seen prosthesis followed by partial dentures.

A slightly higher percentage of urbanites were wearing prosthesis than their rural counterparts, more in Region-1 than in Region-2, with some differentials seen among the genders.

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

Prosthetic Status (Upper)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	*n=*	157	157	314	158	155	313	159	156	315
With Prostheses present		0.0	0.0	**0.0**	3.8	5.1	**4.5**	20.7	13.8	**17.3**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	1.7	**0.9**	0.9	0.0	**0.5**
Partial denture		0.0	0.0	**0.0**	1.8	3.4	**2.6**	1.1	1.1	**1.1**
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**	1.9	0.0	**1.0**	18.7	12.8	**15.8**
Region 2	*n=*	157	158	315	158	157	315	155	160	315
With Prostheses present		0.0	0.0	**0.0**	0.6	2.5	**1.6**	11.0	11.3	**11.2**
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	2.5	**1.3**	2.6	4.4	**3.5**
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**	0.6	0.0	**0.3**	8.4	6.9	**7.7**
State Rural	*n=*	262	260	522	260	261	521	260	264	524
With Prostheses present		0.0	0.0	**0.0**	2.8	4.7	**3.8**	17.0	11.5	**14.3**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	1.9	**1.0**	0.9	0.0	**0.5**
Partial denture		0.0	0.0	**0.0**	0.9	2.9	**1.9**	0.1	1.1	**0.6**
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**	1.9	0.0	**1.0**	16.0	10.5	**13.3**
State Urban	*n=*	52	55	107	56	51	107	54	52	106
With Prostheses present		0.0	0.0	**0.0**	10.9	7.8	**9.4**	51.9	34.6	**43.3**
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**	9.1	7.8	**8.5**	11.1	1.9	**6.5**
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**	1.8	0.0	**0.9**	40.7	32.7	**36.7**
State Total	*n=*	314	315	629	316	312	628	314	316	630
With Prostheses present		0.0	0.0	**0.0**	3.7	5.0	**4.4**	20.4	13.8	**17.1**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	1.7	**0.9**	0.8	0.0	**0.4**
Partial denture		0.0	0.0	**0.0**	1.8	3.3	**2.6**	1.2	1.2	**1.2**
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**	1.9	0.0	**1.0**	18.4	12.6	**15.5**

Note: For information on current status and need for full mouth removable dentures, please refer to Tables **6.24** and **6.24** respectively.
Related Table: **6.20**

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

State: Himachal Pradesh

Prosthetic Status (Lower)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	157	157	314	158	155	313	159	156	315
Prostheses present		0.0	0.0	**0.0**	2.4	1.9	**2.2**	20.5	11.7	**16.1**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.2	1.7	**1.0**	0.9	0.0	**0.5**
Partial denture		0.0	0.0	**0.0**	1.1	0.2	**0.7**	0.9	0.2	**0.6**
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**	1.1	0.0	**0.6**	18.7	11.5	**15.1**
Region 2	n=	157	158	315	158	157	315	155	160	315
Prostheses present		0.0	0.0	**0.0**	1.3	0.0	**0.7**	9.7	8.8	**9.3**
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**	0.6	0.0	**0.3**	2.6	3.1	**2.9**
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**	0.6	0.0	**0.3**	7.1	5.6	**6.4**
State Rural	n=	262	260	522	260	261	521	260	264	524
Prostheses present		0.0	0.0	**0.0**	1.0	1.9	**1.5**	16.9	9.6	**13.3**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.0	1.9	**1.0**	0.9	0.0	**0.5**
Partial denture		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.1	0.1	**0.1**
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**	1.0	0.0	**0.5**	15.9	9.5	**12.7**
State Urban		52	55	107	56	51	107	54	52	106
Prostheses present		0.0	0.0	**0.0**	14.5	2.0	**8.3**	50.0	30.8	**40.4**
Bridge or more than one bridge		0.0	0.0	**0.0**	1.8	0.0	**0.9**	0.0	0.0	**0.0**
Partial denture		0.0	0.0	**0.0**	10.9	2.0	**6.5**	9.3	1.9	**5.6**
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**	1.8	0.0	**0.9**	40.7	28.8	**34.8**
State Total	n=	314	315	629	316	312	628	314	316	630
Prostheses present		0.0	0.0	**0.0**	2.4	1.9	**2.2**	20.2	11.6	**15.9**
Bridge or more than one bridge		0.0	0.0	**0.0**	0.2	1.7	**1.0**	0.8	0.0	**0.4**
Partial denture		0.0	0.0	**0.0**	1.1	0.2	**0.7**	1.0	0.3	**0.7**
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**	1.0	0.0	**0.5**	18.4	11.4	**14.9**

Note: For information on current status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively. Related Table : **6.19**

None of the subjects were wearing a prosthesis among the 15 year olds. The overall proportion of subjects wearing one or the other type of prosthesis in the lower arch increased as age advanced. The proportion of subjects wearing prosthesis in the lower arch was about 2.2 percent for the 35-44 year age group and 15.9 percent for the 65-74 year age group. More males than females were wearing prosthesis. Full mouth dentures were the most common prosthesis (14.9 percent) followed by much lower prevalence of partial dentures (0.7 percent). In the 35-44 year age group the most prevalent prosthesis was bridge (1 percent) followed by partial denture (0.7 percent). The prevalence pattern of subjects wearing prosthesis and their pattern of distribution by type of prosthesis showed that a greater percentage of urbanites were wearing prosthesis than their rural counterparts, more in Region-1 than Region-2. There were marked differentials in the distribution among the genders.

Only one percent of the males in the 35-44 year age group were wearing full mouth removable dentures.

About 14.9 percent of the subjects in the 65-74 year age group were wearing full mouth removable dentures (18.4 percent for males and 11.4 percent for females). The proportion of subjects wearing full mouth removable dentures was higher in the urban than rural areas, and higher in Region-1 than in Region -2, with large differentials among the genders.

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

Prosthetic Status (Full mouth removable dentures)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1										
	n=	157	157	314	158	155	313	159	155	314
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	1.1	0.0	**0.6**	18.7	11.6	**15.2**
Region 2										
	n=	157	158	315	158	157	315	155	160	315
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	0.6	0.0	**0.3**	7.1	5.6	**6.4**
State Rural										
	n=	262	260	522	260	261	521	260	263	523
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	1.0	0.0	**0.5**	15.9	9.6	**12.8**
State Urban										
	n=	52	55	107	56	51	107	54	52	106
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	1.8	0.0	**0.9**	40.7	28.8	**34.8**
State Total										
	n=	314	315	629	316	312	628	314	315	629
% subjects with full mouth removable dentures		0.0	0.0	**0.0**	1.0	0.0	**0.5**	18.4	11.4	**14.9**

Note: Related Tables are 6.19 and 6.20.

6.6.5 Prosthetic need

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

Table 6.22 presents the percent subjects with prosthetic need of upper dental arch by type of prosthesis needed.

Table 6.23 presents the percent subjects with prosthetic need of lower dental arch by type of prosthesis needed.

There was a higher need for prosthesis as age advanced. Only about 1.4 percent of the subjects required one-unit prosthesis, among 15 year olds, and in the 35-44 year age group the prosthetic need was 53.6 percent and a majority needed one-unit prosthesis (31.1 percent).

The prosthetic need was the highest for 65-74 year age group (80.2 percent) and a majority needed full mouth removable dentures (48.1 percent). Followed by the need for multi-unit prostheses (14.9 percent). More females than males needed prostheses. The prevalence pattern and distribution of need by type of prosthesis showed that there was a higher need for prostheses in the rural than urban residents. There were not much differentials with respect to the genders and regions.

There appeared to be a relatively greater need for prosthesis in the lower arch in subjects compared to the upper arch. As in the case of prosthetic need (upper arch) there was a higher need for prosthesis as age advanced.

The need for prosthesis in the lower arch was more for the 35-44 year age group (60.5 percent) and 65-74 year age group (80.6 percent). The most prevalent need was for one-unit prosthesis (32 percent) among the 35-44 year age group. In the 65-74 year age group, the most prevalent need was for full dentures (49.3 percent), more in females than males, followed by the need for multi-unit prosthesis (14.4 percent). The pattern and type of prosthetic need showed that there was a greater need for prosthesis among rural residents than urbanites.

About 2.6 percent of the subjects (3.4 percent for males and 1.7 percent for females) required full mouth dentures in the 35-44 year age group. Almost 46.9 percent of the subjects in the 65-74 year age group (44.9 percent for males and 48.9 percent for females) required full mouth dentures. The need was greater in rural areas compared to urban areas, and higher in Region-1 than in Region-2. There were not much differentials among the genders.

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

Prosthetic Need (Upper)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	157	157	314	158	155	313	159	156	315
With Prosthetic need		0.9	1.9	1.4	57.0	52.0	54.5	76.6	83.6	80.1
Need for one unit prosthesis		0.9	1.9	1.4	31.5	31.6	31.6	6.9	3.7	5.3
Need for multi unit prosthesis		0.0	0.0	0.0	9.5	12.9	11.2	13.1	15.9	14.5
Need for combination of one and/or MUP		0.0	0.0	0.0	11.7	5.8	8.8	10.5	13.4	12.0
Need for full prosthesis		0.0	0.0	0.0	4.3	1.7	3.0	46.1	50.7	48.4
Region 2	n=	157	158	315	158	157	315	155	160	315
With Prosthetic need		1.9	1.3	1.6	25.5	26.8	26.2	81.9	84.4	83.2
Need for one unit prosthesis		1.9	1.3	1.6	16.6	17.2	16.9	9.0	5.6	7.3
Need for multi unit prosthesis		0.0	0.0	0.0	5.1	5.1	5.1	19.4	31.9	25.7
Need for combination of one and/or MUP		0.0	0.0	0.0	3.8	4.5	4.2	9.0	9.4	9.2
Need for full prosthesis		0.0	0.0	0.0	0.0	0.0	0.0	44.5	37.5	41.0
State Rural	n=	262	260	522	260	261	521	260	264	524
With Prosthetic need		1.0	1.9	1.5	58.2	53.0	55.6	80.1	85.5	82.8
Need for one unit prosthesis		1.0	1.9	1.5	31.6	32.2	31.9	6.7	3.9	5.3
Need for multi unit prosthesis		0.0	0.0	0.0	9.6	13.2	11.4	13.5	16.8	15.2
Need for combination of one and/or MUP		0.0	0.0	0.0	12.4	5.7	9.1	11.4	14.3	12.9
Need for full prosthesis		0.0	0.0	0.0	4.7	1.9	3.3	48.5	50.6	49.6
State Urban	n=	52	55	107	56	51	107	54	52	106
With Prosthetic need		0.0	1.8	0.9	38.2	35.3	36.8	46.3	65.4	55.9
Need for one unit prosthesis		0.0	1.8	0.9	27.3	21.6	24.5	9.3	1.9	5.6
Need for multi unit prosthesis		0.0	0.0	0.0	7.3	7.8	7.6	11.1	11.5	11.3
Need for combination of one and/or MUP		0.0	0.0	0.0	3.6	5.9	4.8	1.9	3.8	2.9
Need for full prosthesis		0.0	0.0	0.0	0.0	0.0	0.0	24.1	48.1	36.1
State Total	n=	314	315	629	316	312	628	314	316	630
With Prosthetic need		0.9	1.9	1.4	55.9	51.2	53.6	76.7	83.6	80.2
Need for one unit prosthesis		0.9	1.9	1.4	31.0	31.1	31.1	7.0	3.7	5.4
Need for multi unit prosthesis		0.0	0.0	0.0	9.3	12.7	11.0	13.3	16.4	14.9
Need for combination of one and/or MUP		0.0	0.0	0.0	11.4	5.7	8.6	10.4	13.2	11.8
Need for full prosthesis		0.0	0.0	0.0	4.2	1.7	3.0	46.0	50.2	48.1

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

State: Himachal Pradesh

Prosthetic Need (Lower)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1	n=	157	157	314	158	155	313	159	156	315
With Prosthetic need		2.9	1.8	**2.4**	63.4	59.6	**61.5**	75.5	85.7	**80.6**
Need for one unit prosthesis		2.9	1.8	**2.4**	33.5	31.2	**32.4**	3.4	9.2	**6.3**
Need for multi unit prosthesis		0.0	0.0	**0.0**	14.2	16.6	**15.4**	17.4	10.7	**14.1**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	12.3	10.1	**11.2**	8.6	12.5	**10.6**
Need for full prosthesis		0.0	0.0	**0.0**	3.5	1.7	**2.6**	46.1	53.3	**49.7**
Region 2	n=	157	158	315	158	157	315	155	160	315
With Prosthetic need		1.3	1.9	**1.6**	29.3	35.0	**32.2**	81.3	81.9	**81.6**
Need for one unit prosthesis		0.6	1.9	**1.3**	19.1	20.4	**19.8**	7.7	9.4	**8.6**
Need for multi unit prosthesis		0.6	0.0	**0.3**	3.2	5.7	**4.5**	27.7	23.8	**25.8**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	7.0	8.9	**8.0**	6.5	8.8	**7.7**
Need for full prosthesis		0.0	0.0	**0.0**	0.0	0.0	**0.0**	39.4	40.0	**39.7**
State Rural	n=	262	260	522	260	261	521	260	264	524
With Prosthetic need		2.8	1.0	**1.9**	64.0	59.8	**61.9**	79.1	87.3	**83.2**
Need for one unit prosthesis		2.8	1.0	**1.9**	33.5	30.5	**32.0**	3.9	9.6	**6.8**
Need for multi unit prosthesis		0.0	0.0	**0.0**	14.2	17.0	**15.6**	18.4	11.0	**14.7**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	12.5	10.5	**11.5**	8.5	13.3	**10.9**
Need for full prosthesis		0.0	0.0	**0.0**	3.8	1.9	**2.9**	48.3	53.4	**50.9**
State Urban	n=	52	55	107	56	51	107	54	52	106
With Prosthetic need		3.9	9.1	**6.5**	49.1	51.0	**50.1**	44.4	69.2	**56.8**
Need for one unit prosthesis		3.9	9.1	**6.5**	29.1	35.3	**32.2**	0.0	5.8	**2.9**
Need for multi unit prosthesis		0.0	0.0	**0.0**	10.9	9.8	**10.4**	11.1	11.5	**11.3**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	9.1	5.9	**7.5**	9.3	3.8	**6.6**
Need for full prosthesis		0.0	0.0	**0.0**	0.0	0.0	**0.0**	24.1	48.1	**36.1**
State Total	n=	314	315	629	316	312	628	314	316	630
With Prosthetic need		2.9	1.9	**2.4**	62.2	58.8	**60.5**	75.7	85.5	**80.6**
Need for one unit prosthesis		2.9	1.9	**2.4**	33.0	30.9	**32.0**	3.6	9.2	**6.4**
Need for multi unit prosthesis		0.0	0.0	**0.0**	13.8	16.2	**15.0**	17.7	11.1	**14.4**
Need for combination of one and/or MUP		0.0	0.0	**0.0**	12.1	10.1	**11.1**	8.6	12.4	**10.5**
Need for full prosthesis		0.0	0.0	**0.0**	3.4	1.7	**2.6**	45.8	52.8	**49.3**

Note: For information on current status and need for full mouth removable dentures, please refer to Tables 6.21 and 6.24 respectively. Related Table : 6.22

Table 6.24. Percent subjects needing full mouth removable dentures by age, sex, and geographical area.

State: Himachal Pradesh

Prosthetic Need (Full mouth removable dentures)		15 years			35-44 years			65-74 years		
		M	F	T	M	F	T	M	F	T
Region 1										
	n=	157	157	314	158	154	312	159	155	314
% subjects needing full mouth removable dentures		0.0	0.0	**0.0**	3.5	1.8	**2.7**	45.2	49.4	**47.3**
Region 2										
	n=	157	158	315	158	157	315	155	160	315
% subjects needing full mouth removable dentures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	36.8	36.3	**36.6**
State Rural										
	n=	262	260	522	260	260	520	260	263	523
% subjects needing full mouth removable dentures		0.0	0.0	**0.0**	3.8	1.9	**2.9**	47.3	49.1	**48.2**
State Urban										
	n=	52	55	107	56	51	107	54	52	106
% subjects needing full mouth removable dentures		0.0	0.0	**0.0**	0.0	0.0	**0.0**	24.1	48.1	**36.1**
State Total										
	n=	314	315	629	316	311	627	314	315	629
% subjects needing full mouth removable dentures		0.0	0.0	**0.0**	3.4	1.7	**2.6**	44.9	48.9	**46.9**

Note: Related Tables are 6.22 and 6.23

6.6.6 Community need for immediate care and referrals

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

Overall, life threatening and painful or infective conditions were extremely rare. Life threatening conditions were seen only among 0.7 percent of the subjects, distributed in rural and urban residents in the age groups of 35 years and above.

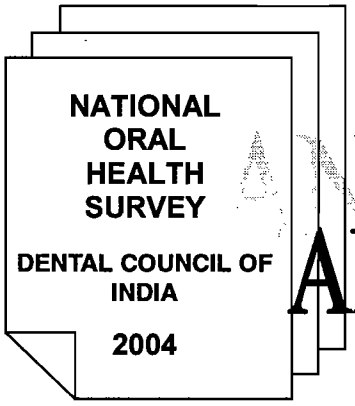
Pain or infection was recorded in all the age groups and was about 17-24 percent in the age groups of 35 years and above.

The pattern was almost similar in rural and urban areas, but there were a much higher proportion of the genders in rural areas, with pain or infection. Region-1 showed higher prevalence of conditions compared to Region-2, except for the 12 year olds.

Referrals were made for almost all the conditions recorded for the surveyed population.

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: Himachal Pradesh

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=	158	157	315	159	155	314	157	157	314	157	155	312	155	151	306
Life threatening condition		158	0.0	**79.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.2	**0.2**	0.9	0.0	**0.5**
Pain or infection		1.6	3.1	**2.4**	1.0	0.0	**0.5**	1.2	5.3	**3.3**	17.3	16.1	**16.7**	23.3	25.4	**24.4**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.9	**0.5**	0.9	0.2	**0.6**	0.0	1.1	**0.6**
Referral		1.6	3.1	**2.4**	1.0	0.0	**0.5**	1.2	5.3	**3.3**	18.2	16.1	**17.2**	23.4	25.7	**24.6**
Region 2	n=	160	155	315	157	158	315	157	158	315	158	157	315	155	160	315
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**	0.6	0.0	**0.3**
Pain or infection		1.3	0.0	**0.7**	3.2	2.5	**2.9**	1.3	2.5	**1.9**	10.2	12.7	**11.5**	11.0	11.9	**11.5**
Other 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**	0.6	0.6	**0.6**
Referral		1.3	0.0	**0.7**	3.2	2.5	**2.9**	1.3	2.5	**1.9**	10.2	12.7	**11.5**	11.0	12.6	**11.8**
State Rural		263	261	524	262	261	523	262	260	522	260	261	521	258	261	519
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**	1.0	0.0	**0.5**
Pain or infection		1.0	2.7	**1.9**	1.0	0.1	**0.6**	1.0	4.8	**2.9**	18.2	16.2	**17.2**	24.8	27.2	**26.0**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	1.0	**0.5**	0.9	0.0	**0.5**	0.0	1.0	**0.5**
Referral		1.0	2.7	**1.9**	1.0	0.1	**0.6**	1.0	4.8	**2.9**	19.1	16.2	**17.7**	24.8	27.3	**26.1**
State Urban		55	51	106	54	52	106	52	55	107	55	51	106	52	50	102
Life threatening condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	1.9	2.0	**2.0**	0.0	0.0	**0.0**
Pain or infection		7.4	5.9	**6.7**	1.9	0.0	**1.0**	3.9	9.1	**6.5**	7.4	13.7	**10.6**	5.8	4.0	**4.9**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.0	**1.0**	0.0	2.0	**1.0**
Referral		7.4	5.9	**6.7**	1.9	0.0	**1.0**	3.9	9.1	**6.5**	7.4	13.7	**10.6**	6.0	6.3	**6.2**
State Total		318	312	630	316	313	629	314	315	629	315	312	627	310	311	621
Life threatening condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.2	0.2	**0.2**	0.9	0.0	**0.5**
Pain or infection		1.6	3.0	**2.3**	1.1	0.1	**0.6**	1.2	5.3	**3.3**	17.1	16.0	**16.6**	22.9	24.9	**23.9**
Other condition		0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.8	**0.4**	0.8	0.2	**0.5**	0.0	1.1	**0.6**
Referral		1.6	3.0	**2.3**	1.1	0.1	**0.6**	1.2	5.3	**3.3**	17.9	16.0	**17.0**	23.0	25.2	**24.1**



ANNEXURES

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. Surindera 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.	Dental College & Hospital, 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 & Hospital, Pune
10.	Dental Wing, S.C.B. Medical College, Cuttak (Orissa)
11.	Mahatma Gandhi Dental College & Hospital, Pondicherry.
12.	Dental College & Hospital, Lucknow
13.	Govt Dental College, Indore (M.P)
14.	Principal, Sri Sai College of Dental Surgery, Vikarabad – 501 101 (R.R. Dist. – A.P.)
15.	Govt. Dental College, Srinagar (J&K)
16.	Pacific Dental College, Udaipur, Rajasthan

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 (HIMACHAL PRADESH)

S. No.	Name	Designation
1.	Dr. N.C. Rao	Regional Coordinator
2.	Dr. D.L. Dileep	Supervisor
3.	Dr. Amitabh Sharma	Dental Surgeon
4.	Dr. Deepak Negi	Dental Surgeon
5.	Dr. Jyoti Saini	Dental Surgeon
6.	Dr. Deepak Aggarwal	Dental Surgeon
7.	Dr. Vivek Raina	Dental Surgeon
8.	Dr. Vivek Guleria	Dental Surgeon
9.	Mr. Ashok Guleria	Dental Hygienist
10.	Mr. Ravi Kumar	Dental Hygienist
11.	Mr. Shyam Sunder	Driver
12.	Mr. Hem Raj	Driver
13.	Mr. Narain Singh	Assistant
14.	Mr. Devinder Kumar	Assistant
15.	Mr. Sadhu Ram	Assistant

List of participating Dental Colleges

1. H.P. Dental College & Hospital, Shimla (H.P)
2. Himachal Dental College, Sunder Nagar, Dist. Mandi (H.P.)

ANNEXURE - 6

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 (ज़ोन) [ ][ ] (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*** प्राइमरी ..... ***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. अ.	**Socio-demographic cherecteristics of the individual** 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			A S K E D	A S K E D				(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			B E	B E				(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			T O	T O				(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			T N	T N				(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			O O	O O				(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 ***Mouth/*** मुँह ***Can't Say/*** कह नहीं सकता	***1*** ***2*** ***3***							(95-99)
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 ***Yes/*** हां ***Can't Say/*** कह नहीं सकता	***1*** ***2*** ***3***							(100-104)
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 ***Yes/*** हां ***Can't Say/*** कह नहीं सकता	***1*** ***2*** ***3***							(105-109)
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 ***Yes/*** हां ***Can't Say/*** कह नहीं सकता	***1*** ***2*** ***3***							(110-114)
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 ***In Sleep/*** नींद में ***In Stress/*** दबाव में ***Can't Say/*** कह नहीं सकता	***1*** ***2*** ***3*** ***4***							(115-119)
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 ***2 times/*** 2 बार ***3 times/*** 3 बार ***4 times/*** 4 बार ***5 times/*** 5 बार ***> 5 times/*** 6 बार ***Not taken/*** नहीं खाई	***1*** ***2*** ***3*** ***4*** ***5*** ***6*** ***7***							(120-124)

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*** ..... ***1*** फ्लोराइड–युक्त ***Non-Fluoridated*** ..... ***2*** फ्लोराइड–रहित ***Can't Say*** ..... ***3*** कह नहीं सकता ***None*** ***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 ..... ***1*** ***4-6 months/*** 4–6 माह ..... ***2*** ***6 + months/*** ..... ***3*** 6 से अधिक ***NA (Not using/ Brush)*** ***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*** ..... ***1*** कभी नहीं ***Sometimes*** ..... ***2*** कभी–कभी ***Always*** ..... ***3*** सर्वदा								(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*** ..... ***1*** डेन्टल फ्लॉश ***Interdental Brush*** ..... ***2*** इन्टरडेन्टल ब्रुश ***Toothpicks*** ..... ***3*** टूथ पिक्स ***Fluoride Mouthrinse*** ..... ***4*** फ्लोराइड माउथरिन्स ***Other*** ..... ***5*** ***Mouthwash/Rinse (Specify)*** अन्य माउथवाश/रिन्स लिखें ***None/*** कोई नहीं ***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/ Chemist*** ..... ***5*** 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	2							
		हाईपरटेन्शन								
		Diabetes	3							
		डाईबिटीज़								
		Epilepsy	4							
		एपिलेप्सी								
		Jaundice	5							
		जोन्डिस								
		Asthma	6							
		अस्थमा								
		Others (Specify)	7							
		अन्य								
		Can't Say/	8							
		कह नहीं सकता								
48.	***What is or are the availability of dental treatment facllities 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	2							
		सरकारी हस्पताल / डिस्पेन्सरी								
		Private Hospitals	3							
		निजी हस्पताल								
		Private Practitioner	4							
		प्राइवेट प्रेक्टिशनर								
		Don't Know	5							
		नहीं जानते								
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***	1							(270-274)
		आधा घण्टा से कम								
		½ to 1 hour	2							
		आधा से 1 घण्टा								
		> 1 hour	3							
		1 घण्टा से अधिक								
		Can't Say	4							
		कह नहीं सकता								

S. No./ क्रम सं.	Question / प्रश्न	Response / उत्तर	Code/कोड़		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*** ..... 1 दंत–क्षय ***Gum Disease*** ..... 2 मसूड़ों की बीमारी ***Bad Smell*** ..... 3 दुर्गन्ध ***Crooked teeth*** ..... 4 टेढ़े–मेढ़े दांत ***Mouth Ulcers*** ..... 5 मुख का अल्सर ***Stained teeth*** ..... 6 गन्दे दांत ***Others (Specify)*** ..... 7 अन्य ***Don't Know*** ..... 8 नहीं जानता			A S K E D					(275-294)
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 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			N O T T O B E					(295-314)

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	1		A S K E D					(315-334)
		Regular cleaning of teeth with brush ब्रुश द्वारा दांतों की नियमित सफाई	2							
		Visiting dentist regularly दंत–चिकित्सक द्वारा नियमित जांच	3							
		Using Fluoride Toothpaste फ्लोराइड टूथ–पेस्ट का इस्तेमाल	4							
		Avoiding sweets icecreams/chocolates मिठाई, आइसक्रीम व चाकलेट छोड़कर	5							
		Others (Specify) अन्य तरीके	6							
		Don't Know नहीं जानता	7							

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

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

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)

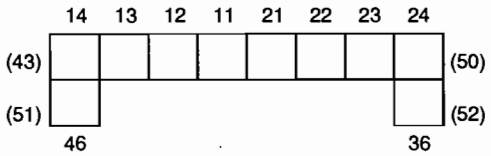
LOCATION

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*

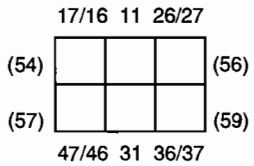
0 = Normal
1 = Questionable
2 = Very mild
3 = Mild
4 = Moderate
5 = Severe
8 = Excluded
9 = Not recorded

(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

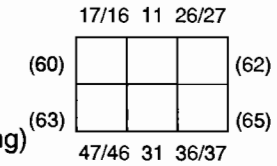
*Not recorded under 15 years of age



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

		55	54	53	52	51	61	62	63	64	65						
		18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Crown	(66)																(81)
Root	(82)																(97)
Treatment	(98)																(113)

		85	84	83	82	81	71	72	73	74	75						
		48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Crown	(114)																(129)
Root	(130)																(145)
Treatment	(146)																(161)

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