

ATRAUMATIC RESTORATIVE TREATMENT TO THE RURAL POPULATION

**A GOI – WHO COLLOBORATIVE PROGRAMME
2006-2007**



**MAHATMA GANDHI
POSTGRADUATE INSTITUTE OF DENTAL SCIENCES
GOVERNMENT OF PUDUCHERRY INSTITUTION
PUDUCHERRY – 605 006**

Project Title: Atraumatic Restorative Treatment to the Rural Population

Principal Investigator:

Dr. Shyam Singh, M.D.S

Director

Mahatma Gandhi Post graduate Institute Of Dental Sciences

Government of Puducherry Institution

Puducherry.

Co – Investigators:

1. Dr. V. Ramesh M.D.S

Dean

Mahatma Gandhi Post graduate Institute Of Dental Sciences

Government of Puducherry Institution

Puducherry.

2. Dr. A. Vasanthakumari M.D.S

Prof. & Head, Dept. of Pedodontics

Mahatma Gandhi Post Graduate Institute of Dental Sciences

Government of Puducherry Institution

Puducherry.

Senior Research Fellow:

Dr. G. California, B.D.S

WHO – ART Project

Mahatma Gandhi Post graduate Institute Of Dental Sciences

Government of Puducherry Institution

Puducherry.

Contributors:

- 1. Dr. Cherian Varghese**
Cluster Focal Point
(Non Communicable Diseases and Mental Health)
WHO – India Control Office
NEW DELHI.
- 2. Dr. Mrs. Jagdish Kaur**
Chief Medical Officer
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India.
- 3. Dr. Kumar Rajan**
Consultant (Oral Health)
WHO – India and Directorate General of Health Services
Government of India.
- 4. Post Graduate Students of Mahatma Gandhi Post Graduate Institute of Dental Sciences**
 - a. Dr. M.Vijaya Raju
 - b. Dr. T. Maheshwaran
 - c. Dr. G. Sitra
 - d. Dr. T. Ranjani
 - e. Dr. Amit Tamrakar
 - f. Dr. Shikha Dogra
 - g. Dr. Anitha Thakur
 - h. Dr. B. Aarthi
 - i. Dr. Anshu Prakash
 - j. Dr. Deepak C.K.

Preface:

The Oral Health Survey under the auspices of WHO conducted by the Mahatma Gandhi Post Graduate Institute of Dental Sciences Puducherry in the year 2004-05 has thrown some light with regard to the high prevalence of caries Index and Missing teeth in the region of Puducherry. This fact provoked us to take some immediate and simple step to prevent this Dental problem which should be cost effective so that it can be implemented throughout the Union Territory of Puducherry, in order to bring down the caries index and the missing teeth in the rural population.

At the preliminary stage, it was planned to adopt two PHC's in the rural area of Puducherry which includes the General Public, school children and the college students within the region of the selected PHC's. To these selected patients with Dental caries – the simple, cost effective and practical approach was adopted (Atraumatic Restorative Treatment), utilizing the Glass ionomer cement.

The effectiveness of the retained fillings were evaluated after a period of 6/3 months, their efficacies were analyzed in the deciduous and permanent dentition. It was also heartening, to note the encouraging results and the recommendations are enclosed in the report.

At this juncture, we acknowledge the cordial and effective approach of World Health Organization and thankful to the authority of WHO, for sponsoring this Project and the Government of Puducherry for permitting us to carry out this project successfully and come out with useful information that will guide in the management of Oral Health status.

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Executive Summary:

The present study aims at providing Atraumatic Restorative Treatment to rural population and to evaluate the efficiency of ART approach in the rural area of Puducherry. The study was conducted in two Primary Health Centers, Schools and Colleges in age group ranging from 5-75 yrs. A total of 1500 individuals were provided ART, the evaluation of ART was done in 6 and 3 months period which included 1180 individuals. The loss to follow up was 10.08%. A total of 267 and 793 single surface restorations were done in deciduous teeth and permanent teeth with 91.3% success rate with 95% Confidence Interval (CI) of 87.96 to 94.8 and 95.7% with 95% Ci of 94.29 to 97.13 respectively.

A total of 109 and 71 multiple surface ART restorations were placed in deciduous and permanent teeth with 92.6% success rate with 95% CI of 87.6 to 97.6 and 95.7% success rate with 95% CI of 90.9 to 100%. The survival of ART approach in deciduous and permanent teeth was considered high during the short follow up period.

Introduction:

India is the second biggest country in the world with a population of approximately 1.00 billion; India is providing 7000 dentists per annum. Yet the dentist: population ratio is 1:30,000. India cannot afford to spend on the highly expensive dental restorative treatment. In order to bring down the disease prevalence and severity, the only alternative is to implement organized and Oral Health preventive programme. Considering the problem of delivery of oral care to such a populous country, the ART approach, which does not require sophisticated and expensive dental equipment, might be appropriate for the management of dental caries in India.

One of the preventive restorative treatment concepts that had emerged in the dental literature in the mid nineties was the Atraumatic Restorative Treatment (ART) approach. ART is one of the existing minimal intervention approaches that removes demineralised tooth tissues using hand instruments and restores the cleaned cavity and adjacent pits and fissures with an adhesive filling material, usually a glass ionomer cement. No electricity is required and local anaesthesia is rarely asked for by people treated by the ART approach (Frencken et al, 1996).

In communities without access to traditional dental treatment, alternative measures for treating caries are being used. One alternate is the Atraumatic Restorative Treatment, which fits modern concepts of preventive and restorative oral care in that it emphasize prevention and minimal invasiveness in treatment.

In patients with great treatment needs, an attempt is made to improve the oral status with a view to arrest the destructive process of the disease and favorably alter the micro biota. ART has become one of the treatment modalities available to oral health workers in managing dental caries.

The present study assesses the survival of ART restorations in deciduous and permanent teeth.

Aims & Objectives:

1. To adopt two PHC's in the Rural Area of the Govt of Union Territory of Puducherry which includes General Public, school children and college students, well within PHC limits.
2. To provide Atraumatic Restorative Treatment to all these people.
3. To assess the effectiveness of Atraumatic Restorative Treatment in primary and permanent teeth by doing single surface restorations and multiple surface restorations.
4. To do follow up and to evaluate the success rate of Atraumatic Restorative Treatment restorations after 6/3 months.

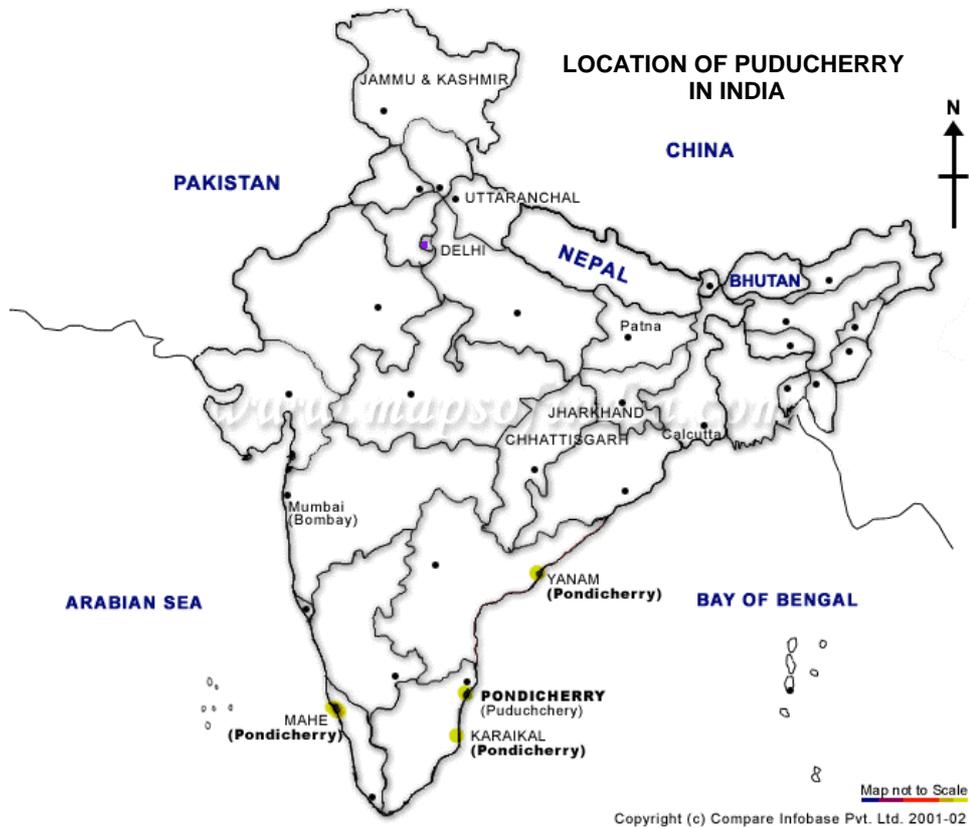
Materials and Methods:

Area and Population Included:

Puducherry is one of the seven Union Territory situated in the Southern region of India. The area of Puducherry is 480 sq.km. The total population of the State is 9,74,345 as per the 2001 population census of India². Literacy rate is 81.49%.

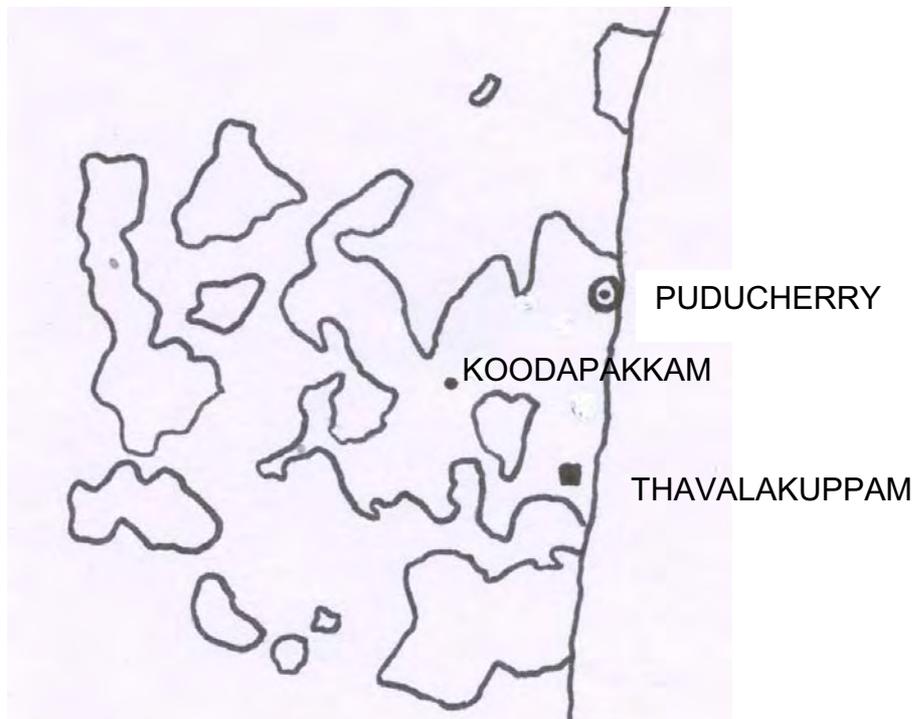
The present study was carried out in Primary Health Centre in the rural area. From the available PHCs in rural areas of Puducherry two were selected randomly, namely Koodapakam and Thavalakuppam villages. The Primary Health Centre covers a population of **8341 and 14677** respectively in koodapakam and Thavalakupam. During our visit to the PHCs for the study, children and adult population who came to PHC were minimal due to the preoccupation in attending the schools and colleges. Hence the schools and colleges in the area were selected for study.

Map 1



LOCATION OF RURAL AREAS

Map 2



Map 1 describes the location of Puducherry in India
Map 2 describes the PHC's included in the study

Sample Size and Sampling procedure:

A Convenient sample of 1500 subject were selected in the age groups of 5-12 yrs, 13-20 yrs, 21-34 yrs, 35-64 yrs, 65-74 yrs.

Inclusion Criteria for the subject were the presence of one or more carious lesions involving dentin and that cavity accessible to hand instruments.

Exclusion criteria were teeth with pulpal exposure, history of pain, or the presence of swelling or fistula.

Selection from PHC:

All the individuals who came to PHC were examined for dental caries. The cases included in the study for ART was as per the norms stipulated in the manual of ART by Jo E.Frencken and Christopher J.Holmgren³.

Selection from Schools and colleges:

Students from two government schools, four private schools and one college were examined for dental caries. A total of 4099 school children and 300 college students were examined for dental caries in the respective age groups. A total number of 998 students were included in the study.

Official Permission:

1. Permission from Directorate of Health and Family Welfare, Government of Puducherry was obtained for conducting the study in the PHC's.
2. Permission from Directorate of school education was obtained for examination of school children.
3. Consent from the school Head Masters, School Teachers and parents were taken before examination and for ART fillings also.

Nature of Information Collected:

- The name, age, address were recorded
- The dentition status was recorded in a separate Oral Health Assessment form.

- KAP questionnaire designed for children and adults was used to assess the knowledge regarding Oral Health.

Study Period:

The study was conducted between August 2006 and March 2007. The success rate of ART was evaluated after 6 months and 3 months duration. The cases in the first phase of treatment from August to October were evaluated after 6 months. The cases included in the 2nd phase from November to January were evaluated after 3 months of the treatment done.

After completion of the treatment part, review was carried in two different phases. The first phase consisted of 6 months follow up for all cases treated upto October, and those cases treated subsequently were placed under second phase group, wherein follow - up period was done after 3 months (i.e. cases done from November to January).

Instruments Used:

The *essential Instruments* for ART are: Mouth mirror, straight probe, explorer, and pair of tweezers, hatchet, spoon excavator – small, medium, large, plastic filling instrument and WHO CPI probe.

The *essential materials* are: Gloves, cotton roll and pellets, GIC Fuji ix, petroleum jelly, plastic strips and articulation paper.

Principles of ART:

The two main Principles of ART are:

- removing carious tooth tissues using hand instruments only, and
- restoring the cavity with a restorative material that sticks to the tooth. Currently, ART is performed using glass-ionomer as the restorative material.

The reasons for using hand instruments rather than electric rotating handpieces are:

- it makes restorative care accessible for all population groups,
- the use of a biological approach, which requires minimal cavity preparation that conserves sound tooth structure and causes less trauma to the teeth,

- the low cost of hand instruments compared to electrically driven dental equipment,
- the limitation of pain that reduces the need for local anesthesia to a minimum and reduces psychological fear,
- Hand instruments can easily be cleaned and sterilized after every patient.

The reasons for using glass-ionomer are:

- The binding of glass-ionomer chemically to both enamel and dentine, the need to cut sound tooth tissue to cavity is reduced,
- fluoride is released from the restoration to prevent and arrest caries and,
- it is rather similar to hard oral tissues and does not inflame the pulp or gingival.

Because the purpose of ART is to remove only demineralised and insensitive outer carious dentin it may not elicit pain or at least it can be kept to minimum. Thus reducing the completed procedural aspects and apprehension. The advance filling material used is glass ionomer cement (Fuji ix).

The study consisted of 1500 patients which includes 771 numbers of males and 729 numbers of females at different age groups as shown in Table No 1. The overall Restorative treatment consisted 375 filling in deciduous and 1320 filling in permanent teeth.

Table I

Distribution of cases by age and sex:

Age	5-12 yrs	13-20 yrs	21-34 yrs	35-64 yrs	65-74 yrs	Total
Male	212	175	191	178	15	771
Female	165	159	212	172	21	729
Total	377	334	403	350	36	1500

The treatments for patients in the PHC were given with the facility of the normal Dental Chair, while that used for the treatment in schools / colleges were conventional plastic chairs used for the seating arrangements.

Step-by- step procedure followed:

For small cavities the entrance to the lesion was widened with a dental hatchet, rotating it backward and forward. The next step was the removal of decalcified tissues with an excavator, first at the dentin-enamel junction and then from the cavity floor. Thin unsupported enamel was carefully removed with a hatchet placed on the enamel and pressure applied to weak enamel walls. The cavity was then washed with water on a small cotton pellet. Conditioning of the tooth structures was carried out with a cotton pellet saturated with the liquid from the glass ionomer for 10-15 seconds. The conditioned surfaces were washed with wet cotton pellets and dried with dry cotton pellets. The glass ionomer cement was prepared by the chair side assistant according to the manufactures instructions. The filling material was inserted into the cavity using the smooth side of an excavator. Finger press technique was used and pressed against the filling material for approximately 1 minute and the restoration was coated with petroleum jelly. Excess material was removed with a carver. The bite was checked using articulation paper and the height of the restoration was adjusted. Patient was asked to not eat for 1 hour.

Follow up: For children the follow up was done in respective schools. For Adults, the patients were requested to come to the PHC on particular days through letters, through the area Anganvadi workers, through ANM's, however less than half of the patients responded to the request. Another attempt was to the remaining left out cases were from house to house visit.

Table II

Original evaluation criteria used for ART restorations⁴

Score	Criterion
0	Present, good
1	Present, slight marginal defect for whatever reason, at any one place which is less than 0.5 mm. in depth. <i>No repair is needed.</i>
2	Present, marginal defect for whatever reason, at any one place which is deeper than 0.5 mm but less than 1.0 mm. <i>Repair is needed.</i>
3	Present, gross defect of more than 1.0 mm. in depth. <i>Repair is needed.</i>
4	Not present, restoration has (almost) completely disappeared. <i>Treatment is needed.</i>
5	Not present, other restorative treatment has been performed.
6	Not present, tooth has been extracted.
7	Present, wear and tear gradually over larger parts of the restoration but is less than 0.5 mm. at the deepest point. <i>No repair is needed.</i>
8	Present, wear and tear gradually over larger parts of the restoration which is deeper than 0.5 mm. <i>Repair is needed.</i>
9	Unable to diagnose

Note : Restorations considered to have survived are scored by codes: 0,1,7; those considered to have failed by codes: 2,3,4,8; while those that are considered to be unrelated to success and failure are codes:5,6.

Information Education Communication (IEC) material:

Phamplets were developed regarding:

- Oral hygiene maintenance like brushing technique, use of inter dental brushes and inter dental aids.
- Ill effects of tobacco and its complication.
- The common cause of pain in teeth and gums and precaution to be taken after extraction.
- Diabetes mellitus its relation to mouth and clinical features, guidelines to be followed in them during dental treatments.
- Common dental problems in children and preventive measures for tooth decay.

Results:

1. Descriptive Data:

National Oral Health Survey⁷ conducted in Puducherry recently has caries prevalence of 51.12 and 51.87 in 12 ± 1 yr and 15 ± 1 yr respectively and DMFT of score of 2.73 and 2.73 in the same age groups. In 35 – 74 yrs age groups the average DMFT score was 3.82.

A total of 379 restorations were done in primary teeth and 1320 restorations were done in permanent teeth.

A total of 1180 individuals were followed up. In 6 month evaluation (1st phase) 624 individuals with 856 restoration were examined. In 3 month evaluations (2nd phase) 556 individuals with 593 restoration was followed. In this, lost to follow up was 10.08%

2. Statistical Analysis:

The data was entered in Epi 6.02. The analyse of data was performed using 95% confidence interval.

3. Survival of restoration:

A) Survival of single surface ART restoration :

A total of 267 restorations were placed in deciduous teeth with survival rate of 91.3% with Confidence Interval (CI) of 95% of 87.96 to 94.8.

A total of 793 restorations were placed in permanent teeth with survival rate of 95.7% with confidence Interval of 95% of 94.29 to 97.13 (Ref table 3).

B) Survival of Multiple surface ART Restoration:

A total of 109 restoration were placed in deciduous teeth with survival rate of 92.6% with confidence interval of 95% of 87.6 to 97.6

A total of 71 restorations in permanent teeth with 95.7% success rate with confidence interval of 95% with 90.9 to 100 (Ref table 4).

C) Survival rate after 6 month evaluation and 3 month evaluation are shown in table 5 and 6 respectively.

The evaluation of the cases treated were done in two phases i,e first phase after six months period and second phase after three months period. The cases treated till

the end of January 2007 was included in the follow up and the study was completed by the end of April, falling short of three months for the fixed six months follow up period. The findings observed are given in table 5 & 6.

Table III

ART done for teeth with single surface caries:

	Deciduous	Permanent
No of Restorations	267	793
No of filling with score 0,1,7	244	759
Success rate	91.3%	95.71%

Table IV

ART done for teeth with multiple surface caries:

	Deciduous	Permanent
No of Restorations	109	71
No of filling with score 0,1,7	101	68
Success rate	92.6%	95.7%

Table V

Survival rate after 6 month evaluation:

	Deciduous teeth		Permanent teeth	
	Single surface	Multiple surface	Single surface	Multiple surface
No of restorations	180	99	378	59
Success rate	92.2%	91.91%	95.32%	94.12%

Table VI

Survival rate after 3 months evaluation:

	Deciduous teeth		Permanent teeth	
	Single surface	Multiple surface	Single surface	Multiple surface
No of restorations	87	10	415	12
Success rate	95.65%	100%	97.12%	100%

- 51 number of restoration which had score of 2,3,4,8 was classified as failure.
- 15 number of teeth had score 5, 6 which was excluded in the study.

Discussion:

The oral health survey done in the region of Puducherry showed caries prevalence of 51.12 in the age group of 12 ± 1 and 51.87 in age group of 15 ± 1 which necessitated to plan some form of treatment for rural population which should be feasible and simple so that acceptable dental treatment can be given for rural population.

Overall study included 1500 patients for whom glass ionomer fillings were given following the principles of Atraumatic Restorative Treatment subsequently the cases that were treated with glass ionomer were followed for 6 months and 3 months period, to assess the effectiveness of the restoration given in both deciduous and permanent dentition.

Overall it was found that the retention of glass ionomer in deciduous teeth for single surface restoration had a success rate of 91.3% with 95% of Confidence Interval of 87.96 to 94.8 and similarly for permanent teeth retention level was found to be 95.7% with confidence interval of 95% of 94.29 to 97.13. Three year study conducted in Netherlands in deciduous teeth for single surface restoration had survival rate of 86.1 and 48.7 for multiple surface restoration (J.E.Frencken et al., 2002⁸).

Two other study in deciduous teeth have reported a success rate of 51% in deciduous dentition among 3 to 6 yrs old after 2.5 yrs (Lo and Holmgren,2001) and 42.6% survival amongst 6 to 14 year olds after 2 years (Lo et al., 2001)².

Marks et al., (2001) reported a 1 year survival of multiple surface glass-ionomer restorations in deciduous dentitions of 92% and Rutar et al. (2000) a 2-year survival of 93% using a capsulated glass-ionomer in a comparable type of restorations.

Study conducted in Zimbabwe for ART restoration and glass ionomer sealants, survival after 3 years showed a success rate of 88.3%⁵.

A similar study done in Chinese school children for ART and glass ionomer sealants for single surface restoration had a survival rate of 99% in 1st year and 92% in 3 year evaluation⁵.

Similarly retention level of multiple surface ART fillings reveals a success rate of 92.6% in deciduous and 95.7% in permanent teeth in our study.

The results obtained reveals a good level of retention of Glass Ionomer filling in the simplified ART technique, similar findings were also recorded in one year study conducted by D.F.G.Cefaly¹, et al in Thailand where the survival rate of class III and class IV restorations using ART approach in permanent anterior teeth was 91%.

The study is only encouraging to note that the usage of Glass Ionomer fillings as an ideal filling material in ART which is more practical as well as simplified so that it can be applied in the conditions suitable to our country.

Recommendations:

The Short term study conducted in the rural population of Union Territory of Puducherry, suggests high prevalence of dental caries and periodontal disease⁷, but unfortunately for various reasons, people do not take treatments, unless & until it becomes acute.

Atraumatic Restorative Treatment (ART) has been tried for treating the dental caries for patients coming to PHCs and also in schools and colleges in the age groups of 5-12 yrs, 13-20 yrs, 21-34 yrs, 35-64 yrs, 65-74 yrs by Dental Surgeons and PG Students & further a 3 & 6 months evaluation was performed on the populations, which were encouraging. Implementation of ART for rural people have been found quiet successful.

Following points are recommended:

Settings:

The main aim of the project is to establish whether ART is an effective mode of treatment which can be applied to the rural people to reach the wider population as a first line of treatment for dental caries. The following settings are the most accessible places to screen and control the dental problems at the root level itself for the rural population.

❖ Community Settings

- The Primary Health Centres and Community Health Centres are the nearest health providing centres for rural population. These health centres are the most preferable settings for implementing ART.
- Special Oral Health Camps at regular intervals.

❖ School / College Settings

- Schoolchildren and young adults studying in colleges are not much aware regarding oral health. In this situation it becomes imperative for the Health agencies to reach this group of population to promote oral health awareness & provide basic treatment of dental caries through

ART. These dental health programs may be fixed at least once in a month through the NSS volunteers of the concerned institutes.

- ART results in a sealed restoration with the filled cavity and sealed pits and fissures adjacent to it, which provides additional protection against recurrent caries attacks, hence it should be definitely implemented as a prophylactic measure in the schools to arrest & prevent further decay of carious teeth, for the school children
- ❖ General Hospital / Dental Institutes
 - Separate wing for ART at dental institutes under the Department of Conservative & Pedodontia & Community Dentistry.
 - Mobile dental units at dental institutes as well as district hospitals with adequate & appropriately trained personnel to perform ART in health camps or rural areas.

Indication:

- ❖ Selection of patient
 - ART is painless since it is only the soft non sensitive caries portion of the tooth which is removed and the need for anaesthesia is not required. The treatment is thus much more accessible to and more easily applied to toddlers, children, patients with general contra-indications for local anesthetic and housebound patients. The treatment is painless, safe and cost-effective.
- ❖ Selection of areas
 - ART is a cost effective & non-invasive treatment modality in the community settings with high yield of positive results; hence it should be tried as first mode of caries prevention & minimal intervention therapy.
 - It can be implemented in rural set up which receive more dental awareness by reaching them at their doorstep and further reduces the apprehension about the treatment procedure.

Personnel who can perform ART:

- ❖ Dental Surgeons
- ❖ Dental Interns – can be posted in CHCs and PHCs compulsorily for some minimum period during a Community Dentistry posting.
- ❖ 3rd year Dental Students – as part of Community Dentistry programme may be encouraged to do the ART as a routine.
- ❖ Because of the simplicity of the ART, apart from dental surgeons, training of the dental hygienists, public health nurses, multi purpose workers, Anganwadi Workers, Health Guides and their services can be utilized in community camps, at PHC/CHC & District Hospitals etc.

Training requirement:

- ❖ A proper, adequate & supervised training is required for performing ART by the list of personnel mentioned above.
- ❖ As the category & understanding level of personnel to be trained are different, the training should be in accordance with this fact.
- ❖ Before providing this treatment in the community the personnel should be asked to perform at least 10 cases for different teeth & types of caries under supervision, for the complete familiarity with ART.

Preparation:

- ❖ Identification of area: Regular dental survey camps can be conducted to assess population which needs ART, subsequently CHCs and PHCs in the concerned areas can be asked to carry out the ART.
- ❖ Follow ups can be done from the Institution to assess the effectiveness of the work.

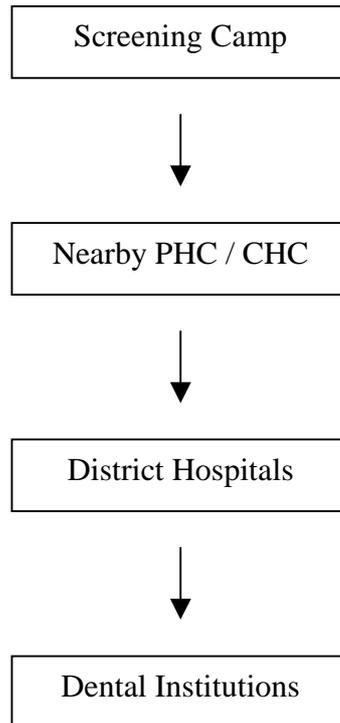
Precaution:

- ❖ Written consent / informed consent should be obtained from the patients / parents - in the case of children.
- ❖ Infection control measures should be meticulously followed particularly while sterilizing instruments.

- ❖ Post treatment follow up – Patients developing any complication after filling must be informed to report to the nearest Health Centers where further management can be done.

Referral linkages

Following referral linkages can be maintained from the base level to specialty centres in reaching the rural population.



Role of Dental Colleges, Govt. Hospitals and Dentist in promoting ART

The Dental Colleges & Dental Surgeons working in either government or private set ups should have a moral responsibility in preventing dental caries – the major cause for loss of teeth – by adopting the ART seriously to prevent the dental disease at root cause level itself. The ART has given encouraging results in our short follow up study. Hence this can be accepted as the first line approach as the preventive measure for caries control.

- ❖ The Dental Institutes can adopt five villages in and around their location and provide frequent service to the dental problems, free of cost & perform ART, where required.
- ❖ The Dental Colleges & Research Institutes can organize special dental camps and Community Health Camps at different places and involve eligible dental students to treat the rural people and thus expose them with various dental problems prevailing among rural people.
- ❖ The importance of ART can be addressed through audio visual aids / pamphlets etc.
- ❖ All the Dental Institutes across the country can adopt at least two (CHC/PHC) & apart from providing other basic oro-dental treatment, must advocate & practice ART for the population, thereby decreasing the dental caries prevalence.
- ❖ Dental Colleges can tie up with social organizations in carrying out Oral Health promotion in an organized way which will help them share the financial strain
- ❖ International research show that ART restorations are as durable and successful as conventional restorations and are considered as permanent fillings, hence can save the tooth for much longer duration.

The Dental Surgeons either working in Institutions or engaged in private practice can adopt ART as a preliminary method of dental treatment.

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ANNEXURES

INSTRUMENTS AND MATERIALS USED FOR ART



IEC materials



ART - PHC Patients



Follow - up in School Students



Follow - up in Adults



DMFT / DMFS INDEX:

			55	54	53	52	51	61	62	63	64	65				
		(116)											(125)			
(126)															(141)	
	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28

			48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
(142)																		(157)
			(158)													(167)		
			85	84	83	82	81	71	72	73	74	75						

DMFT & DMFS Score = **STATUS**

Caries Experience = Permanent Teeth Primary Teeth

dft & dfs score = D – Decayed d – decayed

Caries Experience = M – Missing due to caries e – indicated for extraction

Caries Experience = F – Filled due to decay f – filled due to decay

ART Treatment done :

			55	54	53	52	51	61	62	63	64	65				
		(168)											(177)			
(178)															(193)	
	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28

			48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
(194)																		(209)
			(210)													(219)		
			85	84	83	82	81	71	72	73	74	75						

**CHIEF INVESTIGATOR /
FACULTY MEMBER**

RESEARCH OFFICER

ATRAUMATIC RESTORATIVE TREATMENT
MAHATMA GANDHI POST GRADUATE INSTITUTE OF DENTAL SCIENCES
GOVT. OF PONDICHERRY INSTITUTION
PONDICHERRY – 605 006.

KNOWLEDGE ATTITUDE PRACTICE QUESTIONNAIRE
FOR CHILDREN

Code

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KNOWLEDGE

1) Do you know how many teeth you have in your mouth?

- | | | |
|--------------|--------------------------|---|
| Less than 20 | <input type="checkbox"/> | 1 |
| More than 20 | <input type="checkbox"/> | 2 |
| Don't know | <input type="checkbox"/> | 9 |
-

2) In your opinion, which is the most common dental problem?

- | | | |
|--------------------|--------------------------|---|
| Tooth decay / pain | <input type="checkbox"/> | 1 |
| Bleeding gums | <input type="checkbox"/> | 2 |
| Broken teeth | <input type="checkbox"/> | 3 |
| Others | <input type="checkbox"/> | 5 |
| Don't know | <input type="checkbox"/> | 9 |
-

3) Do you know which of the following food items is / are the main cause of tooth decay?

- | | | |
|---|--------------------------|---|
| Sweets / Chocolates / Biscuits /
Cakes / Chips / Waffers | <input type="checkbox"/> | 1 |
| Fresh fruits | <input type="checkbox"/> | 2 |
| Raw vegetables | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

4) Do you think keeping your mouth clean & healthy is good for health?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

5) What do you think about the condition of your teeth & gum?

- | | | |
|------------|--------------------------|---|
| Excellent | <input type="checkbox"/> | 1 |
| Good | <input type="checkbox"/> | 2 |
| Fair | <input type="checkbox"/> | 3 |
| Poor | <input type="checkbox"/> | 4 |
| Don't Know | <input type="checkbox"/> | 9 |
-

6) Do you know germs in the mouth cause tooth decay?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

7) Any dental facility is available in your village?

- | | | |
|----------------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| No idea regarding it | <input type="checkbox"/> | 9 |
-

8) In your opinion, which of the following prevent dental problems?

- | | | |
|---|--------------------------|---|
| Consuming less sticky foods like sweets, chips, cakes, Wafers | <input type="checkbox"/> | 1 |
| Regular brushing | <input type="checkbox"/> | 2 |
| Visiting Dentist regularly | <input type="checkbox"/> | 3 |
| Use of fluoride tooth paste / mouth wash | <input type="checkbox"/> | 4 |
| Rinse your mouth after each meal | <input type="checkbox"/> | 5 |
| Don't know | <input type="checkbox"/> | 9 |
-

9) Which of the following do you think is / are an abnormal habit?

- | | | |
|-------------------|--------------------------|---|
| Finger sucking | <input type="checkbox"/> | 1 |
| Mouth breathing | <input type="checkbox"/> | 2 |
| Tongue thrusting | <input type="checkbox"/> | 3 |
| Nail / lip biting | <input type="checkbox"/> | 4 |
| Tooth grinding | <input type="checkbox"/> | 5 |
| Don't know | <input type="checkbox"/> | 9 |
-

10) How will you identify a tooth decay?

- | | | |
|--|--------------------------|---|
| A tiny black spot or hole in the tooth | <input type="checkbox"/> | 1 |
| Large hole in the tooth | <input type="checkbox"/> | 2 |
| Only pain is present | <input type="checkbox"/> | 3 |
| Don't know | <input type="checkbox"/> | 9 |
-

11) In your opinion, which among the following materials is good for your teeth?

- | | | |
|----------------------|--------------------------|---|
| Tooth paste / powder | <input type="checkbox"/> | 1 |
| Charcoal | <input type="checkbox"/> | 2 |
| Brick powder | <input type="checkbox"/> | 3 |
| Lime / salt | <input type="checkbox"/> | 4 |
| Don't Know | <input type="checkbox"/> | 9 |

ATTITUDE

12) If your Dentist says avoid eating too much of toffees and chocolates, what will you do?

- | | | |
|---|--------------------------|---|
| I will continue to eat | <input type="checkbox"/> | 1 |
| Sometimes I will eat | <input type="checkbox"/> | 2 |
| I will not eat | <input type="checkbox"/> | 3 |
| I will eat without my Parents knowledge | <input type="checkbox"/> | 4 |
-

13) Have you ever visited a Dentist for any dental problem?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

14) If yes, What was the dental problem?

- | | | |
|--------------------|--------------------------|---|
| Tooth decay / pain | <input type="checkbox"/> | 1 |
| Gum diseases | <input type="checkbox"/> | 2 |
| Broken teeth | <input type="checkbox"/> | 3 |
| Bad breath | <input type="checkbox"/> | 4 |
| Others | <input type="checkbox"/> | 5 |
-

15) How often have you visited the Dentist during the past one year?

- | | | |
|-----------------------|--------------------------|---|
| Once | <input type="checkbox"/> | 1 |
| Twice | <input type="checkbox"/> | 2 |
| Three times | <input type="checkbox"/> | 3 |
| More than three times | <input type="checkbox"/> | 4 |
| Don't remember | <input type="checkbox"/> | 9 |
-

16) If you have a decay tooth, you will inform to your mother (Parent) or not?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't know | <input type="checkbox"/> | 9 |
-

17) If you have crowding in your teeth, will you wish to consult a Dentist?

- | | | |
|-------------------------------|--------------------------|---|
| Yes, I will consult a Dentist | <input type="checkbox"/> | 1 |
| No, I am feared of Dentist | <input type="checkbox"/> | 2 |
| I don't have any idea | <input type="checkbox"/> | 9 |
-

18) Which among the following, you will choose after your dentist says that you have decay in tooth and gives the following options?

- | | | |
|------------------------------------|--------------------------|---|
| Filling of tooth | <input type="checkbox"/> | 1 |
| I will wait till I get pain | <input type="checkbox"/> | 2 |
| Like to go for removal of teeth | <input type="checkbox"/> | 3 |
| I would like to consult my parents | <input type="checkbox"/> | 4 |
| Don't know | <input type="checkbox"/> | 9 |
-

19) Have you ever had swelling in the gums or bleeding from the gums?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

20) How do you feel to receive dental treatment at your doorsteps?

- | | | |
|-------------|--------------------------|---|
| Good | <input type="checkbox"/> | 1 |
| Fair | <input type="checkbox"/> | 2 |
| No comments | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

PRACTICE

21) Which of the following do you use for cleaning your teeth?

- | | | |
|--------------------|--------------------------|---|
| Tooth brush | <input type="checkbox"/> | 1 |
| Finger | <input type="checkbox"/> | 2 |
| Chewstick / miswat | <input type="checkbox"/> | 3 |
| Others | <input type="checkbox"/> | 4 |
-

22) What material do you use for cleaning your teeth?

- | | | |
|----------------------|--------------------------|---|
| Tooth paste / powder | <input type="checkbox"/> | 1 |
| Charcoal | <input type="checkbox"/> | 2 |
| Brick powder | <input type="checkbox"/> | 3 |
| Lime / salt | <input type="checkbox"/> | 4 |
-

23) How many times you brush daily?

- | | | |
|------------------|--------------------------|---|
| Once | <input type="checkbox"/> | 1 |
| Twice | <input type="checkbox"/> | 2 |
| After every meal | <input type="checkbox"/> | 3 |
| Don't know | <input type="checkbox"/> | 9 |
-

24) When will you change your tooth brush?

- | | | |
|------------------------|--------------------------|---|
| 1 – 3 months | <input type="checkbox"/> | 1 |
| 4 – 6 months | <input type="checkbox"/> | 2 |
| 1 year and above | <input type="checkbox"/> | 3 |
| After bristles splayed | <input type="checkbox"/> | 4 |
| Don't know | <input type="checkbox"/> | 9 |
-

25) Do you have the habit of rinsing your mouth after each meal?

- | | | |
|-----------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Sometimes | <input type="checkbox"/> | 3 |
-

26) Do you use any other oral hygiene aids?

- | | | |
|-------------------|--------------------------|---|
| Dental floss | <input type="checkbox"/> | 1 |
| Interdental brush | <input type="checkbox"/> | 2 |
| Tooth picks | <input type="checkbox"/> | 3 |
| Mouth wash | <input type="checkbox"/> | 4 |
| None | <input type="checkbox"/> | 5 |
| Don't know | <input type="checkbox"/> | 9 |
-

27) How often do you take the following items.

	Everyday	Several times a week	Once in a week	Rarely	Never	
1) Sweets / Biscuits / Chips / Cakes / Waffers	<input type="checkbox"/>	1				
2) Fresh fruits	<input type="checkbox"/>	2				
3) Raw vegetables	<input type="checkbox"/>	3				
4) Soft drinks, Lemon juice	<input type="checkbox"/>	4				
5) Milk with sugar	<input type="checkbox"/>	5				
6) Tea / coffee with sugar	<input type="checkbox"/>	6				

EDUCATIONAL STATUS

28) What level of education has been attained by your father?

- | | | |
|--------------|--------------------------|---|
| Illiterate | <input type="checkbox"/> | 1 |
| Primary | <input type="checkbox"/> | 2 |
| Middle | <input type="checkbox"/> | 3 |
| High School | <input type="checkbox"/> | 4 |
| Graduate | <input type="checkbox"/> | 5 |
| Professional | <input type="checkbox"/> | 6 |
-

ATRAUMATIC RESTORATIVE TREATMENT
MAHATMA GANDHI POST GRADUATE INSTITUTE OF DENTAL SCIENCES
GOVT. OF PONDICHERRY INSTITUTION
PONDICHERRY – 605 006.

KNOWLEDGE ATTITUDE PRACTICE QUESTIONNAIRE
FOR ADULTS

Code

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KNOWLEDGE

1) Do you think maintaining good oral health can improve the general health?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| No idea | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

2) Do you know which of the following food items is / are the main cause of tooth decay?

- | | | |
|-------------------------------------|--------------------------|---|
| Sweets / Waffers / Biscuits / Cakes | <input type="checkbox"/> | 1 |
| Fresh fruits | <input type="checkbox"/> | 2 |
| Raw vegetables | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

3) Which is the most common dental problem you come across?

- | | | |
|--------------------|--------------------------|---|
| Tooth decay / pain | <input type="checkbox"/> | 1 |
| Bleeding gums | <input type="checkbox"/> | 2 |
| Broken teeth | <input type="checkbox"/> | 3 |
| Ulcers | <input type="checkbox"/> | 4 |
| Trauma | <input type="checkbox"/> | 5 |
| Others | <input type="checkbox"/> | 6 |
-

4) What is / are the availability of dental treatment facilities in your area?

- | | | |
|-----------------------------|--------------------------|---|
| Govt. Hospital / Dispensary | <input type="checkbox"/> | 1 |
| Private Hospital | <input type="checkbox"/> | 2 |
| Private practice | <input type="checkbox"/> | 3 |
| None | <input type="checkbox"/> | 4 |
| Don't Know | <input type="checkbox"/> | 9 |
-

5) How will you detect a tooth decay?

	Yes	No	
Tiny black spot in tooth	<input type="checkbox"/>	<input type="checkbox"/>	1
Large hole in tooth	<input type="checkbox"/>	<input type="checkbox"/>	2
On occurrence of pain	<input type="checkbox"/>	<input type="checkbox"/>	3
Don't know	<input type="checkbox"/>	<input type="checkbox"/>	4

6) What will happen if your tooth decay is not treated in time?

Decay deepens with pain and loss of teeth	<input type="checkbox"/>	1
Nothing will happen to tooth	<input type="checkbox"/>	2
I don't know	<input type="checkbox"/>	3

7) How can you prevent dental problems?

	Yes	No	
Consuming less sticky foods like sweets, chips, cakes, Wafers	<input type="checkbox"/>	<input type="checkbox"/>	1
Regular brushing with tooth paste & brush	<input type="checkbox"/>	<input type="checkbox"/>	2
Regularly visiting a Dentist	<input type="checkbox"/>	<input type="checkbox"/>	3
Use of fluoride tooth paste / mouth wash	<input type="checkbox"/>	<input type="checkbox"/>	4
Rinse your mouth after each meal	<input type="checkbox"/>	<input type="checkbox"/>	5
Don't know	<input type="checkbox"/>	<input type="checkbox"/>	9

8) Which among the following will cause mouth cancer?

	Yes	No	
Betel nut chewing & using betel quid	<input type="checkbox"/>	<input type="checkbox"/>	1
Usage of tobacco (Cigarette / cigar / beedi / snuff / pan masala)	<input type="checkbox"/>	<input type="checkbox"/>	2
Consumption of alcohol	<input type="checkbox"/>	<input type="checkbox"/>	3
I don't know	<input type="checkbox"/>	<input type="checkbox"/>	4

9) Do you think proper care should be taken for milk teeth?

Very essential	<input type="checkbox"/>	1
Not required	<input type="checkbox"/>	2
Don't Know	<input type="checkbox"/>	9

10) Do you know micro organisms in your mouth along with added factors like food particles, saliva etc. cause dental decay?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No idea | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

11) Do you have any idea regarding the inter-dental (other) cleaning materials available in market?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| Don't Know | <input type="checkbox"/> | 9 |
-

12) Do you know vigorous tooth brushing leads to the following problems?

- | | Yes | No | |
|---|--------------------------|--------------------------|---|
| 1) Loss of tooth substance (abrasion) | <input type="checkbox"/> | <input type="checkbox"/> | 1 |
| 2) Tooth sensitivity (Tingling sensation) | <input type="checkbox"/> | <input type="checkbox"/> | 2 |
| 3) Problem in gums | <input type="checkbox"/> | <input type="checkbox"/> | 3 |
| 4) Others | <input type="checkbox"/> | <input type="checkbox"/> | 4 |
-

13) In your opinion, how do a mouth cancer manifest?

- | | Yes | No | |
|--------------------------------------|--------------------------|--------------------------|---|
| Long standing ulcer | <input type="checkbox"/> | <input type="checkbox"/> | 1 |
| Large mass of growth | <input type="checkbox"/> | <input type="checkbox"/> | 2 |
| Difficulty in chewing and swallowing | <input type="checkbox"/> | <input type="checkbox"/> | 3 |
| Don't know | <input type="checkbox"/> | <input type="checkbox"/> | 4 |
-

14) How many natural teeth do you have?

- | | | |
|------------------|--------------------------|---|
| 1 – 9 teeth | <input type="checkbox"/> | 1 |
| 10 – 19 teeth | <input type="checkbox"/> | 2 |
| 20 teeth or more | <input type="checkbox"/> | 3 |
-

ATTITUDE

15) How do you describe the condition of your mouth?

- | | | |
|------------|--------------------------|---|
| Excellent | <input type="checkbox"/> | 1 |
| Good | <input type="checkbox"/> | 2 |
| Fair | <input type="checkbox"/> | 3 |
| Poor | <input type="checkbox"/> | 4 |
| Don't Know | <input type="checkbox"/> | 9 |
-

16) Are you satisfied with the dental treatment available in your area?

- | | | |
|-------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| No comments | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

17) Have you ever visited a Dentist for any dental problem?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

18) If yes, how often you have visited the Dentist during the past one year?

- | | | |
|-----------------------|--------------------------|---|
| Once | <input type="checkbox"/> | 1 |
| Twice | <input type="checkbox"/> | 2 |
| Three times | <input type="checkbox"/> | 3 |
| More than three times | <input type="checkbox"/> | 4 |
| Don't remember | <input type="checkbox"/> | 9 |
-

19) What was the dental problem for which you have visited a Dentist?

- | | | |
|--------------------|--------------------------|---|
| Tooth pain / decay | <input type="checkbox"/> | 1 |
| Gum diseases | <input type="checkbox"/> | 2 |
| Bad breath | <input type="checkbox"/> | 3 |
| Broken teeth | <input type="checkbox"/> | 4 |
| Ulcer | <input type="checkbox"/> | 5 |
| Mobile teeth | <input type="checkbox"/> | 6 |
| Others | <input type="checkbox"/> | 7 |
| Don't Know | <input type="checkbox"/> | 9 |
-

20) How do you feel to receive dental treatment in your village?

- | | | |
|-------------|--------------------------|---|
| Good | <input type="checkbox"/> | 1 |
| Fair | <input type="checkbox"/> | 2 |
| No comments | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

21) In case of broken teeth or any injury to your face, will you approach a Dentist immediately or not?

- | | | |
|--------------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Sometimes I may go | <input type="checkbox"/> | 3 |
| I don't know | <input type="checkbox"/> | 9 |
-

22) In your opinion, the important cause for bleeding is / are

- | | Yes | No | |
|------------------------------|--------------------------|--------------------------|---|
| 1) Gum diseases | <input type="checkbox"/> | <input type="checkbox"/> | 1 |
| 2) Tooth decay | <input type="checkbox"/> | <input type="checkbox"/> | 2 |
| 3) Vigorous tooth brushing | <input type="checkbox"/> | <input type="checkbox"/> | 3 |
| 4) Burns in gums | <input type="checkbox"/> | <input type="checkbox"/> | 4 |
| 5) Food impaction | <input type="checkbox"/> | <input type="checkbox"/> | 5 |
| 6) Sharp pieces of hard food | <input type="checkbox"/> | <input type="checkbox"/> | 6 |
-

23) Are you aware of the fact that we should regularly undergo dental check up atleast once in a year?

- | | | |
|--------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Not required | <input type="checkbox"/> | 3 |
| Don't Know | <input type="checkbox"/> | 9 |
-

24) In case of very deep decay (with / without pain), what form of treatment you will like to undergo?

- | | | |
|-----------------------------------|--------------------------|---|
| Root canal treatment | <input type="checkbox"/> | 1 |
| Removal of teeth | <input type="checkbox"/> | 2 |
| At present postpone the treatment | <input type="checkbox"/> | 3 |
| Don't know | <input type="checkbox"/> | 4 |
-

25) If you have swelling or bleeding from gums / sensitivity in your tooth, you wish to approach a Dentist or not?

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | 1 |
| No | <input type="checkbox"/> | 2 |
| Don't Know | <input type="checkbox"/> | 9 |
-

26) Do you have any artificial teeth set?

- | | | |
|----------------------|--------------------------|---|
| Partial teeth set | <input type="checkbox"/> | 1 |
| Full upper teeth set | <input type="checkbox"/> | 2 |
| Full lower teeth set | <input type="checkbox"/> | 3 |
| Fixed teeth set | <input type="checkbox"/> | 4 |
-

PRACTICE

27) Which of the following do you use for cleaning your teeth?

- | | | |
|------------------------|--------------------------|---|
| Tooth brush | <input type="checkbox"/> | 1 |
| Finger | <input type="checkbox"/> | 2 |
| Chewstick / neem stick | <input type="checkbox"/> | 3 |
| Others | <input type="checkbox"/> | 4 |
-

28) What material do you use for cleaning your teeth?

- | | | |
|----------------------|--------------------------|---|
| Tooth paste / powder | <input type="checkbox"/> | 1 |
| Charcoal | <input type="checkbox"/> | 2 |
| Brick powder | <input type="checkbox"/> | 3 |
| Lime / salt | <input type="checkbox"/> | 4 |
-

29) How many times you brush daily?

- | | | |
|------------------|--------------------------|---|
| Once | <input type="checkbox"/> | 1 |
| Twice | <input type="checkbox"/> | 2 |
| After every meal | <input type="checkbox"/> | 3 |
| Don't know | <input type="checkbox"/> | 9 |
-

30) When will you change your tooth brush?

- | | | |
|------------------|--------------------------|---|
| 1 – 3 months | <input type="checkbox"/> | 1 |
| 4 – 6 months | <input type="checkbox"/> | 2 |
| 1 year and above | <input type="checkbox"/> | 3 |
| After wear | <input type="checkbox"/> | 4 |
| Don't know | <input type="checkbox"/> | 9 |
-

31) Do you have the habit of rinsing your mouth after each meal?

- Yes 1
No 2
Sometimes 3
Don't remember 9
-

32) Do you use any other oral hygiene aids?

- Dental floss 1
Interdental brush 2
Tooth picks 3
Mouth wash 4
None 5
-

33) How often do you take the following items.

- | | Everyday | Several times
a week | Once in a
week | Rarely | Never | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---|
| 1) Sweets / Biscuits / Chips
/ Cakes / Wafers | <input type="checkbox"/> | 1 |
| 2) Fresh fruits | <input type="checkbox"/> | 2 |
| 3) Raw vegetables | <input type="checkbox"/> | 3 |
| 4) Soft drinks, Lemon juice | <input type="checkbox"/> | 4 |
| 5) Milk with sugar | <input type="checkbox"/> | 5 |
| 6) Tea / Coffee with sugar | <input type="checkbox"/> | 6 |
-

34) Do you have the habit of using any of the following tobacco products?

- | | Yes | No | |
|---------------------|--------------------------|--------------------------|---|
| Beedi | <input type="checkbox"/> | <input type="checkbox"/> | 1 |
| Cigarettes | <input type="checkbox"/> | <input type="checkbox"/> | 2 |
| Cigar | <input type="checkbox"/> | <input type="checkbox"/> | 3 |
| Snuff | <input type="checkbox"/> | <input type="checkbox"/> | 4 |
| Others (Pan Masala) | <input type="checkbox"/> | <input type="checkbox"/> | 5 |
-

35) How often do you use the above said tobacco products.

	Once daily	Many times a day	Several times a week	Rarely	
Beedis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Cigarettes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Cigar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Snuff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Others (Pan Masala)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

36) Do you have the habit of betel-nut chewing or betel quid, how frequently do you use..

	Everyday	Several times a week	Once in a week	Rarely	Never	
Betel-nut (Without tobacco)	<input type="checkbox"/>	1				
Betel quid (with tobacco)	<input type="checkbox"/>	2				
Tobacco only	<input type="checkbox"/>	3				

EDUCATIONAL STATUS

37) What is the level of education attained by you?

Illiterate	<input type="checkbox"/>	1
Primary	<input type="checkbox"/>	2
Middle	<input type="checkbox"/>	3
High School	<input type="checkbox"/>	4
Graduate	<input type="checkbox"/>	5
Professional	<input type="checkbox"/>	6
