Oral Health Status in rural child population Promotional & Interventional Strategies

(GOI-WHO Collaborative Program 06-07)

PROJECT REPORT

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Developed under GOI-WHO Collaborative Programm 06-07

Certificate

This is to certify that the report titled **"Oral Health Status in Rural Child Population-Promotional & Interventional Strategies"** is a genuine and bonafide work done by us at Maulana Azad Dental College and Hospital under a grant from the office of the WHO Representative to India.

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for Project Titled

ORAL HEALTH STATUS IN RURAL CHILD POPULATION - UTTARANCHAL (INDIA)

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EXECUTIVE SUMMARY

India is facing many challenges in rendering oral health care to the rural masses. Out of these 70-72% residing in rural areas more than 40% are children. This report is based on research survey with respect to different parameters i.e. Oral hygiene practices, dietary pattern, tobacco smoking & chewing, media habits and awareness regarding dental treatment to get the complete overview of the existing oral health related problems and the factors responsible for poor oral health among rural children.

The aim of the study is to provide guidelines / recommendations to design right kind of strategies / programmes and sharply focus them on the target groups i.e. teachers, health workers, parents and children. These strategies shall bring in a permanent change in the oral health practices of children in rural areas.

The project was carried out in the rural areas of Uttaranchal State with the objective of determining oral health status in rural child population in the age group of 7 to 12 years. Further, to assess awareness regarding oral health amongst teachers, health workers, parents, children and to determine the role of teachers, parents & health workers, to suggest tobacco control measures, to design long term promotional and interventional strategies for Oral health aimed at different target groups i.e. teachers, parents and health workers.

The study was conducted in four phases :

i) ***Assessment phase :*** Oral health needs of the sample groups were determined. Also, knowledge, Attitude & Practices of the target groups with respect to oral health were also assessed.

ii) ***Sensitizational phase :*** comprised of workshops for teachers, parents and health workers. This included multi-media presentations, development and distribution of IEC material, training for ART and interactive sessions.

iii) ***Reinforcement phase***

iv) ***Monitoring and evaluation phase***

Analysis of the information collected during the study gave results indicating that :

- Majority of the target groups were not aware of the right oral hygiene practices i.e. tooth brushing, tooth cleaning material etc.
- They were not aware of the ill effects of eating between meals and then not rinsing the mouth after meals.

- Though, it was found that only 11.7% of the children were indulgent into tobacco smoking and tobacco chewing practices but a significant number of children and parents were found to be using tobacco based tooth cleaning materials regularly.
- The target groups were found to be not visiting a qualified dental personnel for their dental treatment / preventive check-up.
- With respect to media habits it was found that TV was the most popular medium with Doordarshan being the most popular channel watched during evening hours. Enough attention is not being given to radio listening by them.

Recommendations made for various sectors are as under :

- **Education Sector :** Inclusion of Oral health in school curriculum & slots in school time tables, dental health related programmes, training activities aimed at teachers and children.
- **Health sector :** Strengthening of infrastructure and dental manpower. Further, training of multi purpose health workers, ASHA workers and village health care providers.
- **Integration of Oral health care :** A multi sectoral approach with integration of oral health programmes with other ongoing National, State, Local level programmes to achieve synergistic effects. This shall also avoid duplication of efforts & bring optimal results.
- **Social welfare sector :** Role of NGO's with respect to providing oral hygiene materials and various dental services has been proposed in the study.
- **Public private partnership :** Oral health promotion and prevention has to be the main strategy to be pursued aggressively involving Government & Private Sector.
- **Tobacco control initiatives :** Specific action plan with regards to tobacco smoking and chewing has been given.
- **IEC :** Well designed IEC material needs to be developed for teachers, parents and health workers to educate them about various aspects of oral health.
- **Media :** To effectively communicate with the target groups regarding various issues on oral health. Further, recommendations have been made for each type of medium.

To conclude, the report provides a framework for integrated, long term, and sustainable action plans for Oral Health targeted at teachers, health workers, parents and children of rural areas.

INTRODUCTION

World Health Organization has defined Health as "a state of complete physical, mental and social well being and not merely an absence of disease or infirmity"[1]. Ironically, this state of well being is often compromised in developing countries as Oral Health still remains neglected.

India is a developing country facing many challenges in rendering Oral Health Care to the masses. As per census of 1991[2], majority of the Indian population i.e. 70-72% resides in rural areas, of which more than 40% are children. By and large these children from rural areas tend to be more vulnerable to oral diseases due to various social, economic and demographic factors e.g. lack of awareness, limited access to professional dental care, lack of transportation, lack of perceived need for dental care, language and cultural barriers.

PROJECTED POPULATION DATA IN 2011- INDIA

(Population 000)

Indicator	2001	2011
Total	1028610	1192507
Male	532157	617317
Female	496454	575190
Child Population (0-14 Years)	364582	346942

Many of the epidemiological surveys have shown that the countries with emerging market economies have higher prevalence of dental diseases in children due to gradual changes in their dietary habits and life styles[3]. Also, according to International Dental Care Guidelines, the first Dental Examination should follow eruption of the first primary teeth i.e. not later than 12 months of age. The Guidelines also indicate that in the first year of the child's life parents should receive counseling on appropriate Oral Hygiene procedures and diet[4]. Despite these recommendations Oral Health Care remains inadequate in majority of the developing countries globally.

A number of epidemiological surveys carried out in Indian context indicate that caries is still fairly prevalent and is major public health problem. Therefore, efforts are required to improve school children's oral health. The common, preventable risk factors of oral health diseases are linked to self-esteem, oral health-related attitudes and behaviours[5,6]. Besides, healthy food habits, maintaining good oral hygiene and using fluoride toothpaste for regular tooth brushing (twice a day) are essential in preventing dental caries and periodontal diseases[7,8]. It has been shown that relatively stable pattern of tooth brushing is established during childhood and adolescence[9,10].

This study was conducted in the rural areas of Uttaranchal State. Uttaranchal is a newly formed State of India. It has a population of 8.5 millions. The state a divided into 13 districts, 49 tehsils, 95 blocks and has 16,414 villages with about 78% of the population living in rural areas. About 36% of the total population is younger than 15 years. The overall literacy rate is as high as 72%. The state being the hilly one is the most sparsely populated state in the country with a population density of 159 per Sq. Kms.

The poor road connectivity, difficult hilly terrains (93% of the area is hills), small scattered settlements, lack of infrastructure and human power, contribute to problems of access to health services delivery. Given the poor paying capacity and scattered location of settlements in the hilly areas, the

population is entirely dependent on public health delivery system. The Oral Health Care component of this system is yet not fully developed. As per the information available, there are just 60 Sanctioned posts of Dental Surgeons in the state out of which only 43 are filled.

Presently, Dental Surgeon : Population ratio of the state is 1:197199. The state has approved opening of two Dental Colleges in Uttranchal. With this the anticipated Dental Surgeon : Population ratio is not likely to improve considerably and the dismal picture shall remain.

Dental Caries is the most common chronic disease of childhood. This oral condition interferes with eating and adequate nutrition intake, speaking, selfesteem and dailyactivities. It has also been observed that children with caries may be severely under weight because of the associated pain and disinclination to eat. This may lead to nutritional deficiencies during childhood and effect cognitive development. Besides this, children frequently suffer from Gum/Periodontal problems due to poor Oral Hygiene Habits. WHO has also stated in their reports of last three decades that dental caries & Periodontitis contribute towards global health burden. Both Dental Caries and Gum Problems can be prevented and eradicated but not every one is aware of measures necessary to do so.

PROJECTED POPULATION DATA IN 2011- UTTARANCHAL

(Population 000)

Indicator	2001	2011
Total	8489	9943
Male	4326	5072
Female	4163	4871
Child Population (0-14 Years)	3093	3011

Tobacco abuse is another area of concern in children of rural India and

adolescents all over are getting increasingly addicted to the use of tobacco. Paradoxically, parents who guide the impressionable minds of their children are themselves indulgent in tobacco smoking and chewing practices.

Significant oral, dental and systemic health consequences associated with all forms of tobacco use are well documented in the literature. Such consequences include oral cancer, periodontal diseases, cardiovascular disease, pulmonary diseases and lung cancer[11,12].

Smoking and smokeless tobacco use almost always are initiated and established in adolescence. The earlier the children and adolescents begin using tobacco, it is more likely they will become highly addicted and continue using as adults.

In the light of the above mentioned situational analysis, it was felt desirable to study the Oral Health needs of the rural population and suggest suitable strategies for the region. This project was designed for the rural children with the following specific objectives.

SPECIFIC OBJECTIVES

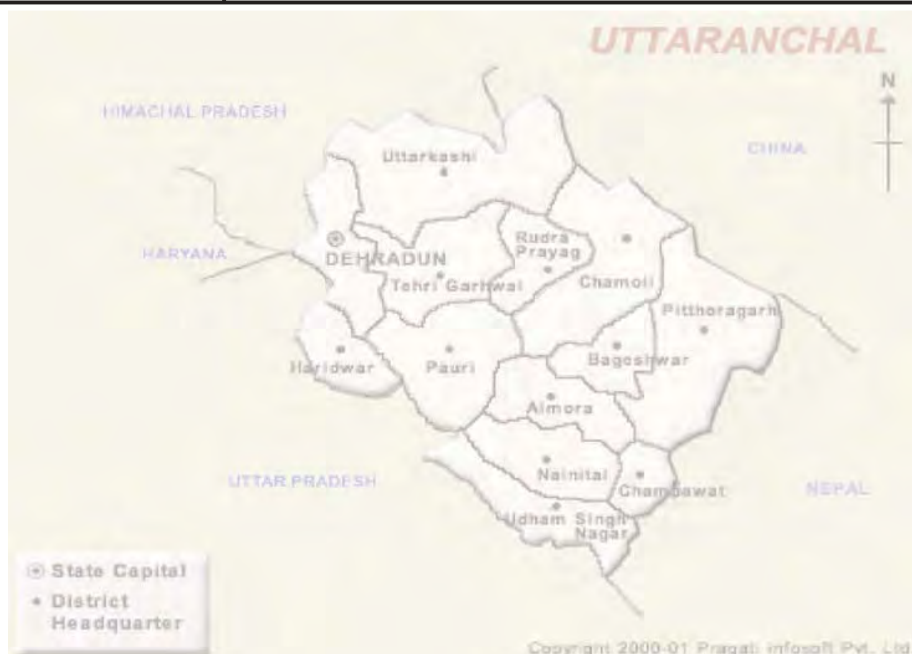
1. To determine the Oral Health Status of Child population in rural areas.
2. To assess the present knowledge with respect to oral health amongst teachers, health workers, parents and children.
3. To determine the role of teachers, health workers & parents with respect to Oral Health promotion.
4. To design promotional and interventional strategies for Oral Health.
5. To design strategies for tobacco control in children.
6. To formulate guidelines for teachers, health workers and dental practitioners for effective counseling and utilization of resources.
7. To design the reinforcement technique for teachers, parents and children with respect to Oral health.

METHOLOGY

PROJECT DESIGN

The study was carried out in one district of Uttaranchal state as per convenience. Within this district, 5 villages were selected at random. Under each selected village, from sampling frame of primary schools, 5 schools were selected. Further, 722 children (418 boys and 304 girls) from the age group of 7- 12 years were selected from the schools.

Sample extent	Uttaranchal state
Sample unit	Village
Sample element	Children within the age group of 7- 12 years (based on the estimates of pilot surveys carried out in these areas, it was found that on an average 80- 90% of the children in this age group are attending school as the primary education is free and compulsory. Along with the incentive of mid-day meals for the children in these schools).
Sample size	722

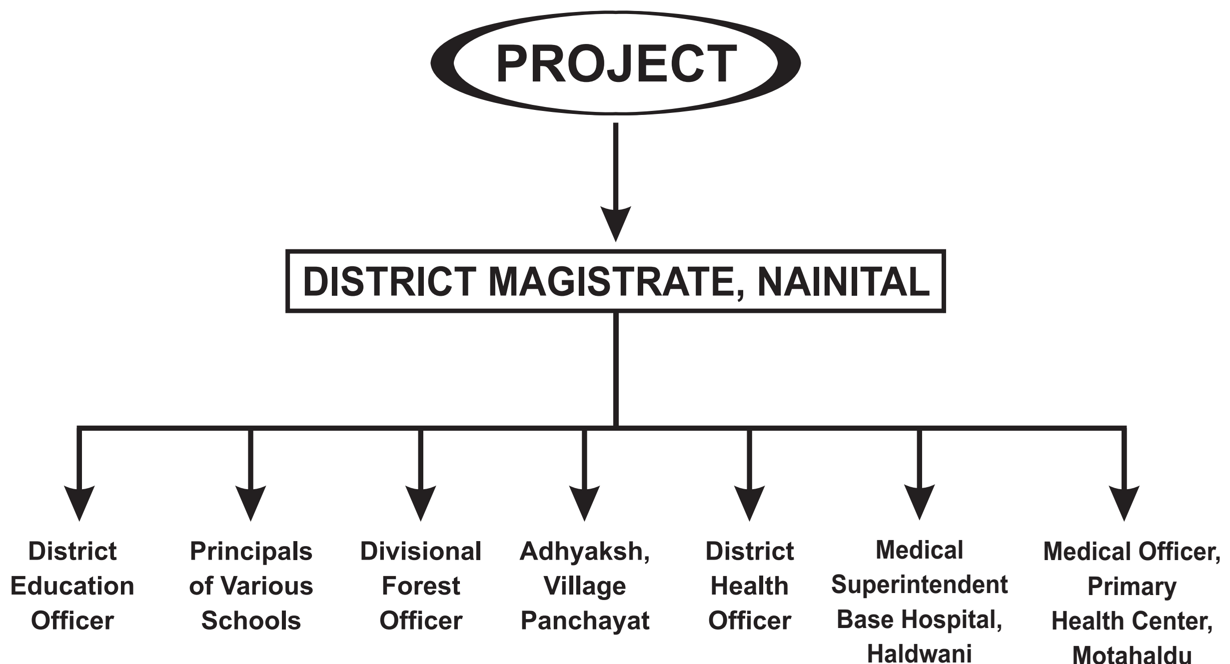


DESCRIPTION OF ACTIVITIES

In pursuance of the aim/ objective of the project, a preliminary survey of various districts of the State of Uttaranchal was conducted and it was decided to operationalize the study in Nainital district and few villages of Haldwani tehsil were selected for the survey.

A meeting was fixed with the District Magistrate of Nainital and he was apprised of the project and a copy of project protocol was submitted in his office. In response to this, the District Magistrate Nainital extended his co-operation by communicating to various departments directing them to facilitate this project. A multi-sectoral approach was adopted and the following authorities were involved in the action plan of the project:

1. District Education Officer
2. District Health Officer
3. Divisional Forest Officer
4. Medical Superintendent Base Hospital, Haldwani
5. Medical Officer, Primary Health Center, Motahaldu
6. Adhyaksh, Village Panchayat
7. Principals of Various Schools



The whole sample was divided into two groups :

Group A (Test Group) comprised of children on whom all the interventional and preventive measures were undertaken. Pre and post study evaluation was also carried out for teachers/health workers and Parents of the test group through structured questionnaires.

RURAL AREA	BOYS	GIRLS
LALKUAN	192	116
PHOOLCHAUR	41	44
VIDYA PUSHP ACADEMY BAREILLY ROAD	25	14
NEW BAL SANSAR VIDYALAYA TEEN PANI	21	13

Group B(Control Group) comprised of children on whom only the required dental treatment was given. They were not given any educational/ Oral Health awareness related inputs.

RURAL AREA	BOYS	GIRLS
DEVALCHAUR	143	116

PHASES OF THE STUDY

Phase I (ASSESSMENT PHASE)

Separate structured questionnaires were designed for (i) Teachers/ Health Workers (ii) Parents (iii) Children and were pre-tested. The required minor modifications were made. The questionnaires were administered to the teachers/ health workers, parents and children to get information regarding the objectives of the study.

Oral Health Needs Assessment for children was carried out using various indices and treatment was rendered to both Group A & B at the time of initiation as an ethical measure. Participation of the sample was subject to an informed consent. Also, drinking water samples were collected from different villages & analysis was done for estimation of fluoride levels.

The treatment that was provided included restorations like Atraumatic Restorations, Intermediate Restorations, Oral Prophylaxis, Topical Fluoride applications, Extractions and Orthodontic Treatment (Removable appliances and Ortho-Trainers)

Phase II (SENSITIZATIONAL PHASE)

The second phase comprised of educating and training of teachers/ health workers and parents of the test group by organizing educational workshops so that they can further impart the knowledge acquired about oral health/ tobacco control to the children in the rural settings. Thus, making our program self- sustainable.

The content of the workshop was essentially based on providing education so as to make them understand Dental Caries/ Gum

Problems as a disease which can be controlled by means of practicing proper tooth brushing, diet control, training on plaque removal and use of fluoridated tooth paste.

THE COMPONENTS OF THE WORKSHOP

i) Multimedia presentations

ii) Material for Information, Education, Communication was prepared for distribution both in Hindi & English Booklet form.

iii) Interactive Sessions/ Group Discussions

iv) Simulation Methods to teach Brushing Techniques and Atraumatic Restorative Technique on models

v) Training Teachers and Health Workers for Atraumatic Restorative Technique.

i) Multimedia presentations:

Multimedia Presentations were conducted by the investigators targeted to the Test Group Teachers/ Health Workers and Parents. Each presentation was of about 30 min duration. The topics covered in these sessions were related to :

- Common Dental Diseases i.e. Dental Caries, Gum Diseases their Etiology, Signs/ Symptoms, Curative/ Preventive Measures.
- Common Oral Habits in Children.
- Ill-effects Tobacco Smoking/ Chewing.
- Diet and Oral Health.
- Preventive Measures for Maintaining good oral health.

ii) Material for Information, Education, Communication regarding Oral Health.

For the above said purpose a booklet was designed in both English and Hindi to provide basic information on Oral and Dental Health. It was our effort to educate and inspire the teachers, parents and health workers about various aspects of oral hygiene so that they can encourage and instill proper dental habits amongst their children. The booklet was designed with visuals & Information was provided in a way to make it self explanatory to the extent possible and easy to memorize.

iii) Interactive Sessions/ Group Discussions:

The next step was an Interactive Session of 15 min. duration for Teachers, Health Workers and Parents held separately. Interactive activities included Training of the Test Group for Identifying Primary/ Permanent Teeth, Timing and Sequence of Eruption, white/ brown spots indicative of dental caries and calculus/ plaque recognition.

iv) Simulation methods:

The Simulation technique was used for demonstrating the proper brushing method to clean the teeth on Dental Models with a Tooth Brush. Further they were asked to show this technique on Models in front of the Children. Each session lasted for about 15-20 min.

v) Training Teachers and Health workers for ART :

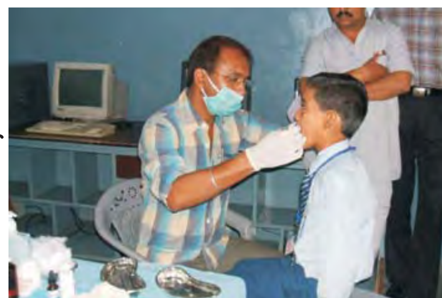
Sub- groups were formed for the training and demonstration of ART comprising of 5-6 persons each. The Step wise procedure of the technique was also distributed amongst them in form of one page hand-out in Hindi. They were initially demonstrated the technique on dental models. The same was then shown on children. This was followed by 2 practice sessions lasting for 30 min each on dental models. After this basic training they were made to perform ART in the presence of trained dental personnel.

In an attempt to make this program self-sustainable, the teachers and health workers were distributed restorative material along with required armamentarium to perform ART. They were also sensitized and trained regarding Infection Control Measures. Health workers were also asked to perform this exercise on non- School Going Children and were requested to maintain and submit the record to us along with the details. It was for us to verify and check on their work at random.

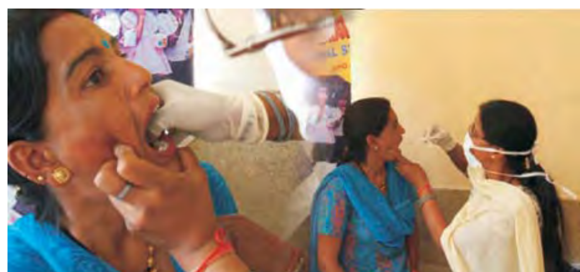
Duration of an Educational Workshop

Total man hours spent on teaching and training for each session was 30 min (slide presentations) + 15 min (interactive session) + 15 min (simulation method) + 30 min x 2 (ART training) = 2 Hours.

Phase III (REINFORCEMENT PHASE):



The phase II which consisted of teaching and training was followed by Reinforcement of information/education to Teachers/Health Workers and Parents. In this phase, they were distributed the fliers/ leaflets as reminders for further dissemination of the oral health education and practices. Each of the sub group was again briefed regarding tooth brushing technique and ART for 5 min as a reinforcement working activity. Also the entire sample was distributed tooth brushes and tooth pastes.



The Reinforcement programme consisting of various activities was designed and executed for the target group of Teachers/Health Workers & Parents. Different type of contests were organised for Children e.g. Poem Recitation on Oral Health, on the Spot Painting Competition, Smile Contest and prizes were distributed. Also, Street Plays and Dental Exhibitions were organized to further generate the interest of the target group.

Phase IV (MONITORING AND EVALUATION PHASE):

In this phase the Teachers, Health Workers and Parents were assessed by means of structured questionnaires. Their ability to perform ART, their knowledge with respect to Oral Health and Imparting the same to the children was evaluated.

Data Collection and Analysis :

The data from Teachers/Health Workers, Parents and Children was collected through structured questionnaires with respect to all the objectives. The results so obtained are discussed and inferences drawn.

RESULTS

A questionnaire survey method was adopted to collect the qualitative data from the target sample. A total of 48 Teachers, 36 Health Workers, 49 Parents and 722 Children were interviewed periodically. Based on the study questionnaire and oral examination of 722 Children, the treatment needs were identified in the study groups. Educational workshops for teachers, health workers, parents were conducted and the results obtained are as under :

1. ORAL HYGIENE HABITS

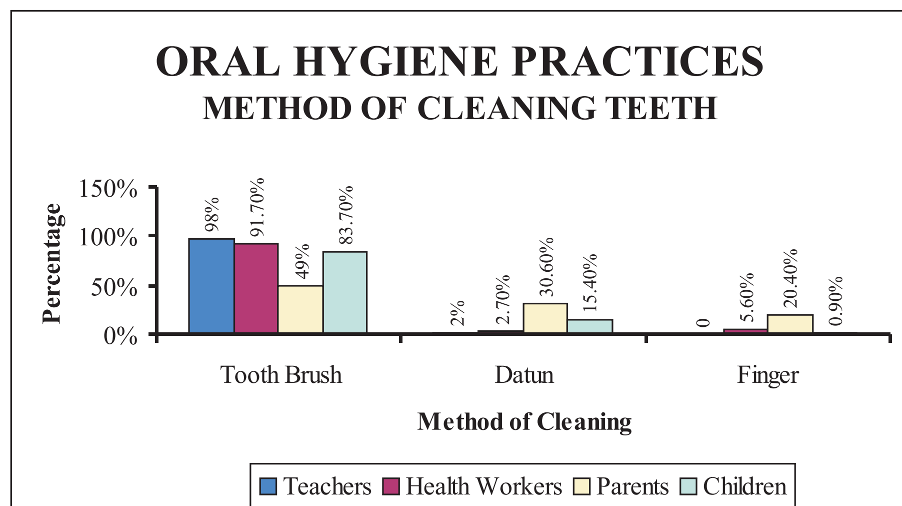
1.1 Teachers

Various questions were asked on oral hygiene practices covering aspects such as how teeth are cleaned, what material is used to clean the teeth etc. The results indicated that 47 (98%) of the teachers used tooth brush to clean the teeth and the remaining 1 (2%) used Datun. 42 (87.5%) of the teachers used tooth paste and the remaining 6 (12.5%) used tooth powder.

As regards, their frequency of cleaning the teeth 37 (77.1%) of the sample cleaned their teeth twice daily. After educating them, there was improvement i.e. 2.3% in oral hygiene practices amongst the teachers who cleaned their teeth once daily (i.e. there is a positive shift towards cleaning of teeth twice daily). Initially 6.3% cleaned their teeth after every meal which increased to 8.3% at the end of the study.

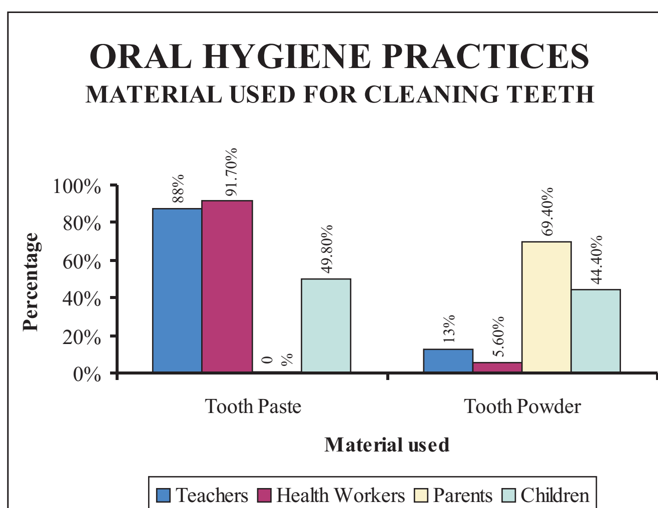
Despite the fact, the awareness regarding frequency of changing the tooth brush showed improvement, i.e. from 41 (85.4%) to 45 (93.8%). It was found that the awareness about the frequency of changing tooth brush is not being practiced in their normal routine ($P < 0.05$).

1.2 Health Workers



The results indicated that majority of Health Workers 33 (91.7%) used tooth brush with tooth paste, 1 (2.5%) used datun and the remaining 2 (5.6%) used fingers to clean their teeth along with tooth powder.

As regards to the frequency of cleaning the teeth there was slight improvement in number of the health workers who cleaned their teeth once daily and those who cleaned twice daily. There was an increase from 23 (63.9%) to 26 (72.2%). This increase was not found to be statistically significant. Awareness about the cleaning of teeth after meals increased by 10% as compared with the results at the time of initiation of study.



1.3 Parents

The result indicated that a total of 24 (49%) parents used tooth brush with tooth powder instead of tooth paste, 15 (30.6%) used datun and remaining 10(20.4%) used fingers to clean the teeth along with tooth powder.

With regards to the frequency of cleaning the teeth there was slight improvement in oral hygiene practices amongst parents after training who started cleaning their teeth twice daily. i.e. from 24 (49.%) to 27 (55%).

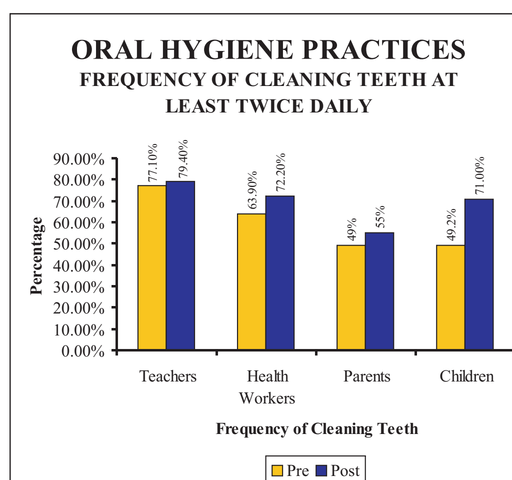
Awareness about the changing the tooth-brush (i.e. after 1-3 months) increased by 8% when compared with the results obtained at the time of initiation of this study. Further, there was no change in how often they should clean their teeth.

1.4 Children

The results indicated that out of a total of 722 children, 602 (83.7%) children used tooth brush to clean their teeth and the remaining 120 (15.4%) used datun / finger 360 (49.8%) of them used tooth paste and 320 (44.4%) used tooth powder and remaining 42 (5.7%) were using other materials to clean the teeth.

As regards their frequency of cleaning the teeth 49.2% of the sample cleaned their teeth twice daily and 42.2% cleaned once daily which improved to 71.0% by the end of the study.

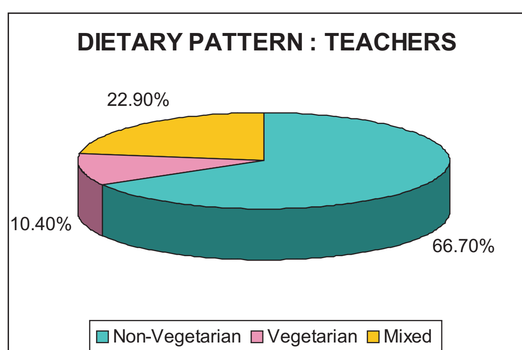
Their awareness regarding frequency of changing tooth brush showed slight improvement over the period of the study.



2. DIETARY PATTERN

2.1 Teachers

A series of questions were asked on dietary pattern covering aspects like type of diet, eating between meals, rinsing the mouth after meals etc. The results showed that 32 (66.7%) were non- vegetarian, 5 (10.4%) were vegetarian and 11 (22.9%) had mixed diet. When interviewed regarding eating in between meals 27 (56.3%) believed that there was no harm in it. This attitude improved marginally towards not having in between meals.



It was found that 31 (64.6%) & 9 (18.8%) of the sample were occasionally eating in between meals and this practice remained the same till the end of the study.

As regards their awareness and practice regarding rinsing after meals, 45 (95.8%) of teachers reported of rinsing their mouth after meals.

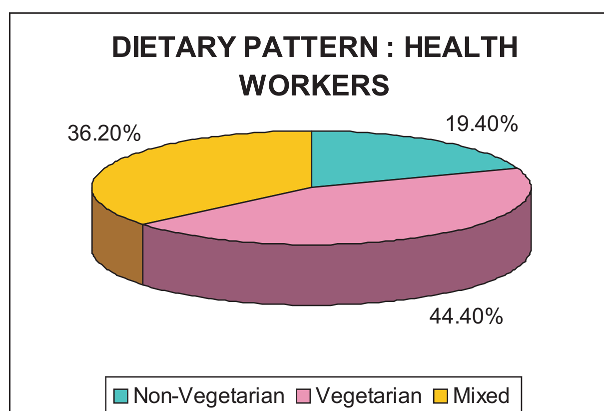
2.2 Health Workers

Out of 36 health workers, 7 (19.4%) were non-vegetarian, 16 (44.4%) were vegetarian and 13 (36.2%) had mixed diet. When interviewed regarding eating in between meals 52.8% believed that there was no harm in it. This belief of not having in between meals improved marginally after educating them of ill effects of eating between meals.

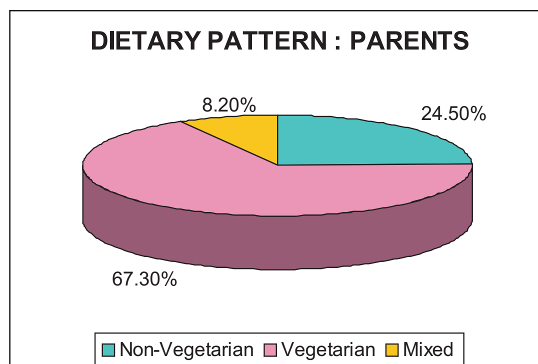
It was found that 24 (66.7%) Health Workers of the sample were occasionally eating in between meals and this practice remained the same at the end of the study.

2.3 Parents

The results showed that 16 (24.5%) were non-vegetarian, 25 (67.3%) were vegetarian and 8 (8.2%) had mixed diet. When interviewed regarding eating in between meals 25 (51%) believed that there was no harm in it. This belief was improved marginally after educating them.



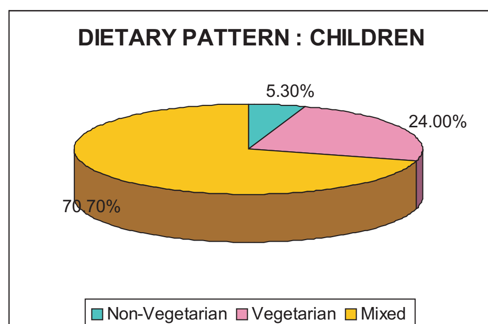
It was found that 30 (61.2%) of the sample was occasionally eating in between meals and this practice remained the same at the end of the study.



As regards their awareness and practice regarding rinsing after meals, 36 (73.5%) of parents reported of rinsing their mouth after meals.

2.4 Children

70.7% of the child population examined had mixed diet, 5.3% were non-vegetarian and only 24% were vegetarian, 70.9% reported to have 3 meals a day. When interviewed regarding eating between meals 57.7% believed that there was no harm in it at the time of initiation. This belief was changed by 10% that one should not have anything in between meals.



It was found that 45-46% of the sample was occasionally eating in between meals and this practice remained the same till the end of the study.

As regards their awareness and practice regarding rinsing after meals, 53.6% of children reported of rinsing their mouth after meals though 70.9% were aware that they should rinse their mouth after every meal. At the end of the study it was the found 62% started rinsing after every meal.

3. TOBACCO SMOKING/ TOBACCO CHEWING HABITS

3.1 Teachers

Out of the total sample of 48, it was noted that 43 teachers were females and were non tobacco users and 4 out of 5 male teachers were smoking since 10-12 years of age. They also shared that it was under the influence of friends that they started smoking.

3.2 Health Workers

It was noted that 22 (61.1%) health workers were females and 14 (38.9%) were males. The study revealed 6 (16.66%) were habitual smokers, 14 (38.9%) were habitual

tobacco chewers and only 1 (2.9%) had tobacco in either of forms.

3.3 Parents

Out of 49 parents who were interviewed 24 (49%) were tobacco users either in the form of tobacco smoking or chewing tobacco. After intervention we found a 12% decrease in tobacco users.

3.4 Children

Out of the total sample of 722, it was noted that 85 (11.77%) children (Test & Control) in the age group of 10-12 were tobacco users. They also shared that it was under the influence of friends that they started smoking. Also, the study revealed that the parents of nearly 80% of the total children were habitual smokers / chewers.

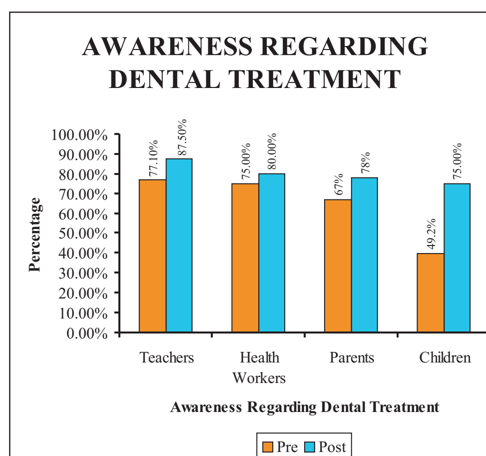
4. AWARENESS REGARDING DENTAL TREATMENT

4.1 Teachers

A set of questions were asked to the teachers to know regarding their awareness and practice regarding dental treatment. The results revealed that at the initiation of the study 37 (77.1%) were aware of their dental problems and at the end of the survey 42 (87.5%) responded for awareness regarding dental problems. Finally, it was concluded that by the end of the study the teachers were in better position to identify their dental needs and the data revealed that the perceived need of majority of the them was that they were suffering from tooth decay.

Initially, 38 (79.2%) of the sample was aware of need to consult a dentist for their problems and after training 41 (85.4%) had the awareness to consult a dentist and the study also revealed that about 60-75% are visiting the dentist either of their own or after consulting others.

On going through the data of 4 sessions, one concludes that initially a person was visiting a dentist only when he/ she was having dental problem but by end of session 4 they were more aware of visiting a dentist at least every 6 months i.e. 13 (27.1%) to 27 (56.3%).



When asked regarding oral hygiene instructions/ checking given by them to their students, it was found that there was a positive shift from 37 (77.1%) teachers to 42 (87.5%) giving instructions about good oral hygiene practices and from 29 (60.4%) to 32 (66.7%) started checking children's teeth time to time.

4.2 Health Workers

The results revealed that 80% health workers were aware of their dental problems. 58.3% of them were aware of need to consult a dentist for their problems and it was found that about 58.3% were visiting the dentist either of their own or after consulting others.

At the end of survey it was concluded that initially a person was visiting a dentist only when he/she was having dental problem but now they were better aware of visiting a dentist at least every 6 months (shift from 13.9% to 22.2%).

When asked regarding oral hygiene instructions / checking given by them to the children, it was found that there was a positive shift from 23 (63.9%) to 25 (69.4%) and from 19 (52.8%) to 22 (61.1%) respectively.

4.3 Parents

The results revealed that 39 (79.6%) were aware of their dental problems. Majority of them were having dental decay i.e. 21 (48.8%) and 7 (14.1%) had multiple dental problems.

29 (59.2%) parents felt that one should visit a dental practitioner when they or their child had dental problem but data revealed that only 15(51.7%) were actually adopting this practice in their life styles and 2(6.9%) were visiting medical practitioner while remaining were forced to visit either a pharmacist or to some one else because of the lack of facilities.

29 out of the 34 parents who believed that one should visit a dentist only when they had a problem, were now visiting a dentist 4(8%), felt that they should visit a dentist once a year and were actually practicing the same.

4.4 Children

A set of questions were asked to the children to know regarding their awareness and practice regarding dental treatment. The results revealed that at the initiation of the study 39.9% (test group) and 48.7% (control group) were aware of their dental problems and at the end of the survey 75% of the test group children responded for awareness regarding dental problems. Finally, it was concluded that by the end of the study the children were in a better position to identify their dental needs and the data revealed that the majority of the people suffer from tooth decay.

Only 34.2% of the sample was aware of need to consult a dentist for their problems and the rest were showing to medical practitioner / pharmacist. This practice remained the same till the end of the study.

On going through the data one concludes that a child was visiting a dentist only when he/she is having dental problem.

Results reveal that 45% of the child population were influenced by the teachers / health workers and 55% were influenced by parents.

5. MEDIA HABITS

5.1 Teachers

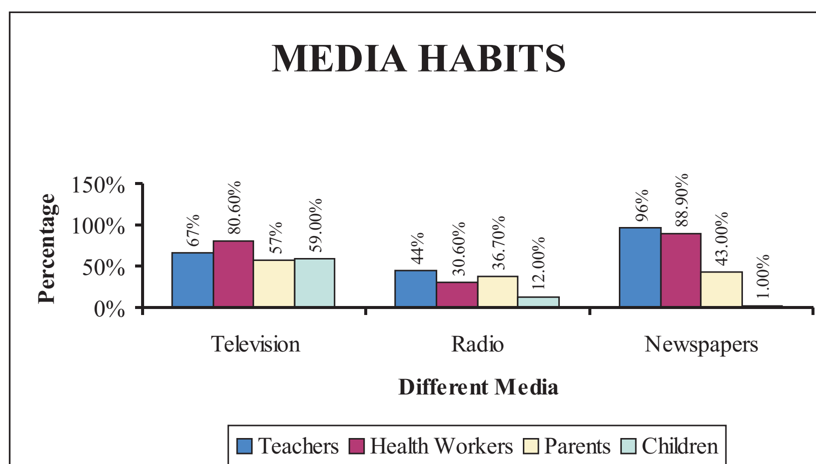
When asked about the source of information used 46 (95.8%) of them were in habit of reading Hindi newspapers. While going through the newspapers 21 (43.8%) reported that they usually go through most of the advertisements and 27 (56.3%) were selectively going through the advertisements.

When surveyed 21 (43.8%) of the target sample was interested in listening to the radio for 1-2 hours and the similar pattern was seen with regard to watching television 20 (41.7%).

The pattern revealed that they were listening to the radio in the morning hours whereas watching television was more in practice during evening hours 32 (66.7%).

23 (47.9%) of the teachers reported that they were partly interested in advertisements and 9 (18.8%) said that they watch the advertisements enthusiastically. But majority of them i.e. 42 (87.5%) were more interested in informative advertisements rather than entertaining ones. Also, it was inferred that the keenness in watching/ listening to advertisements is associated with the degree of believability of the information ($P < 0.05$).

The results obtained from the 4 sessions revealed that the dependability of the health information is related to the creditability of the advertisement agency e.g. govt. agency.



It was finally concluded that the informative oral health related advertisements provides more information/ awareness.

Though, 35 (72.9%) reported that the community based health programs were rarely

organized in their village, but whenever organized more than 28 (58.4%) of them attended and 46 (95.8%) desired that all the activities should be informative. Thus, it can be concluded that community based informative activities influence the community.

5.2 Health Workers

88.9% of health workers were in habit of reading Hindi newspapers. While going through the newspapers, 20 (55.6%) reported that they usually go through most of the advertisements and 9 (25%) were selectively going through the advertisements.

When surveyed, 11 (30.6%) were interested in listening to the radio for at least 1 hour but more were interested in watching television i.e. 29 (80.6%) for atleast one hour.

It was revealed that 100% were listening to the radio in the morning / afternoon whereas watching television was more in practice during evening hours.

22 (61.1%) of the health workers reported that they were partly interested in advertisements and the rest said they watched advertisements enthusiastically. But only 67% were more interested in informative advertisements rather than entertaining ones.

The results obtained from the 2 sessions revealed that the dependability of the health information is related to the creditability of the advertisement agency e.g. govt. agency.

Further, 25% reported that the community based health programs were rarely organized in their village whereas 58.3% reported that these programmes were held

more than once a year. Whenever organized more than 55% of them attended and about 90% of them desired that all the activities should be informative.

5.3 Parents

21 (43%) of the parents were in the habit of reading newspaper daily. 37 (75.5%) of them were in habit of reading hindi newspapers. 50% of these who were in habit of reading newspaper reported that they usually go through most of the advertisements and 13(31.7%) were selectively going through the advertisements and remaining were not interested in them.

The pattern revealed that parents were more interested in watching Television in the evening 25(56.8%) and 18 (36.73%) listened to the radio during day time.

26(53.1%) of the parents reported that they were partly interested in advertisements and 38.8% said that they watched the advertisements enthusiastically. 50% of the parents watching advertisements were more interested in informative advertisements and the remaining 50% felt that the advertisements should be entertaining.

16(84.2%) of these 19 parents who watched advertisements enthusiastically sometimes acted upon health related information given in advertisements whereas 12(46.2%) of the 26 who were partly interested in advertisements often acted upon health related information given in advertisements.

55% reported that the community based health programs were organized once a year in their village but whenever organized 18 (36.7%) of them attended always and 26 (53.1%) of them attended sometimes. 14 (77.8%) of these 18 parents who always attended and 19(73.1%) who attended sometimes to the community based health programs desired that these activities to be informative.

5.4 Children

Children of the study group were not in habit of reading newspapers regularly.

When surveyed 12% of the target sample was interested in listening to the radio for 1-2 hours, whereas 59% were in the habit of watching television.

It was revealed that they were listening to the radio in the morning hours whereas watching television was more during afternoon and evening hours i.e. 78.9%.

66.7% of the children reported that they were interested in advertisements they watched the advertisement enthusiastically, if the celebrity is there in the advertisement and 17% were interested watching government agencies airing the advertisements.

ORAL HEALTH ASSESSMENT RESULTS

Clinical / Oral Examinations were carried out for both test and control group children by qualified Dental Surgeons. They were briefed to clinically examine the children in the field conditions as per WHO Oral Health Assessment form (1997). The data collected was analysed statistically and the following observations were made.

1. Dental Caries

Prevalence of dental caries was relatively higher in children below 12 years of age with prevalence rate of 93.5% for control group and 92.3% for test group. The caries experience for the primary dentition (mean dmft) was 3.43 for the target sample and the caries experience for permanent dentition (mean DMFT) was 0.657. Further it was observed that there was no apparent gender based differential in the sample.

Periodontal Status

Periodontal Status was assessed with its indicators of gingival bleeding and calculus. The prevalence of bleeding gums was 25.29% & 24.73% in control and test groups respectively. The calculus deposits were in the range of 31.03% & 35.04% in control and test group respectively. The overall prevalence of periodontal problems was 59.97%.

Dental Fluorosis

Dental fluorosis is essentially due to high fluoride content i.e. more than 2.0 ppm. The water samples collected from different villages under study were analysed at the Central Quality Control Lab, Delhi Jal Board. The fluoride content of all the samples was found to be within desirable limits of 1.00 ppm.
The details are as under :

Sl.No.	Village	Flouride in ppm
1.	Deval Chaur	0.62
2.	Lal Kuan	0.31
3.	Phool Chaur	0.21
4.	Bareilly Road	0.32
5.	Teen Pani	0.56

No severe fluorosis was found in the target group. ***(tables placed as annexture)***

Malocclusion Status

Various parameters to assess the prevalence of malocclusion were used. The target group being in the age group of 7-12 years was in the mixed dentition period. 30% to 40% of them were having anticipated crowding in upper and lower dental arches. The recommended Dental aesthetics index had limited use in the study in view of the age factor.

Treatment Needs

The children were clinically assessed for their preventive and curative needs based on their caries experience and dentition status. The results indicated that 23 (3.2%) teeth were requiring preventive treatment for incipient caries. Further there were 346 (47.9%) teeth which required one surface fillings, 9 (1.24%) teeth requiring 2 or more filings, 14 (1.9%) teeth required immediate pulp care and 152 (21.1%) teeth needed extraction.

After taking due consent from parents and teachers the desired preventive, interceptive and curative treatment was rendered to the target group in the form of restorations, scalings, extractions & orthodontic interventions. The details are tabulated as under :

Village	Total No. of Children	No. of Boys	No. of Girls	Treatment given			
				Restoration	Scaling	Extraction	Orthodontic Intervention
Lalkuan	308	192	116	115	180	50	9 ortho trainers 10 removable appliance
Phoolchaur	85	41	44	43	55	40	3 ortho trainers
Bareily Road	39	25	14	18	20	8	5 appliances
Teenpani	34	21	13	24	18	9	5 ortho trainers
Devalchaur	259	143	116	136	120	48	8 ortho trainers 10 removable appliances
Total	725	422	303	336	393	155	25 ortho trainers 25 removable appliances

CONCLUSIONS

Majority of the children, teachers, health workers and parents were found to be aware and practicing cleaning of their teeth once daily. Further, it was found that they were not aware of cleaning of teeth twice daily. But after training some increase was found in their practice of cleaning teeth at least twice daily.

It implies that awareness and reinforcement through effective means need to be planned and executed. Use of an aggressive communication strategy as per their media habits can bring in change in oral hygiene practices.

With regards to materials used for cleaning teeth it was found that majority of the local population except teachers were using tooth powder. On probing further and checking up of the tooth powders used, it was revealed that a tobacco based tooth powder was being used in some of the cases.

This is matter of concern. Discussions revealed that it is primarily the cost factor which makes them pick up this product as a choice material for their families.

It is suggested that a strategy should be designed to inform the population of the ill effects of these tooth powders and promote the use of alternative methods e.g. neem sticks/datun to clean their teeth. This shall take care of the cost factors.

Further, most of the respondents had the knowledge regarding frequency of changing tooth brush in 1-3 months. But in depth discussions revealed that majority of the children were sharing tooth brushes with the siblings due to economic reasons and not changing the tooth brush in 3 months.

Thus, for bringing about change with respect to cleaning materials and tooth brush it is suggested parents, teachers and health workers be educated.

With respect to dietary pattern it was found that majority of the respondents were having mixed diet and having 3 meals a day. Their awareness and practice levels as regards eating between meals revealed that majority of the teachers, health workers, children and parents were not aware of the ill effects of eating between meals. Hence, it was felt that the target groups to be imparted knowledge thereby bringing in desirable changes in their practices.

Further, it was found that majority of teachers, health workers were rinsing their

mouth after having meals but parents and children needed to be sensitized regarding this practice also.

A significant finding was that though a small percentage of children were in the habit of tobacco smoking & chewing. Majority of them were found to be using tobacco based tooth powder to clean their teeth which may lead to indulgence to tobacco in later years. An aggresive effective communication strategy needs to be formulated & implemented for this purpose. Children during the survey reported having a family member in the habit of tobacco smoking and chewing. Whereas survey of parents revealed otherwise. It may be interpreted that some of the parents might be feigning.

It was found that majority of teachers, parents, health workers were aware of the need to visit a qualified dentist but in practice they were not doing so. On discussion, it revealed that it was due to lack of trained personnel in the area that they were taking advice from medical practitioner or pharmacists. It is suggested to impart formal training to identified health workers and teachers so as to take care of incipient dental problems.

Teachers and health workers were found to be reading Hindi newspapers. They did not indicate much interest in the advertisements. Newspaper reading was not found to popular media habit amongst children and parents. This suggests that print media may not be suitable for conveying oral health messages.

Radio is not a primary medium amongst teachers, health workers & parents. Teachers, health workers, parents who listened to radio were in the habit of listening for about 1-2 hours in the morning. It is deduced that this medium can be used to some extent in the morning hours.

An important finding is that television is the most popular electronic media for communication in this target group. Doordarshan is the most popular channel among all the targets groups in the evenings for 2-3 hours duration. Thus it can be inferred that television would be an effective medium to communicate with the target groups in the rural areas.

Another advantage of this medium is that the target groups do notice advertisements. They like celebrity in the advertisements. They prefer the advertisements to be informative and entertaining. They believe the information to be authentic in the case advertisements are aired by government agency.

In rural areas, hoardings and community events for oral health promotional activities can be used as a medium but it needs to be designed effectively.

RECOMMENDATIONS

GUIDELINES FOR DESIGNING OF PROMOTIONAL & INTERVENTIONAL STRATEGIES

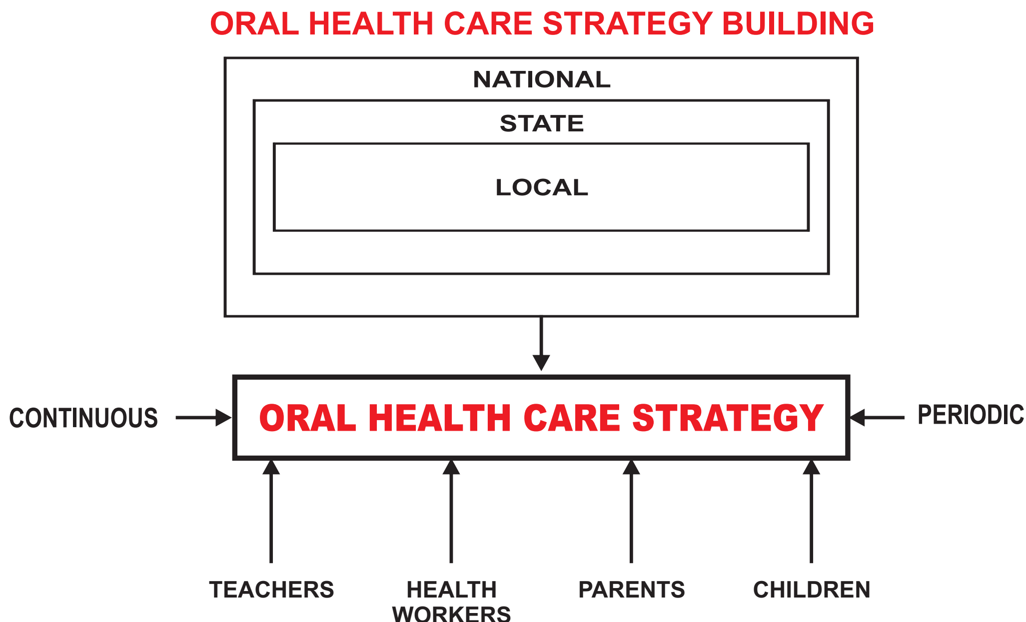
Uttaranchal is essentially a rural and agrarian hilly state. This poses many challenges to its policy makers while dealing with health related issues. There is a need to provide comprehensive health care which is easily accessible, affordable and available to its rural masses. This comprehensive health care cannot be accomplished until Dental Care is also given a major priority in all health services programmes.

An appropriate and feasible strategy needs to be designed with an objective of providing Oral Health Care to rural children. Also, based on different criteria, Oral Health Care strategy needs to be classified. This classification would enable us to identify the efforts in a focused manner & develop effective strategies. Also it helps in coordination of all the activities at different administrative levels ie Local, State & National.

In this project we are giving suggestions for a long term self sustainability. For this purpose, different kind of activities and directions need to be performed on continuous & periodic basis i.e. short term perspective of activities needs to be well coordinated with activities of long term perspective.

Further, the various target groups ie Teachers, Health Worker, Parents, Children need to play different roles /activities. These activities also need to be effectively coordinated so as to avoid duplication of efforts and to develop a meaningful strategy.

ORAL HEALTH CARE STRATEGY BUILDING



Integration of National, State, Local level continuous & periodic Oral Health care activities targeted at Teachers, Health Workers, Parents & Children shall give the desired results.

Healthy children become healthy adults, people who create better lives for themselves, their communities & their country. Oral Health is one of the primary need for children more so in the rural areas of India. The factor that the number are extremely large and it is also a longterm issue with respect to implications later in life. It makes it an issue be taken with great seriousness. Analysis of the information collected during the survey has been used to suggest strategies discussed below :

I. EDUCATION SECTOR :-

1.1 School Curriculum : Oral Health Education is important part of school curriculum. At the state level curriculum, needs to be planned & executed with emphasis on oral health at primary school level. The books need to have chapters providing necessary information with suitable illustrations pertaining to oral health i/e on the pattern of NCERT Books.

1.2 Schools in the rural areas are the ideal sites for promoting oral health, through education & preventive programmes and deliver dental services to children. Oral health education in schools should have 4 major components:

- Material development i/e models, displays, charts, booklet
- Training of teachers
- Students activities
- Monitoring and evaluation

Dental health programmes : These programmes should emphasize the right kind of oral health practices e.g.

Oral Hygiene Habits-proper brushing technique to be demonstrated , rinsing after every meal to be advocated, alternative methods of cleaning teeth with datun (neem sticks) or other medicinal plants should be promoted, to advocate not to use tobacco based tooth powder for cleaning teeth.

Dietary habits - balanced diet and dietary control to be emphasized.

Dental health programmes should be designed and implemented on periodic basis through out the year.

Preventive strategy : school based fluoride mouth rinsing programme can be designed as oral health preventive strategy. This progamme shall be cost effective when targeted at rural children.

Reinforcement : School activities wherein oral health care can be reinforced include :

- Emphasis on oral health during morning assembly
- Scheduled slot for oral health should be given in the time table
- Dental checkups to be carried out periodically
- To emphasize on tooth brushing and rinsing of mouth after mid day meals
- Various competitions to be planned organized e.g. painting competition, smile competition, health teeth competition, on the spot quizzes, essay competition, poem recitation on oral health
- Children with good oral health be recognized and awarded

1.3 School teachers : It is recommended that school teachers be educated and trained as they play a significant role in oral health promotional activities. The teachers, in rural settings were observed to be the main and right kind of influencer, who can bring in change in behaviour of the children. His attitude, values, views, beliefs, all influence childs behaviour. Whatever a teacher says is followed by children blindly. So, a communication strategy aimed at teachers needs to focus on the following :

- To educate them about dental development of the child
- To educate the teachers about dental diseases
- To train them for simple curative and preventive procedures e.g. atraumatic restorative technique, good oral hygiene practices
- To train them for counseling with respect to tobacco control initiatives

This suggested strategy is to provide continuous communication with the teachers in the form of booklets, pamphlets, reminders, fliers etc. This continuous programme is to function as constant reminder/reinforcement of oral health care practices, there by effective implementation of oral health care activities. Further, workshops should be organized on periodic basis for educating and training the teachers.

For active involvement of the teachers in oral health programme they should be suitably rewarded ie Monetary/ non monetary incentives. Participation of the teachers in providing the awareness, curative and preventive measures will take us a long way in effective outcome of our strategy.

II. HEALTH SECTOR : CAPACITY BUILDING

The below mentioned initiatives would contribute towards development of a task force for Oral health at different levels.

2.1 Primary Health Care : Oral health has to be delivered through primary health care infrastructure. Presently no dental surgeon is posted at PHC/CHC in the state. There is a an acute shortage of skilled dental manpower. Adding to this, limited resources, equipment and infrastructure still exists for oral health care.

- To fill this lacuna in the first phase, trained dental auxiliary i.e. Dental Hygienist/Dental Mechanic should be deployed at each PHC. This is to be later strengthened with a dental surgeon in the second phase. These Dental Hygienist/ Dental Mechanic should be educated and trained for basic oral health care, treatment techniques etc.

2.2 Unified Internship Roster : Another way to strengthen the trained manpower is to have unified Dental Internship Roster for the dental colleges in the state. These interns are to be posted in rural areas on compulsory rotatory internship programme. There by facilitating oral health care to the rural masses at their door steps.

2.3 New Dental College : The state government should plan an equitable growth of dental colleges in the various regions of the state.

2.4 Multipurpose Health Workers / Accredited Social Health Activist / other village level Health Care Providers:

With participation of local communities in designing oral health promotional strategy 4-5 health workers / ASHA workers are to be identified from each village. These people should be the ones who can interact closely with the local families and influence the community with respect to good oral health practices. These health workers are to be educated and trained in the following.:

- Basic Oral Health care
- Identification of dental problems
- Training the health workers for treatment techniques e.g. scaling, ART infection control measures

2.5 Integration of Oral Health Care Programme :

A multi sectoral approach in which health, education, nutrition & development components come together, can add to programme's cost effectiveness. Also convergence of services, focuses on the whole child rather than compartmentally & in doing so reinforces and compliments to how a child develops. For this, initiatives

are to be spearheaded by government in improving Oral Health Care Services for rural communities.

Oral health care programme should be made a component of all the other on-going National / State level rural health care programmes / community development programmes e.g. National Rural Health Mission, Sarva Shiksha Abhiyan etc. This integration initiative shall provide synergistic effects and avoid duplication of efforts and resources, thus making the programme cost effective.

III. SOCIAL WELFARE SECTOR

Non Governmental Organization should be encouraged to join in our efforts to promote oral health care in rural children. Since schools are already aimed at through education sector for Oral Health, it is suggested that NGO's can supplement the work plan of education and training aimed at house to house visits. Their efforts should be primarily targeted at parents/ care givers as they are responsible for bringing of their children. Parents after assimilating knowledge regarding oral health can further impart this knowledge to their children, so as to bring in positive change in their attitude and behaviour towards oral health.

Further NGO's should design some programme within the community e.g. Organizing of Dental Checkup Camps, providing information and solutions to their dental problems. Secondly, NGOs should take an initiative for promoting alternative methods of cleaning teeth. They may also provide tooth brushes, tooth pastes, Neem Sticks for rural children.

IV. PUBLIC PRIVATE PARTNERSHIP

Private organisations can play a significant role in achieving the objectives of such a programme. It may be :

Providing of Mobile Van Dental Units with an objective to take oral health care to the door steps of the communities in rural areas. These vehicles can be operationalised by NGOs or in the alternative MNCs e.g. Colgate Palmolive India Ltd., Hindustan Lever Ltd., etc. may be requested donate such fully equipped mobile Units.

They may distribute free samples of tooth paste, tooth brushes, tooth powder alongwith leaflets for oral health promotion.

They may sponsors community activities.

V. INFORMATION EDUCATION COMMUNICATION

IEC material designed and distributed to teachers, health workers and parents enabled us to achieve the following objectives :

- To raise awareness, knowledge and understanding among the target gruops ie Teachers, Health workers, Parents and Children about oral health care and dental diseases and methods of prevention
- To promote desirable oral health practices in the rural child population ie proper cleaning of teeth, diet control etc.
- To mobilize different sections of society to integrate oral health messages and programming into existing activities.
- To train Teachers, Health Workers in oral health practices and curative strategies.
- To provide continuous reinforcement to the concerned target groups. This shall contribute towards self sustainability of the programme.

Hence it is suggested that Print material in the form of posters, displays, leaflets, pamphlets, may be distributed to target population to convince the rural communities of the importance of good oral hygiene practices. This shall have an indelible impression amongst the masses.

Health care providers can also use this print material to reinforce their interpersonal communications with the target groups of parents and children. Good illustrations can make the oral health messages easier to grasp and remember.

Media

Entertainment for public education and public health can be a powerful approach. The use of electronic media eg. Television, Radio can be the mains stay of IEC strategy as it cuts across literacy barriers.

Television : As per our findings with regard to TV as a medium, advertisement should be designed in such a way that they are informative as well as entertaining to convey messages, if possible celebrity based advertisement to be created to catch their attention. The commercials may have a local flavour in the form of song, background and people.

For oral health care messages to be effective, they need to be aired through Doordarshan Channels during evening hours.

As indicated in our survey, for the purpose of believability among rural population Directorate of Advertising and Visual Publicity should take the responsibility for getting the oral health promotional spots designed.

Radio : as a medium shall perform a supplementary role to TV. The oral health messages in the form of catchy jingles/songs keeping in mind the local communities should be aired during morning hours. Oral Health radio talks, panel discussions can help the rural masses to understand oral health problems and treatment modalities.

Outdoor activities : to used this medium effectively, Directorate of Field Publicity should arrange film shows on oral health, street plays, songs for local communites.

Hoardings : should be designed in such a manner to attract the attention of the people and convey messages in simple, clear language. The hoardings will also contribute towards the objective of reinforcement. Due attention should be given to the location and number of hoardings in such a way that it becomes unavoidable to oversee them.

VI. TOBACCO CONTROL INITIATIVES

Counseling : Face to face inter personal communication is the most powerful tool to effect behaviour change particularly when it relates to tobacco smoking and chewing practices. Through counseling children and parents can be made to scrutinize their behaviour and persuaded to abstain from tobacco smoking chewing. Health care worker should develop special skills for taking care of those who are indulgent into this habit while mobilizing the community to health those affected and their families.

Portraying individuals afflicted with tobacco related diseases can be shown to the community to convey & convince the people about ill effect of tobacco. It would motivate them not to indulge in tobacco smoking and chewing practices.

As revealed from the study, **tobacco based tooth powder** which is freely available and heavily used by the rural population should be banned and alternative methods of oral hygiene practices should be promoted.

Also, **advertisements** through television, radio, community activities and hoardings may be used to convey the ill effects of tobacco smoking and chewing.

VII. RESEARCH INITIATIVES :

Government should encourage research and development activities with respect to development a safe and economical tooth cleaning and restorative materials.

SUSTAINABILITY

This report suggests the frame work for an integrated, long term and sustainable programme for oral health in rural child population. It amounts to bringing in the changes in mindset and behaviour of children on permanent basis. Various measures were taken by the team during the project towards making it sustainable.

The permanent change in behaviour related with oral health can be achieved only by empowering different groups, who are in position to guide the children. The target groups for this purpose were parents, teachers, health workers.

The fact that the changed behaviour may not continue for longrun, various activities/steps were built-in the suggested programme/strategies for preventive & curative purposes. These activities included the preparation of oral health booklet which would remain with the target group as a permanent source of reminder.

Periodic activities in the schools, use of TV, Radio & Outdoor media shall keep reinforcing the target groups. Training the teachers, health workers is another suggested step. Periodic visits by skilled dental personnel ie dental surgeon, interns for reinforcement of our efforts would do the job of sustainability.

Once these children imbibe the right oral health practices, they would pass it on to the next generation. Thus, it is for the first cycle of efforts, that we need to be aggresive in our inputs.

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