EFFECTIVENESS OF DIFFERENT HEALTH EDUCATION METHODS ON 15 YEAR OLD SCHOOL GOING CHILDREN ON GINGIVAL HEALTH IN LUCKNOW CITY

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In the partial fulfilment of the requirements for the degree

of

MASTER OF DENTAL SURGERY

In the speciality of

PUBLIC HEALTH DENTISTRY

By

Dr. Anam Siddiqui

Under the guidance of

Dr. Sahana S.

Reader

DEPARTMENT OF PUBLIC HEALTH DENTISTRY

BABU BANARASI DAS COLLEGE OF DENTAL SCIENCES,

LUCKNOW

(Faculty of Babu Banarasi Das University)

2017-2018

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"EFFECTIVENESS OF DIFFERENT HEALTH EDUCATION METHODS ON 15 YEAR OLD SCHOOL GOING CHILDREN ON GINGIVAL HEALTH IN LUCKNOW CITY"** is a bonafide and genuine research work carried out by me under the guidance of **Dr. Sahana S.,** Reader, Department of Public Health Dentistry, Babu Banarasi Das College of Dental Sciences, Babu Banarasi Das University, Lucknow, Uttar Pradesh.

Date: 30/10/18

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Dr. Anam Siddiqui

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LIST OF ABBREVIATIONS

DMFT	Decayed, Missing, Filled teeth.
DMFS	Decayed, Missing, Filled Surfaces.
WHO	World Health Organization
OHI-S	Simplified Oral Hygiene Index
DI-S	Debris Index Simplified
OHI	Oral Hygiene Index
PL1	Plaque Index
GI	Gingival Index
BI	Bleeding Index
NBP	Non-Bleeding Papillae Index
PD	Pocket Depth
DHE	Dental Health Education
OHE	Oral Health Education
DHW	Dental Health Week
PHP	Patient Hygiene Performance
NNT	Number Needed To Treat
EL	Education Learning
TL	Television Learning
U.P.	Uttar Pradesh
U.K.	United Kingdom
*	Multiply
%	Percentage
>	Greater than
SPSS	Statistical Package For Social Sciences
±	Plus-minus
n	Number of subjects
≤	Greater than or equal to

NS	Not Significant
SD	Standard Deviation
KAP	Knowledge and Practices

Abstract

Introduction- Oral health education is an important part of oral health promotion and is an essential and basic part of oral health services. However oral diseases are major health problems, especially in children, owing to their high prevalence & incidence in all regions of the world. **Objective:** The present study was conducted with the objective to assess the effectiveness of Lecture method and multimedia method of health education on12 and 15 year old school going children on gingival health. **Material and Methods:** A randomized parallel design investigative study was conducted on 360 school going childrens of both public and private schools in Lucknow. After obtaining ethical clearance the study participants were divided into two groups i.e. Group A (Chalk & Talk demonstration, models & flip charts) and Group B (Power point presentation) and were examined in their respective institutions by using a pre-designed structured proforma which consist information on Personal and demographic factors, Oral hygiene practices, Oral Health Knowledge and to assess gingival health gingival index of Loe H. & Silness J 1963 was used and to assess deposition of plaque plaque index of Silness J. & Loe H. 1964 was used by a single examiner who was caliberated, conducted the study from November 2017 to March 2018. The data obtained were entered into the spread sheets and analysed using SPSS 16.0 version. **Results:** It was found that there was no significant ($p>0.05$) difference in the practice of cleaning teeth between the groups at 0 week. However, the correct practice of cleaning teeth was significantly ($p<0.01$) higher in Group 2 (42.1%) than Group 1 (38.3%) at 2, weeks, 2 months and 4 months. The correct practice of frequency of cleaning teeth was significantly ($p<0.05$) higher in Group 2 (37.4%) than Group 1(22.8%) at 0 weeks and 2 weeks. In group 1, students exhibited better practice of oral hygiene in 2 months and 4 months than group 2. Both the groups had almost similar gingival index scores at baseline i.e. 10.66±6.18 and 10.11±6.21. Group 2 exhibited better gingival health at end of 4 months i.e. 5.46±4.62. Plaque deposition significantly reduced at 4 months in Group 2 i.e. 5.96±4.65. **Conclusion:** It was concluded that multimedia approaches (Group 2) to health education exhibited better gingival health than chalk & talk method (Group 1).

Introduction

Oral health is an important part of general health [1]. Absence of mindfulness about dental illnesses has brought about gross disregard of oral health[2].

Oral wellbeing comprises of strength of the oral and related tissues which adds to the general prosperity and also empowers a person to eat, talk and associate without dynamic ailment, inconvenience or humiliation, so that the individual stays sound and dynamic.[3]. The most important part of oral health promotion is spreading awareness through Oral health education[4]. Oral health education is a powerful and successful tool in promoting oral health in adolescents[5,6]. It has been considered an essential and basic part of dental health services[7]

Nowadays public health is a major concern of society. Hence, health education is an important tool of public health and an effective primary preventive method. To eliminate plaque and to incorporate oral health instruction, efficient dental health education should be necessarily given to each and every individual as to minimise oral health problems.[8]

Among children, increasing levels of dental caries are observed in some developing countries and as well as in those community where school based preventive oral care programs are not established[9].

To control the growing burden of oral diseases and to promote oral health, schools are the perfect setting which helps in promoting health education. Schools can be an efficient and effective way to reach children worldwide and, through them, their families and community members[10].

Teaching of preventive dental health practices in schools creates environment which helps in spreading oral[11,12] health education and shows positive outcomes for oral cleanliness, gingival health, and oral health knowledge both in developing [13]and developed countries[14].

As According to current estimates, Government is the major provider of education, 80% of all schools in the country are government schools [15]. The schools in urban areas are run by private sectors which include children from middle, upper middle and upper socio-economic classes [16]. As per the present circumstances it is important to identify the risk groups in order to utilize the scant resources.

In under developed areas, toothpick is traditionally utilized for dental cleaning than of toothbrush. Regular brushing of teeth after every meals is not practiced universally [17].

In many developing and underdeveloped countries [18, 19], the oral diseases are rapidly increasing, hence, it results in huge oral problems and concerns in the surroundings. India, is a developing country, faces many challenges in rendering oral health needs. The huge chunk of Indian population resides in rural areas [20] and Children <18 years constitute about 40% of the population [21]. There is a shortage of proper activities and organized school health programs in our country.

There are many underprivileged children who can not avail dental facilities due to inaccessibility, financial constraints and stagnation of public dental healthcare services [22].

To reach out all segments of population schools are the ideal platform and thus classroom education has been considered an important effort to improve preventive dental behaviour in general population.

School going children are relatively easily accessible, compared to any other population groups for health promotion programs. School oral health programs have proven effective in promoting health in many developed countries [23, 24].

Programmes related to oral health education consist of various educational methods [25]. It includes verbal, written, and audiovisual methods which are the three main modes to promote oral health education [26].

Research has revealed the efficacy of oral health education in controlling plaque and dental diseases [27]. It is necessary to know the dental health practices that people follow as well as prevalence and distribution of oral health problems. Such information is basic for formulation of oral health policies and appropriate programs.

Several studies shows that the evaluation of the effectiveness of the school health education programmes is probably one of the most neglected activities in the practice of public health.

In India, wherein there is a low awareness regarding dental health, widespread presence of dental diseases resulting from plaque formation and unequal distribution of manpower, the only solution lies in oral health promotion of individuals to lessen the burden of dental diseases. In this background, the present study was planned to evaluate the effectiveness of different types of health education intervention on 15 year old school going children of Lucknow on gingival health [28, 29].

Aim and objectives

AIM -

To investigate the effectiveness of different health education methods on 15 year old school going children on gingival health in Lucknow city, U.P.

Objectives-

1) To evaluate the effectiveness of Lecture method of health education on 15 year old school going children on gingival health
2) To evaluate the effectiveness of Multimedia method of health education on 15 year old school going children on gingival health
3) To compare the different methods of health education on gingival health, of 15 year old school going children.

Review of Literature

Bushra Rashid Noaman and Saya Hadi Rauf [30] in 2017 conducted a study to assess the Initial Impact of an Educational Program on the Oral Health Awareness of Iraqi Primary School Students Aged 12 Years. A primary public school in Erbil was chosen randomly to perform an examiner blind study. Seventy-four students of 12 years (38 males and 36 females) participated in the educational program after inclusion/exclusion criteria. The program had two sessions, In the baseline, the debris accumulation was examined according to the debris index simplified (DI-S] of the Simplified Oral Hygiene Index (OHI–S Green and Vermillion), The students answered 5-items dental knowledge questionnaire, followed by the educational program for two hours, The program continued by the teachers for two hours a week. The second visit was 3 weeks after the baseline one to examine the debris and answered the same 5-items dental knowledge questionnaire. The authors reported that significant reduction in the DI-S score for all the participants (reduction=42%) on the second visit ($p < 0.05$). The differences in the results of dental knowledge questionnaire between the two visits were a statistically significant, with $p < 0.05$. The authors suggested that the results indicate a positive initial impact of the educational program on oral cleanliness and the dental knowledge of the schoolchildren.

Ashwag Saleh Alotaibi et al [31] in 2017 conducted a study to assess the impact of oral health education program on the level of oral health knowledge among female public intermediate school students in Riyadh. As well as to evaluate the correlation between their oral health knowledge and selected socio-demographic variables. A pre-postest quantitative study was conducted at public intermediate girls' schools in Riyadh. A sample of schools was selected using stratified random sampling technique to reflect the spectrum of intermediate schools under the Riyadh's educational regions (north, south, middle, east, and west). Five schools were randomly chosen from the department of education listings in each educational region. A total sample of 315 school students between the ages of 12 and 16 years completed the study. Permission to perform this study was received from the Institutional Review Board of King Saud University and Ministry of Education. A 15-item self-administered questionnaire was designed in Arabic language and used to assess the student's oral health knowledge. Followed by the intervention which consisted of 40 minutes interactive lecture using power point presentation presented by the investigator. The impact of the oral health education program was evaluated by measuring the change in the level of oral health

knowledge one month after the program implementation. The authors reported that 80% of the participants were Saudis and the remaining were non-Saudis. The age range of the participants was 12-16 years with a mean age of 13.98 ± 1.094. Regarding the knowledge of the number of permanent teeth, only 24.1% of the respondents knew the correct number of permanent teeth. With regards to the knowledge of the external layer covering the teeth, only 27.3% of the sample gave a correct answer. Only 28.6% of the participants knew the importance of routine dental visits. About 30% of the respondents knew the correct indication for a dentist to do root canal treatment. The results showed that the oral health education program was effective at improving participant's oral health knowledge. The authors concluded that a school based oral health education program had a positive effect on the student's oral health knowledge.

Sangeeta U Nayak and Swati Pralhad [32] in 2016 conducted a study to assess the evaluation of the Effect of Oral Hygiene Instructions on maintenance of gingival Health. Sixty participants above the age of 18 years were included in the study. They were randomly allocated into one of the three groups: Oral instructions, written instructions, and oral individualized instructions. For all the participants, plaque and gingival indices were recorded using periodontal probe with Williams's markings and a mouth mirror, at baseline, at the end of 1st, 2nd, and 3rd week. The authors found that the Plaque and gingival index scores reduced in all the groups. However, it was seen that plaque index significantly reduced in the group receiving individualized instructions. In view of the results of the present study, the authors implied that oral hygiene instructions should be provided, and they should be tailormade for each individual that would help correct the individual deficits in the learners.

R. Krishnakumar et al [33] in 2016 conducted a study to evaluate and compare the effectiveness of audio and audio- tactile methods in improving oral hygiene status of visually impaired school children in Cuddalore District, Tamil Nadu. In this study, the total study group comprised 48 visually impaired children that were randomly divided into two groups, with one group receiving the audio method and the other group receiving the audio-tactile method. Periodic reinforcement of health education was performed at an interval of 2 months. Re-examination was carried out after 2 months of health education to assess plaque scores. Data were statistically analyzed using

paired *t*-test. The authors found that there was reduction in plaque scores in audio-tactile group after health education. In the audio-tactile group, the mean plaque scores of pre- and post- health education were 1.28 and 0.95, respectively. The difference was statistically significant ($P < 0.001$). In audio group, the mean plaque scores of pre- and post- health education were 1.15 and 0.14, respectively. The difference was statistically non significant ($P < 0.07$). The authors concluded that visually impaired children could maintain an acceptable level of oral hygiene when taught using special customized methods. However, reinforcement at regular intervals is required for the maintenance of oral hygiene.

Matina V Angelopoulou et al [34] in 2015 conducted a Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional lecturing in 10 year-old children in Greece. Eighty-four children were recruited for the EL and 100 for the TL group from 3 locations in Greece. Data regarding oral health knowledge, attitude and behavior were collected via questionnaires. Data regarding dental plaque, gingivitis and caries were collected by clinical examination. The evaluation using questionnaires and clinical examination was assessed at baseline and 6 and 18 months afterwards. Two calibrated pediatric dentists examined the students using a periodontal probe and artificial light. Modified hygiene index (HI) was used for dental plaque recording, the simplified gingival index (GI-S) was used for gingivitis and DMFT, based on BASCD criteria, for dental caries. Based on a dedicated manual, the teacher applied in the classroom the oral health educational program using EL. The authors found that the EL group had statistically significant better hygiene than the TL at 6 months ($p < 0.05$). Within the same group, both groups had enhanced oral health knowledge at 6 and 18 months ($p < 0.05$) and improved oral health behavior ($p > 0.05$) and attitude ($p > 0.05$) at 6 months in comparison to baseline. The authors concluded that the EL program was found more successful than TL in oral hygiene improvement. Both oral health education programs improved the oral health knowledge, attitude and behavior of children.

Deepak Viswanath and Anindita Sarma [35] in 2015 conducted a study to assess the impact of different and newer health education methods amongst the parents of pre-schoolers from Bangalore-North. The study comprised of 180 parents along with their respective children from the same socio-economic status from three different play

and private schools each. The examination was carried out by three trained and calibrated investigators using a mouth mirror and explorer under natural daylight. A total of 604 children (331 government and 273 private) were examined. The mean oral hygiene index-simplified (OHI-S) was higher among government school children (2.9) as compared to private school children (0.6). The mean gingival score and mean decayed missing filled teeth were also higher among government school children compared with private school children. A significantly higher number of children in the government schools had poor oral hygiene status, moderate to severe gingivitis and caries experience. The authors concluded that the prevalence of oral diseases was relatively less among children from private schools in comparison with those from government schools. Hence, the children from government schools should be given the priority compared with private school children in any school dental health programs planned on a state wide basis.

Satyawan G Damle et al [38] in 2014 conducted a study to evaluate and compare the oral health status and the impact of supervised toothbrushing and oral health education among school children of urban and rural areas of Maharashtra, India. A total of 200 school children in the age group 12-15 years were selected by stratified random sampling technique from two schools and were further divided into two groups: Group A (urban school) and Group B (rural school). Both the groups were again subdivided into control group and study group. Supervised toothbrushing was recommended for both the groups. The toothbrushing teaching program included sessions on oral health education, individual toothbrushing instructions, and supervised toothbrushing. Dental caries increment, plaque scores, and gingival status were assessed as per the World Health Organization (WHO) criteria (1997), Turesky-Gilmore-Glickman modification of the Quigley Hein Plaque Index, and Loe-Silness Gingival Index (1963), respectively. Cronbach's alpha, Chi-square test, paired t-test, and unpaired t-test were utilized for data analysis. The authors found that the mean plaque and gingival score reduction was significantly higher in the study groups as compared to the control groups. An increase in the mean of decayed, missing, filled teeth (DMFT) and Decayed, missing, filled teeth and surfaces (DMFS) scores throughout the study period was seen in children who participated in study. The authors concluded that the oral health education was effective in establishing good

effective than that conducted at six-week intervals in improving oral health knowledge, practices, oral hygiene status, and gingival health of schoolchildren.

AjithKrishnan CG, Thanveer K et al [46] in 2010 conducted a study to evaluate the impact of oral health education on plaque, gingival and caries status among 12 and 15 year old children attending Government schools of Vadodara city. A total of 372 study- subjects, aged 12 and 15 years were examined at baseline, 335 of which were examined after three months period at the time of follow-up for plaque, gingival and caries status by using Silness and Loe Plaque index. Loe and Silness Gingival index and WHO modified DMFT index. Oral health education was given to the study subjects. At the end of the third month from collection of baseline data, the study subjects were examined again for plaque status, gingival status, and caries status. The authors found that the mean plaque scores of all study subjects decreased after oral health education. There was no significant difference in plaque scores of male study subjects, while among 15 year old female study subjects, significant decrease was observed. Mean gingival and mean caries scores did not show any significant reduction among 12 and 15 year old male and female study subjects. The authors concluded that the result showed that short term oral health education programmes may be useful in improving oral hygiene but no effective in improving gingival health and caries status.

REZA YAZDANI, MIIRA M. VEHKALAHTI et al [47] in 2009 conducted a study to evaluate the short-term effect of school-based educational intervention on oral cleanliness and gingival health of 15-year olds in Tehran, Iran. The present cluster randomized trial was based on exposing students (n = 287; control, n = 130) at public schools to oral health knowledge through a leaflet or a videotape. The outcome was evaluated after 12 weeks. A positive outcome was defined as at minimum a 50% reduction in numbers of teeth with dental plaque or gingival bleeding compared to baseline. Evaluation included percentage changes, number needed to treat (NNT), and students' self-assessment. The authors found that at baseline, all students had dental plaque, and 93% had gingival bleeding on at least one index tooth. Positive outcome for oral cleanliness was 58% ($P< 0.001$) of the students in the leaflet group, 37% ($P< 0.001$) in the videotape group, and 10% of controls. Corresponding figures for gingival health were 72% ($P< 0.001$), 64% ($P< 0.001$), and 30%. For oral cleanliness,

health through the implementation of preventive programs among children who have never been exposed to preventive dental treatment and who are living under adverse social conditions.

Hartono SW, Lambri SE et al [58] in 2002 conducted a study to assess the Effectiveness of primary school-based oral health education in West Java, Indonesia. Eight experimental and six control primary schools in the same area participated in the study. Out of each school 10 children, aged 8-12-years old, were randomly selected. The authors found that the ANOVA with age and gender as co-variables showed statistically significantly lower (21%) habitual plaque scores among children from experimental schools as compared to those from control schools. Tooth brushing effectiveness had significantly improved among experimental children and they took longer for tooth brushing when supervised. The dmft/dmfs values were comparable but the DMFT/DMFS values of children from experimental schools tended to be lower (not statistically significant) than of those from control schools. Differences in oral health knowledge were apparent but self-reported habits pertaining to oral health were comparable between children from experimental and control schools. The authors concluded that the school-based OHE programme had a moderate positive effect on oral health knowledge and on habitual plaque levels and on the effectiveness of tooth brushing. The effects on caries levels and on self-reported behaviour were inconclusive.

Frencken JE, Borsum-Andersson K, Makoni F et al [59] in 2001 conducted a study to assesses the effectiveness of an oral health education programme administered by school teachers in a district in Zimbabwe over a period of 3.5 years. The experimental group consisted of schools that had sent representatives to a regional workshop on oral health held in 1992. The control group was selected at random from schools not having attended the workshop. A total number of 439 boys and 526 girls were examined in 1992. Follow-up evaluations were carried out in 1993, 1994 and 1996. The dependent variables were plaque accumulation and caries increment in grade 2 and grade 4 children of experimental and control schools. ANOVA test with year of evaluation (1992-94), experiment/control school, age and gender as independent variables showed no statistically significant difference in mean plaque scores in longitudinally examined original grade 2 ($P>0.20$) and grade 4 children ($P=0.06$) from experimental and control schools. The authors found that mean caries increment

score in the experimental and control schools was 0.04 and 0.19, respectively. ANOVA test with fluoride levels and gender as independent variables on caries increment in experimental and control schools did not show a statistically significant difference (P=0.06). The authors concluded that one-time training of teachers in aspects of oral health was ineffective in lowering plaque levels over a period of 3.5 years. Considering the low caries increment observed over the study period, the effect of the oral health programme on caries levels in the study group was inconclusive.

Worthington HV , Hill KB, Mooney J et al [60] in 2001 conducted a cluster randomized controlled trial of a dental health education program for 10-year-old children in northwest of England. Thirty-two primary schools in the northwest of England participated. After a baseline assessment of plaque and the completion of a dental knowledge questionnaire by the children, the schools were allocated randomly to active or control groups. Children in schools allocated to the active group received the dental health program, which consisted of four one-hour lessons. After four months the children were examined clinically and scored for plaque, and a second questionnaire was administered. The schools in the control group were then allocated randomly to receive the program or not over the following three months, the program being withdrawn from the schools who initially received it. A further assessment of plaque was made and a questionnaire administered seven months after the baseline of the study. The authors found that the active groups had 20 percent and 17 percent lower mean plaque scores than the control group at four and seven months ($P < .001$). The children's knowledge of which type of toothbrush should be used and the role of disclosing tablets improved in the initial test group when compared with the control group and this was retained over the second part of the study. The authors concluded that the children receiving the program had significantly lower mean plaque scores and greater knowledge about toothbrushes and disclosing tablets than the control children who had not received the program.

Redmond CA, Blinkhorn FA et al [61] in 1999 conducted a cluster randomized controlled trial for testing the effectiveness of a school-based dental health education program for adolescents. A total of 2,678 people, with a mean age of 12.1 years attending 28 schools participated in a school-based dental health education program. The study used a cluster randomized controlled study design. The health service

five through thirteen were randomly assigned for dental treatment to a school-based practice, and to private practitioners in the community. Simultaneously, five of the nine public schools attended by the children offered an enriched program of dental education while the remaining schools taught the regular health education courses. All children participated in a school based fluoride program and their dental treatment was provided without charge. Data indicating how the children utilized dental services were collected over the three-year treatment phase of the study. The authors reported that the evidence from the third treatment year indicates that children assigned to the school based practice who also attended a school offering enriched dental health education used dental services on a more regular basis than children in the other three groups. The authors concluded that the evidence obtained from log-linear modeling supports the hypothesis that dental health education had a positive effect on children's utilization of dental service.

Emler BF, Windchy AM et al [67] in 1980 conducted a study to assess the value of including repetition and reinforcement in a dental health education program for school children. Sixty-one people, 11 to 13 years of age, were divided into three groups according to room assignments. Group I (control) received no oral hygiene lectures or instructions until the conclusion of the experiment. Group 2 (nonreinforced) received one lecture and a toothbrushing lesson, but no repetition or reinforcement. Group 3 (reinforced) received the same program as Group 2 on the initial visit and also received two additional visits for repetition and reinforcement of the lectures and instructions, plus a final summary lecture. Six visits were conducted at intervals of 0, 1, 5, 3, 8, 20 and 52 weeks, following a double-blind experimental format. PHP scores were obtained on all subjects on each of the six visits. The authors concluded that the repetition and reinforcement components of dental health education program were of significant value in improving the oral hygiene performance of the school children over a period of 1 year.

Agerback N, Melen B & Lind OP et al [68] in 1979 conducted a study on "Effect of regular small group's instruction Per Se on oral Health status of Danish children". The main aim of the author was to evaluate the effect of dental health program which seemed to be a considerable improvement on the existing standard program and which was acceptable to dentist, dental auxiliaries, the children & school authority. For the

study, eight school classes with a total of 193 children, 11-13 year of age were selected. Before the initiation of this programme & 1 year later, children were examined clinically for plaque, gingivitis & caries. Children were randomly allocated into test & control groups. In order to evaluate the effect of the program on knowledge & attitudes of the children toward prevention of dental disease, a multiple choice test was given after 1 year to both test & control children. Result showed minor improvement in plaque & gingival score in both groups and slightly more in the control than in the test group. The authors concluded that there was little difference in the level of knowledge on oral health between experimental & control group.

Anaise J.Z. and Zilkan E. [69] in 1976 conducted a study examine the effectiveness of a dental health education program providing dental health information and toothbrushing instruction on oral cleanliness. Two methods of instruction, individual and group instruction, are presented in this study. The plaque situation was assessed in a group of 175 children, 11-14 years of age, by the Patient Hygiene Performance (PHP) method at the beginning of the study and at 1, 2, and 12 months. The authors found that immediately after instruction the dental health education program resulted in improved oral hygiene home care for the two experimental groups. However, the improvement noted was achieved regardless of the method of toothbrushing instruction (individual versus group). The authors demonstrated that maintenance of a satisfactory level of oral hygiene home care was dependent upon review of educational programs and toothbrushing instruction and not related to the method of instruction.

Materials and Methods

(A) Study Design-

This was a randomized parallel design investigative study which was designed to evaluate the effectiveness of different health education methods on 15 year old school going children on gingival health in Lucknow city, Uttar Pradesh.

(B) Source of Data

Schools of Lucknow, both public and private formed the study source. The list of schools were obtained from Deputy Director of Public Institute Office, Lucknow.

(C) Study sample- size and method /Sampling Method

Two stage stratified random sampling technique was employed to choose the study population. In the first stage, Lucknow city was divided into 5 zones i.e. north, south, central, east and west. From each zone, a school was chosen randomly. Through simple random sampling method (lottery) schools from each zones was selected. In order to ensure representatives of the 15 years old school going children, both private & public schools were included.

In the second stage of sampling, a group of 72 students , of 15 years were chosen from the school selected. A cluster of 72 students who were 15 year olds were selected from selected schools, thus making the sample size of 360 (72*5).

Lottery method was then used to randomly allocate students from each school into group A and group B, equally. Group A received Chalk and Talk Intervention and Group B received multimedia Intervention.

Sample size-

At 80% power of study and at alpha level set at 0.05, and estimating an approximately equal cluster size, the sample of the cluster was set at 64. Expecting an 11% loss of subjects to the period of trial, the sample size of the cluster was taken upto 72. The final sample size was thus 360, which is the product of the cluster sample and sampling sites i.e. 72*5= 360.

(D) Ethical Approval

The study was approved by the Institutional Ethical Committee (IEC) of Babu Banarsi Das College of Dental sciences, Lucknow. (The copy of which is attached as an Annexure).

Approval from the authorities-

Prior permission was taken from the school authorities for conducting the study (Annexure attached).

Informed consent-

The consent for conducting the clinical examination of children was obtained from their parents by means of a circular issued through the school diary system.

(E) Eligibility Criteria

Inclusion Criteria-

- The students who were present on the day of examination.
- The students who were 15 year of age on the day of examination.

Exclusion Criteria-

- Children who were below or above 15 year of age.
- Children who were under going orthodontic therapy.
- Children who was suffering from systemic diseases.
- Students who were on medication.
- Non co-operative children.

(F)Data Collection-

A pre- designed structured proforma was used by the examiner which was divided into four parts-

1) The first part contained questions on Personal and demographic factors like name, gender, address and school.

2) The second part contained questions on oral hygiene practices like how do you clean your teeth, what is the frequency of cleaning your teeth, which direction

do you brush your teeth, how frequently you change your brush, do you use anything else to clean your teeth, do you clean your tongue, when did you last visit your dentist and what was the problem to visit dentist.

3) The third part contained questions on Oral Health Knowledge like how many sets of teeth do we have, function of teeth, what is plaque, excessive dental plaque deposition results in, which is the most effective way to remove plaque from the teeth, what is dental caries, tooth decay occurs due to, are you aware of fluoride tooth paste, what does fluoride do, gums disease is caused due to, what is malocclusion and various tobacco smoking/chewing habits leads to.

4) The fourth part contained a clinical oral examination of the study participants, which included Gingival Index (Loe H. & Silness J. 1963) to assess gingival health and Plaque Index (Silness J. & Loe H. 1964) to assess deposition of plaque.

Clinical Examination-

On the day of examination, the study population gathered in the school playground after prior information to the school head master/ madam. The participants were seated on an ordinary chair with a back rest in school premises, for examination which was done by a single examiner.

Then the study population were randomly distributed in group A & group B. Immediately after the allocation the students grouped into either A or B and were recorded on the proforma sheet in order to avoid any further confusion.

Group A - Study population was delivered Health Education through lecture method (Chalk & talk demonstration models & flip charts) in their class room

Group B- Study population was delivered Health Education through multimedia method (power point presentation) in another class room .

The oral examination of both the groups was done using type III examination i.e. by using mouth mirror & probe in natural sunlight.

Gingival Index (Loe H. & Silness J. 1963) [70] was used to assess gingival health and Plaque Index (Silness J. & Loe H. 1964) [70] was used to assess deposition of plaque.

(G) Examination Procedure and follow up-

The examination of the study population was done on 0weeks, 2 weeks, 2 months, 4 months. The study population was divided into two groups i.e group A & group B. The baseline value of the same group served as its own control.

(H) Training & calibration of examiner-

The data was collected by a single examiner who was calibrated and trained in the Department of Public Health Dentistry for all the codes and criteria of the indices. The data was recorded by a trained internee. The trained recorder was made to stand close to the examiner so that the instructions could be heard easily.

The validity of the questionnaire was also assessed by using the Cronbachs alpha 0.88

Schedule-

The study was done from November 17 to March 2018 for a period of 5 months. 360 students were divided into two groups i.e. Group A and Group B.

Group A- Health education practice and Oral health knowledge instruction were given through lecture method (Chalk & talk demonstration, models & flip charts)

Group B - Health education practice and Oral health knowledge instruction were given through multimedia method (power point presentation)

The study population were examined from 11 am to 1.30 pm in their respective schools.

(I) Dental Health Education-

Group A- On the day of examination, interactive 15 minute health education session was held in classroom which consisted of lecture method (flip chart, chalk & talk and demonstration models). The flipchart contained coloured pictures pertaining to the topic (oral hygiene practices & oral health knowledge) to retain students attention as well as interest. Through demonstration models proper brushing & flossing method

was demonstrated to the students. The health education session was held at every visit to monitor the improvement in oral cleanliness and in gingival health.

Group B - On the other hand, group B students were given health education through multimedia method (power point). The contents (pictures and slides) related to both oral health practices and oral health knowledge were the same in both methods in order to ensure uniformity of the method. It took 11 minutes to complete the presentation which was held in class room between 11am to 12 pm. The multi media of spreading health education was held at every visit i.e. on 0 week, 2 week, 2 months & 4 months to notice the improvement in oral cleanliness and gingival health. Evaluation was performed after each educative session on the outcome variables of the study.

(J) Armamentarium-

The following instruments were used in the study:

- Mouth mirrors
- Explorers
- Periodontal probes
- Tweezers
- Cotton rolls
- Disposable Mouth masks
- Disposable gloves
- Proforma
- Flipchart
- Kidney trays
- Towels
- Soap

(K) Infection control-

Disposable mouth mask and gloves were worn by the examiner.

Sufficient numbers of autoclaved instruments were carried at the site of examination to avoid interruption during the study. After examination all the instruments were carried back to the college and were autoclaved.

(L) Referral-

During the examination procedure, the students who required emergency dental treatment were referred to Babu Banarsi Das College Of Dental Sciences for the needful treatment.

CLINICAL ASSESSMENT METHODOLGY

GINGIVAL INDEX (GI)

LOE H AND SILNESS J (1963)

The Gingival Index (GI) was developed by Loe H and Silness J in 1963. It was developed solely for the purpose of assessing the severity of gingivitis and its location in four possible areas by examining only the qualitative changes (i.e. severity of the lesion) of the gingival soft tissue. The GI does not take into account periodontal pocket depth, degrees of bone loss, or any other quantitative change of the periodontium.

The GI shows good validity, reliability and ease of use. However, this index has demonstrated sufficient sensitivity to distinguish between groups with mild and severe gingivitis, it may not discriminate as well between the middle ranges.

INSTRUMENTS USED-

- Mouth mirror
- Periodontal probe.

METHOD

The tissues surrounding each tooth are divided into four gingival scoring units: disto-facial papilla, facial margin, mesio- facial papilla and the entire lingual gingival margin. Unlike the facial surface, the lingual surface is not subdivided in an effort to minimize examiner variability in scoring, since it will most likely be viewed indirectly with a mouth mirror.

The teeth and gingival should be dried lightly with a blast of air and/or cotton rolls.

SCORING CRITERIA-

Score	Criteria
0	Absence of inflammation/ normal gingiva
1	Mild inflammation, slight change in color, slight edema; no bleeding on probing.

2	Moderate inflammation; moderate glazing, redness, edema and hypertrophy, bleeding on probing.
3	Severe inflammation; marked redness and hypertrophy, ulceration, tendency to spontaneous bleeding.

CALCULATION OF THE INDEX-

GI score for the area:

Each area (disto – facial, facial, mesio-facial, lingual) is assigned a score from 0 to 3.

GI score for a tooth:

The scores from the four areas of the tooth are added and then divided by four.

GI score for the individual:

The indices for each of the teeth are added and then divided by the total number of teeth examined. The scores range from 0 to 3.

GI score for a group:

The indices for each member of a group or population is added up and then divided by the total number of individuals in the group or population.

The numerical scores of the gingival index may be associated with varying degrees of clinical gingivitis as follows-

Gingival scores	Condition
0.1 – 1.0	Mild Gingivitis
1.1 – 2.0	Moderate Gingivitis
2.1 – 3.0	Severe Gingivitis

PLAQUE INDEX (PLI)

SILNESS J. AND LOE H. (1964)

The Plaque Index (PII) was described by Silness J. And Loe H in 1964 and more fully described by Loe H in 1967.

The Plaque Index is unique among the indices used for assessment of Plaque because it ignores the coronal extent of Plaque on the tooth surface area and assesses only the thickness of Plaque at the gingival area of the tooth.

This index is one of the most widely used and has demonstrated good validity and reliability. It can be used as a full mouth index or as a simplified index.

INSTRUMENTS USED:

- A mouth mirror
- A dental explorer
- Air drying of the teeth and gingiva

SURFACES EXAMINED:

The four gingival areas of the tooth i.e. the disto – facial, facial, mesio – facial and lingual surfaces. The third molars are not examined or scored in the upper or lower arch.

METHOD-

The tooth is air dried and examined visually. When no plaque is visible an explorer is used to test the surface. The explorer is passed across the tooth surface in the cervical third and near the entrance to the gingival sulcus.

When no plaque adheres to the point of the explorer, the area is considered to have a '0' score.

When plaque adheres, a score of '1' is assigned.

Plaque that is on the surface of calculus deposits and on dental restorations of all types in the cervical third is evaluated and included.

SCORING CRITERIA:

Score	Criteria
0	No plaque
1	A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may be seen only by running a probe across the tooth surface.
2	Moderate accumulation of soft deposits within the gingival pocket, on the gingival margin and/or adjacent tooth surface, which can be seen by the naked eye.
3	Abundance of soft matter within the gingival pocket and/or on the gingival margin and adjacent tooth surface.

CALCULATION OF THE INDEX-

P1I score for the area:

Each area (disto- facial, facial, mesio – facial, lingual) is assigned a score from 0 to 3.

P1I score for a tooth:

The scores from the four areas of the tooth are added and then divided by four.

P1I score for the individual:

The indices for each of the teeth are added and then divided by the total number of teeth examined. The scores range from 0 to 3.

P1I score for a group:

The indices for each member of a group or population is added up and then divided by the total number of individuals in the group or population.

INTERPRETATION:

Plaque Score	Condition
0	Excellent
0.1 – 0.9	Good
1.0 – 1.9	Fair
2.0 – 3.0	Poor

The data from the proforma were entered into the Microsoft excel XP software programme. Statistical analyses done using the software SPSS-18. Statistical tests used were-

Chi-square test-

It is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-square distribution when the null hypothesis is true, or in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi-square distribution as closely as desired by making the sample size large enough.

The test statistic is a chi-square random variable (X^2) defined by the following equation.

$$X^2 = \Sigma [(O_{r,c} - E_{r,c})^2 / E_{r,c}]$$

where $O_{r,c}$ is the observed frequency count at level *r* of Variable A and level *c* of Variable B, and $E_{r,c}$ is the expected frequency count at level *r* of Variable A and level *c* of Variable B.

Students 't' test

A 't' test is any statistical hypothesis test in which the test statistic has a student's t distribution if the null hypothesis is true. It is applied when the population is assumed to be normally distributed but the sample sizes are small enough that the statistic on which inference is based is not normally distributed.

The results are presented in frequencies and percentages. The Chi-square test was used for comparisons. The Unpaired t-test was used to compare GI and PI between the groups at different time periods. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

Mean and standard deviation (SD)

The *sample mean* is the average and is computed as the sum of all the observed outcomes from the sample divided by the total number of events. We use x as the symbol for the sample mean. In math terms,

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x$$

where n is the sample size and the x correspond to the observed valued.

We define the *variance* to be

$$s^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x-\bar{x})^2$$

and the *standard deviation* to be

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x-\bar{x})^2}$$

Unpaired t-test

The unpaired t method tests the null hypothesis that the population means related to two independent, random samples from an approximately normal distribution are equal.

$t=x_1-x_2/(\text{sqrt}(1/n_1+1/n_2)$

$s=[\text{sum}(x_j-x_1)^2+\text{sum}(x_i-x_2)^2]/(n_1+n_2-2)$

where x_1 and x_2 are the sample means, s^2 is the pooled sample variance, n_1 and n_2 are the sample sizes and t is a Student t quantile with $n_1 + n_2 - 2$ degrees of freedom.

Statistical analysis

The results are presented in frequencies and percentages. The Chi-square test was used for comparisons. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(O WEEK)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months
   c) Flaring of tooth brush
   d) I don't know

5) **Do you use anything else to clean your teeth?**
   a) Floss
   b) Tooth pick
   c) Mouth rinse
   d) None of the above

6) **Do you clean your tongue**
   a) Yes
   b) No

7) **When did you last visit your dentist?**
   a) 1 year before
   b) 6 months before
   c) 2 year before
   d) Never visited

8) **What was the problem to visit dentist?**
   a) Routine check up
   b) Need for care
   c) Difficulty in eating
   d) All of the above

Oral Health knowledge

1) **How many sets of teeth do we have?**
   a) 1 set
   b) 2 set
   c) 3 set
   d) 4 set

2) **Function of teeth is to?**
   a) Give us a nice smile
   b) Help us to eat food
   c) Speak properly
   d) All of the above

3) **What is plaque?**
   a) A tooth paste
   b) A sticky layer of germs on the teeth
   c) A plastic coating for the teeth
   d) I don't know

4) **Excessive dental plaque deposition may lead to?**
   a) Tooth decay & gum disease
   b) Staining of the teeth
   c) Irregularly placed teeth
   d) I don't know

5) **Which is the most effective way to remove plaque from the teeth?**
   a) Brushing & flossing
   b) Brushing alone
   c) Flossing alone
   d) I don't know

6) **What is dental caries?**
   a) Bleeding gums
   b) Bad breath
   c) Decaying of tooth/teeth
   d) I don't know

7) **Tooth decay occurs due to:**
   a) Acid produced by the bacteria
   b) Coated tongue
   c) Nail biting
   d) I don't know

8) Are you aware of fluoride tooth paste?

a) Yes

b) No

9) What does fluoride do?

a) It makes teeth white

b) It makes teeth grow

c) It helps in protecting teeth from decay

d) I don't know

10) Gums disease is caused due to:

a) Plaque

b) Tartar or calculus

c) Both of the above

d) I don't know

11) What is malocclusion?

a) Loose teeth

b) Yellow teeth

c) Irregularly erupted/placed teeth

d) I don't know

12) Various tobacco smoking/chewing habits leads to?

a) Hypertension

b) Diabetes

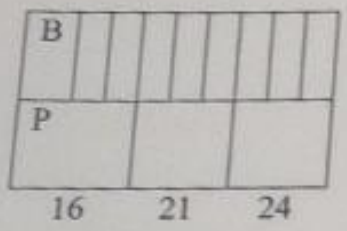
c) Oral ulcers or even cancers

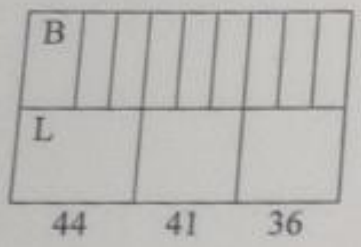
d) I don't know

GINGIVAL ASSESSMENT(BASE LINE INFORMATION)

GINGIVAL INDEX (Loe H & Silness J) in 1963

(0 WEEK)





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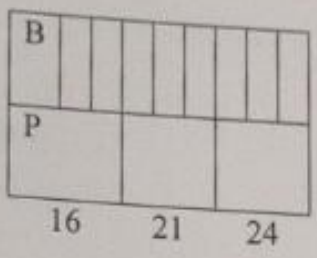
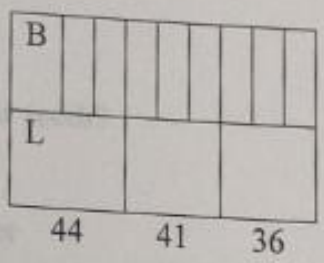
PLAQUE ASSESSMENT (BASE LINE INFORMATION)

PLAQUE INDEX(Silness J & Loe H) in 1964

(0 WEEK)





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(2 WEEKS)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months

c) Flaring of tooth brush
d) I don't know

5) Do you use anything else to clean your teeth?

a) Floss
b) Tooth pick
c) Mouth rinse
d) None of the above

6) Do you clean your tongue

a) Yes
b) No

7) When did you last visit your dentist?

a) 1 year before
b) 6 months before
c) 2 year before
d) Never visited

8) What was the problem to visit dentist?

a) Routine check up
b) Need for care
c) Difficulty in eating
d) All of the above

Oral Health knowledge

1) How many sets of teeth do we have?

a) 1 set
b) 2 set
c) 3 set
d) 4 set

2) Function of teeth is to?

a) Give us a nice smile
b) Help us to eat food
c) Speak properly
d) All of the above

3) **What is plaque?**
   a) A tooth paste
   b) A sticky layer of germs on the teeth
   c) A plastic coating for the teeth
   d) I don't know

4) **Excessive dental plaque deposition may lead to?**
   a) Tooth decay & gum disease
   b) Staining of the teeth
   c) Irregularly placed teeth
   d) I don't know

5) **Which is the most effective way to remove plaque from the teeth?**
   a) Brushing & flossing
   b) Brushing alone
   c) Flossing alone
   d) I don't know

6) **What is dental caries?**
   a) Bleeding gums
   b) Bad breath
   c) Decaying of tooth/teeth
   d) I don't know

7) **Tooth decay occurs due to:**
   a) Acid produced by the bacteria
   b) Coated tongue
   c) Nail biting
   d) I don't know

8) **Are you aware of fluoride tooth paste?**
   a) Yes
   b) No

9) What does fluoride do?

a) It makes teeth white
b) It makes teeth grow
c) It helps in protecting teeth from decay
d) I don't know

10) Gums disease is caused due to:

a) Plaque
b) Tartar or calculus
c) Both of the above
d) I don't know

11) What is malocclusion?

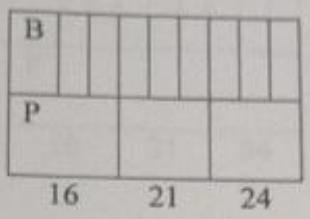
a) Loose teeth
b) Yellow teeth
c) Irregularly erupted/placed teeth
d) I don't know

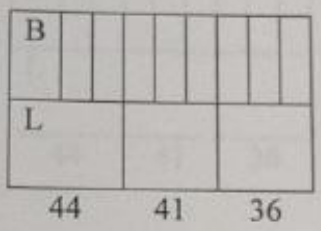
12) Various tobacco smoking/chewing habits leads to?

a) Hypertension
b) Diabetes
c) Oral ulcers or even cancers
d) I don't know

GINGIVAL INDEX (Loe & Silness)

(2 WEEKS)





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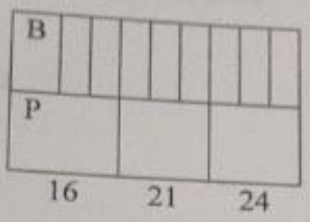
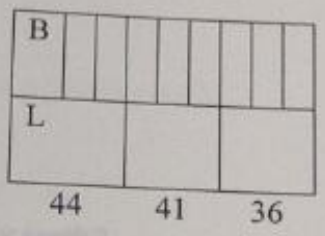
PLAQUE INDEX(Silness & Loe)

2 weeks





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(2 MONTHS)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months

c) Flaring of tooth brush
d) I don't know

5) Do you use anything else to clean your teeth?

a) Floss
b) Tooth pick
c) Mouth rinse
d) None of the above

6) Do you clean your tongue

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b) No

7) When did you last visit your dentist?

a) 1 year before
b) 6 months before
c) 2 year before
d) Never visited

8) What was the problem to visit dentist?

a) Routine check up
b) Need for care
c) Difficulty in eating
d) All of the above

Oral Health knowledge

1) How many sets of teeth do we have?

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b) 2 set
c) 3 set
d) 4 set

2) Function of teeth is to?

a) Give us a nice smile
b) Help us to eat food
c) Speak properly

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a) A tooth paste

b) A sticky layer of germs on the teeth

c) A plastic coating for the teeth

d) I don't know

4) Excessive dental plaque deposition may lead to?

a) Tooth decay & gum disease

b) Staining of the teeth

c) Irregularly placed teeth

d) I don't know

5) Which is the most effective way to remove plaque from the teeth?

a) Brushing & flossing

b) Brushing alone

c) Flossing alone

d) I don't know

6) What is dental caries?

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c) Nail biting

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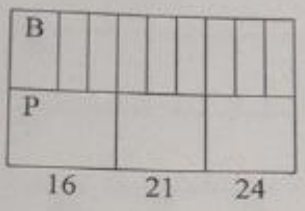
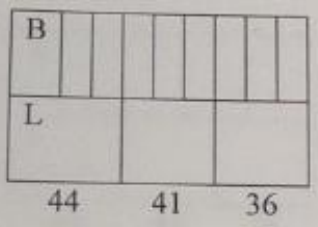
a) Hypertension
b) Diabetes
c) Oral ulcers or even cancers
d) I don't know

GINGIVAL INDEX (Loe & Silness)

2 Months





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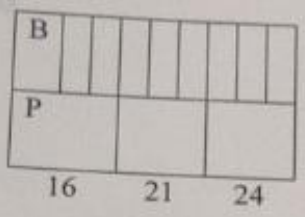
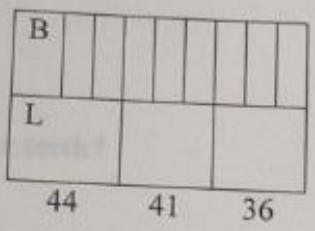
PLAQUE INDEX(Silness & Loe)

(2 Months)





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(4 MONTHS)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months

c) Flaring of tooth brush
d) I don't know

5) Do you use anything else to clean your teeth?

a) Floss
b) Tooth pick
c) Mouth rinse
d) None of the above

6) Do you clean your tongue

a) Yes
b) No

7) When did you last visit your dentist?

a) 1 year before
b) 6 months before
c) 2 year before
d) Never visited

8) What was the problem to visit dentist?

a) Routine check up
b) Need for care
c) Difficulty in eating
d) All of the above

Oral Health knowledge

1) How many sets of teeth do we have?

a) 1 set
b) 2 set
c) 3 set
d) 4 set

2) Function of teeth is to?

a) Give us a nice smile
b) Help us to eat food
c) Speak properly
d) All of the above

3) **What is plaque?**
   a) A tooth paste
   b) A sticky layer of germs on the teeth
   c) A plastic coating for the teeth
   d) I don't know

4) **Excessive dental plaque deposition may lead to?**
   a) Tooth decay & gum disease
   b) Staining of the teeth
   c) Irregularly placed teeth
   d) I don't know

5) **Which is the most effective way to remove plaque from the teeth?**
   a) Brushing & flossing
   b) Brushing alone
   c) Flossing alone
   d) I don't know

6) **What is dental caries?**
   a) Bleeding gums
   b) Bad breath
   c) Decaying of tooth/teeth
   d) I don't know

7) **Tooth decay occurs due to:**
   a) Acid produced by the bacteria
   b) Coated tongue
   c) Nail biting
   d) I don't know

8) **Are you aware of fluoride tooth paste?**
   a) Yes
   b) No

9) What does fluoride do?

a) It makes teeth white

b) It makes teeth grow

c) It helps in protecting teeth from decay

d) I don't know

10) Gums disease is caused due to:

e) Plaque

f) Tartar or calculus

g) Both of the above

h) I don't know

11) What is malocclusion?

i) Loose teeth

j) Yellow teeth

k) Irregularly erupted/placed teeth

l) I don't know

12) Various tobacco smoking/chewing habits leads to?

a) Hypertension

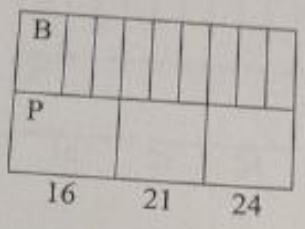
b) Diabetes

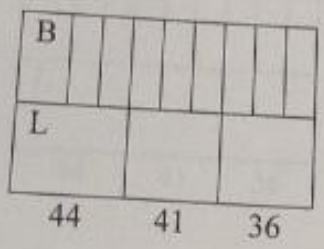
c) Oral ulcers or even cancers

d) I don't know

GINGIVAL INDEX (Loe & Silness)

4 Months(Post Education)





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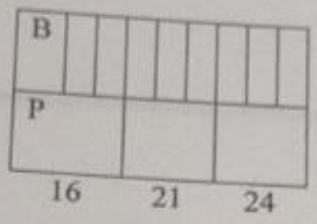
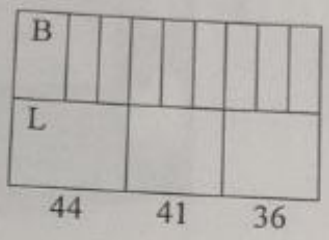
PLAQUE INDEX(Silness & Loe)

4Months(Post Education)





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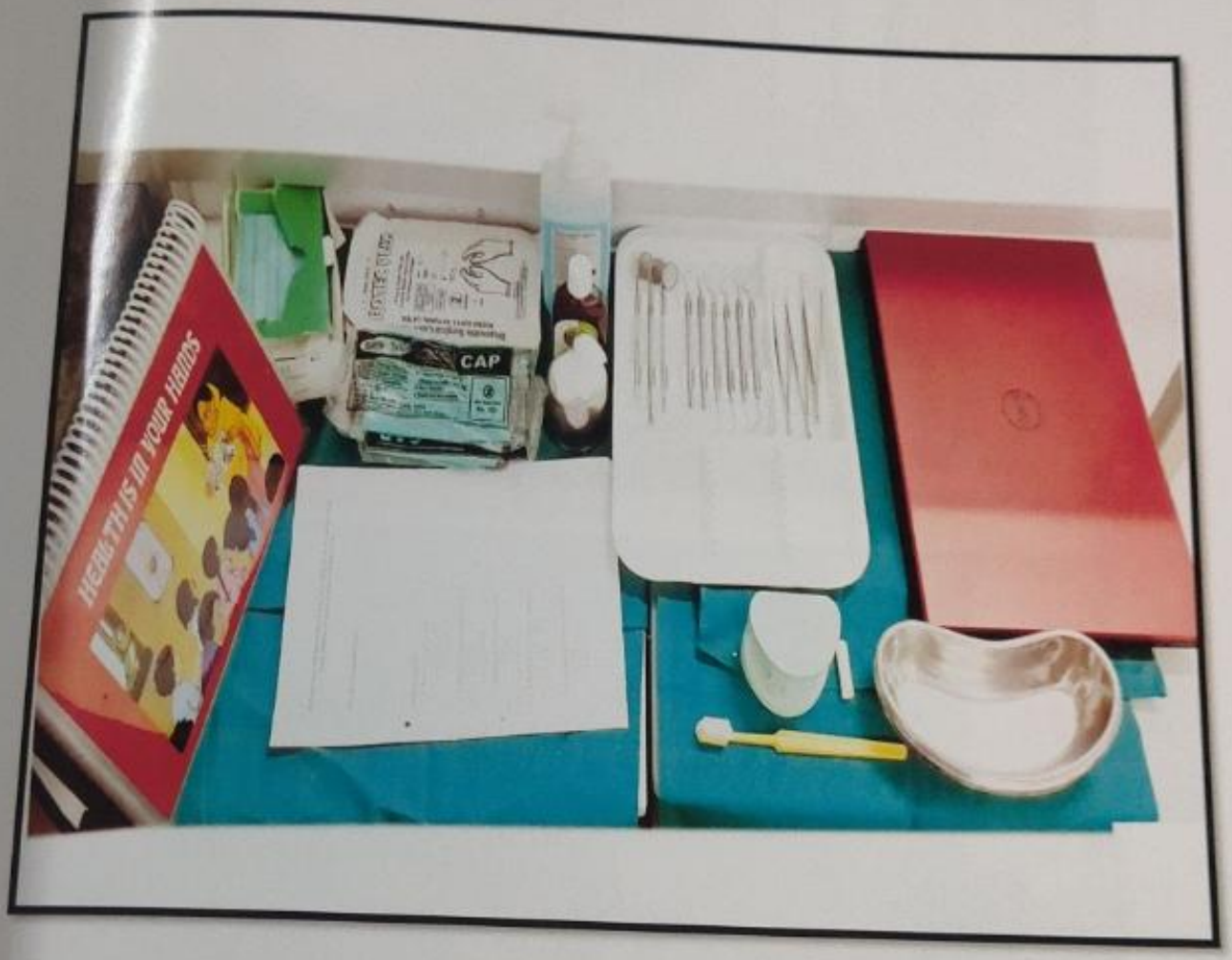
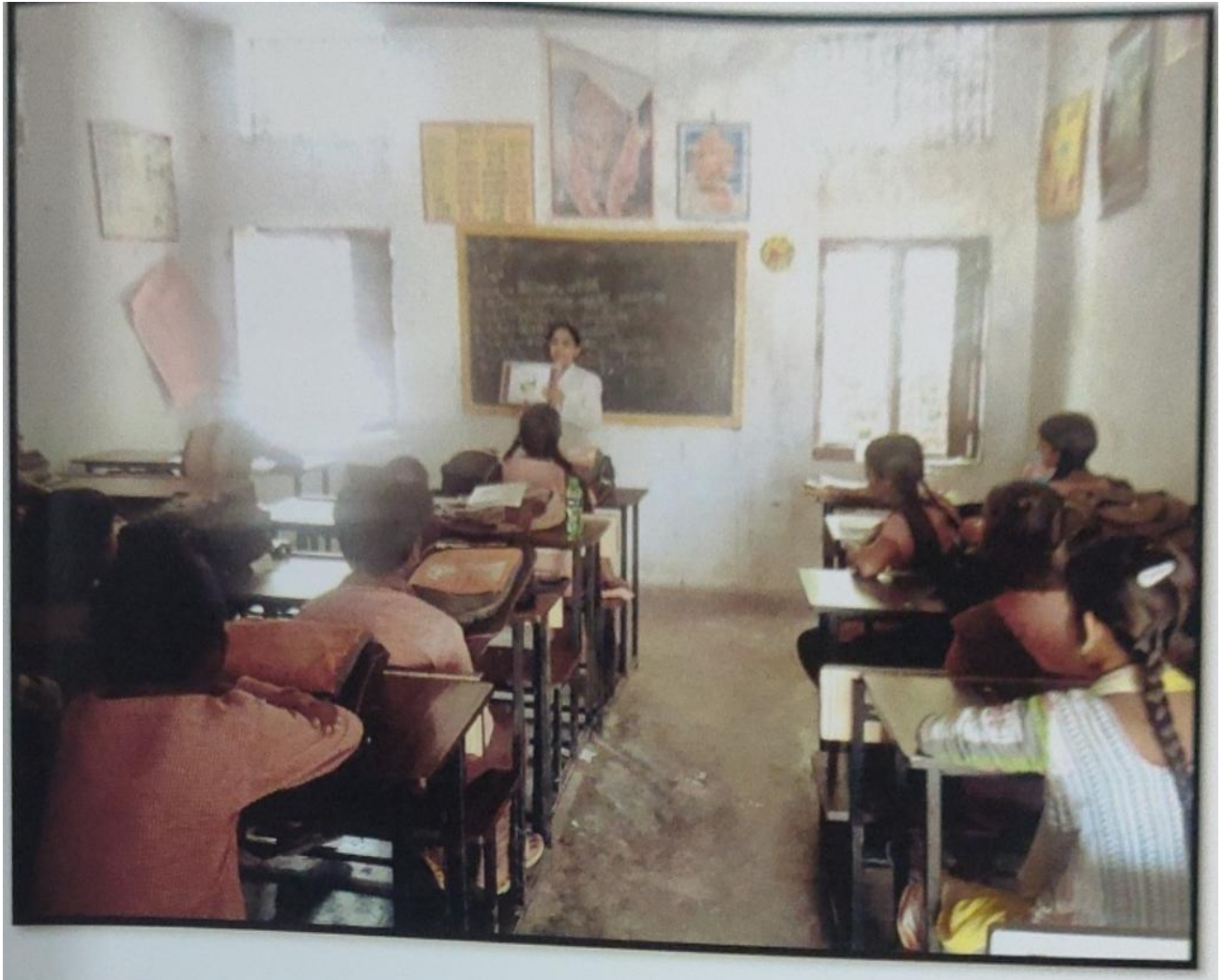
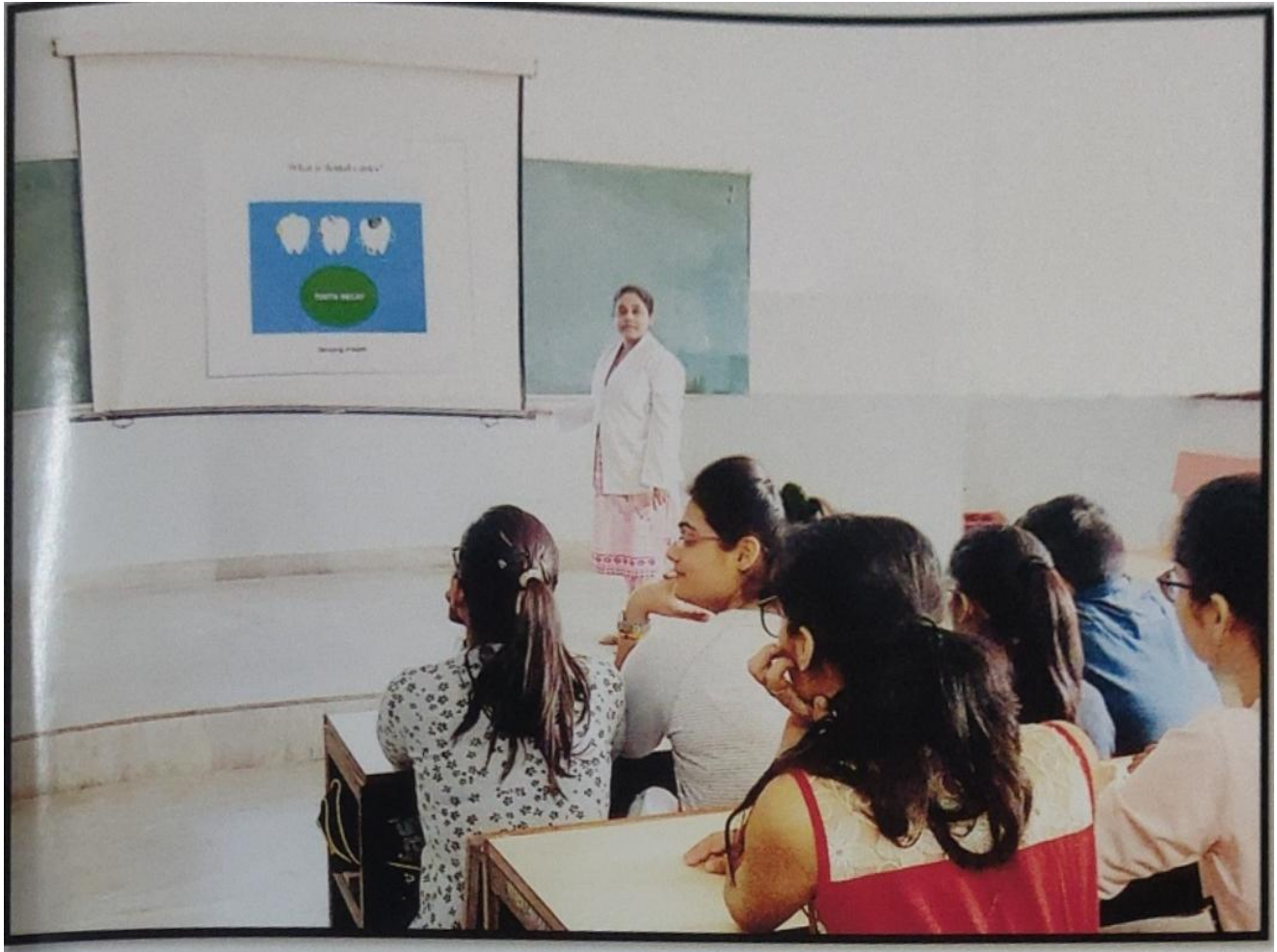
PELLET-1

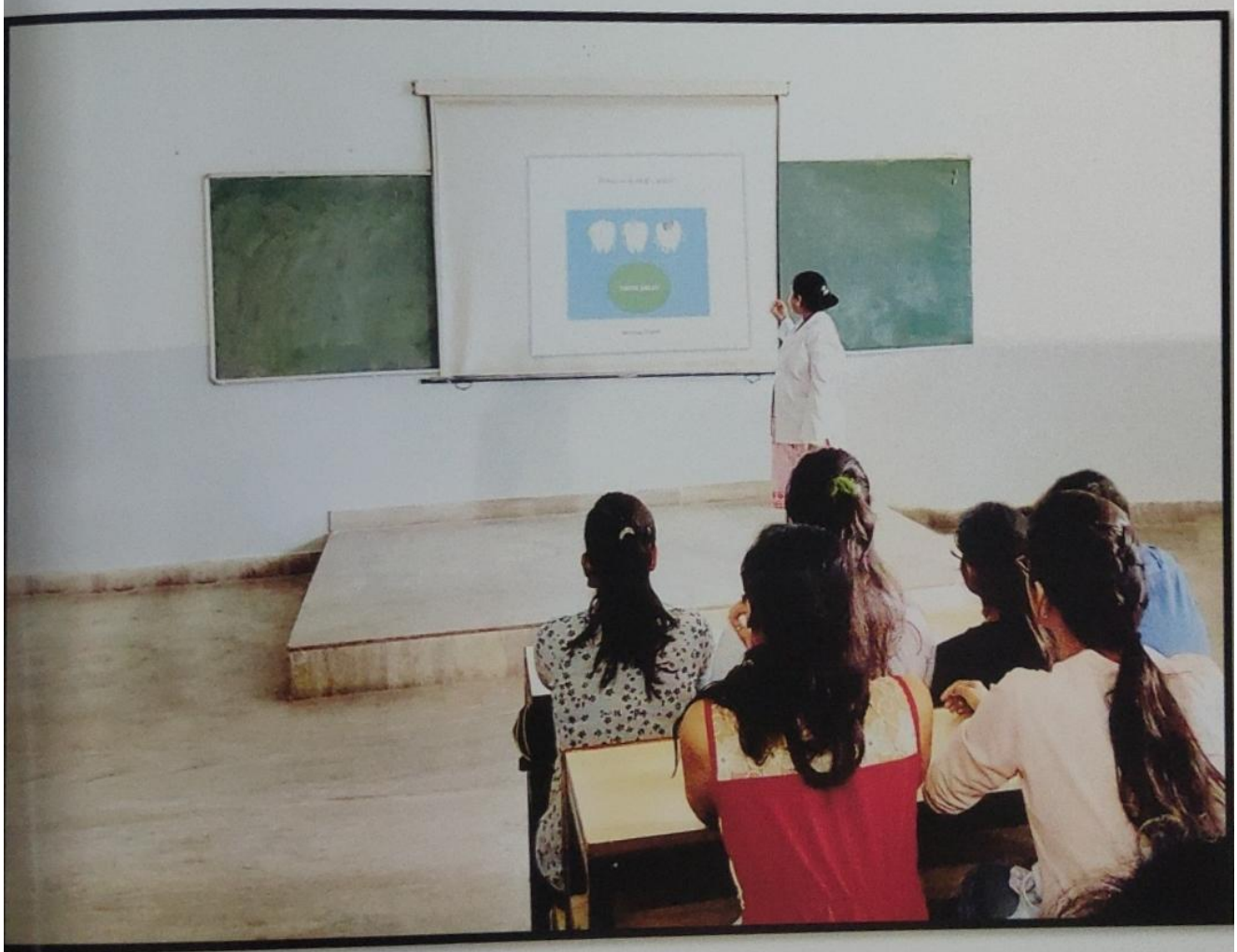


Instruments used for the study



Examiner Educating Study Participants





Examiner Educating Study Participants

Results and Observations

The present study was conducted in the Department of Public Health Dentistry, with the objective to assess the effectiveness of various health education methods on gingival health in 15 year old school going children.

In the distribution of subjects according to gender, males constitute 46.9% in Group 1 and 51.9% in Group 2. There was no significant ($p>0.05$) difference in gender between the groups. (Table-1 & Graph 1)

In the comparison of practice of cleaning teeth between the groups across the time periods, there was no significant ($p>0.05$) difference in the practice of cleaning teeth between the groups at 0 week. However, the correct practice of cleaning teeth was significantly ($p<0.01$) higher in Group 2 than Group 1 at 2 weeks, 2 months and 4 months. (Table-2 & Graph 2)

The comparison of practice for frequency of cleaning teeth between the groups across the time periods. The correct practice of frequency of cleaning teeth was significantly ($p<0.05$) higher in Group 2 than Group 1 at 0 weeks and 2 weeks. In group 1, students exhibited better practice of oral hygiene in 2 months and 4 months than group 2. (Table-3 & Graph 3)

The comparison of practice of direction of brushing teeth between the groups across the time periods. The correct practice of direction of brushing teeth was significantly ($p<0.05$) higher in Group 2 than Group 1 at 2 weeks, 2 months and 4 months. (Table-4 & Graph 4)

The comparison of practice of frequency of changing brush between the groups across the time periods. The correct practice of frequency of changing brush was significantly ($p=0.02$) higher in Group 2 than Group 1 at 4 months. (Table-5 & Graph 5)

The comparison of practice of using any adjuvant aids to clean teeth between the groups across the time periods. There was no significant ($p>0.05$) difference in the practice of adopting any other aids to clean teeth between the groups across the time periods. (Table-6 & Graph 6)

The comparison of practice of cleaning tongue between the groups across the time period. There was no significant ($p>0.05$) difference in the practice employed for cleaning tongue between the groups across the time periods. (Table-7 & Graph 7)

The comparison of practice of visiting a dentist between the groups across the time periods. There was a significant ($p<0.01$) difference noted in the practice of visiting a dentist between the groups across the time periods, with children in Group 2, were aware of the benefits of visiting a dental professional at 2 months and 4 months which was significant. (Table-8 & Graph 8)

The comparison of practice of problems in visiting dentist between the groups across the time periods. There was no significant ($p>0.05$) difference in the practice of the problems in visiting dentist between the groups across the time periods. (Table-9 & Graph 9)

The comparison of knowledge regarding sets of teeth in mouth between the groups. There was no significant ($p>0.05$) difference in the awareness about sets of teeth in mouth between the groups. (Table-10 & Graph 10)

The comparison of knowledge about functions of teeth between the groups. There was no significant ($p>0.05$) difference in the knowledge gain about function of teeth in mouth between the groups across the time periods. (Table-11 & Graph 11)

The comparison of knowledge about plaque between the groups across the time periods. There was a significant ($p=0.03$) difference in the knowledge about the description of plaque between the groups at 2 weeks. (Table-12 & Graph 12)

The comparison of knowledge about excessive dental plaque between the groups. There was a significant ($p=0.02$) difference in knowledge about excessive dental plaque deposition between the groups at 2 months. (Table-13 & Graph 13)

The comparison of knowledge about most effective way to remove plaque from teeth between the groups across the time periods. There was no significant ($p>0.05$) difference in the knowledge about most effective way to remove plaque from teeth between the groups across the time periods. A good number of study participants expand their knowledge on using a brush and floss which was the most effective way to remove plaque. (Table-14 & Graph 14)

The comparison of knowledge about dental caries from teeth between the groups across the time periods. There was no significant ($p>0.05$) difference in the above variable between the groups. (Table-15 & Graph 15)

The comparison of knowledge regarding the cause of tooth decay occurring between the groups. There was a significant ($p<0.01$) difference in the knowledge regarding etiology of tooth decay between the groups at 2 weeks, 2 months and 4 months. (Table-16 & Graph 16)

The comparison of knowledge about fluoride tooth paste between the groups across the time periods. There was significant ($p=0.007$) difference in the knowledge about fluoride tooth paste between the groups at 4 months, though not noted in baseline, 2 weeks or 2 months. (Table-17 & Graph 17)

The comparison of knowledge about action of fluoride between the groups across the time periods. There was significant ($p=0.003$) difference in the correct knowledge about cariostatic action of fluoride between the groups at 4 months. (Table-18 & Graph 18)

The comparison of knowledge about cause of gum disease (gingivitis)between the groups across the time periods. There was a significant ($p=0.001$) difference in the knowledge about cause of gum disease between the groups at 4 months. (Table-19 & Graph 19)

The comparison of knowledge about malocclusion between the groups across the time periods. There was a significant ($p=0.01$) difference in the knowledge about malocclusion between the groups at 2 months and 4 months. (Table-20 & Graph 20)

The comparison of knowledge about consequences of various tobacco smoking/ chewing habits leads to disease between the groups across the time periods. There was a significant ($p<0.05$) difference in the knowledge about consequences of various tobacco smoking/chewing habits leads to disease between the groups at 0 week, 2 month and 4 months. (Table-21 & Graph 21)

Group 1 children exhibited a GI value of 10.66± 6.18 at baseline, while group 2 children had 10.11± 6.21. Group 1 children presented a GI value of 14.01± 3.99 while group 2 showed 11.07± 5.88. A significant reduction was noted in both group at 4

months period with group 1 presenting 6.95± 5.35, while group 2 showed 5.46± 4.62 at the end of study period, which is significant at p level ie. 0.008. The comparison of GI between the groups across the time periods. GI was significantly ($p<0.01$) higher in Group 1 than Group 2 at 2 weeks, 2 months and 4 months. Both the groups had almost similar gingival index scores at baseline. Group 2 exhibited better gingival health at end of 4 months. (Table-22 & Graph 22)

Group 1 children exhibited a PI value of 11.44± 6.04 at baseline, while group 2 children had 10.90± 6.05. Group 1 children presented a PI value of 14.73± 3.99 while group 2 showed 11.80± 5.70. A significant reduction was noted in both group at 4 months period with group 1 presenting 7.12± 5.63, while group 2 showed 5.96± 4.65 at the end of study period, which is significant at p level ie. 0.04. The comparison of PI between the groups across the time periods. PI was significantly ($p<0.05$) higher in Group 1 than Group 2 at 2 weeks, 2 months and 4 months. Plaque accumulation was significantly reduced in both the groups at 4 months, p value at 0.04. Plaque deposition significantly reduced at 4 months in Group 2. (Table-23 & Graph 23)

LIST OF TABLES

Table-1: Distribution of study subjects according to gender

Gender	Group 1 (n=160)		Group 2 (n=160)		p-value[1]
	No.	%	No.	%	
Male	75	46.9	83	51.9	0.37
Female	85	53.1	77	48.1	

[1]Chi-square test -

Table-2: Comparison of practice of cleaning teeth between the groups across the time periods

Time periods	Group 1 (n=149)		Group 2 (n=171)		p-value[1]
	No.	%	No.	%	
0 Week	57	38.3	72	42.1	0.27
2 Weeks	29	19.5	82	48.0	0.001*
2 months	65	43.6	113	66.1	0.001*
4 months	107	71.8	143	83.6	0.008*

[1]Chi-square test, *Significant

Table-6: Comparison of practice of using any other aids to clean teeth between the groups across the time periods

Gender	Group 1 (n=149)		Group 2 (n=171)		p-value[1]
	No.	%	No.	%	
0 Week	66	44.3	81	47.4	0.58
2 Weeks	75	50.3	82	48.0	0.67
2 months	101	67.8	119	69.6	0.72
4 months	109	73.2	133	77.8	0.33

[1]Chi-square test

Table-9: Comparison among groups for the reason/problems in visiting a dentist across the time periods

Gender	Group 1 (n=149)		Group 2 (n=171)		p-value[1]
	No.	%	No.	%	
0 Week	75	50.3	94	55.0	0.40
2 Weeks	93	62.4	113	66.1	0.49
2 months	105	70.5	123	71.9	0.77
4 months	125	83.9	149	87.1	0.41

[1]Chi-square test

Table-13: Comparison of knowledge about the ill effects of excessive dental plaque deposition between the groups

Gender	Group 1 (n=149)		Group 2 (n=171)		p-value[1]
	No.	%	No.	%	
0 Week	73	49.0	86	50.3	0.81
2 Weeks	85	57.0	103	60.2	0.56
2 months	90	60.4	123	71.9	0.02*
4 months	115	77.2	138	80.7	0.44

[1]Chi-square test, *Significant

Table-17: Comparison of knowledge about fluoride tooth paste between the groups across the time periods

Gender	Group 1 (n=149)		Group 2 (n=171)		χ^2	p-value[1]
	No.	%	No.	%		
0 Week	57	38.3	73	42.7	0.64	0.42
2 Weeks	67	45.0	81	47.4	0.18	0.66
2 months	82	55.0	97	56.7	0.09	0.76
4 months	106	71.1	143	83.6	7.19	0.007*

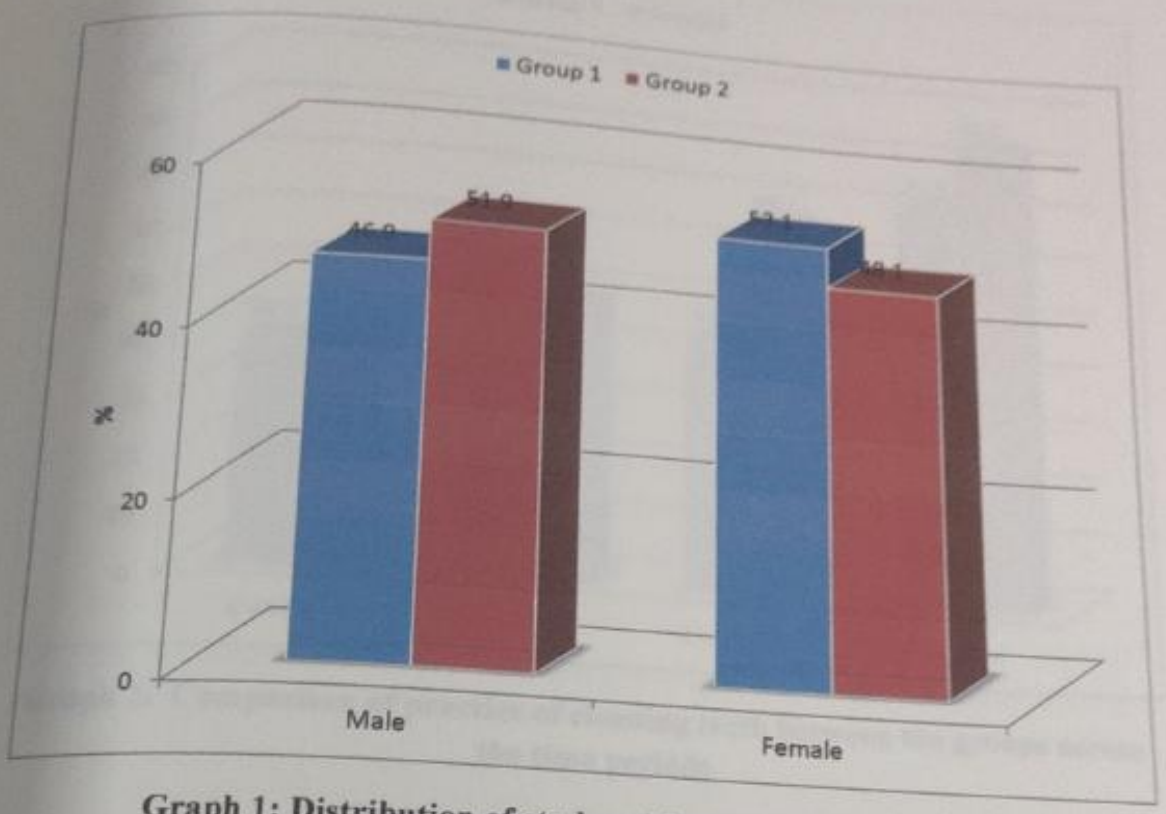
[1]Chi-square test, *Significant

Table-21: Comparison of knowledge about consequences of various tobacco smoking/chewing habits leads to disease between the groups across the time periods

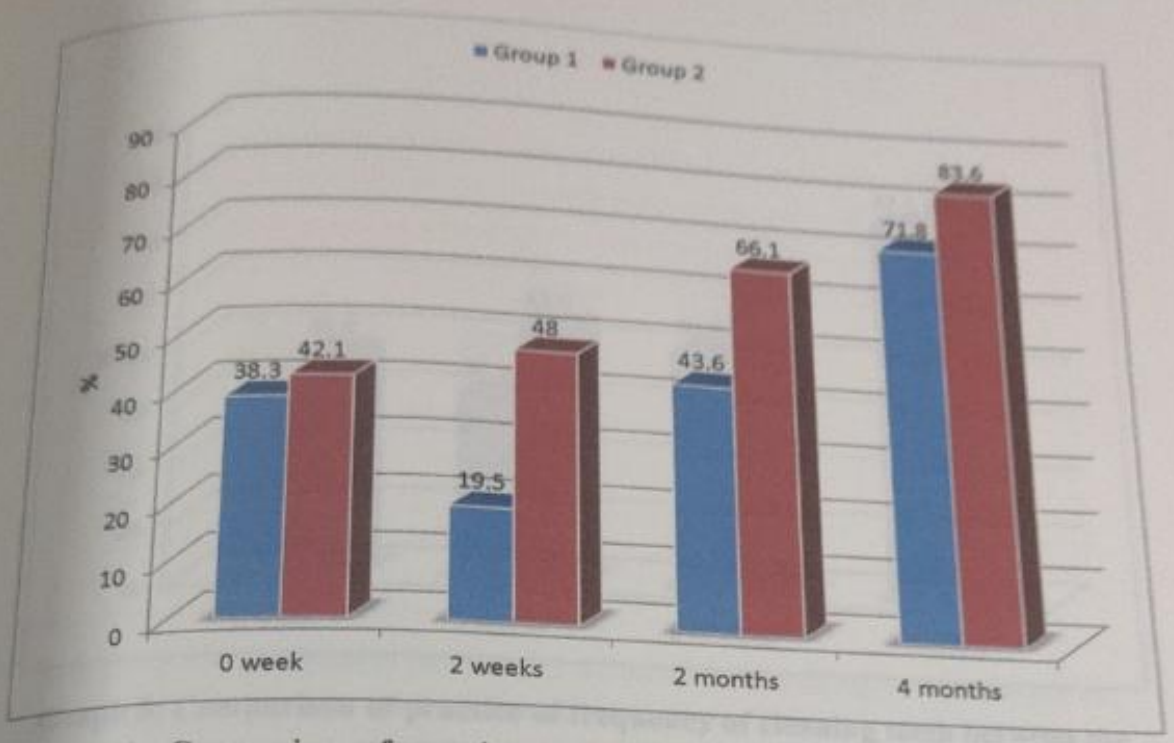
Gender	Group 1 (n=149)		Group 2 (n=171)		X^2	p-value[1]
	No.	%				
0 Week	42	28.2	28	16.4	6.50	0.01*
2 Weeks	57	38.3	77	45.0	1.50	0.22
2 months	65	43.6	98	57.3	5.97	0.01*
4 months	105	70.5	143	83.6	7.90	0.005*

[1]Chi-square test, *Significant

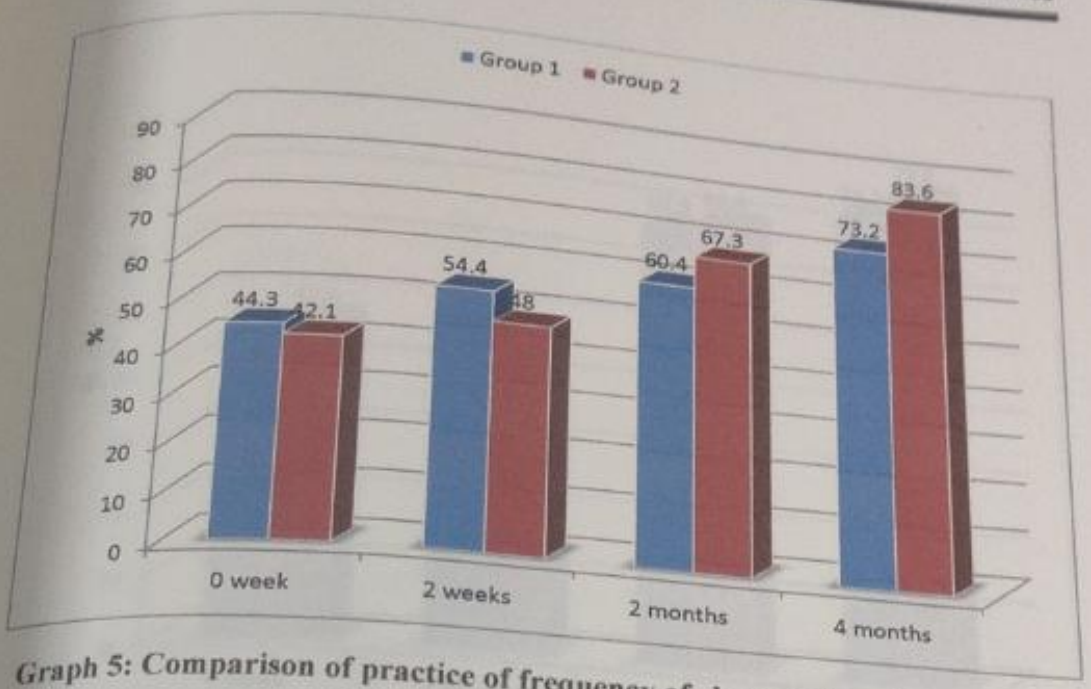
LIST OF GRAPHS



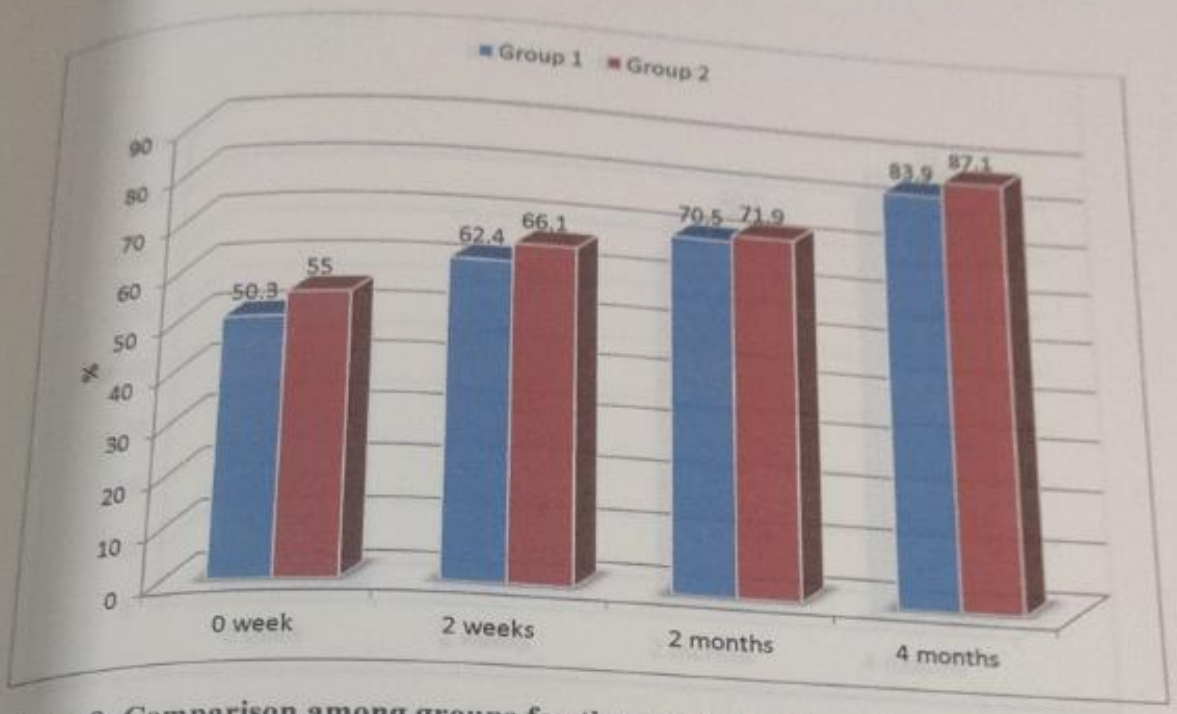
Graph 1: Distribution of study subjects according to gender



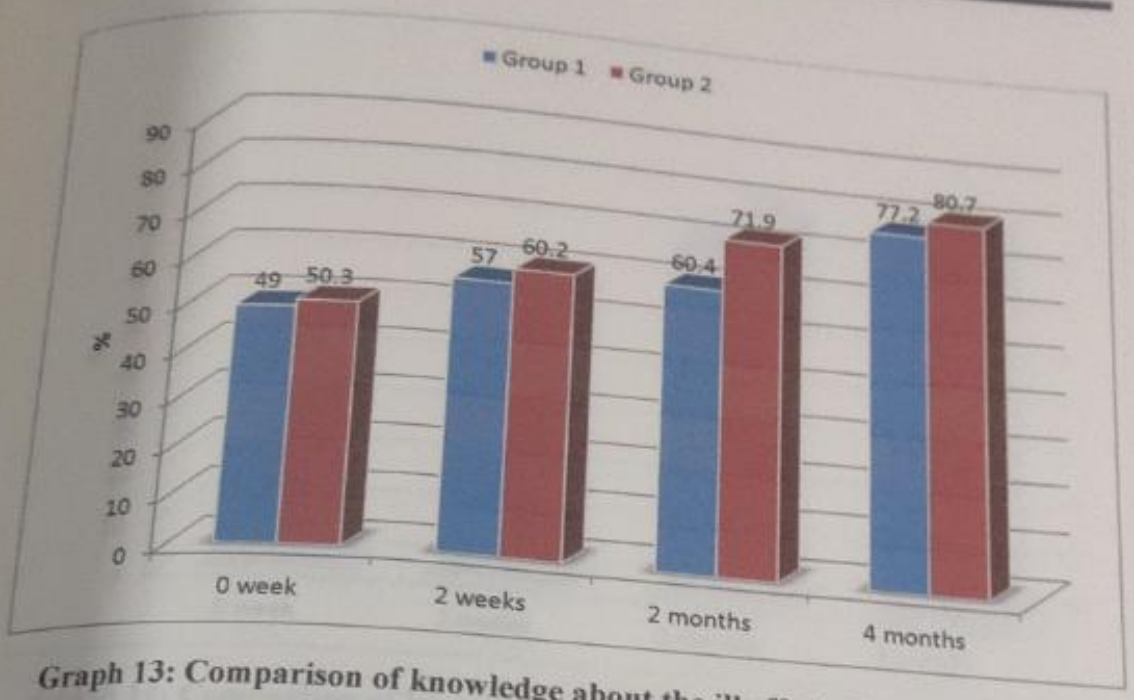
Graph 2: Comparison of practice of cleaning teeth between the groups across the time periods



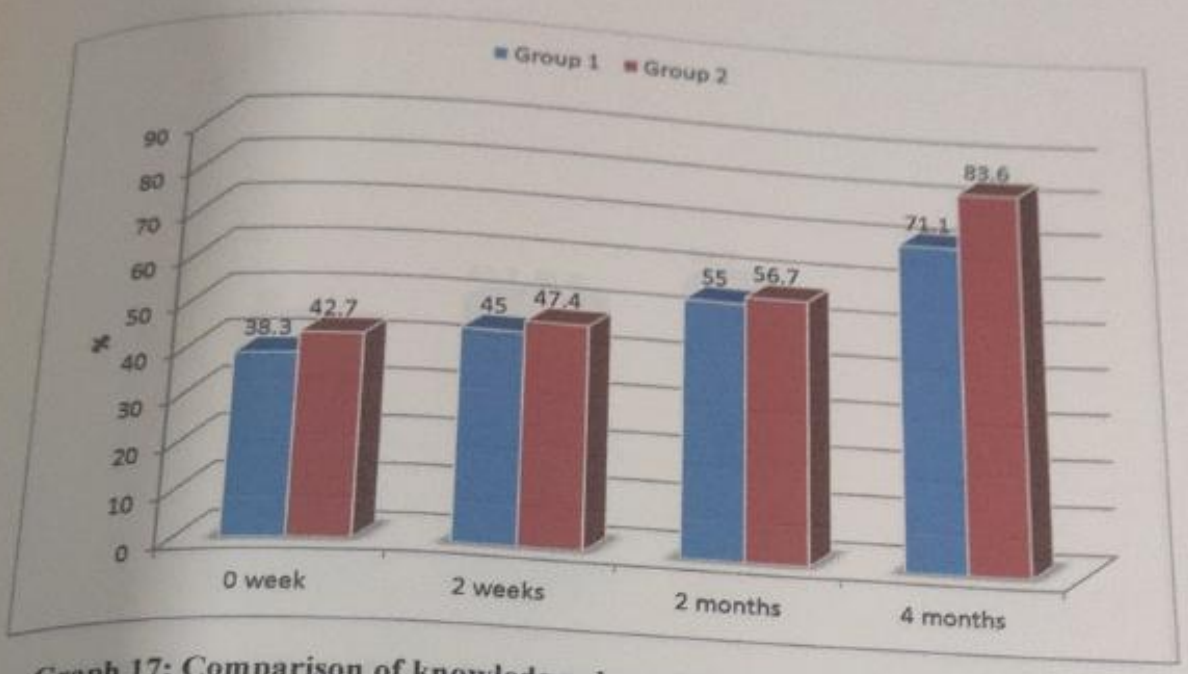
Graph 5: Comparison of practice of frequency of changing brush between the groups across the time periods



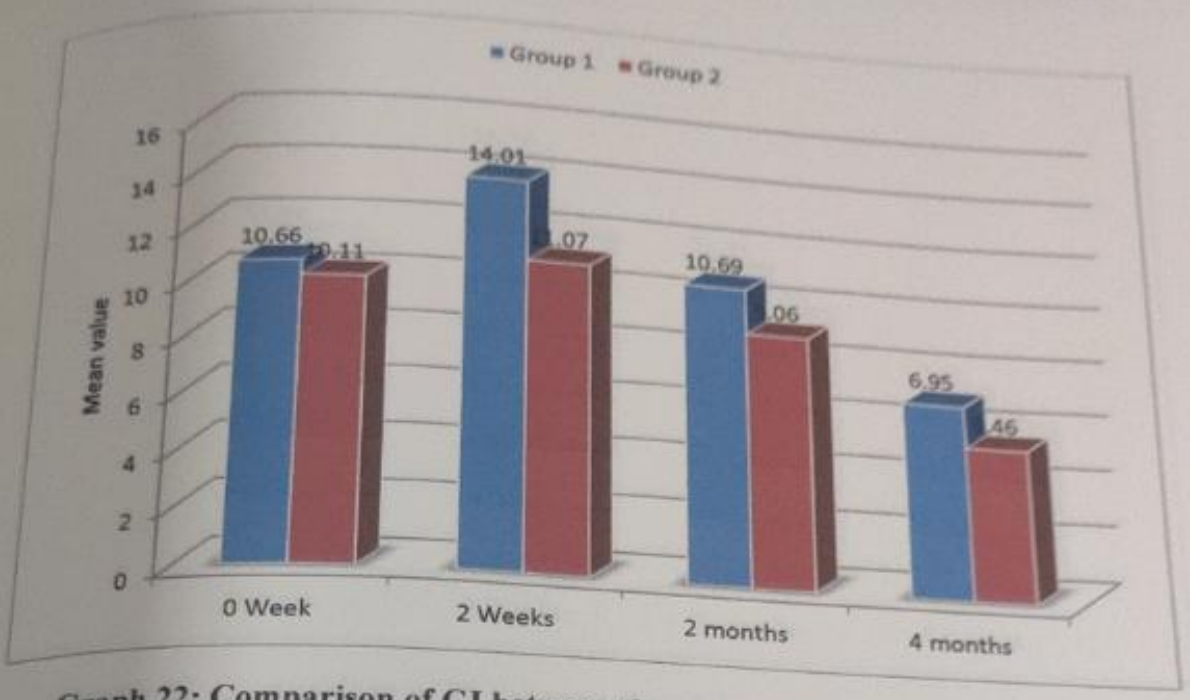
Graph 9: Comparison among groups for the reason/problems in visiting a dentist across the time periods



Graph 13: Comparison of knowledge about the ill effect of excessive dental plaque deposition between the groups.



Graph 17: Comparison of knowledge about fluoride tooth paste between the groups across the time periods



Graph 22: Comparison of GI between the groups across the time periods

Discussion

This was an interventional study done to assess the effectiveness of two different types of health educational technique on gingival health. The study participants were divided into 2 groups.

Group 1- Chalk & talk method of education

Group 2- Multimedia method of education.

The study aimed to assess the following objectives-

1) To evaluate the effectiveness of lecture method of health education on gingival health

2) To evaluate the effectiveness of multimedia method of health education on gingival health

3) To compare the different methods of health education on gingival health.[71]

The study was conducted on 15 years old school going children of Lucknow city. 12 year is considered as the global age for monitoring of dental diseases like dental caries and gingivitis. Also educating children at this earlier age will lead to knowledge enhancement which improves plaque removal and monitor gingivitis in later years. 15 years is the age at which the teeth are present in the oral cavity for a certain amount of time giving sufficient exposure to the risk factors associated with gingivitis [72] , hence this age group was selected.

The target group for the specific oral health education program was the middle school children. The high prevalence of gingivitis found in a recent epidemiological study in 12 year old children in Greece made it imperative to enhance oral health education at an earlier age in order to improve plaque removal and monitor gingivitis in later years[73]. Also, 10 year old children were selected in their study because experiential learning requires students that who analyse logic thoughts, can work together in teams, can realize the cause-result interaction and explore everything. Younger children possibly would not be able to present those skills and experiential learning would be ineffective [74]

It is believed that visualization, active participation, skill training and reinforcement are of paramount importance in establishing and altering behaviour in a child. The

largest and the most significant group accessible for oral health education is always seen in school system. For that reason, in the present study, classroom was considered an ideal setting to conduct supervised toothbrushing program, especially in rural areas where oral health facilities are meager and rarely parents are concerned of their children's toothbrushing behaviour [38]

This finding of the present study was similar to the study conducted by Satyam G. Damle. Also some of the school based programs which have been conducted in Brazil, Madagascar and Indonesia have shown encouraging results [35]

Dental plaque is (usually colorless) a layer like deposition that builds up on the teeth. It is a living, organized community of micro organism, consisting of numerous species embedded in an extracellular matrix.

The micro organisms present in dental plaque are all naturally present in the oral cavity, and are normally harmless. However, failure to remove plaque by regular tooth brushing means that they are allowed to build up in a thick layer. Those micro organisms nearest to the tooth surface convert to anaerobic respiration; it is in this state that they start to produce acids.

- Acids released from dental plaque lead to demineralization of the adjacent tooth surface, and consequently to dental caries. Saliva is also unable to penetrate the build-up of plaque and thus cannot act to neutralize the acid produced by the bacteria and remineralize the tooth surface.
- They also cause irritation of the gums around the teeth that could lead to gingivitis, periodontal disease and tooth loss.
- Plaque build up can also become mineralized and form calculus(tartar).

The central role played by the bacteria colonizing the teeth in the initiation of dental caries and periodontal disease is well established and removal of plaque is therefore most important to maintain oral health.

Control of plaque is crucial in the treatment of periodontal diseases and caries and in the maintenance of dental health. Primary responsibility for plaque control rests with the patient and mechanical means.[75]

Oral hygiene instructions in most studies are a combination of patient information, motivation, and skill training.[76] The present study compared the effectiveness of oral hygiene instructions given to patients in 2 different ways: Chalk and talk and Multimedia instructions.

Oral health education that was provided to the children covered topics on oral hygiene practices like how do you clean your teeth, what is the frequency of cleaning your teeth, which direction do you brush your teeth, how frequently you change your brush, do you use anything else to clean your teeth, do you clean your tongue, when did you last visit your dentist, what was the problem to visit dentist.

Simpler methods such as dental education programs have been adopted in this study without the use of expensive aids. Other studies have used frequent prophylaxis for longer duration along with supervised toothbrushing, which is impractical in an Indian scenario, as dental professionals will be able to attend a limited number of children and immense manpower also will be required.

The topics contained questions on Oral Health Knowledge like how many sets of teeth do we have, function of teeth, what is plaque, excessive dental plaque deposition may lead to, which is the most effective way to remove plaque from the teeth, what is dental caries, tooth decay occurs due to, are you aware of fluoride tooth paste, what does fluoride do, gums disease is caused due to, what is malocclusion, various tobacco smoking/chewing habits leads to ulcer or oral cancer [77]

The duration of the study was 4 months, sufficient for plaque to accumulate as supported by a study in which clinical signs of gingivitis were observed within 10-21 days.[78]

The present study employed gingival index and plaque index to assess the gingival health of school children.

Gingival Index [70]- The gingival index is one of the most widely accepted and used gingival indices due to its documented validity, reliability, and ease of use. However, even though the gingival index has demonstrated sufficient sensitivity to distinguish between groups with mild and severe gingivitis, it may not discriminate as well

between the middle ranges. It can be used to determine the prevalence and severity of gingivitis in epidemiologic surveys. For the assessment of gingivitis severity in individual dentition, it can be used in controlled clinical trial of preventive or therapeutic agents. For recording the gingival index score, gingival index system as proposed by Loe and Silness was used. **Damle** et al also employed the same index to measure gingival health.

The Plaque Index (PII) was described by Silness J. And Loe H in 1964 and better described by Loe H in 1967.The Plaque Index is unique among the indices used for assessment of Plaque because it ignores the coronal extent of Plaque on the tooth surface area and assesses only the thickness of Plaque at the gingival area of the tooth. This index is one of the most widely used and has demonstrated good validity and reliability. It can be used as a full mouth index or as a simplified index. The study done by Loe et al demonstrated that plaque build up was associated with gingival inflammation and that removal of plaque reversed the process. And this index was also used by **SANGEETA U NAYAK** [32] in her study to assess the evaluation of the effect of oral hygiene instructions on maintenance of gingival health.

In the present study there was no significant difference ($p>0.05$) in the percentage of gender distribution i.e. the male constitute (46.9%) in Group 1 and 51.9% in Group 2 which was similar with the study done by Deepak Viswanath and Anindita Sarma and also similar with the study done by John et al who have reported similar findings in their study.

Results of the present study suggested that knowledge improved in both intervention groups i.e. group 1(chalk & talk) and group 2(multimedia) which was in accordance with the study done by Matina V Angelopoulou et al who suggested that knowledge improved in both intervention groups. Enhanced oral health knowledge has been stated previously even when applying traditional lecturing[58]. Previous multimedia learning studies suggested that knowledge improves more when this method is being used [43].

Both interventions were found effective in improving oral health behavior and attitude. This finding is in accordance with other studies that found that oral health behavior and attitude of primary school children to temporary improve regardless of the educational approach used. These findings, as suggested in the past, prove that

oral health education should be repeated with either method in order to maintain its positive results longitudinally [79,80].

The significant importance was found in the knowledge relation to oral hygiene measures in the presence study which was in accordance with a study conducted by by Albandar *et al* [81]wherein two different preventive programs were provided to 13-year-old children. The effectiveness of the program was evaluated by examining the plaque scores and gingival bleeding which was similar to our study. The results of the present study were also comparable with another study done by Ivanovik and Lekic.[63] They conducted a randomized controlled trial to examine the short-term effect of an intensive instructional program without professional prophylaxis on gingival health of 240 children of age 11–14 years. They found a significant improvement in oral hygiene of children in experimental group as noted by a significant decrease in plaque scores and gingival bleeding as compared to the control group which showed slight but not significant reductions in plaque scores which was similar to our study were comparison is made between cleaning of teeth, frequency of cleaning of teeth and direction of brushing teeth. It was concluded that though improvement was observed, it was transient and only during the experimental period. The maintenance of improved gingival health over longer periods requires prolonged, repeated instruction by professionals. The findings from this study were consistent with the results reported in other studies carried out in western communities by Glavind *et al*,[82] Hetland *et al*,[83]Soderholm *et al*.[84]

The present study showed that despite brushing twice daily, people have large amount of plaque suggesting that their brushing is inadequate, which is similar to the study done by Sangeeta U Nayak [32] and Wati Prahlad [32]. This indicates that maintenance of an effective level of plaque control is difficult using the conventional mechanical procedures, suggesting that there is definitely a need to educate and motivate a patient to establish improved gingival condition.[44]

Children in Group II showed considerable improvement in their oral hygiene, as demonstrated by decrease in the plaque scores. Use of three-dimensional animated pictures and colorful diagrams, and stepwise representation of concepts may have helped the children to understand the topics better and may have created an interest to bring about behavioral change which is similar to the study of [85] Damle et al.

The current generation of children is attracted by the cartoon characters as they spend more time watching television and cartoon serials[86], hence incorporation of cartoon characters in the motion media presentation made it more impactful for the children as well. Not only is the content of the message important but the way it is conveyed to the target population, so as to retain the information also is more important. This was the probable reason for group II to have better results than group I

Therefore the recommendation for the utilization of an "entertaining, easy to understand and practical" educational material in an oral health program had also been previously reported [87]

The result of the present study demonstrated that oral health education was more effective in reduction of gingivitis & plaque score in Group 2 intervention groups. The result is in accordance with the conclusion of Needleman et al 2005[88] where they stated that repeated oral hygiene instructions might have an effect similar to that of mechanical & chemical plaque removal. On the other hand regular repetition, check-ups of the individual's dental status and the re-instructions in oral hygiene seemed to be of great importance helping in the subjects to maintain a high standard of oral hygiene.[89]

A.N Crawford, H. Mc Allan [90] have reported that individual oral hygiene instruction have showed marked reduction in gingival and plaque indices within 1 month.

Clinical trial conducted by Axelsson & Lindhe, Poulsen, Agerbaek, Melsen, Korts, Glavind & Rolla in children and Lindhe & Nayman, Hamp, Nayeman & Lindhe, Rosling[91] in adults, have shown that with proper chair side instruction and frequently repeated professional tooth cleaning, it is possible to reduce plaque and entirely eliminate the sign of gingivitis.

The results of this study confirm the findings of Gaare *et al*[92] and Hetland *et al*,[83] that improved dental health can be brought about by oral health education alone, aimed simply at improving oral cleanliness. It should be remembered that once cognitive and affective gains pertaining to oral health have been established at a young age, they could later, when the present children become parents, be a factor in improving the health-related behavior of the next generation.

Although dental health education is a relatively new discipline within dentistry, it is apparent that different educational methods are needed for different groups of people and for different educational objectives [93]

Limitations

The changes observed on the figures of the Plaque Index and Gingival Index express an important improvement in the children's skills to control dental plaque accumulation, which is the most essential biological factors associated with the development of the most prevalent dental diseases. However, these findings should not be considered directly linked to the educational oral health strategy adopted. No separate control group was selected. This may be regarded as one of the limitations of the study.

The clinical measurements were not double- blinded; the observer necessarily knew whether each subject was in the study group, although at no time did she have access to results of previous examinations until the whole study had been completed.

Recommendations

1) Preventive programmes in schools should be set as a high- priority goal by health policy- makers.

2) Oral health education/ oral Hygiene Instructions should be a part of academic curriculum of paramedical students, Graduate & degree Colleges.

3) Fiscal policy- toothpaste & mouth rinses should be available at a cheaper price across the counters.

4) Every institution/ (professional/ non professional) should have a dental clinic set up as a part of organization, which should render oral health education at a regular intervals.

5) Oral health program could be reinforced with parent's involvement in the educational process and other preventive measures such as tooth brushing and fluoride treatment in order to enhance its effect.

6) Oral health program could be used in earlier age groups too, which may contribute to better results in the later years.

Conclusion

as been argued that health education programs too often seem to be directed at aging people's risk appraisal in term of perceived susceptibility and severity ted to a particular disease, since risk appraisal in it is not sufficient to predict ventive behaviour. Furthermore, it has been argued that it might be useful to notice distinction between immediate reinforcement contingencies and long term sequences of performing a particular behaviour.

ntal health education for adolescents is great challenge for the future. Dental health cation should obviously be directed more towards rural adolescents. Its content y also be inadequate, as the use interdental cleaning aids is commonly neglected.

oup 2 exhibited better gingival health at the end of study period.

e following points can be concluded with the present study-

1) At baseline, both Group 1 and Group 2 had similar Gingival score at baseline, i.e. 10.66± 6.18 and 10.11 ± 6.21 accordingly.

2) At the end of trial, Group 2 showed better gingival health with Gingival score at 5.46 ± 4.62 as compared to Group 1 at 6.95 ± 5.35.

3) At baseline, both Group 1 and Group 2 children had a Plaque Index score of 11.44 ± 6.04 and 10.90 ± 6.05.

4) At the end of 4 months, Group 2 presented better gingival status with Plaque Index value of 5.96 ± 4.65 as compared to Group 1 (Gingival Index value 7.12 ± 5.63)

5) Group 2- overall had better knowledge scores than Group 1.

6) From the present study, it can be concluded that multimedia approach (Group 2) to health education exhibited better gingival health than chalk & talk method (Group 1)

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Annexures

ANNEXURE-1

BABU BANARASI DAS COLLEGE OF DENTAL SCIENCES
(FACULTY OF BBD UNIVERSITY), LUCKNOW

INSTITUTIONAL RESEARCH COMMITTEE APPROVAL

The project titled **Effectiveness of Different Health Education Methods on 15 year old School Going Children on Gingival Health in Lucknow City, Uttar Pradesh** submitted by **Dr. Anam Siddiqui** Post graduate student from the Department of **Public Health Dentistry** as part of MDS Curriculum for the academic year 2016-19 with the Accompanying proforma was reviewed by the institutional research committee present on **7th April 2017** at BBDCODS. The Committee has granted approval on the scientific content of the project. The proposal may now be reviewed by the institutional ethics committee for granting ethical approval.

Prof. (Dr).Vivek Govila

Principal

PRINCIPAL
Babu Banarasi Das College of Dental Sciences
(Babu Banarasi Das University)
B&C City Faculty

Chairperson Institutional Research Committee

Babu Banarasi Das University
Babu Banarasi Das College of Dental Sciences,
BBD City, Faizabad Road, Lucknow – 226028 (INDIA)

Dr. Lakshmi Bala
Professor and Head Biochemistry and
Member-Secretary, Institutional Ethics Committee

Communication of the Decision of the V^th Institutional Ethics Sub-Committee

IEC Code: 38 **BBDCODS/03/2017**

Title of the Project: Prevalence of Oral Mucosal lesions among 35-65 years age group in rural area around Lucknow.

Principal Investigator: Dr. Vivek Singh **Department:** Public Health Dentistry

Name and Address of the Institution: BBD College of Dental Sciences Lucknow.

Type of Submission: New, MDS Project Protocol

Dear Dr. Vivek Singh

The Institutional Ethics Sub-Committee meeting comprising following four members was held on 02nd March, 2017.

1.	Dr. Lakshmi Bala Member Secretary	Prof. and Head, Department of Biochemistry, BBDCODS, Lucknow
2.	Dr. Neerja Singh Member	Prof. & Head, Department of Pedodontics, BBDCODS, Lucknow
3.	Dr. Rana Pratap Maurya Member	Reader, Department of Orthodontics, BBDCODS, Lucknow
4.	Dr. Manu Narayan Member	Reader, Department of Public Health Dentistry, BBDCODS, Lucknow

The committee reviewed and discussed your submitted documents of the current MDS Project Protocol in the meeting.
The proposal was reviewed, comments were communicated to PI thereafter it was revised.

Decisions: The committee approved the above protocol from ethics point of view.

Lakshmi Bala 20/4/17
(Dr. Lakshmi Bala)
Member-Secretary
IEC

Member-Secretary
Institutional Ethics Committee
Babu Banarasi Das College of Dental Sciences
BBD University
Faizabad Road, Lucknow-226028

Forwarded by:

(Dr. Vivek Singh)
Principal
Babu Banarasi Das College of Dental Sciences
(Babu Banarasi Das University)
BBD City, Faizabad Road, Lucknow-226028

PRINCIPAL
BBDCODS

ANNEXURE-2

To

Dr. Anam Siddiqui
MDS Student
Public Health Dentistry
BBDCODS
Lucknow,

Sub :- **Permission to Conduct oral Healthy check up camp.**

Dear Anam,

We have undergone your requisition and have agreed to grant your the permission to do oral health check up camp on our school children for your thesis work for the topic "Effectiveness of Different Health Education methods on 15 years old school going children on gingival health in lucknow City"

Thanking You,

Yours

Renu Jalote

Renu Jalote

Principal

St. Joseph School Jankipuram,
Lucknow

सेवा में,

डॉ० अनम सिद्दीकी,
एम०डी०एस० स्टूडेंड
पब्लिक हेल्थ डेंटिसट्री
बी०बी०डी० कॉटस,
लखनऊ।

विषयः—मौखिक स्वास्थ्य के जांच के सम्बन्ध में अनुमति।

महोदया,

आपको अवगत कराना चाहती हूँ कि आपको निवेदन पत्र हमें मिला। अतः आपको "लखनऊ शहर में मसूड़ों के स्वास्थ पर 15 साल के स्कूली बच्चों पर विभिन्न प्रकार के स्वास्थ विधियों का प्रभावकारिता" के लिये संघर्ष अनुमति दी जा रही है।

उज्जल भविष्य के लिए शुभकामना।

Deepa Singh

(श्रीमती दीपा सिंह)

प्रधानाचार्या

पलहरी स्कूल बाराबंकी, लखनऊ।

ANNEXURE-3

Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(O WEEKS)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months
   c) Flaring of tooth brush
   d) I don't know

5) **Do you use anything else to clean your teeth?**
   a) Floss
   b) Tooth pick
   c) Mouth rinse
   d) None of the above

6) **Do you clean your tongue**
   a) Yes
   b) No

7) **When did you last visit your dentist?**
   a) 1 year before
   b) 6 months before
   c) 2 year before
   d) Never visited

8) **What was the problem to visit dentist?**
   a) Routine check up
   b) Need for care
   c) Difficulty in eating
   d) All of the above

Oral Health knowledge

1) **How many sets of teeth do we have?**
   a) 1 set
   b) 2 set
   c) 3 set
   d) 4 set

2) **Function of teeth is to?**
   a) Give us a nice smile
   b) Help us to eat food
   c) Speak properly
   d) All of the above

3) **What is plaque?**
   a) A tooth paste
   b) A sticky layer of germs on the teeth
   c) A plastic coating for the teeth
   d) I don't know

4) **Excessive dental plaque deposition may lead to?**
   a) Tooth decay & gum disease
   b) Staining of the teeth
   c) Irregularly placed teeth
   d) I don't know

5) **Which is the most effective way to remove plaque from the teeth?**
   a) Brushing & flossing
   b) Brushing alone
   c) Flossing alone
   d) I don't know

6) **What is dental caries?**
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   b) Bad breath
   c) Decaying of tooth/teeth
   d) I don't know

7) **Tooth decay occurs due to:**
   a) Acid produced by the bacteria
   b) Coated tongue
   c) Nail biting
   d) I don't know

8) **Are you aware of fluoride tooth paste?**
   a) Yes
   b) No

9) **What does fluoride do?**
   a) It makes teeth white
   b) It makes teeth grow
   c) It helps in protecting teeth from decay
   d) I don't know

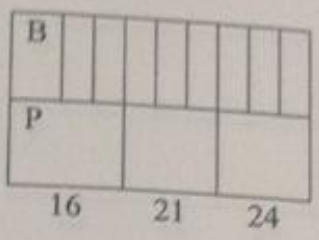
10) **Gums disease is caused due to:**
   a) Plaque
   b) Tartar or calculus
   c) Both of the above
   d) I don't know

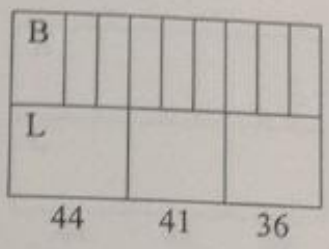
11) **What is malocclusion?**
   a) Loose teeth
   b) Yellow teeth
   c) Irregularly erupted/placed teeth
   d) I don't know

12) **Various tobacco smoking/chewing habits leads to?**
   a) Hypertension
   b) Diabetes
   c) Oral ulcers or even cancers
   d) I don't know

GINGIVAL ASSESSMENT(BASE LINE INFORMATION)
GINGIVAL INDEX (Loe H & Silness J) in 1963

(0 WEEK)





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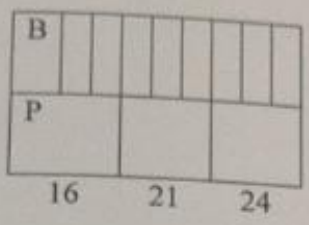
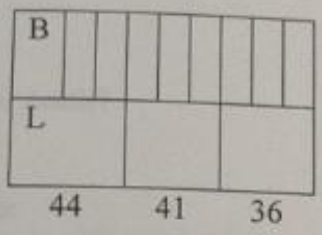
PLAQUE ASSESSMENT (BASE LINE INFORMATION)

PLAQUE INDEX(Silness J & Loe H) in 1964

(0 WEEK)





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(2 WEEKS)

Personal & demographic factors

S.No

Name

Gender

Address

School

Oral hygiene practices:

1) **How do you clean your teeth?**
   a) Brush & paste
   b) Finger & powder
   c) Brush & powder
   d) If any other please specify.....

2) **What is the frequency of cleaning your teeth?**
   a) Once daily
   b) Twice daily
   c) Thrice daily
   d) After every meal

3) **Which direction do you brush your teeth?**
   a) Vertical
   b) Horizontal
   c) Circular
   d) All of the above

4) **How frequently you change your brush?**
   a) After every month
   b) After three months

c) Flaring of tooth brush
d) I don't know

5) **Do you use anything else to clean your teeth?**
a) Floss
b) Tooth pick
c) Mouth rinse
d) None of the above

6) **Do you clean your tongue**
a) Yes
b) No

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b) 6 months before
c) 2 year before
d) Never visited

8) **What was the problem to visit dentist?**
a) Routine check up
b) Need for care
c) Difficulty in eating
d) All of the above

Oral Health knowledge

1) **How many sets of teeth do we have?**
a) 1 set
b) 2 set
c) 3 set
d) 4 set

2) **Function of teeth is to?**
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b) Help us to eat food
c) Speak properly
d) All of the above

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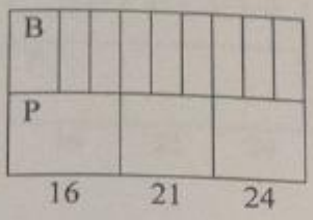
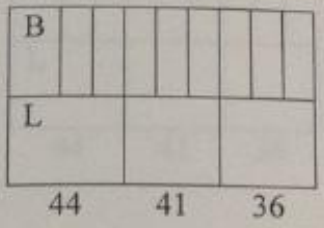
GINGIVAL INDEX (Loe & Silness)

(2 WEEKS)





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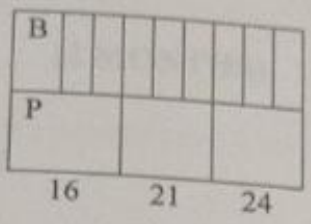
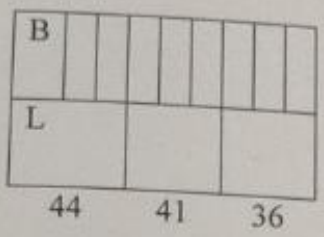
PLAQUE INDEX(Silness & Loe)

2 weeks





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(2 MONTHS)

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S.No

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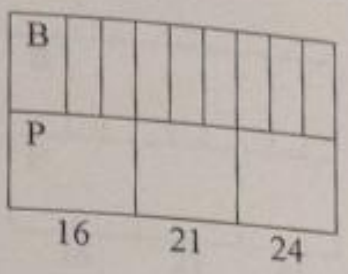
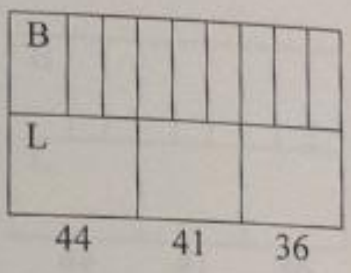
GINGIVAL INDEX (Loe & Silness)

2 Months





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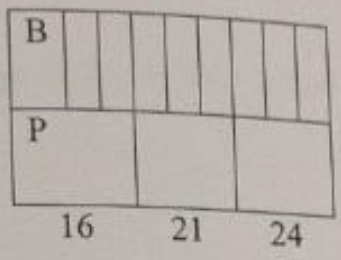
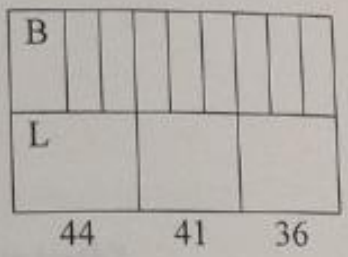
PLAQUE INDEX(Silness & Loe)

(2 Months)





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Effectiveness of Different Health Education Methods on 15 year old school going children on gingival health in Lucknow city

(4 MONTHS)

Personal & demographic factors

S.No

Name

Gender

Address

School

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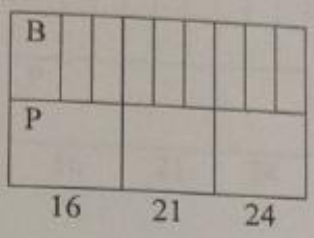
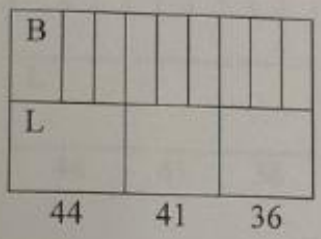
GINGIVAL INDEX (Loe & Silness)

4 Months(Post Education)





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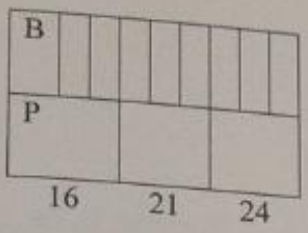
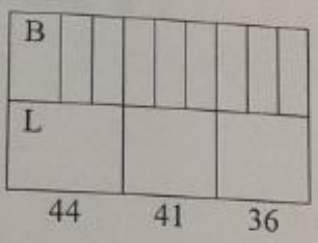
PLAQUE INDEX(Silness & Loe)

4Months(Post Education)





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लखनऊ शहर में मसूड़ों के स्वास्थ पर 15 साल के स्कूली बच्चों पर विभिन्न प्रकार के स्वास्थ विधियों का प्रभावकारिता।

निजी और जनसंख्यिकी सम्बन्धी

क्रम सं0

नाम

लिंग

पता

विद्यालय

प्र0–1 आप कैसे दाँत साफ करते है ?

अ. ब्रश एवं पेस्ट

ब. ऊंगली एवं पाउटर

स. ब्रश एवं पाउटर

द. अन्य

प्र0–2 आप कितनी बार अपने दाँत साफ करते है ?

अ.एक बार

ब. दो बार

स. तीन

द. खाना खाने के बाद

प्र0–3 आप किस तरह से अपने दाँत साफ करते है ?

अ. उर्ध्वाधर

ब. गोल–गोल

स. क्षैतिज

द. ऊपर लिखित सभी से

प्र0–4आप अपने ब्रश को कितनी जल्दी बदलते है ?

अ. हर एक महीने के बाद

ब. हर तीन महीने के बाद

स. टूथ ब्रश फैलने पर

द. पता नहीं।

प्र0–5 क्या आप किसी अन्य तरीके से दाँतो को साफ करते है ?

अ. किलास

ब. माउथ वॉश

स. टूथ पिक

द. इनमें से कोई नहीं।

प्र0–6 क्या आप अपने जीभ की सफाई करते है ?

अ. हाँ

ब. नहीं

प्र0–7 आपने अखिरी बार दाँत के डॉक्टर के पास कब गए थे ?

अ. एक साल पहले

ब. 06 महीने पहले

स. 02 वर्ष पहले

द. कभी नहीं।

प्र0–8 दॉत के डॉक्टर के पास जाने की वजह क्या थी ?

अ. रूटीन चेक अप

ब.

स. खाने में समस्या

द. सभी कारण

प्र0–9 हमारे दॉतो में कितने प्रकार के जोड़ होते है ?

अ. एक जोड़ा

ब. दो जोड़ा

स. तीन जोड़ा

द. चार जोड़ा

प्र0–10 दॉतो का क्या अर्थ है ?

अ. मुस्कुराने के काम

ब. खाने के काम

स. बोलने के काम

द. सभी

प्र0–11 प्लाक क्या है ?

अ. एक टूथ पेस्ट

ब. दॉतो पर कीटाणुओं की एक टिप्पणी

स. दॉतो पर प्लास्टिक कीटाणुओं की एक परत

द. मुझे नहीं पता

प्र0–12 अत्यधिक डेंटल प्लाक निक्षेप से क्या होता है ?

अ. दंत क्षय और मसूड़ों की बीमारी

ब. दांत का पीलापन

स. अनियमित रखा दांत

द. इनमें से सभी

प्र0–13 दांतो से प्लाक को छॉटाने का सबसे असरदार तरीका क्या है ?

अ. ब्रश और सोता

ब. केवल ब्रश

स. केवल सोता

द. मुझे नही मालूम

प्र0–14 दांतो का डेंटल क्या है ?

अ. मसूड़ों से खून आना

ब. सांस से बदबू आना

स. दांतो का सड़ना

द. अन्य

प्र0–15 दांतो में सड़न होता है ?

अ. जीवाणुओं द्वारा अम्ल उत्पन्न करना

ब. परतदार जीभ

स. नाखून चबाना

द. अन्य

प्र0–16 क्या आपके प्लोराइड दंतमंजन के बारे में पता है ?

अ. हाँ

ब. नहीं

प्र0–17 प्लोराइड क्या करता है ?

अ. दांत को सफेद करता है।

ब. दांतो को बढ़ाता है।

स. दांतो को सड़न से बचता है।

द. अन्य

प्र0–18 मसूड़ों की बीमारी होती है ?

अ. प्लाक

ब. तारटार या कैलुंकुलस

स. ऊपर के दोनों

द. अन्य

प्र0–19 दांतो का अत्यवस्थित होना क्या है ?

अ. कमजोर दांत

ब. पीले दांत

स. अनियमित दांतो का निकलना

द. अन्य

प्र0–20 कई प्रकार के तम्बाकू/धुमपान करने से होता है ?

अ. अत्यधिक तनाव

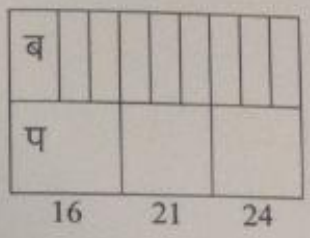
ब. मधुमेह/शुगर

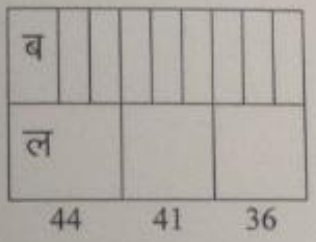
स. मुंह में छाले या कैसंर

द. अन्य

मसूड़ों की सूची (लो एण्ड सिलनेस)

0 सप्ताह





स्कोर =