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Comparison between Two Different Modes of Oral Health Education on Gingival Health: A Randomised Controlled Trial

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Abstract

Introduction: Oral diseases qualify as major public health problem owing to their high prevalence and incidence in all regions of the world. The need to introduce effective and convenient oral health education program in schools is paramount today owing to high absenteeism rates as a result of poor oral health. A randomised controlled trial was done to evaluate the effectiveness of two different ways of delivering health education: self-instructional manual and self-instructional manual with video assisted mode.

Materials and methods: The study was conducted among 12 – 15 years old school going children. Randomization was done using lottery method by the primary investigator. The recruited study subjects were randomly allocated into two groups where each group comprised of 50 subjects. The study was carried out for over a one month period. Subject's demographic variables were recorded. Plaque levels were assessed by using Sillness and Loe plaque index. Gingival status was assessed by using Loe and Sillness gingival index pre and post intervention.

Results: The findings of the present study showed that there was statistically significant difference in the mean plaque and gingival scores pre and post intervention within the groups. The pre and post plaque and gingival scores in between the two groups were statistically insignificant.

Conclusion: Self-instructional manual and self-instructional manual with video mode are both effective means of teaching oral hygiene instructions. Applications of video assisted instructional format teaching oral

hygiene instructions is warrant and cost effectiveness so comparison studies are significant for future investigation.

Keywords: Audio mode, Gingival health, Health education, Plaque score, Self-instructional manual

Introduction

Oral diseases qualify as major public health problem owing to their high prevalence and incidence in all regions of the world. The irony of the problem is that most oral diseases are preventable to a great extent, but unfortunately, adequate efforts are lacking in that direction. The need to introduce effective and convenient oral health education program in schools is paramount today owing to high absenteeism rates as a result of poor oral health. Schools have been suggested as the best platform to impart this oral health education as they are estimated to reach over one billion children worldwide.[2] The habits developed during childhood and adolescence will last for the rest of life of the subject and are able to assume responsibility for learning and maintaining health-related attitudes and behaviours that carry over into adulthood.

Health education and preventive dental care interventions not only reduce the incidence of oral diseases but are also cost-effective, easy to administer, and logical to use at community level. Health education is a widely accepted approach in the prevention of oral diseases, a process of transmission of knowledge and skills are necessary for improvement in oral health and quality of life.[1] Effective self-performed regular oral hygiene has been identified as a key step in disease prevention.

They specialise in cognition and psychology associated with motivation, instead of instructional methodology or focused on instructional methodology and compared written and oral instruction. The evolution of multimedia software applications has far outpaced printed pamphlets, computer-assisted teaching formats have not been rigorously evaluated.[4]

Substitution of personal instruction by other means of communication has been investigated in place of personal instruction, such as the use of self-educational manuals and audio-visual aids. Audio-visual aids are valuable tools in education, more so, in the field of health education, as these have a long-lasting impression on the target population.[5] It was documented that videotaped recordings were as effective as live demonstration in teaching interventional skills, clinical methods, and practical techniques to medical and dental students. Videos offer a standardized level of teaching, and information on the video can be repeated according to the viewers' needs. Thus, this study was done to evaluate the effectiveness of two different ways of delivering health education: self-instructional manual and self-instructional manual with video assisted mode.

Methodology

The present study was a randomised controlled trial of delivering health education among 12 – 15 years old school going children. Randomization was done using lottery method by the primary investigator. The recruited study subjects were randomly allocated into two groups where each group comprised of 50 subjects. The study was conducted over a period of one month from October 2018 to November 2018. Subject's demographic variables were recorded. Plaque levels were assessed by using Sillness and Loe plaque index. Gingival status was assessed by using Loe and Sillness gingival index.

Self-instructional manual and video consist about introduction to oral cavity, healthy gingiva, gingivitis and its stages followed by oral hygiene instruction on modified bass method of brushing technique, flossing and tongue cleaning. The demographic details of the study subjects which included name, age and gender were recorded.

Group A: After the assessment of the plaque score and the gingival status. Group A received Self-instructional manual as oral health education mode. Group B: After the assessment of the plaque score and the gingival status Group B received Self-instructional manual with video as oral health education mode.

Follow up was carried out on 15th and 30th day. At 15th day reinforcement of oral health education was done for the video assisted group. At 30th day plaque levels and gingival status were reassessed. Second investigator recorded plaque and gingival index and primary investigator gave the intervention to the study groups. The study Group A was unsupervised so periodic reminders were sent to the school teachers and parents through phone calls.

Inclusion criteria are subjects aged 12-16 years, who are literates in English and parents who willingly gave the written informed consent. Exclusion criteria are subjects who were suffering from any physical disability, irregular in attendance, suffering from any systemic diseases, using any prosthesis, removable and fixed Orthodontic appliances and who were under antibiotics. The present study was conducted in The Bengaluru High School, Jaya nagar. Subjects who met inclusion and exclusion criteria were included in the study after intra oral examination was performed.

Before commencing the study, investigator was trained and calibrated for recording the Plaque and Gingival index. The investigator was trained in order to check the inter examiner variability for the use of the indices where age matched samples were examined at two occasions, at least a week apart in the department. The results obtained were subjected to Kappa statistics, intra examiner agreement for all the assessments was in the satisfactory range of 0.81 which reflects high degree of conformity in the observations.

Statistical Methods

Data was collected and analysed using statistical package for social sciences for windows version 22.0 released 2013. Descriptive analyses of all the explanatory and outcome parameters were done using standard deviation for quantitative variables, frequency and proportions for categorical variables. Differences in proportions were compared using the Chi square test was used to compare the differences in proportions and Student's t test was used to compare the difference in mean. The level of significance was set at $P<0.05$.

Results

Tabular and graphical representation was used to describe the data of the study population. The table 1 represents the mean plaque score in Group A pre intervention is 1.16±0.47 which decreased to 1.06±0.40 post intervention which is statistically significant. The mean plaque score in Group B pre intervention is 1.12±0.5 which decreased to 1.07±0.46 post intervention which is statistically significant. The mean gingival index score in Group A pre intervention is 0.52±0.43 which decreased to 0.50±0.41 post intervention which is statistically significant.

The mean gingival index score in Group B pre intervention is 0.57±0.48 which decreased to 0.54±0.45 post intervention which is statistically significant (Table 2). The mean plaque score in Group A and Group B pre intervention is statistically not significant with p value 0.681. The mean plaque post intervention score in Group A and Group B is statistically not significant with p value 0.872 (Figure 1). The mean gingival index score in Group A and Group B pre intervention score is statistically not significant with p value 0.571. The mean gingival index post intervention score in Group A and in Group B is statistically not significant with p value 0.632 (Figure 2).

Table 1: Comparison of mean plaque scores pre and post intervention between Group A and group B.

Groups	Plaque scores	mean±SD	t	p-value
Group-A	Preintervention	1.16±0.47	4.321	0.000
	Post intervention	1.06±0.40		
Group-B	Preintervention	1.12±0.5	3.236	0.002
	Post intervention	1.07±0.46		

Table 2: Comparison of mean gingival scores pre and post intervention between Group A and Group B.

Groups	Plaque scores	mean±SD	t	p-value
Group-A	Preintervention	0.52±0.43	2.641	0.001
	Post intervention	0.50±0.41		
Group-B	Preintervention	0.57±0.48	3.456	0.001
	Post intervention	0.54±0.45		

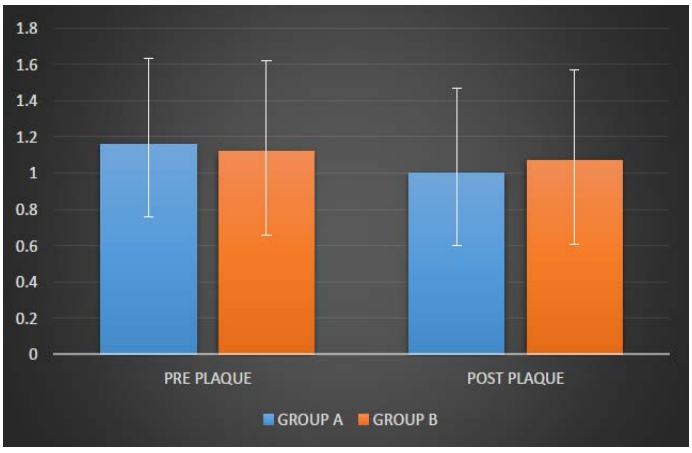

Figure 1: Comparison of pre and post intervention plaque scores between the groups.

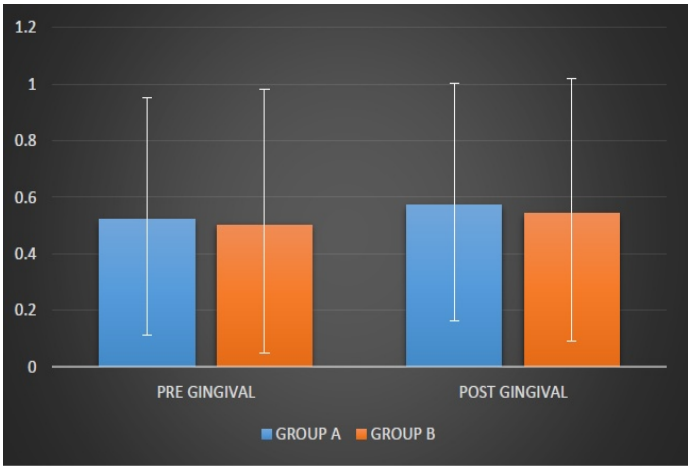

Figure 2: Comparison of pre and post intervention gingival scores between the groups.

Discussion

The history of dentistry has established the fact that prevention through oral health education is a major factor in controlling dental caries and related complications. Schools have been suggested as the best platform to impart this oral health education as they are estimated to reach children worldwide. The habits developed during childhood and adolescence will last for the rest of life of the subjects and are able to assume responsibility for learning and maintaining health-related attitudes and behaviours that carry over into adulthood. Children with their impressionable minds serve as the perfect target group for instilling correct oral hygiene practices.

The results of the present study confirm findings of study done by Lim L P et al. that improved dental health can be brought about by oral health education alone, aimed at improving oral cleanliness. This has significant implications for communities with low dental awareness and limited manpower resources since oral hygiene information can be delivered on a community wide-scale basis and not solely at the individual level.[1]

Methods of education such as self-educational manuals and self-educational manual with video assisted mode indeed have a place in community programs and also

attempted to find out which method of educational motivation is effective. It was seen that although there was an improvement in both the experimental groups but when compared in between groups there was no significant effect as compared to the study done by D'Cruz A M et al.[2]

The study done by Kumar S. G. R et al, shows more reduction of mean Oral Hygiene index score, and Plaque score in the study group than control group which is same as in the present study where mean plaque score and gingival status were significant pre and post intervention.[3]

Self-educational manual with video assisted was not much effective than the self-educational mode which was not same as the study done by Williams K A et al which states that computer assisted mode was more effective than the self-care instructor.[4]

Shenoy R P et al. shows that Dental Health Education program was effective in improving oral health knowledge, practices, oral hygiene status, and gingival health of school children and same was found in the present study findings.[6] Masheshwari U N et al and Kumar Y et al. shows that game based oral health education can be an effective aid for teaching basic oral health concepts to children the same was found in the present study where in there was no significant change when compared between the two different modes of health education which is not the same with study compared.[8,9]

Lynn B et al. showed that family-centered educational videos are a promising method for providing anticipatory guidance to parents regarding early childhood oral health which is same as the present study as in the self-instructional manual assisted with video mode.[10] Ahire M et al. showed that the best mode of education is clinician demonstration and the least effective one is the audio-video which is contradicting the results of the present study.[12] Oral health education is thus a powerful tool in improving the oral hygiene knowledge and practices, which can lead to better plaque control and subsequent improvement in gingival health. Reinforcement of oral health information is of utmost importance and is the key to success of any oral health education program. Implementing an easy-to-organize and inexpensive school-based educational intervention can improve oral cleanliness and gingival health among school children, in particular in countries with a developing oral healthcare system.

Conclusion

The present study showed significant changes in the levels of plaque levels and gingival status pre and post intervention of self-instructional manual and self-instructional manual with video mode of health education within the groups. But the study didn't show any significant changes in between the two different modes of intervention. Self-instructional manual and self-instructional manual with video mode are both effective means of teaching oral hygiene instructions. Applications of video assisted instructional format teaching oral hygiene instructions is warrant and cost effectiveness so comparison studies are significant for future investigation.

Limitation

The participants were unsupervised so periodic reminders were sent to the parents and the school teachers. Even random error related to sight and sound related distractions which may impact learning. No environmental or lifestyle changes were advocated. Over reporting of favourable behaviour might be expected. We did not educate the parents and/or the teachers along with the children. It may be possible that to make the education of school children effective, it should be supported by the education of their parents.

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