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RESEARCH ARTICLE

EFFECT OF ORAL HEALTH EDUCATION REGARDING KNOWLEDGE, ATTITUDE AND PRACTICES AMONG HIGH SCHOOL STUDENTS OF SEMI URBAN AREA OF BELAGAVI DISTRICT, KARNATAKA - AN INTERVENTIONAL STUDY

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ABSTRACT

Background: Oral diseases qualify as a major public health problems owing to their higher incidence & prevalence.

Objectives*:* To assess the impact of oral health education on knowledge, attitude & practices among high school students.

Materials and Methods: A universal sample of 400 students was taken from two government aided schools located in semi urban area of Belagavi district. Study included two groups; one school was taken as control group and other as study group. Oral health education was given twice only to study group. Pretested questionnaire was used to elicit the information. Frequency and percentage were calculated. Ethical clearance, informed consent and assent were taken.

Results: In pre test period (61.5%) control participants had better knowledge, attitude and practices regarding oral health as compared to study participants (60.5%). After giving oral health education there was a significant increase in knowledge, attitude and practices among study participants (62.6%) when compared to control participants (56.4%).

Conclusion: Proper health education intervention regarding oral health through a network of school authorities is needed to increase the KAP of school students.

INTRODUCTION

During the past decades rapid changes have occurred in the distribution of oral diseases worldwide. Oral diseases qualify as a major public health problems owing to their higher incidence & prevalence (Varenne B *et al*., 2006). Global review of oral health emphasized that inspite of great improvements in oral health, problems still persist, particularly among the underprivileged groups in both developing & developed countries. In developing countries, changes in living conditions due to urbanization & adoption of western lifestyle are often considered as potential risk factors for increased incidence of oral disease, tooth loss, oral cancer, HIV & orodental trauma are of utmost importance (Petersen *et al*., 2005).

Oral health is an integral part of general health & is essential for well being. It is seen that dental caries affects 60-90% of school children & 2% youths are affected by severe periodontal conditions. In addition, 90% of oral cancer in adults is due to use of tobacco which in turn aggravates periodontal breakdown, poorer standards of oral hygiene & thus there is premature tooth loss. Oral diseases have major impact on individual & community (Petersen *et al*., 2003). Oral diseases are clearly related to behavior, although there exists a weak association between knowledge & behavior. Oral health knowledge is considered to be an essential prerequisite for health related behavior (Al-Ansari *et al*., 2003). Good oral health practices are necessary from a young age to ensure positive long term dental health & hygiene (Friel *et al*., 2002). Children are the future youth of our country & considered as target groups for various health education activities. Though various schools have implemented dental education programs, nevertheless, oral health still remains neglected as children are unaware of oral diseases thereby increase in prevalence & incidence of caries & periodontal disease. Positive influence on Knowledge, Attitude & Behavior requires integrated health education & health promotion approach (Friel *et al*., 2002). However imparting health education is a major problem because it involves reshaping the attitude of people as well as their re-education.

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Oral health is related to behavior, education on maintenance of oral hygiene, brushing habits & importance of visiting dentist; such simple measures can help an individual to improve their oral health status. Better oral health can improve children's nutritional intake thereby enhancing their growth & development. Information on oral health in schools should be on wider basis. School authorities, dental care providers, parents should work together to provide comprehensive oral health care for children.

It has been shown that Indian children have low level of oral health awareness & practice as compared to their western counterparts. Little is known about oral health attitudes & behavior of children from developing countries (Al-Ansari *et al*., 2003).

Therefore with this background present oral health study was undertaken with the objective of to assess the impact of oral health education on knowledge, attitude & practices of high school students of semi urban area of Belagavi district.

MATERIALS AND METHODS

An interventional study was conducted in two schools located in semi urban area of Belagavi district at KVM high school, Peeranwadi & St Joseph's Orphanage high school, Santibastwad. Children between the age group of 13-15 years of 8th and 9thstandard who gave the assent were included in the study. Children who were not willing to participate were excluded.

Table 1 Comparison betweesn Pre test & Post test for Study Participants

S.No.	Factors	Pre test	Post test 1 month	Post test 3 month
		Knowledge		
1	Uses of teeth	177 (88.5%)	83 (41.5%)	111 (55.8%)
2	Dental diseases:			
	Tooth pain	64 (32%)	41 (20.5%)	76 (38.2%)
	Gum swelling	18 (9%)	41 (20.5%)	51 (25.6%)
	Tooth decay	53 (26.5%)	27 (13.5%)	73 (36.7%)
	Don't know	65 (32.5%)	91 (45.5%)	0
3	Signs of Carious tooth			
	Black discoloration	49 (24.5%)	46 (23%)	0
	Hole in tooth	26 (13%)	42 (21%)	0
	Pain in tooth	73 (36.5%)	37 (18.5%)	0
	All of above	52 (26%)	75 (37.5%)	200 (100%)
4	Signs of Gum diseases			
	Bleeding of gums	36 (18%)	47 (23.5%)	0
	Swollen gums	105 (52.5%)	78 (39%)	0
	Bad breathe	17 (8.5%)	30 (15%)	0
	All of above	42 (21%)	45 (22.5%)	200 (100%)
5	Harmful effects of tobacco			
	Yes	51 (25.5%)	131 (65.5%)	200 (100%)
	No	149 (74.5%)	69 (34.5%)	0
6	Prevent dental disease	87 (43.5%)	110 (55%)	115 (57.8%)
		Attitude		
1	Teeth is important part of body			
	Yes	178 (89%)	151 (75.5%)	200 (100%)
	No	22 (11%)	49 (24.5%)	0
2	Sweet causes dental caries	188 (94%)	174 (87%)	200 (100%)
3	Crooked teeth affect appearance			
	Yes	181 (90.5%)	155 (77.5%)	200 (100%)
	No	19 (9.5%)	45 (22.5%)	0
4	Should you visit dentist			
	regularly	162 (81%)	149 (74.5%)	200 (100%)
	Yes	38 (19%)	51 (25.5%)	0
	No			
		Practices		
1	Aids used to clean teeth			
	Tooth brush with finger	95 (47.5%)	54 (27%)	50 (25%)
	Tooth brush and paste	58 (29%)	133 (66.5%)	140 (70%)
	Gargle	45 (22.5%)	3 (1.5%)	10 (5%)
	Neem stick	1 (0.5%)	2 (1%)	0
	Salt	1 (0.5%)	7 (3.5%)	0
2	Frequency of brushing			
	Once daily	111 (55.5%)	79 (39.5%)	111 (55.5%)
	Twice daily	89 (44.5%)	121 (60.5%)	89 (44.5%)
3	Change of tooth brush			
	Once a month	179 (89.5%)	158 (79%)	0
	Once in 6 months	21 (10.5%)	42 (21%)	200 (100%)
4	Do you rinse your mouth			
	Yes	185 (92.5%)	187 (93.5%)	200 (100%)
	No	15 (7.5%)	13 (6.5%)	0
5	Have you visited dentist			
	Yes	19 (9.5%)	40 (20%)	200 (100%)
	No	181 (90.5%)	160 (80%)	0

Table 2 Comparison between Pre test & Post test for Control Participants

S.No.	Factors	Pre test	Post test 1 month	Post test 3 month
		Knowledge		
1	Uses of teeth	152 (76%)	152 (76%)	83 (41%)
	Dental diseases:			
	Tooth pain	64 (32%)	65 (32.5%)	41 (20.5%)
2	Gum swelling	14 (7%)	13 (6.5%)	41 (20.5%)
	Tooth decay	15 (7.5%)	16 (8%)	27 (13.5%)
	Don't know	107 (53.5%)	106 (53%)	91 (45.5%)
	Signs of Carious tooth			
	Black discoloration	43 (21.5%)	43 (21.5%)	46 (23%)
3	Hole in tooth	20 (10%)	21 (10.5%)	42 (21%)
	Pain in tooth	77 (38.5%)	77 (38%)	75 (37.5%)
	All of above	60 (30%)	59 (29.5%)	37 (18.5%)
	Signs of Gum diseases			
	Bleeding of gums	24 (12%)	25 (12.5%)	47 (23.5%)
4	Swollen gums	89 (44.5%)	88 (44%)	79 (39.5%)
	Bad breathe	28 (14%)	31 (15.5%)	44 (22%)
	All of above	59 (29.5%)	56 (28%)	30 (15%)
	Harmful effects of tobacco			
5	Yes	152 (76%)	155 (77.5%)	165 (82.5%)
	No	28 (24%)	45 (22.5)	35 (17.5%)
6	Prevent dental disease	115 (51.5%)	115 (51.5%)	110 (55%)
		Attitude		
	Teeth is important part of body			
1	Yes	184 (92%)	185 (92.5%)	190 (95%)
	No	16 (8%)	15 (7.5%)	10 (5%)
2	Sweet causes dental caries	184 (92%)	184 (92%)	174 (87%)
	Crooked teeth affect appearance			
3	Yes	160 (80%)	164 (82%)	175 (87.5%)
	No	40 (20%)	36 (18%)	25 (12.5%)
	Should you visit dentist regularly			
4	Yes	164 (82%)	165 (82.5%)	170 (85%)
	No	36 (18%)	35 (17.5%)	30 (15%)
		Practices		
	Aids used to clean teeth			
	Tooth brush with finger	55 (27.5%)	138 (69%)	138 (69%)
1	Tooth brush and paste	133 (66.5%)	50 (25%)	50 (25%)
	Gargle	3 (1.5%)	10 (5%)	10 (5%)
	Neem stick	2 (1%)	1 (0.5%)	1 (0.5%)
	Salt	7 (3.5%)	1 (0.5%)	1 (0.5%)
	Frequency of brushing			
2	Once daily	83 (41.5%)	155 (77.5%)	179 (89.5%)
	Twice daily	117 (58.5%)	45 (22.5%)	21 (10.5%)
	Change of tooth brush			
3	Once a month	159 (79.5%)	165 (82.5%)	175 (87.5%)
	Once in 6 months	41 (20.5%)	35 (17.5%)	25 (12.5%)
	Do you rinse your mouth			
4	Yes	180 (90%)	180 (60%)	180 (90%)
	No	20 (10%)	20 (10%)	20 (10%)
	Have you visited dentist			
5	Yes	23 (11.5%)	23 (11.5%)	23 (11.5%)
	No	177 (88.5%)	177 (88.5%)	177 (88.5%)

The total sample size for this study was 400 (KVM high school– 200 students, St Joseph's Orphanage high school – 200 students). Study included two groups: one school was taken as study group & other as control group. Questionnaire was administered thrice (pre test, after 1 month post test & after 3 month post test) to students of both schools for the period of August 2009 to January 2010.

Data on oral health KAP was collected by means of pretested questionnaire among both the groups. After collecting pretest questionnaire, oral health education was given only to Study group where in charts were used to give information regarding maintenance of oral hygiene, brushing habits, harmful effects of tobacco & importance of visiting a dentist etc. After period of 1 month post test questionnaire was given to both the groups & health education was repeated for Study group. 3 months later post test questionnaire was collected from both groups to see the effect of oral health education.

Data was analyzed in Microsoft Excel & results were expressed in percentages. Formal informed consent was sought from head of the both schools & assent from students who were participating in the study. Teachers of school as witness have also signed, confirming that the study has been fully & adequately explained to the students. Ethical clearance was obtained from the K.LE University Ethical Committee prior to the start of the study.

RESULTS

In the study group, majority (88.5%) participants in pre test mentioned mastication as major use of teeth while after 1 month and 3 month post test (41.5%) and (55.8%)

participants mentioned mastication as major use. More than a quarter (32.5%) participants in pre test were unaware of oral diseases while after health education, all participants became aware of the oral diseases. About (24.5%) study group said black discoloration, (13%) hole in tooth, (36.5%) pain in tooth and (26.5%) mentioned all of the above as a sign of carious teeth. In post test there was a significant increase in knowledge of participants about signs of carious teeth. About awareness of harmful effects of tobacco, (25.5%) participants were aware while after 1 month post test (65.5%) study group were aware and 3 month post test all participants were aware. Out of 200 in pre test, (89%) participants agreed that teeth is also important as any other part of body, (94%) felt that eating sweets causes dental caries and (90.5%) participants agreed that crooked teeth affects the appearance, (9.5%) were not aware. Concerning the visit to dentist, (81%) said yes, (19%) were not aware. There was significant increase in attitude levels in post test but after 1 month of post test there was decrease in attitude level of study group regarding crooked teeth affect appearance. Regarding practices (47.5%) participants in pre test used tooth paste with finger & (29%) used both brush & paste, (22.5%) just rinse their mouth, (1%) use salt & neem stick. To maintain oral hygiene, (44.5%) brush their teeth twice daily & (89.5%) change their tooth brush once in a month & (10.5%) change their tooth brush once in 6 months. (92.5%) rinse their mouth after consuming food, (9.5%) participants visited dentist often whereas (90.5%) did not visit. A significant increase in practices level was found among study participants after giving health education. (Table 1)

When participants of control group were asked regarding uses of teeth (76%) mentioned mastication as a use, which was less when compared to study group and in post test (1 and 3 months) the knowledge of participants decreased steadily. Out of 200 participants in pre test (32%) said tooth pain, (7%) gum swelling, (7.5%) tooth decay & (53.5%) did not have any knowledge about dental disease. (21.5%) said black discoloration, (10%) hole in tooth, (38.5%) pain in tooth are the signs of carious tooth and their knowledge was more as compared to study group in pre test. About (12%) said bleeding from gums, (44.5%) swollen gums & (14%) bad breathe are signs of gum disease. About awareness of harmful effects of tobacco (76%) were aware of the harmful effects of tobacco & (24%) were unaware. Control group awareness is more than the study groups in pre test while in post test (1 and 3 months) the awareness level of control participants decreased rapidly. Regarding attitude of control group (92%) agreed that teeth are important as any other part of body and (92%) felt that eating sweets causes dental caries. (80%) participants agreed that crooked teeth affect appearance and (20%) were not aware. Concerning visit to dentist (82%) said yes and (18%) were unaware. In post test there was slight increase in attitude level of participants. (27.5%) used tooth paste with finger, (66.5%) used tooth brush & paste, (1.5%) gargle and (3.5%) use salt to clean their teeth. It was observed that awareness of using tooth brush & paste was higher among control group in pre test compared to study group. To maintain oral hygiene (58.5%) brush their teeth twice daily, (79.5%) change their tooth brush once in a month & (20.5%) change their tooth brush once in 6 months. About (90%) control participants rinse their mouth & (11.5%) visited dentist, whereas (88.5%) did not visit dentist. There was a significant slight increase in practices of control group but was less compared to study group. (Table 2)

DISCUSSION

Oral health enables an individual to speak, eat & socialize without active disease or discomfort. Oral health is fundamental to general health & well being, significantly impacting on quality of life. Poor oral health can have a detrimental effect on children's performance in school & later life. According to WHO, children who suffer from poor oral health are 12 times more likely to have more restricted activity days in schools & more than 50 million hours annually are lost from school due to oral diseases, most common being tooth decay (dental caries) & gum disease (gingival & periodontal diseases).

Knowledge & attitude related to oral health

In the present study every child was individually asked to answer the pre & post test questionnaire whereas study conducted in Delhi children were allocated in groups (Goel *et al.,* 2005). Common dental diseases mentioned in this study were tooth pain, tooth decay & hole in teeth. Tooth decay & pyorrhea were common diseases mentioned in a Delhi study (Goel *et al*., 2005). Of 200 participants, (81%) felt that visit to dentist regularly was must & after 3 months almost (100%) participants felt that visit to dentist is must. Another study conducted in Bangalore city among 212 children, (67.8%) agreed that regular visits to dentist keep away dental problems (Harikiran *et al*., 2008).

During pretest (26%) students felt that black discoloration, hole in tooth & pain in tooth are signs of carious tooth while after 1 month there was increase in knowledge (37.5%). In present study (94%) participants agreed that eating sweet causes caries in pre test & (100%) said yes in post test. A study conducted among children in Bangalore city showed (48.9%) children agreed that eating sweet causes caries (Harikiran *et al*., 2008).

Practices related to oral health

In present study during pretest it was observed that (40%) children brush their teeth twice daily and in post test after 1 month (56.5%) brush teeth twice daily. Similar study conducted in Bangalore revealed (38.5%) participants brush their teeth twice or more in a day (Harikiran *et al*., 2008).

In the pre test that (92.5%) children rinsed their mouth after consuming food but after giving the health education, it was observed that (93%) and (100%) practiced mouth rising during the 1st & 3rd month post test period respectively. About (94.5%) study participants & (48.5%) control participants used oral hygiene aids like neem stick, tooth pick, charcoal & salt whereas after giving health education (56.5%) study participants used tooth brush, tongue cleaner to maintain their oral hygiene & percentage for Control participants remained the same. Similar study conducted in Bangalore showed that (1.7%) participants used charcoal, (23.7%) used toothpicks &

(4.6%) used dental floss to clean their teeth (Harikiran *et al*., 2008).

Considering the adverse oral habits, it was observed that (100%) study participants did not chew or smoked tobacco in any form in pre & post test period while in control group (0.5%) participants did smoke and chew tobacco during pre & post test period. Study conducted in Bangalore showed that (2.7%) participants smoked cigarettes everyday & (94.6%) never smoked (Harikiran., *et al* 2008).

Pre versus post intervention

Pre versus post intervention results obtained in the present study showed that after giving oral health education to study group there was significant increase in their awareness level. In contrast to our study percentage of responses before intervention and after intervention was almost the same (Goel *et al*., 2005).

During the pre test period overall percentage of KAP for the study participants was (60.6%) and in control group it was (61.5%). In pre test control group had better awareness when compared to study group. After giving oral health education the overall percentage of KAP at end of 3 months was (62.6%) for study group & (56.4%) for control group. Control group did not show any improvement as health education was not given to them.

CONCLUSION

Oral health education has a variable impact on the oral health status of individuals. Results of this study suggest that oral health KAP among study participants regarding uses of teeth, visits to dentist, maintenance of oral hygiene etc. was poor in the pre test. After giving health education there has been significant increase in the KAP of study group. However not significant improvement was seen in control participants as they were not given any oral health education. Therefore periodic reinforcement of knowledge & practice related to oral health is necessary and school authorities, dental care providers, parents should work together to provide comprehensive oral health care for children.

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