



EVALUATION OF ORAL HEALTH AWARENESS, PRACTICES AND EFFECTIVENESS OF ORAL HEALTH EDUCATIONAL PROGRAM AMONG ELEMENTARY SCHOOLS CHILDREN IN HAIL CITY, KINGDOM OF SAUDI ARABIA

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ABSTRACT

Background: Disciplinary efforts by health workers along with parents and teachers through organized educational program can help school children to expand knowledge and to establish positive attitudes and behaviors toward dental health. Aim & objectives: The primary objective of the study is to evaluate how much information were left after 6 months and one year after oral health educational program. Second objective is to improve children awareness, practices and attitude toward dental health and to recognize the etiology behind the increased progression of dental diseases in Saudi children even after the beginning of oral educational programs and establish a baseline data for further explorations.

Materials & Methods: It was an observational study with a comparative design having a systematic random sampling technique. Sample size was 529 participants with age ranging between 8-11 years old. Schools were selected based on geographic criteria. Study tools were 3 sets of self-admitted questionnaires having the same items concerning oral health knowledge and practices. First set of the questionnaires represented the base line data. The second set of questionnaires were given after 6 months period and the third set was giving after 1 year. The data was displayed and analyzed on Statistical Package of Social Sciences, SPSS version 20. Data was displayed as number and percentage.

Results: At base line, 34% of children brush twice daily and increased up to 54.8% after six months. Understanding the role of dental plaque increased by 41.6% after 6 months. Gingival disease awareness improved by 21.3% at 1 year follow up. Conclusion: oral health programs proved that can be beneficial to improve children awareness and attitudes toward oral health. Because of the limited evidence based in the kingdom of such regard, it is advisable to do more studies in this topic. Due to the deficient knowledge of school children in the base line data, we recommend to provide more efforts to correct this issue

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INTRODUCTION

Dental health is considered one of the aspects which contribute to general health either medically, physically, mentally and socially and not merely the absence of disease or infirmity (1-26). There are progressing levels of dental diseases in developing countries where the community based-preventive oral care programs are not structured(27). Dental health problems have invaded Saudi populations and it is still occurring. Al-Sekait and Al-Nasser reported that the prevalence of dental caries was 52% among 6-15 years school children in 1988 (28). Whilst another study by Akpata *et al* said that 64%-74% of dental caries was found in 12-15 years children in 1997 (29). Furthermore, Al-shammery reported that urban population has a 74% dental caries for urban and 67% for rural population in 1999 (30). While in 2006, there was an increasing in prevalence in dental caries, 93.7% was found in 12-14 years old children(31). However, dental issues are not occurring in KSA only, several studies have encountered dental diseases in children. AnandHiremath *et al* reported that the overall caries prevalence was 78.9% , mean dmft was 2.97±2.62 and mean DMFT was 0.17±0.53 in india(32). CristianFunieru *et al* said that the mean DMFT value for the entire sample was 2.8, and its highest component was decayed teeth (mean DT 2)(Romania 2012)(33).

While, in Senegal the prevalence of dental caries was 52.1% in 1989 and 52.7% in 1994 (34). Luckily, dental diseases are preventable when the oral health education was provided in schools (35).

In addition to Parental education level which will reflect mostly on the caries scores by extending knowledge, attitude and practice towards oral health (33). The community based preventive programmes consisting of dental health education lectures are effective in changing the knowledge, attitude and practice about oral health of the children as well as in preventing and controlling the common dental diseases (36).

In Saudi Arabia, caries prevalence was 52% in 1986 (28). While the oral health preventive programs started in 1993 (37), caries prevalence was increasing upto 92% in 2002 (38). An Indian study showed that the prevalence of dental caries was an approximately 60% in 2005 (39) , but in 2010 there was study for preventive programs showed that there are improvements in oral health knowledge, practices and reductions in plaque and gingival scores (40). The mean DMFT of the study population in 2016 was 0.36 (41) well below than that of children aged 12 years in Senegal, which was 2.6 in 1999 according to Sembène(34). A Romanian study observed an improving of oral health of schoolchildren, as caries prevalence in 2007 decreased by 16.7% in 6 year-old children and 24.8% in 12 year-old children, compared to the values registered in 1992 (42,43). Since children are much

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more adaptable than adults to modulate a proper dental health practices and make it as habit in a young age and for the life time. Disciplinary effort must be provided by health care workers through organized oral health programs in equal with a cooperation of parents at homes. To the best of our knowledge, there is a limited studies in the kingdom with such regard.

The primary objective of this study is to evaluate how much information were left after 6 months and one year after oral health educational program. Secondary objective is to improve children awareness, practices and attitude toward dental health and establish a baseline data for further explorations.

MATERIALS & METHODS

Since the study target was children, five urban schools were chosen in different locations to have a sufficient study sample. Schools were divided based on a geographic criteria into north, south, west, east and centre. Inclusion criteria were: 1- governmental schools with learning resources. 2-age group was 8-11 years old. 3-only male students were chosen. Exclusion criteria were:1-students who are older than 11 or younger than 7 years old. 2-students who did not answer all questions.3-students who chose more than one answer. A written informed consent was taking from schools prior conducting the study.

It was an observational study with a comparative design having a systematic random sampling technique. Sample size was 529 participants. The study tools were 3 sets of self admitted questionnaires having the same items concerning oral health knowledge and practices. First set of the questionnaires were giving to students which represent the base line data.

Followed by oral health lecture presented on a power point show in Arabic language and a video show of proper teeth brushing technique. practical demonstration of a proper teeth brushing on a brushing models was done by one dental intern and two senior dental students. Each student practiced it under the supervision. At the end, every student received a moral present containing a tooth paste and tooth brush and a written instructions of maintaining oral health according to American Dental Association (ADA). The second set of questionnaires were given to the students after 6 months period and the third set was giving after 1 year to evaluate the changes in knowledge and practices. Data were displayed and analyzed on Statistical Package of Social Sciences, SPSS version 20. Data were displayed as number and percentage.

RESULTS

A total of 529 of schools children who completed participation in the study. Collected data was statistically analyzed regarding knowledge (Table1) and practices (Table 2).

Table 1 Knowledge and attitude of the children at the start of the study (baseline) and changes observed following oral health education after 6 months and 1 year

	Baseline	6 months	P-value	12 months	P-value
Brushing as a best method	79.4	85.8	.116	76.2	.32
Frequency of cleaning teeth daily					
a. Don't brush		15.5%	12.7%	15.3	.72
b. Once daily		29.5%	22.7%	25.7	
c. Twice daily		34.0%	54.8%	46.0	
d. Three daily		21.0%	9.8%	12.9	
Role of fluoride on teeth					
a. Don't know		51.6%	14.9%	25.4	.000
b. Has no role		3.6%	1.9%	2.8	
c. Makes teeth stronger & protects from decay		43.7%	80.2%	68.8	
d. Harmful on teeth		1.1%	3%	3%	
Foods causing tooth decay					
a. Don't know		7.8%	3.4%	4.4%	.075
b. Sugars		85.3%	90.4%	86.1%	
c. Fruits / vegetables		5.1%	3.8%	6%	
d. Foods and Drinks containing calcium		1.9%	2.5%	3.5%	
Early Signs and symptoms of gingivitis					
a. Don't know		40.1%	11.9%	22%	.000
b. Swelling of gums and bleeding during brushing		42.3%	76.2%	62.8%	
c. No bleeding during brushing		17.6%	11.9%	15.2%	
Knowledge about dental plaque					
a. Don't know		69.6%	24.8%	42.5%	.000
b. Layer of harmful bacteria and food debris on teeth		22.5%	64.1%	45.9%	
c. Layer of useful bacteria on teeth		7.9%	11.2%	11.6%	
Knowledge about deciduous teeth importance					
a. Don't know		46.3%	13.8%	28.2%	.000
b. Not important		15.3%	11.3%	18.7%	
c. Important		38.4%	74.9%	53.1%	

Table 2 Oral health practices at the start of the study (baseline) and changes observed following oral health education after 6 months and 1 year

	Baseline	6 Months	P Value	12 months	P Value
Children Using Tooth Brush To Clean Their Teeth	84.5%	87.3%	.814	84.7%	.72
Frequency Of Brushing Practice Daily					
a. Once		29.5%	22.7%	25.7%	
b. Twice		34%	54.8%	46.1%	.72
c. Thrice		21%	9.8%	12.9%	
a. Don't Know		45.4%	17.2%	25.0%	
Type Of Paste Used For Brushing					
b. Fluoridated Toothpaste		30.4%	65%	50.7%	.000
c. Non-Fluoridated Toothpaste		8.7%	5.1%	9.0%	
a. Thrice		54.1%	62.9%	42.7%	
Frequency Of Sugar Intake By The Children Daily					
b. Four times		5.3%	7.4%	6.7%	.000
c. More than Four		8.5%	11%	7.6%	
d. Never eat		32.1%	18.7%	43%	

The main significant difference regarding knowledge was concerning dental plaque in which 41.6% of school children became believers that dental plaque is harmful for dental tissues (Table1). Also, there was perceptible improvement toward the role of fluoride as a protective element for teeth by which 36.5% (Table1). Also, the main improvement of children practices were toward using a fluoridated toothpaste in 34.6% (Table2). Unexpected finding which had been encountered that 0.6% of children thought foods and drinks containing calcium could cause caries (Table1).

Regarding deciduous teeth, lacking of knowledge about the importance of them was receded by 36.5% (Table1).

DISCUSSION

The study aimed to evaluate children knowledge after oral health education program. We observed that almost half of the schools children at the baseline knew the correct information about the signs and symptoms of gum diseases but the horrifying matter is that almost three fourth of schools children don't know that dental plaque is the major cause of bleeding gum and periodontal diseases. This defect of knowledge might be because of the limited community dental health programs, which might be a factor accompanied with poor educated parents who do not get such information. These finding were comparable to a study done in India by Punitha *et al* (44) and Shenoy *et al* (40) in which at baseline only 1.23% and 19% of school children respectively were knew about gum diseases. Additionally, limited knowledge regarding dental plaque among children stated by Al Ansari *et al* (45) and Whye *et al* (46) where in both studies showed that 85.6% children did not know about dental plaque. These findings were in opposite to the study done by Al Omiri *et al* (47) and Humagain *et al* (48) in which only 36.3% and 26.2% of school children respectively did not know about dental plaque. Regarding the significant of fluoride, the correct knowledge is almost doubled as well as the use of fluoridated tooth paste. The significant turnover is simply because of lacking community dental health educational programs. In contrast, Peterson *et al* (49) showed that 74.9% of school children were aware of fluoridated tooth paste and were practicing with it that provides an impression of an adequate baseline. Also, Jensen *et al* (50), Smyth *et al* (51) and Whye *et al* (46) reported that the appreciable knowledge and attitude towards tooth paste in the school going children. The baseline evaluation of oral hygiene practice stated that 84.5% of school children were already using dental brushes to clean their teeth. Vasundhara Pathania *et al* (36) showed that 95.8% of school children are using dental brushes to clean their teeth while, Humagain *et al* (48) and Walsh *et al* (52) showed 100% and 96% of school children respectively used dental brushes for cleaning their teeth. In the present study, though 84.5% of school children were using dental brushes to clean their teeth but only 79.4% of school children considered dental brushes to be the most effective method of maintaining the oral hygiene. Further more, Linn *et al* (53) said that 99% children were using dental brushes but only 93% had the correct knowledge about dental brushes as the best effective tool for cleaning the teeth. We found that when school children were instructed about the importance of oral brushing, knowledge among children about oral brushing being the best method increased by 6.4%. These findings were comparable with the studies done by Vasundhara Pathania *et al* (36) in which

similarly there was an increase in the knowledge of brushing method as was observed after the oral health education. Sugar consumption was significantly increase. This might be due to the lecture content which informed the children about the risks of sugars that are not only about the quantities but also about the attitudes to maintain the good oral health in between meals in valuable ways such as mouth rinsing, chewing a sugarless chewing gum, eating raw vegetables and fruits and eating cheddar cheese (54-58). These findings agreed with similar studies done by Vasundhara Pathania *et al* Shenoy *et al* (40) and Alomiri *et al* (47) in which significant improvement in knowledge towards the sugar consumption was seen from 84.9% to 98.2% and 87.4%. Finally, in the present study regarding deciduous teeth, it was observed that knowledge had a huge increase from 38.4% to 74.9 which was statistically significant. A noticeable defect of knowledge in the base line might be a result of the shortage of information of the parents, teachers and children themselves who believe that primary teeth don't have an impact on the health of the permanent ones. Szatko *et al* (59) reported that two-thirds of the mothers agreed that care of primary dentition was unnecessary. The limitations of the study are: 1-only male students were selected. 2-evaluation of practices were not based on clinical criteria. Based on these findings.

CONCLUSION

It can be concluded that oral health programs have the potential to improve children awareness and attitudes toward oral health. As the results stated, lectures proved that can be beneficial in such improvements. However, it should be given in a frequent basis (preferable every 6 months) otherwise most of the students will not be able to retain such information. Because of the limited evidence based in the kingdom of such regard, it is advisable to do more studies in this topic. Due to the deficient knowledge of school children in the base line data, we recommend to provide more efforts to correct this issue through frequent community preventive dental programs toward children, parents and teachers. Also, coordination from ministry of education should be done to create a position for dentists in elementary schools who are responsible to guide students to the correct dental attitudes. Furthermore, activation of smart phone applications to be a reference for children in how they can keep their teeth clean is important since information in this way are more easier to retain and can provide an interesting way to learn.

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