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Research Article

The effectiveness of oral health education by peers on knowledge and performance of students in Zabol, Iran

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ABSTRACT

Oral diseases are the extensive human diseases, especially among children and more than 99% of people suffer from this disease. Oral and dental education by peers provides a good condition to form the health behaviors before adulthood. The aim of this study was to investigate the effect of oral and dental education by peers on knowledge and behavior of first grade female students in Zabol, Iran. In this quasi-experimental study conducted in 2012, 287 female primary students were randomly selected and studied in Zabol. Pre-test and post-test performed with the completing a questionnaire that was designed to assess knowledge and behavior of brushing and using sodium fluoride mouthwash. The validity of the results was determined through expert panel and the reliability was determined by Cronbach`s alpha (N=30, α=0. 77). One person from each class in the intervention group was selected as a peer educator and was educated via an education plate. The post-test was performed after one month of education. For data analysis, descriptive and analytical tests (paired and independent t-test) in SPSS 18 software were used. There was a significant difference between the mean scores of two groups in knowledge and behavior after education, so that the mean score of knowledge and behavior of students who were educated by peers were higher than that of them before education ($P<0.001$). Oral and dental education of students by peers is a simple, inexpensive, and effective method which can be used by health system, truly.

Keywords: Oral health, Peer group, Education, Students

INTRODUCTION

Oral health is one of the important branches of public health that has a significant impact on individuals' health.[1] World Health Organization (WHO) considers it as a necessity and states that the poor oral and dental and untreated oral diseases can have a profound impact on the quality of life. Failure to meet the oral and dental behaviours are associated with negative influences science with eating, talking, voice quality, and speech. Thus, paying attention to this issue is one of the programs of the World Health Organization in the area of chronic disease prevention and health promotion.[2] Oral and dental diseases are the most pervasive and common human diseases,

especially among children.[3] Approximately after six months and six years of age, primary and permanent teeth start to grow respectively. Tooth decay usually begins during childhood, but symptoms may be kept hidden for a few years from the eyes of children, parents, and the dentist.[4] More than 99% of human population are suffering from tooth decay and only a few people can be found that had no rotted teeth in their lifetime. With changes in urbanization, the incidence of tooth decay increased and reached to the current situation.[5]

In the last 5 years, a reduction in these verities and prevalence of oral diseases among the population is seen in developing countries. Dental cares have been systematically organized to increase the oral health care among children and adolescents. These advances, improved dental health of children and altered the decay pattern.[6] But its dimensions in developing countries are so vast that has been appearing as epidemic and if neglected and ignored, the number of patients will be increased daily.[7] By the efforts of public health institutions and WHO in nine industrial countries, the prevalence of caries between the years 1994 to 2004 decreased 30 to 50%. At the same time the prevalence of caries in developing countries began to increase,[8] tooth decay growth trends in our country was upward due to not knowing or weak public knowledge towards the role and importance of maintaining oral hygiene and dental health.[9]

Recent results of oral and dental status of children aged 3 to 6 show that Iranian children spend their 3rd year of life with about 2 rotten primary teeth and 6year of their life with 5rotten primary teeth.[7]

Health promotion and disease prevention is an important goal of health system.[10] According to the studies around the world, it is proven that although societies are developing and a variety of methods are used to provide better and heal their food, oral diseases are still widely seen in most people.[11] Reducing diseases particularly oral diseases is indebted to create prevention thought and promote public health knowledge. Today, all medical and dental schools worldwide have concluded that effective health education can be the best and the easiest way to ensure public health.[12] Since the 1970s, prevention and health promotion has been proposed as a practical strategy to improve community health strategy. So, oral and dental diseases and problems like periodontal disease and tooth decay are preventable with the strategies of lifestyle and behavior change. Reduction of sugar intake, proper use of fluoride compounds, and oral hygiene habits like brushing are emphasized and oral health education, helping the improvement of eating habits, and promoting preventive behaviors are the main goals of community oral health promotion programs.[13] The mini-golf health education is to change health behavior in individuals through their participation.[14] One of the educational methods is the use of peers. Through the ways that health personnel cannot, by engaging the peers, trained peers can communicate with their peers and deliver information effectively and be effective on individuals of their own age as an available model. Also by promoting empathy and trust become a good interface between health clinics and schools.[15] Peer education in schools is widely used. Advocates suggest that this is an effective method based on the belief that information, particularly sensitive information, is more easily shared between individuals of an age group. This concept suggests that peer effects can be more than adults such as teachers and professionals. Peers use different methods such as presentations, theatrical productions, support resource centers, hotlines, and person to person counseling. Peer education is not only known to school children and also includes live-in caregiver and elderly service projects. The reviewed literatures suggest that peer education can be more effective in creating positive changes in health behavior than adults' interventions.[16] Since such a study has not been done in the city of Zabol, the aim of this study was to investigate the impact of oral health education by a person's knowledge and performance of first-grade female students unusable.

METHODS

In this quasi-experimental study conducted in 2012, 287 first-grade female students were randomly selected from two primary schools from the center of the city and two schools from the suburbs and were studied in the two groups of intervention (149 persons) and control (138 persons) using a questionnaire which included demographic information (8 questions), knowledge measurement (13 questions), and behaviour (7 questions). The range of changes in 13questionsabout knowledge was from zero to13 and for 7 questions about behaviour was from zero to 10. The validity of the questionnaire and its reliability were determined through a panel of experts and by Cronbach's alpha ($N = 30$, $\alpha = 0.77$) respectively. In this way that, to determine validity of the questionnaire, it was delivered to 10 experts in education and health and dental promotion field to comment on its face and content validity. Consequently, CVR and CVI were achieved 0. 68 and 0.80 respectively.

In this study, first a pre-test was given, and then a student (3 persons preschool) who had better information and the ability to communicate than the others was selected in the comments of the teacher, students, and based on his own desire as a peer educator in each class of the intervention group. In addition, before beginning the educational, students' ability to transfer the contents was checked out. Peer educators in the intervention group school received four educational sessions of 45-30 minutes in person, using an educational CD with story content about proper eating habits, using a toothbrush, and using mouthwash. For oral health education, peer educators held a 45-minute educational session using an educational disc and through practical display and distribution of toothbrushes, toothpaste, and mouthwash for their classmates. After one month, the same students were given the test. Data collected from descriptive tests (frequency, percentage, mean, etc.)

And analytical tests (Chi-square, Mann-Whitney, t-test, and paired t-test) were analyzed in SPSS18 software.

RESULTS

Most parents of students in the experimental group (94.3% of mothers and 92.1% of fathers) and in control group (93.0% of mothers and 94.5% of fathers) had primarily to high school education. Moreover, mothers of 123 subjects (82.6%) in the intervention group and 113subjects (81.9%) in the control group were housewives and also76fathersin the intervention group (51.0%) and72fathers in the control group (52.2%) were self-employed. There were statistically no significant differences between fathers' (P=0.066) and mothers' education (P=0. 200) and also between fathers' (P=0.235) and mothers' occupied (P=0.23) in both groups.

Mean scores of both groups were similar before education and there was no significant difference (P=0.31), while the mean score of the intervention group was more tangible and significantly different after the treatment by peers. Mean score changes in knowledge for individuals educated by peers is more than that of uneducated individuals. Independent sample t - tests showed statistically significant differences between the two groups' knowledge scores after education (P<0.001) (Table 1).

Comparison of the mean scores of subcategory of knowledge in intervention and control groups that included the difference between permanent and milky teeth, taking care of teeth, brushing times during the day, toothbrush replacing time, identifying mouthwash and its time of use which before and after education by peers in the two groups showed that most scores of the group educated by peers was more than the control group in this subset (Table 2).

Mean scores of behaviour were similar in both groups before education but the independent t-test showed a significant difference (P=0. 01), also after the education, there was a significant difference. Mean changes in the behaviour of individuals educated by peers are higher than that of untrained individuals. Independent sample t-test showed statistically significant difference between behaviour score changes of the two groups after the education (P<0.001) (Table 3).

Comparison of sub-behaviour means scores in the two groups of intervention and control which included brushing, the way and frequently of brushing, using mouthwash, and the way and frequency of its use, revealed that most scores of education group in this subset were more than that of the control group before and after education by peers in the two groups (Table 4).

Table 1: Comparison of mean and standard deviation of knowledge scores in both intervention and control groups before and after education.

Knowledge / Group	After intervention	Before intervention	Changes
	Mean ± SD	Mean ± SD	Mean ± SD
Intervention	1.14 ±10.22	1.32 ± 5.50	1.80 ± 4.72
Control	1.41 ±5.65	1.21 ± 5.34	1.50 ± 0.30
Maximum score		13	
Test results	22.44=t	df=284	p<0.001

Table 2: Mean ± SD of knowledge scores before and after intervention in the two groups of intervention and control.

Sample Question	Control group		Intervention group	
	After intervention	Before intervention	After intervention	Before intervention
The difference between primary and permanent teeth	0.4±0.21	0.33±0.13	0.16±0.97	0.32±0.12
Taking care of teeth	0.46±0.31	0.23±0.05	0.00±1.00	0.25±0.06
Frequency of brushing per day	0.21±0.54	0.22±0.49	0.16±0.68	0.24±0.43
Time of toothbrush replacement	0.25±0.25	0.24±0.21	0.34±0.73	0.25±0.22
Identifying mouthwash	0.03±0.24	00±0.07	0.03±1.02	02.0±0.14
Time of using mouthwash	0.08±0.00	0.00±0.00	0.09±0.57	0.001±0.01

Table 3: Mean and SD of behaviour scores before and after intervention in the two groups of intervention and control.

Behavior / Group	After intervention	Before intervention	Changes
	Mean and SD	Mean and SD	Mean and SD
Intervention	1.10 ± 7.90	1.33 ± 3.21	1.60 ± 4.69
Control	0.96 ± 3.01	1.08 ± 2.84	1.09 ± 0.16
Maximum score	10		
Test Results	27.64=t	df=284	P<0.001

Table 4: Mean ± SD of behavior scores before and after intervention in the two groups of intervention and control.

Sample Question	Control group		Intervention group	
	After intervention	Before intervention	After intervention	Before intervention
Brushing	0.20±0.95	0.31±0.89	0.00±1.00	0.28±0.91
Frequency of brushing	0.32±0.61	0.38±0.67	0.31±0.84	0.49±0.60
Way of brushing	0.65±0.83	0.63±0.62	0.43±1.80	0.69±0.87
Use of mouthwash	0.00±0.00	0.08±0.007	0.11±0.98	0.26±0.07
Time of using mouthwash	0.00±0.00	0.00±0.00	0.43±0.75	0.16±0.02
The way of using mouthwash	0.14±0.02	0.14±0.02	0.37±1.90	0.38±0.10

DISCUSSION

One of the important and worth mentioning points in Islamic commands is maintaining and improving health and emphasizing the priority of prevention over treatment[17] and health orders of Imams (peace be upon them) also confirms this. Moreover, treatment of dental and oral hygiene control prior to pulling teeth has been considered by great scholars of Islamic medicine.[18] Oral health education of the community is a process that its main steps include informing, motivating, and assisting individuals in achieving and maintaining healthy behaviors leading to a healthy lifestyle. In fact, the educational program is an inseparable part of any type of therapy, prevention, and health improving activity in personal and social level.[19]

The results of this study indicated a significant increase in the amount of knowledge of intervention group from pre-test to post-test. In other words, the educational intervention on knowledge and performance of the students had a positive impact on oral health. Other studies indicate a positive impact of education on knowledge and performance of students and other segments of society.[17-20] About the effectiveness of educational programs with peers, this educational method was effective in raising knowledge and performance but in the study of Akbarzadeh et al. about preventing AIDS, the educational method by peers outperformed the education by teachers only in increasing knowledge and the results can imply that this educational method in this age group not only can be effective in raising knowledge but it can also be effective in improving performance. Of course, this difference could be due to differences in subjects of the study. The study of Azizi et al. Suggested that methods of education by peers have been more effective than education by press[20] and also Frank Van Der Maas showed in his study that peer education is an effective method in relation to knowledge and misconceptions about HIV/AIDS.[22] On the other hand in researches, the economic evaluation of education by peers compared with other preventive educational methods showed that education by peers is very advantageous and more economical.[17] In this study, only12.1percentof the students before the education knew the difference between permanent and primary teeth that reached to97.3%after education and 23.5% knew that it is better to brush the teeth three times a day which increased

to 77.9% via peer education.18.8% of them brushed three times a day before education that reflects unfavourable condition of brushing of these students that after the education increased to75.2%. Brushing as the ultimate goal of health behaviour and health education was considered in this study. Karanza illustrated "it would be sufficient if teeth are carefully cleaned with all equipment within 24to48 hours".[23]

One of the factors that can prevent tooth decay is fluorine. WHO emphasized the need for strengthening the effective use of fluoride to prevent dental caries in the 21st century as an important factor in public health and recommended abundant supply of fluoride toothpastes in developing countries. He continues the experience of dental rots in China in primary tee this high while children show relatively less severe patterns of caries in permanent teeth. However, recently due to the growing consumption of sweets and inadequate use of fluoride, a relatively increased growth in permanent tooth caries has been observed in some parts of China.[24] In this study, 7.4% of the students used mouthwash before the education which increased to91. 9% after the education. Considering that sodium fluoride mouth wash as undesirable flavour, most people refused to use it and regarding good growth in its use after the education of peers it can be concluded that education allows learning, feelings, attitudes, and values about the things learned better be expressed. In addition, a peer as an available model has some effects on people in the same age and disseminates health information and peers as a powerful interface between health systems and other peers by promoting empathy and trust.[17]

According to the findings of the present study on the effectiveness of peer education on knowledge and performance of oral health in first-grade students, this study can be applied in this age group for training health and preventive principles as a new method of education. Impact of peer as an educator and consultant is an important and economically cost effective method and it is recommended that peer education method be used to teach about the health issues in elementary group students.

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