Original Article

The Role of Trained Mothers in Varnish Fluoride Therapy Program

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Abstract

Background and Aim: Considering the high rate of the dental caries in Iran, prevention, especially in children is necessary. One of the preventive methods is varnish fluoride therapy (VFT). Along with the limited access to dentists and highly priced dental services, providing simple preventive services by volunteer mothers seems to be a suitable solution. The aim of this study was to evaluate the success rate of training varnish fluoride therapy to volunteer mothers comparing two different educational methods were used.

Materials and Methods: This was an interventional educational study. The target population was educated volunteer mothers having a child at school age. Fifteen mothers were trained in two different methods. The first group was trained by multimedia and the second by multimedia plus a discussion session. Then every mother did VFT on her child. The practice of mothers of each group was evaluated. Finally, the average score of each group was compared to evaluate of two educational methods.

Results: The average practice score in the first group was 74, and in the second group was 97. (Pvalue<0.001)

Conclusion: The result of this study showed that the second educational method (multimedia and discussion session) was more effective than the first educational method (multimedia).

Key Words: Varnish fluoride therapy, School based oral health program, Preventive dentistry, Mothers, Educational methods.

Introduction:

Dental caries is the most common disease of childhood (1). Primary teeth are important not only for function and esthetic but also for saving space for eruption the permanent teeth as a space maintainer to help them grow in their correct place (2). Although dental caries in Iranian children is in a low rate in comparison to, it is not acceptable comparing to other countries in the Middle East region. According to the health ministry reports, Iranian children have experiences average 5 decayed teeth at the beginning of school age which 4 of them still have untreated decayed. And every 12 year-old child has an average of 2 permanent decayed teeth while only 20% of them have sound teeth (3).

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According to the high rate of dental caries and importance of primary teeth, maintenance of primary teeth and prevention of caries of these teeth seems to be necessary. There are different ways to reduce dental decays. Oral and dental health education as an effective way in prevention of dental caries and periodontal disease is one of the dentists' duties. Dentists are the best and most effective source to transfer information to parents (2). As parents can play a vital role in helping their kids have healthy mouth. Their kids, role and knowledge, attitude and practice is the first item to supply children's oral health (3). Oral health interventions can improve parents' health behaviors and ability to transmit their knowledge to their children (4). The best sources to improve parents' awareness are dentists and other stuff, and as dental decays can be preventable, dentists should pay attention to prevention in addition to treatment (5). A study about oral and dental health on British children in 1993 and its comparison to one and two decades earlier showed reduction of dental caries and dental trauma due to increasing parents' knowledge (6). A study in India also showed the relationship between parents' attitude and dental diseases in primary school children (2).

The most common ways to prevent dental caries are mechanical methods to plaque control and plaque removal. Tooth brushing and flossing are the main mechanical ways (1). Protecting teeth by fluoride is another way. Water fluoridation and other forms of fluoride are the most effective healthy ways in society to prevent dental caries. It showed that correct use of fluoride is fairly immune and cost-effective (3). In systemic fluoridation, the optimum of fluoride in drinking water is 1 ppm (6). There are different ways of local fluoride therapy; one of them is varnish fluoride. Varnish fluoride therapy for all children and on all teeth 2 to 4 times a year can reduce dental caries 30% to 40% (7). Fluoride varnish makes enamel take high dosage of fluoride and it has a low dose in comparison of gels and mouth rinses. And it's the most useful and cost-effective way of fluoridation. The reasons of preference of fluoride varnish are immunity, simple using, and high concentration of fluoride in enamel surface (6). Studies offer fluoride varnish as a public health unit for reducing dental caries in high risk people (8, 10).

On the other hand studies show that using local fluoride is not limited to dentists, and educated people can do it as well. In USA in addition to dental professionals in 45 states, dental assistants are permitted to do varnish fluoride therapy too (11). However in some states it should be done on a dentist's supervision, so these people should take the course and have the license (12). According to the high rate of dental caries in the society in this study we evaluate the effectiveness of varnish fluoride therapy by nonprofessional people and explore whether it is successful to help develop and accelerate promotion of health in society.

Materials and methods:

This interventional study evaluates trained mothers for varnish fluoride therapy. Samples were mothers with college education who had primary school age kid and volunteered for training. Training course was provided by a pedodontist, practiced VFT on their children. Mothers were ensured that a specialist in pediatric dentistry is observing their actions for their children and prevents of any problem for their kids. He is responsible and participates in the study. Two different educational methods on preventing service were evaluated. An educational film was produced. Then the

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procedure of varnish fluoride therapy was listed and the items of evaluation were determined in a checklist by a peddontist and a specialist in oral health. The check list was a table containing 13 items that mothers should do during varnish fluoride therapy. Evaluators were giving the mothers score for each item from 0 to 2 according to their practice. Educational film contained two parts. The first part was theory explanation about tooth structure, dental caries process, preventing methods, fluoride and its forms, varnish fluoride and its traits. In the second part of film we showed practically the correct method to use varnish fluoride and materials and stuff that we need. The study consisted of two groups; the number of samples in each group was 9 people. The first group was trained by the film were given them them to watch films and they were asked watched it. The second group's education was collecting mothers in a place and watching the film together and after that having a discussion session. In this session we explain more about the film and want mothers to ask their probable questions about the film or about varnish fluoride therapy. After educational part, watching the film for the first group and discussion session in the second group, we start performing the project and evaluate their practice on their children. They participated on practical part of study with their 8-9 year old child. The necessary stuff for varnish fluoride therapy containing one package of fluoride varnish, gauze for drying teeth, cotton roll for isolating teeth, plastic gloves, mask, a pence for putting and removing the cotton rolls and a mirror for pulling over check and tongue of the child, was given to them and they started to do it on their child where light was sufficient. Children were sitting in a way that will give adequate opportunity to visibility. During varnish fluoride therapy evaluators supervised the process and gave score according to the check list. Finally, the results of study were analyzed by chi-square.

Results:

In the first group 6 mothers from 9 that were trained by multimedia, participated in varnish fluoride therapy. In the second group that was educated by multimedia and discussion session all 9 mothers participated in varnish fluoride therapy. The final score was standardized and calculated in a range of 0-100 scale for mothers in both groups respectively was 74.4 and 97.9. The practice of mothers in the second group was significantly better than the first group. (P value <0.001)

Data for all 13 items showed that mothers in the second group had better practice almost in each items. All of mothers in the first group had forgotten to ask students about brushing while no one in the second group had forgotten that. Mothers in the second group had significantly better practice in applying varnish fluoride on the teeth of upper jaw. (P value=0.05) This item in the lower jaw was better in the second group, too. In this group except two mothers that couldn't isolate teeth well, others did the levels correctly. Also, most of mothers in the first group had forgotten post treat instructions. Mothers in the second group were better in doing items such as being sure about brushing, drying teeth of upper jaw, isolation of teeth of upper jaw, applying varnish fluoride on the all surfaces of teeth of upper jaw, applying varnish fluoride on the all surfaces of teeth of lower jaw, and postoperative educations. For the first item; "being sure of brushing", no one in the first group took any score.

Totally, in every item mothers in the second group were better than the first group, and in 6 items the difference was significant. In nine

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items every mothers in the second group had better practice. Table 1 show in details.

Table 1: The result of VFT by mothers in both groups in each assessed item

Items	Groups	Group 1		Group 2		P value
		properly	improperly	properly	improperly	
1	Communication with child	3	3	9	0	0.044
2	Being sure about brushing	0	6	9	0	0.000
3	Correct position for the child	5	1	9	0	0.400
4	Drying teeth of upper jaw	3	3	9	0	0.044
5	Isolation of teeth of upper jaw	2	4	8	1	0.047
6	Applying varnish fluoride on the all surfaces of teeth of upper jaw	3	3	9	0	0.044
7	Being dry after VFT on upper jaw	4	2	8	1	0.341
8	drying teeth of lower jaw	4	2	9	0	0.143
9	Isolation of teeth of lower jaw	2	4	7	2	0.172
10	Applying varnish fluoride on the all surfaces of teeth of upper jaw	3	3	9	0	0.044
11	Being dry after VFT on lower jaw	5	1	9	0	0.400
12	Postoperative educations	2	4	8	1	0.047
13	Organized set	4	2	9	0	0.143

Discussion:

The aim of present study was to evaluate skills of volunteer mothers on varnish fluoride therapy and extending the results to oral health programs by training non-professionals individuals for doing this preventive service in schools and kindergartens.

The results of the study showed that volunteer mothers could cope easily with the skill of VFT. The difference between two groups confirmed that multimedia is a good prerequisite for training the VFT. However, the extra education could improve their capabilities to an acceptable level of performance.

The procedure had weakness points; one was the ignorance of doing some steps. This might be easily improved by a printed checklist of activities in their hand. The isolation of teeth, especially in lower jaw was another problem during applying VF, as it is an important difficulty even if it is over dental unit and by using air spray. Using more cotton rolls helps to overcome this problem. By the way, after several times, the practitioners learn very well how to manage the saliva isolation. Adding more training activities into multimedia to improve the isolation may be helpful as well.

The unequal distribution of dental workforce is a worldwide problem of oral health systems, as well as in Iran. In rural and disadvantaged areas few dentists provide dental services (Tahani et al. 2013). The solution to overcome the shortcomings of dental workforce for providing preventive services is training the dental hygienists. However, in case of lacking dental hygienists, mothers can act as primary oral health care providers.

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In this study we used only educated mothers to improve the understanding the procedure. As we saw in results, well-trained mothers in the multimedia plus group carried out an acceptable varnish fluoride therapy on children's teeth. This is parallel with findings from studies in Washington, Indiana, Wisconsin and North Carolina states in America supporting the capability of nonprofessional people for varnish fluoride therapy (13, 17).

Having better skills of VFT in multimedia plus group shows that this educational method was more effective than multimedia group, and holding a discussion session is a good complementary. Another study in Isfahan also showed that an additional education meeting was very helpful (18). Findings from other studies showed workshop plus conventional methods were better than distance learning alone (19, 20). The reason for differences may be due to reinforcement of the educations by discussion session.

Conclusion:

According to the result of this study it's concluded that educated mothers who were educated varnish fluoride therapy by the method of film and discussion session, can do this preventive service. Complementary studies for low-educated mothers and by better educational method for varnish fluoride therapy is required.

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Refrences:

1. Dean J A, Avery D R, McDonald R E. McDonald and Avery. Dentistry for the Child and Adolescent. Indiana: Mosby; 2010.
2. Visavadia BG, Kumar M. A study of attitudes to oral health and prevalence of dental disease in primary school children in Delhi. J Dent. 1991; 18(8):351-2.
3. Daly B, Watt R, Atchelor P, Treasure E. Essential dental public health.1st edition. Oxford. Oxford University; 2013. Part 3.
4. Saied-Moallemi Z. Oral Health among Preadolescents: A School-Based Intervention in Iran: Concepts, Models, Determinants, Promotion. LAP LAMBERT Academic Publishing; 2010.
5. Pninkham J, Casamassimo P. Pediatric dentistry. 4th edition. W.B. Saunders Company; 2005. Chap 12.
6. Harald O. Heymann, Edward J, Swift Jr, Andre V. Art and science of operative dentistry. 6th edition. Mosby; 2012. Chap 3.
7. Azarpazhooh A, Mai PA. Fluoride Varnish in the Prevention of Dental Caries in Children and Adolescents: A Systematic Review. JCDA. 2008;74(1):73-79
8. Gibson G, Jurasic MM, Wehler CJ, Jones JA. Supplemental fluoride use for moderate and high caries risk adults: a systematic review. J Public Health Dent. 2011; 71(3):171-5.

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[DOI: 10.29252/ijpd.9.1.59]

9. Arruda AO, SenthamaraiKannan R, Inglehart MR, Rezende CT, Sohn W. Effect of 5% fluoride varnish application on caries among school children in rural Brazil: a randomized controlled trial. Community Dent Oral Epidemiol. 2011; 63(4):48-53.
10. Gugwad SC, Shah P, Lodaya R, Bhat C, Tandon P, Choudhari S, Patil S. Caries Prevention Effect of Intensive Application of Sodium Fluoride Varnish in Molars in Children between Age 6 and 7 Years. J Contemp Dent Pract. 2011;12(6):408-13.
11. Zwieg K. Fluoride in caries control. 2011 April [cited 2011]; Available from: http://ida.cdeworld.com/courses/4501-Fluoride_in_Caries_Control. Accessed: August 2, 2013.
12. California dental association. Topical fluoride application. California 2009 [cited 2011]; Available from: http://cando.ucsf.edu/Documents/AB667TopicalFLBill.pdf. Accessed: August 10, 2013.
13. Lewis Ch, Lynch H, Richardson L. Fluoride Varnish Use in Primary Care: What Do Providers Think? Pediatrics. 2005; 11(5); 69-76.
14. Swigonski NL, Yoder KM, Maupome G, Ofner S. Dental Providers' Attitudes Regarding the Application of Fluoride Varnish by Pediatric Health Care Providers. J Public Health Dent. 2009; 69(4):242-7.
15. Okunseri C, Szabo A, Jackson S, Pajewski NM, Garcia RI. Increased Children's Access to Fluoride Varnish Treatment by Involving Medical Care Providers: Effect of a Medicaid Policy Change. Health Serv Res. 2009; 44(4): 1144–1156.
16. Washington State School-based Sealant and Fluoride Varnish Program Guidelines, Third Edition, June 2012, At http://here.doh.wa.gov/materials/sealant-fluoride-varnish-guidelines/15_OHsealguid_E12L.pdf. Accessed: September 1, 2013.
17. Slade GD, Rozier RG, Zeldin LP, Margolis PA. Training pediatric health care providers in prevention of dental decay: results from a randomized controlled trial. BMC Health Serv Res. 2007; 7:176.
18. Jafarzadeh M, Eshghi A, Saneei M. Effect of educational films compared to conventional behavior control methods in pediatric dentistry on the attitude of dental students. Journal of Isfahan Dental School. 2011; 6(5):561-567.
19. Bahri, N, Bagheri S, Erfani M, Rahmani R, Tolidehi H. The Comparison of Workshop-Training and Booklet-Offering on Knowledge, Health Beliefs and Behavior of Breastfeeding after Delivery. Iranian Journal of Obstetrics, Gynecology & Infertility. 2013;15(32):14-22.
20. Hamidzade Y, Nemati A. Comparing the effect of presence and distance education methods by health staffs and health volunteers on knowledge of mothers feeding their infants and infant anthropometric changes. Report of research project. 2008. At: http://eprints.arums.ac.ir/1666/1/hamidzadeh.pdf. Accessed: September 15, 2013.

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