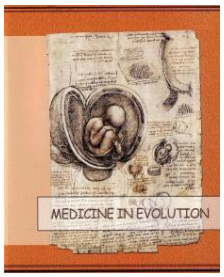
A model of experiential learning for teenagers' caries-protective diet



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Abstract

Teenagers' reluctance to learning in general and their demand for non-traditional, interactive leaning methods, on one hand, and the difficulties in changing the oral health-related behaviors, on the other hand, represent a permanent challenge for oral health educators. Experiential learning was developed by David Kolb and promotes the concept of learning by doing, and with better chances for teenagers to get engaged in the educational process using as learning cycle: concrete experience ("Do"), observation and reflection ("Observe"), forming abstract concepts ("Think"), testing in new situation ("Plan"). As part of the "Com4You" oral health promotion program, Department of Oral Heath and Community Dentistry from Faculty of Dentistry, UMF "Carol Davila", Bucharest, designed educational lessons using experiential learning and applied them in small groups of teenagers in schools. The present article describes the two activities used in Com4You program for promotion of caries-preventive diet for adolescents, that conducted to a decrease in the consumption of cariogenic food compared to control group (traditional learning) as shown by the results of a 2 -year longitudinal study. The activities performed in small groups (5-10 subjects) and with a medium duration of 15 minutes each, aimed to raise the awareness on the proper eating behavior in preventing dental caries and to offer a better understanding of the food products characteristics that makes them cariogenic/caries-protective.

Keywords: oral health education, adolescents, diet.

INTRODUCTION

Oral health promotion remains one of the priorities of the World Health Organization due to the fact that dental caries affects half of the global adult population even though it is mostly preventable through optimum life-style and oral health behavior [1,2].

Thus, proper education should start early in life in order for children and adolescent to have enough information and to be encouraged to practice the proper oral health- related habits to prevent dental caries as future adults [3]. Applied to oral health education, experiential learning shows improvements in teenagers' oral health status and behavior, as shown on a 2-years longitudinal study that took place in Bucharest, Romania [4].

Aim and objectives

Teenagers' cooperation for education represents a challenge regardless the subject but when it comes to oral health changing their habits such as oral hygiene, dental check-up attendance or diet, the challenge is even tougher [5]. Diet is the most difficult oral health-related behavior to be changed [6]. Apart from that, children and adolescents nowadays demand methods of education that imply interaction, active participation, critical thinking and practical activities. Experiential learning was developed by David Kolb and promotes the concept of learning by doing. This method has good results for all age ranges but it is proper for adolescents who are mostly reluctant [7].

MATERIAL AND METHODS

The Experiential Learning activities for this oral health educational lessons offered to the teenagers enrolled in the program were developed by the research and teaching staff in the Department of Oral Heath and Community Dentistry from Faculty of Dentistry of "Carol Davila" Medicine and Pharmacy University in Bucharest, Romania, guided by trainers from TES Association, that activate in non-formal education of teenagers and young adults. The lessons were designed accordingly to the base principles of experiential learning (Kolb's experiential learning cycle): concrete experience ("Do"), observation and reflection ("Observe"), forming abstract concepts ("Think"), testing in new situation ("Plan"). The team created two activities that aimed to offer the teenagers the clear image of how the diet influence the risk of dental caries, to reflect on their eating behavior and to motivate them to make the right decision regarding the food consumption that prevent cavities.

These activities were performed in small groups of teenagers at a time (5-10 subjects 13-16 years old), with a duration of 15-20 minutes each, in the classrooms of the schools selected for the program, and coordinated by one of the faculty staff who were trained and calibrated prior to the program applied in schools. During all the lessons held, all the participants were willing and interested in engaging in the activities proposed and also pleased by the content and method of learning, as declared at the end of the lesson in the feedback forms.

Activity 1. Role of diet on dental caries development

Aim: Raising awareness of the proper eating behavior in preventing dental caries

Method of education: Take-a-stand

Description of the educational process:

Teenagers are asked to stand in the center of a free area in a classroom that are divided by an imaginary line in two sectors accordingly marked as "FOR" and "AGAINST". Teenagers will be informed by the coordinator (trainer) that they are to be read 10 statements related to diet (Table 1). After each statement each of them move on one of the FOR/AGAINST sector depending on their opinion and own habits regarding the statement

presented (in order to stimulate them to reflect and assume). After all of the teenagers chose their position, the coordinator randomly selects 2-3 of them to express the reasons for their stand (on one hand in order for specialist to understand not only if the teenagers have enough or the right information about oral health but also what is the motivation behind children oral health-related behavior; on the other hand, in order for peers to stimulate their active listening and critical thinking, to discover other perspectives without being judgmental). After the argumentation of each participant chosen, no discussion or comments are made by either the coordinator or the other participants. After all of the 10 statements are read, the coordinator discusses each statement, validates the proper habits, reinforces right arguments given by the participants and offers easy to understand reasons why the improper habits could lead to dental caries or corrects the wrong arguments heard).

Table 1. Activity No.1 - Statements

1.	After a meal, it is good to eat hard food like peanuts or pistachio
2.	When I eat chocolate I use to it square by square
3.	I drink acidic beverages, for sure it will remove the dental plaque
4.	I don't eat milk products because they affect my teeth
5.	I need energy, I have to eat something sweet
6.	Fresh juices are healthy, for sure they don't affect my teeth
7.	I brush my teeth after every meal, for sure this will reduce the dental caries development
8.	I like to chew gum until it gets hard
9.	I like to snack a lot between meals
10.	When I eat something hot, I cool my teeth with cold juice

Activity 2: Caries-Protective food vs. Cariogenic food

Aim: Getting to know the food that protects against or favors dental caries

Method of education: Brainstorming, debate

Description of the educational process:

Teenagers are divided into groups of 5 participants and each group are offered a set of 47 cards with different food products (Table 2). They are informed that they have 5 minutes to work together and separate the cards in two categories: food that protects against dental caries (or it has a neutral effect) and food that favors the initiation and evolution of dental caries. At the end, two participants chosen by the group are asked to represent the categories and expose the results as decided by the team: the composition of the aforementioned categories and the reasons why each food product is protective or harmful. When there are two parallel working groups, one participant from one group presents the caries-protective food while one participant from the other group presents cariogenic food. When there are divergent opinions between groups regarding one product, participants are encouraged to present concise arguments to support the different perspective. The coordinator assists during the presentation and moderates the debate and at the end of the discussions between participants validates the right answers and arguments, enforces the correct decisions made by the participants and corrects the wrong arguments heard. Moreover, in order to stimulate the teenagers to make judicious decision, the coordinator invite participants to reflect and reason how the carious risk changes when we change some characteristic of certain food products, for instance: tea or coffee without/with added sugar, milk without/with chocolate corn flakes, homemade yogurt with fresh fruits /prepackaged fruit yogurt wit added sugar, eating a bar of chocolate at a time / eating a small square of chocolate at a time but repeatedly during the entire day. At the end of the activity teenagers should remain with the key message that cariogenic food is represented by acidic, sweetened, rich in processed carbohydrates, starchy products consumed in high quantity or frequently during the day and not followed by oral hygiene. Moreover, for a clear final message with a visual impact, the

coordinator writes down on the whiteboard, on 3 separate columns, the absolute cariogenic products, absolute caries-protective products and relative products (that change their potential for caries-development depending to the context). On the other hand, teenagers should be stimulated to consume during snacks products such as fruits, rich in fibers, solid and drink water when thirsty.

Table 2. Activity No. 2 - Cards

Pastry	Bread	Pasta	Potatoes
Cereals	Whole grains	Corn	Cocktails
Water	Coke	Fresh juice	Sweet chewing gum
Caramel	Candies	Cakes	Dark chocolate
Minty chewing gum	Whipped cream	Honey	Cheese
Cheese	Milk	Butter	Oranges
Citric fruits	Bananas	Quince	Forrest fruits
Carrot	Celery	Apple	Popcorn
Walnuts	Peanut	Almonds	Hazelnuts
Pistachio	Pork meat	Beef meat	Fish
Coffee	Fruit yogurt	Fast food	Potatoes chips
Tea	Energizer	Mineral water	

RESULTS

Seventy-six adolescents who took part at "Com4You" Oral Health Promotion Program and attended all of the 4 lessons offered using experiential learning, improved their eating habits by avoiding cariogenic food. Thus, the daily consumption of milk chocolate or toffees decreased from 44,3% to 27,9%. Also, sugary and starchy food such as cakes or biscuits were consumed at least once a day by less teenagers at the end of the program: 32,8% compared to 39,3% at baseline.

The greatest improvement was observed regarding the sweetened drinks like tea, coffee or milk: more than half of the adolescent who used to add sugar to their drinks became aware of its impact on the dental integrity and avoided it (decrease from 57,4% to 24,6%). Beverages were consumed daily by a low percent of subjects (13,1%) and the results showed only a small decrease (11,5%).

Moreover, these result become more satisfactory when we take into consideration that, compared to this test group, the subjects in control group, who were offered only one oral health educational lesson, through traditional learning-oral presentation, increased the consumption of all these cariogenic food, except for sweetened drinks.

DISCUSSIONS

The experiential learning method was applied in Com4You program as a pilot study but, due to the promising results related to the behavioral changes obtained, and also the satisfying cooperation and feedback from the participant teenagers, the Department of Oral Health and Community Dentistry that initiated the program continued to apply the method and lessons designed on more children communities as part of the practical activities with the dental students during the semesters. However, the research team consider a follow-up study to assess the stability in time of the results obtained taking into consideration that behavior related to diet is difficult to change. The research team recommends this method for oral health promotion among teenager but proper training is mandatory to perform the experiential education lessons.

CONCLUSIONS

Experiential learning for oral health promotion in general, and for teenagers' education for caries-protective diet in particular, had satisfying feedback and promising results. The lessons designed and proposed as a model in the present article are recommended to be applied in community dentistry.

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