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Tooth Brushing Behavior in 6-11 Year Olds Children and the Importance of a Break of Tooth Brush Once a Day in School

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Abstract

Literature on dental health behavior is consistently developed and mainly based on data from adults. There are also researches realized on children's dental health behavior, but they are less frequent and realized just in a little number of countries. Therefore our aim is to identify if introducing the tooth brush in primary school once a day influence the oral hygiene. In order to achieve our purpose we designed our research using quantitative approach, conducting specialized social survey before and after the 4 month intervention on three primary schools from Timisoara. The research sample was constructed from 6-11 years old children coming from different but not representative schools from Timisoara area. The sample was done by 783 selected children representing the entire population of children from the 3 schools, respecting age selection criterion and the informed consent agreed and signed by parents. Frequency of tooth brush was significantly changed in good (p=0.000, Person's r value= 0.763) after the 4 month brushing tooth at school with the teacher, we noticed also a changing behavior about oral hygiene, 83.4% of the children brushing teeth at least two times a day.

Keywords: children health behavior, oral health, oral health education, oral hygiene, self-care, tooth-brush.

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Introduction

According to White "oral health is everyone's responsibility and by expanding oral health education to the wider community so that nurseries, children's centers and primary schools all play a role we can reduce dental decay and ultimately improve the oral health of the local population" (White, 2014). Therefore oral hygiene is a crucial factor in having a good oral health, which is associated with overall health and health-related quality of life. Tooth decay and gum disease are the two most common, largely preventable dental problems (Angelopoulou *et al.,* 2016; Buunk-Werkhoven *et al.*, 2011; Lopez-Gomez *et al*., 2016). At risk are those who are among the most vulnerable in our society and who are dependent on others to care for them, such as young children and frail older people who need help to stay independent (Ota *et al.,* 2013; Jurgensen and Petersen, 2011; Tolvaninen *et al*., 2010; Stewart *et al.,* 1996). The literature shows that oral self-care practice, individual belief and attitudes are considered to have an important role in oral health care (Kumar *et al*., 2011).The relation between psychosocial dimension and oral health behavior has been analyzed by several different studies (Davies & Bridgman, 2011). For example the theory of one reasoned action, which used to predict patients' tooth brushing and dental flossing (Ajzen, 1980). Tooth brushing, dental floss and mouth washer has been used for many years in conjunction for removing dental plaque in between teeth (Farooqi *et al.,* 2015; Hernandez-Martinez *et al*., 2014; Poklepovic *et al*., 2013; Marinho *et al*., 2003).

Dental caries is one of the most common global childhood diseases and is entirely preventable if we have a good prevention system (Bourgeois & Llodra, 2014). Good oral health is dependent on the establishment of the key behaviors of tooth brushing with fluoride toothpaste and controlling sugar snacking (Petersen *et al*., 1992; 2003; 2005; 2007; 2012). Primary schools provide a potential setting in which these behavioral interventions can support children to develop independent and habitual healthy behaviors (Ferrazzano *et al.*, 2016; Shyama *et al*., 2012). Numerous studies have related dental caries experience of children with the frequency of their tooth brushing or with their oral cleanliness at the time of examination (Casanova-Rosado *et al*., 2014; Martignon *et al.,* 2012; Stroski *et al*., 2011; Casanova-Rosado *et al.,* 2013). In other studies, the incidence of new carious lesions over a number of years was related to oral cleanliness during the same period of time. Dental caries can be largely prevented by highly efficient removal of plaque by tooth brushing and flossing (Petersen *et al*., 2005; Lima *et al*., 2016; Pang *et al*., 1992). However, the available evidence suggests that regular prophylaxis by dental personnel is essential to maintain the necessary high level of efficiency. It is not known to what extent individuals are capable of removing their own plaque to the same high level of efficiency. It is probable that only highly-motivated individuals can maintain such a high standard of plaque control (Andlaw, 1976).

Behavior change in an individual can reduce a person's risk of disease, yet changing behavior in patients has proven to be difficult (Prasai Dixit *et al*., 2013; Fejerskov & Kidd, 2008). The Stages of Change Model devised by Prochaska and Di Clemente (1982) suggest that there are five stages of behavior change. These stages of behavior changes are: *precontemplation* when the person not thinking about changing yet, *contemplation* – when the person begins to think change may be a good thing, *preparation* when the person makes some small changes, *action* – when the person undertakes the new behavior and the *maintenance* when the new behavior becomes habitual (Glatt *et al*., 2015; Horn *et al*., 2014; Blanco *et al.,* 2015).

The aim of the study was to evaluate the oral health related knowledge, tooth-brushing behavior and attitude towards schoolchildren aged 6-11 years from Timisoara, Romania, and to analyze how health risk factors are related to socio-demographic background; and to identify if introducing the tooth brush in primary school once a day influences the oral hygiene and the oral health behavior. In order to achieve our aim we designed our research using quantitative approach, conducting specialized social survey before and after the 4 month intervention on three primary schools from Timisoara.

Material and method

In order to achieve our purpose we designed our research using quantitative approach, conducting specialized social survey. To assess the impact of a school-based tooth brushing intervention aimed at encouraging primary school children to brush their teeth daily at school, on cognitions, tooth brushing behavior and habit strength. We made an intervention, by putting primary school children tooth-brush once a day at school for an entire semester (4 months from September to February), to see if we could notice any difference of changing oral health behavior. The research sample was constructed from 6-11 years old children coming from different but not representative schools from Timisoara area. The sample was done by 783 selected children representing the entire population of children from the 3 schools, respecting age selection criterion and the informed consent agreed and signed by parents. From the initial sample size of 791 children, 8 cases were dropouts because of the age (more than 11 or less than 6). The research instrument was a questionnaire with 37 closed and opened questions related to specific oral hygiene behavior. The instrument was firstly tested on a pilot sample of 20 children and afterwards optimized and adapted for 6-11 years old children. The University „Victor Babes" ethics committee approved the study and the school informed consent was obtained for each subject of our research.

Results and discussions

Our first research interest was regarding the instruction in oral hygiene behavior. At our first meeting and the first survey completed, 54.2% of the children considered that they know very well the tooth-brushing techniques, 35.8% that they know well, 8.8% that they know good how to brush their tooth, 0.8 % considered that they do not really know the correct technique and 0.3% said that they don't know the technique. After one semester (six months) just 23.6% of children considered that they know to wash their tooth very well, 36.5% know well and 23.7% good and 6.9% don't know very well how to brush their teeth. When we speak about the reason why they choose to brush their teeth only 0.76% made this because they wanted. (See table 2.).When we speak about reason why the primary school children don't brush their teeth we see (table 3.) that 0.3% from all children said that they didn't have bathrooms, or a sink for that, other 0.3% said that they didn't have tooth brush, 0.4% didn't have tooth paste, 0.3 didn't know how to brush their teeth, 0.3% said that nobody had told them that it was important to brush their teeth and 0.5% thinks that if they brushed the teeth after that they would be in pain or would bleed.

Table 1. Learning about the tooth-brushing at children

	Talked about tooth-brushing (n, %)	Showed how to brush their tooth (n, %)
Governess	72 (9.1%)	2 (0.255%)
School teacher	120 (15.2%)	4 (0.511%)
Parents	578 (73.1%)	502 (64.11%)
Grand-parents	64 (8.12%)	4 (0.5111%)
Brothers	101 (12.8%)	10 (1.277%)
Friends or colleagues	74 (9.4%)	4 (0.511%)
Dental doctor	480 (60.4%)	137 (17.49%)
Nobody	67 (8.5%)	121 (15.45%)

Based on these results we can say that informing about oral hygiene practice is made by two important agents: the family and the professionals in oral dentistry. An interesting aspect that can be observed while analyzing these tables is the importance of teacher in this process of information. Even if the teacher is the most closed person to the children in this period, his contribution could be considered as being very limited. For this reason, considering the proximity between the children and the teacher at this age, we thought that the teacher should make the children brush their teeth every day, after the big break, when the most of the children eat their meal. The school has to adapt and transform in a place for informing children about oral hygiene behavior and healthy life style.

Table 2. The reason why primary school children should brush their teeth

Reason	Frequencies N (%)
Bad breath	558 (71.26%)
Decay fear	625 (79.82%)
Teeth pains fear	471 (60.15%)
Forced by parents	50 (6.38%)
Nice smile	23 (2.94%)
They wanted that	6 (0.766%)

*Table 3.*The reason why primary school children don't brush their teeth

Reason	Frequencies N (%)
Don't have tooth brush	2 (0.3%)
Don't have tooth pasta	3 (0.4%)
Don't have a bath or a sink	4 (0.5%)
Don't know how	2 (0.3%)
Nobody told them the importance of brushing teeth	2 (0.3%)
Pain fear	4 (0.5%)

The daily behavior in terms of oral hygiene was the most important indicator of our study. Considering brushing after each meal as the most adequate practice in term of oral hygiene, we conduct a comparative analysis between before and after intervention. 11 (1.405%) of the school children didn't brush their teeth last week (*Figure 1*). The frequency of tooth brush in the last week depended on sex Person's r value= 0.130, by age Person's r value= 0.071, by school class Person's r value= 0.100. Frequency of tooth brush was significantly changed in good (p=0.000, Person's r value= 0.763) after the 4 month brushing teeth at school with the teacher, we observed also a changing behavior about oral hygiene, 13.7% brushing teeth once a day, 46% two times a day and 37.4% brushing teeth three or more times a day (*Figure 2*).

The average ratio for DMFT Index values was 1.66 ± 0.85. For 0 classes was 1.45, for the first class was 1.52, for the second class was 1.58, for the third class was 1.73 and for the forth class was 2.01. The fourth grade, including the children from 9 to 11 years, which is closer to the objectives referred to by WHO 2000 (12 years) remains below the level DMFT recommended by the WHO (in 3). DMFT value remains higher than in developed countries, where the index is 1.1-1.2 (USA, Italy) or even below par (Denmark, Germany, Switzerland etc.) (EUROSTAT, 2002). The value is given especially by DMFT components indicating the number of tooth / tooth surfaces affected caries. The differences between sexes of experience index values carious not statistically significant, indicating an approximately equal involvement of both sexes.

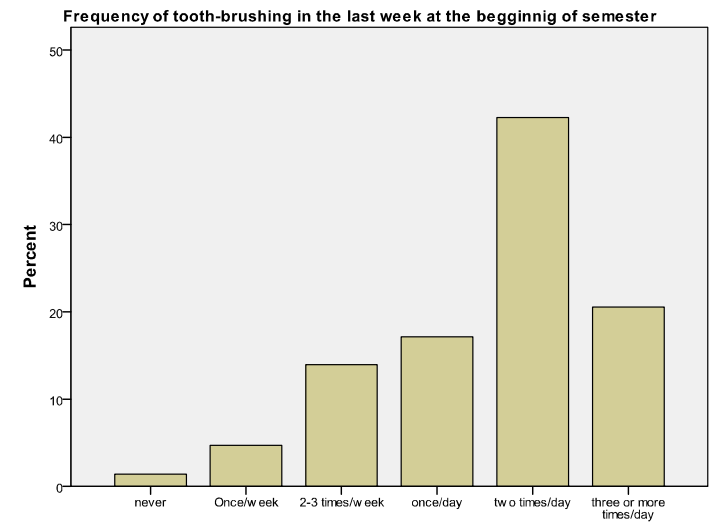

Figure 1. Tooth brushing frequency before the intervention

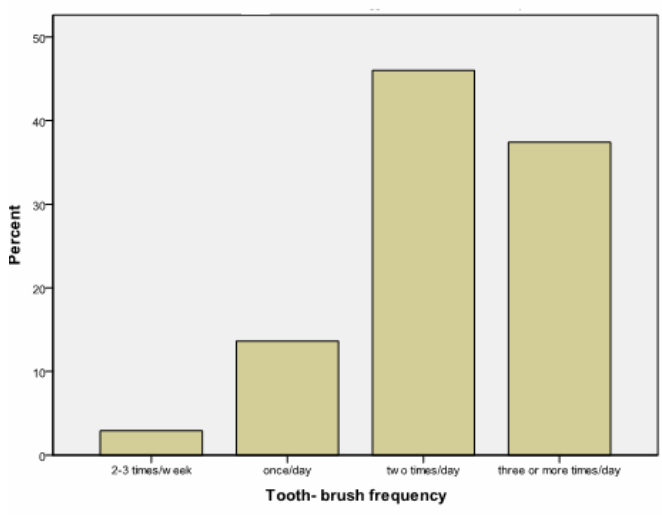

Figure 2. Tooth brushing frequency after the intervention

The tooth brush used is 21.7% specially designed for children. 44.5% of them used electric tooth and 37.8% said that they used normal teeth brush. 2.6% of the children said that they don't use tooth paste for brushing their tooth, 89% from used pasta is with fluor and is common supermarket teeth pasta.

The tooth brush time was increased after the intervention, 679 of the children said that one tooth brush lasted at least 1 minute after the intervention, and just

465 before. (See figure 3.). Even if this variance is not a strong one (p= 0.073), as a preliminary discussion we can assume that is an important changing behavior.

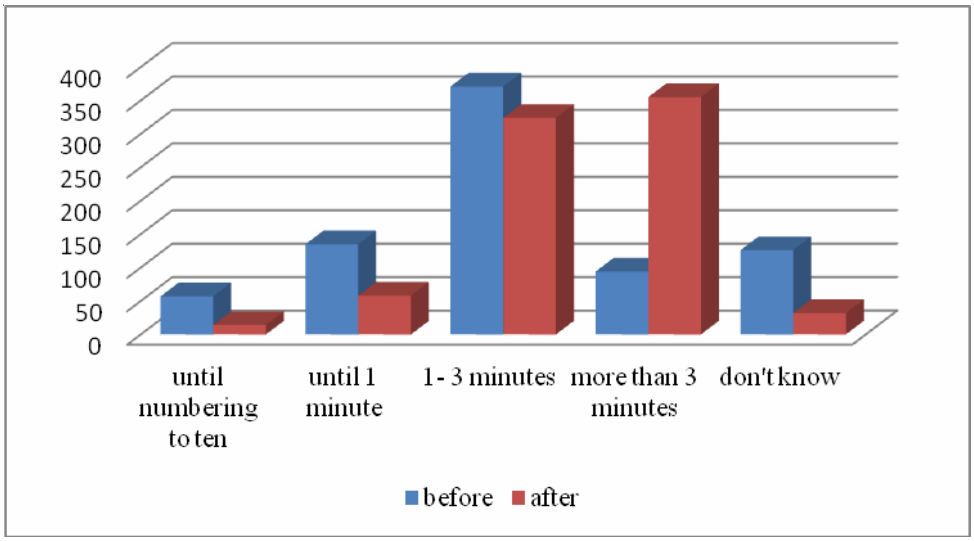

Figure 3. The time before and after intervention of the tooth brush

Conclusions

The study presents that tooth brushing and oral hygiene behavior can be changed at primary school children by implementing a National Program for Oral Health in Schools which has to include apart from the health education, oral health education, one break for tooth brushing, on the teacher surviving. This is a good project to implement in Romania, for a better oral health and for changing the behavior and life style of these children and the future adults. Health education, proper guidelines on feeding and oral hygiene practices and access to early oral health care can substantially reduce the risk and prevalence of early carries. At the same time, based on our research results, we suggest and indicate the opportunity of using the teachers as agents and the schools as new places for teaching children about health behavior and oral health behavior.

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