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## **Revista de cercetare și intervenție socială**

ISSN: 1583-3410 (print), ISSN: 1584-5397 (electronic)

Selected by coverage in Social Sciences Citation Index, ISI databases

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Revista de cercetare și intervenție socială, 2016, vol. 54, pp. 142-155

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Published by:

Expert Projects Publishing House



On behalf of:

„Alexandru Ioan Cuza” University,

Department of Sociology and Social Work

and

Holt Romania Foundation

REVISTA DE CERCETARE SI INTERVENTIE SOCIALA

is indexed by ISI Thomson Reuters - Social Sciences Citation Index

(Sociology and Social Work Domains)



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# Oral Hygiene Behaviour. Case Study of Primary School Children from Timis County

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## Abstract

The purpose of this research is to conduct a social research on oral hygiene behaviour in primary school. In order to achieve our aim we designed our research using quantitative approach and conducting specialized social survey, using a sample of 1016 children from 11 different schools Timis County. Designed on three main dimensions of oral hygiene behaviour: information and knowledge practice of oral hygiene and relation with the dentist, our research findings provides strong support in order to understand the significant differences of dental health behaviour across gender, class level, and rural/urban area. In the same time, our results offer important elements of evidence-based data support required for conducting efficient oral health prevention programme and public policy.

*Keywords:* dental hygiene behaviour, public policy, evidence-based data, Romania.

## Introduction

Oral health is an integral element of general health and wellbeing. Good oral health enables individuals to communicate effectively, to eat and enjoy a variety of foods, and is important in overall quality of life, self-esteem and social confidence. (Locker 1988) Although overall improvements in oral health have occurred in many developed countries over the last 30 years, oral health inequalities have emerged as a major public health challenge because lower income and socially disadvantaged groups experience disproportionately high levels of oral

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disease (Petersen, 2003). Based upon a biomedical model of disease, oral health professionals have traditionally focused preventive and educational action on altering those behaviours which were seen to be the cause of dental diseases. This “lifestyle” approach has dominated preventive practice across the world for many decades. The underlying theory behind this approach is that once individuals acquire the relevant knowledge and skills, they will then alter their behaviour to maintain good oral health (Watt, 2005).

The literature shows that oral self-care practice, individual belief and attitudes are considered as one of the most important factors in oral health care. The relation between psychosocial dimension and oral health behavior has been analyzed by several different studies (Ajzen & Fishbein, 1980). The results show a strong relation between oral hygiene behavior and on one hand the individual’s attitude toward oral health and on the other hand on perceived influence of the others persons that are part of the respondent’s social capital. Adair *et al.* found that the most significant predictors of children’s favorable habits were parents’ favorable attitudes towards controlling their children’s tooth brushing and sugar-snacking habits. (Adair, *et al.*, 2004). In the same direction, other scholar as Smedley and Syme also show that individual behaviours such as oral hygiene practices, and attendance for dental care are largely influenced by family, as well as by the social and community factors, or political and economical measures (Smedley & Syme 2000). Even if much has been learned about improving oral health in recent times and there are still other avenues with potential for effect. It is to be hoped that any guidance is well informed from a variety of sources and that the experience of those on the ground is sought (Davies & Bridgman, 2011). Considering these literature findings, our analyze will oriented to the instructional process related to oral hygiene and more precisely to the characteristics of persons from the children’s social capital in influencing the oral health behaviour.

Toothbrushing is considered to be an important method for maintaining gum health and controlling plaque formation, particularly when combined with fluoride toothpaste. For this reason, the role of tooth-brushing in the prevention of caries has long been considered self-evident. In the same time there is little evidence to support the notion that just tooth brushing action without respecting several criteria as time for brushing or instruction, could reduces caries. Recent publications have shown that daily tooth-brushing with fluoride toothpaste and for 2 minutes, significantly reduces caries incidence compare to a control group that also brushed with a fluoride toothpaste but receive no received no instructions restricting rinsing (Tinanoff, Kanellis & Vargas, 2002). Another important aspect in terms of brushing teeth is the daily frequency. This point, we know that twice per day brushing with fluoridated toothpaste is effective universally recommended (Milgrom, *et al.* 2011; Currie, Gabhainn & Godeau 2008). Realized twice per day, it works by disrupting the bacteria growing on the teeth and by providing a reservoir of fluoride to repair the damage caused by the acid of the bacteria. Based

on these literature outcomes, we conduct analyse of brushing teeth behavior related to the next items: frequency, period of the day, and duration of the process.

As others authors, we consider oral behaviour not just a matter of “just teeth brushing and flossing” (Buunk-Werkhoven, Dijkstra, & Van der Schans, 2011), but also as a complex and multidimensional process that include instruction, motivation, a matter of doing and specifics effects. In this way, our study was oriented by the next key research question: Who are the persons that instruct children on oral hygiene behaviour? When, how frequent and how long oral self-care practices are realized? What is the most important agents of instruction? Which are the effects of the instruction process? In order to give an answer based on a scientific research, we conduct a sociological survey study between children from primary school.

The final aims of this research result are to offer evidence-based support in order develops future preventive project and an adapted public policy. However, outcomes suggest that educational programs improve knowledge, but only have a temporary effect on plaque levels, and have no discernible effect on caries experience. Despite these limitations, oral health education will undoubtedly remain an important component of preventive dental programs. Efforts designed to improve the ability of educational messages to alter oral health behavior need to be pursued (Tinanoff, Kanellis & Vargas 2002).

## **Materials and Methods**

### ***Method and data collection***

The paper will explore oral hygiene behavior of children from primary schools. In order to achieve our aim we chose to conduct a specialized social survey in the academic year 2014-2015. The research sample was 1016 pupils from the first until the fourth grade with an average age of 8.77 years old. Out of the total number 494 were boys, 496 were girls, and 22 did not declare their gender. The sample for our study was divided between 11 different schools from the area of Timis County. In order to ensure a high level of representation and diversity of our sample, the schools were selected according to specific criteria such as: the level of education offered by the school, auxiliary of the main school institution criteria, rural or urban location, distance from the main town of the county and the isolation level of the locality\*. Based on these criteria, our schools sample was made of 6 school institutions and 5 of their auxiliary schools. More precisely, our selected schools were: “Grigore Moisil” High School from Timisoara (n=332),

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\* The isolation level of the locality was considered in relation with the distance to the European road (E70) that crosses the county.

The Secondary School No 21 “Vicentiu Babes” Timisoara (n=246), The Secondary School from Dumbravita (n=213), The Theoretical High School from Periam (n=102), The Secondary School from Topolovatul Mare (n=47), The Secondary School from Sacosul Turcesc (n=27), The Secondary School from Uliuc (n=18; auxiliary school of The Secondary School from Sacosul Turcesc), The Primary School of Berini (n=10; auxiliary school of The High School from Periam), The Primary School from Ictar-Budint (n=9; auxiliary school of The Secondary School from Topolovatul Mare), The Primary School from Iosifalau (n=8, auxiliary school of The Secondary School from Topolovatul Mare), The Primary School from Sustra (n=4, auxiliary school of The Secondary School from Topolovatul Mare). The pupils from each school included in our study represent the entire population of children from the first to the fourth grade studying in those schools.

The research instrument was a questionnaire with 37 questions related to: information about dental hygiene behavior, person in charge with teaching, perceived level of knowledge about dental health behavior, reason of keeping oral hygiene, frequency, method and moment of day for brushing teeth. In addition, we evaluated complementary methods of keeping dental hygiene and at least the specifics of the relation with the dentistry doctor characterized by dimensions such as: frequency of visit and reason for the visit. The instrument was firstly tested on a pilot sample of 20 children of both sexes between 7 - 10 years old. Regarding their contribution to the questionnaire’s development procedure, the individuals tested were informed about the procedure of the assessment. The testing method used was a cognitive debriefing method based on paraphrasing by asking the respondents to rephrase the item in their own words, immediately after answering the item. This pre-testing procedure was very important for solving questionnaire problems such as misunderstandings about the intended meaning of the question and afterwards optimizing and adapting the questionnaire for children from the first to the fourth grade. The “Victor Babes” University ethics committee approved the study and the school informed consent was obtained in order to conduct our research.

The questionnaire was given during the class time in collaboration with the teacher and at least one of the investigators. Because the collection data procedure was auto-administration, the children were reminded that the questionnaire was not an exam and that there were not incorrect answers. In addition, the children were informed that the answer they provide will not be known either by their teacher or by their parents. Specific attention was given to the pupils in the first grade. Because all of them could read and write, the investigator’s task was to make sure that all the pupils had good understanding of the question and were able to select the adequate answer. Both categories of people involved in data collection: the investigator and the teacher were firstly trained in order to have operational equivalence.

The data management was carried out using the statistical software SPSS. The statistical significance of the bivariate analysis was processed through the Pearson chi-square and the descriptive analyses were carried out using frequency and crosstabs analyses.

## Results

In order to analyze the oral hygiene behavior as a complex and multidimensional process, we investigated dimensions such as: instruction regarding the oral health behavior and the self-perceived level of knowledge, practice of oral hygiene behavior and the relation with the dentistry doctor. To obtain a more comprehensive understanding of our topic, we conducted a bivariate correlation and cross tabulation with gender, the level of study and the rural/urban location for each of these items.

### *Instruction and knowledge related to oral hygiene*

The instruction is the first and one of the most important steps in order to develop a correct behavior in terms of oral hygiene. The importance of tooth brushing instruction was highlighted by Davies and Hawley that assume that advice on tooth brushing is more likely to be successful than attempts to change dietary behavior (Davies & Hawley, 1995). The variables that we analyzed in terms of instruction were: firstly, the existence of an instruction regarding correct oral behavior, secondly, the identification of the person that provided this instruction and thirdly, the specificity of the instruction process. According to our research results, the respondents declared in proportion of 90.2% (n=916) that at least a person had talked to them about the oral hygiene practice. The comparative analysis between genders shows that just 5.9% of girls had never had such a discussion, while the percentage of boys is significantly higher: 12%.

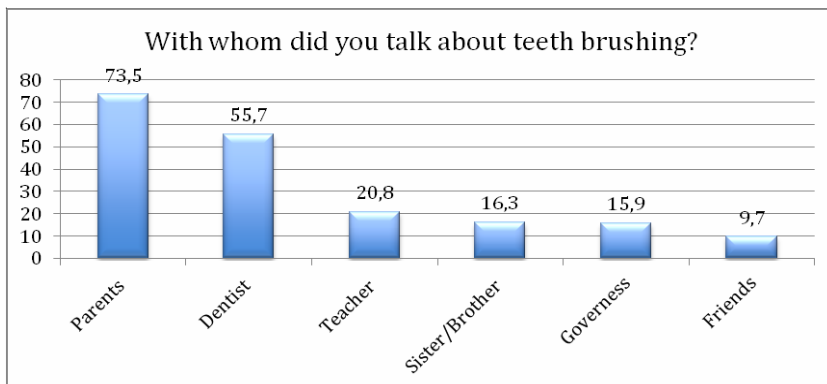


Figure 1. Persons providing information about teeth brushing

Regarding the identity or status of these people, 73.5% are parents, 55.7% are dentists and only 20.8% are teachers (Figure 1). This means that the instruction regarding the dental health behaviour is mainly carried out by the family or by the dentist. On the other hand, a very important aspect that we can notice refers to the very small implication of the teacher as a school representative in oral health instruction. An in-depth analysis highlights the fact that the training conducted by parents becomes more important once the child grows. At the same time, even if the level of implication of the teacher in oral hygiene instruction is low, we can observe that the teachers from the rural areas are much more involved in the process of instruction (28.4%) compared to the teachers from the urban areas (15.1%). This higher involvement of the teacher in the instructional process could be associated and explained by a low dentistry doctor intervention in the rural area. 52.1% of the children from the rural area declared that they had never been informed about the oral health hygiene by a dentistry doctor, compare to 38% of children from the urban area in the same situation.

Good knowledge of tooth brushing is the second step to achieving good oral health hygiene. Curnow et al have reported that children who participated in a tooth brushing programme were less likely to develop dental caries compared with children that did not take part at the programme (Curnow *et al.*, 2002). Being asked about how well the children know to brush their teeth, 60.5% of our respondents consider that they know very well, 31.1% stated that they know well and 7 % considered that they know so and so. According to our statistical analysis, girls declared in a significantly higher proportion than boys that they know to brush their teeth very well. If this difference was almost expected, because Gender differences in oral health-related habits have been already observed, (Schou, Currie & McQueen, 1990), the difference between urban and rural areas was less expected. 65.8% of children from rural areas, compare to 56.6% from urban areas declared that they knew to brush their teeth very well.

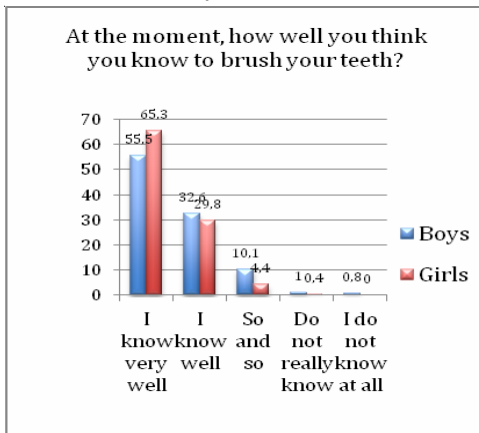


Figure 2. The level of knowledge on teeth brushing, by gender

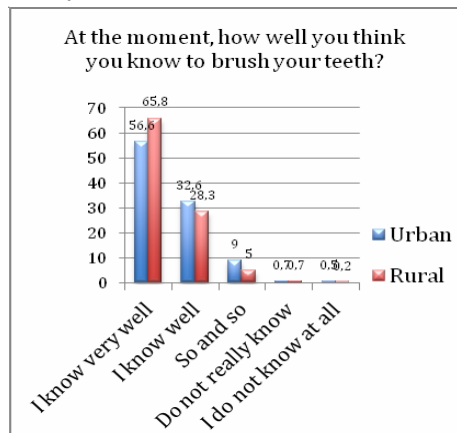


Figure 3. The level of knowledge on teeth brushing, depending on location (urban/ rural)

**Oral hygiene behaviour**

Tooth brushing is a known practice among children, 95.3% of them declared that had brushed their teeth in the previous week. In terms of motivation, our research highlights that 82.5% of children brush their teeth to avoid having caries, 75.9% to avoid having bad breath, 63.2 % to avoid having toothache and just 9.1% because parents make them.

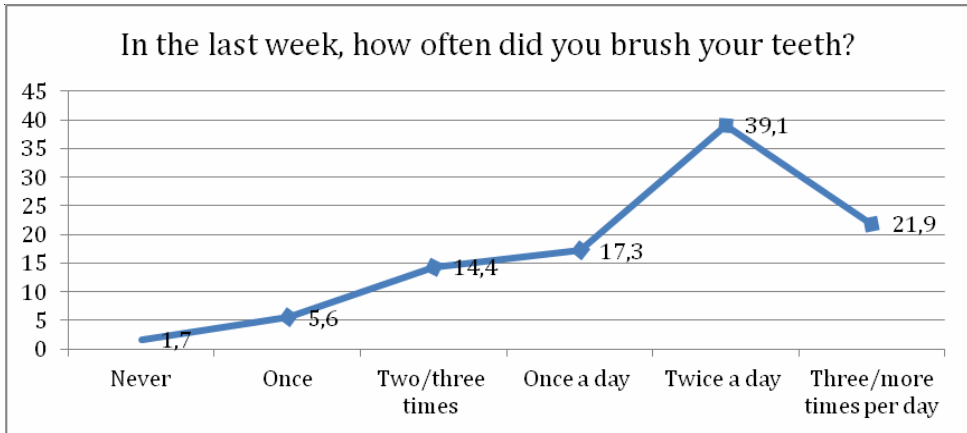


Figure 4. Weekly frequency of teeth brushing

Being considered one of the most important methods of maintaining oral health, tooth brushing should be done with a frequency of twice a day (Loe, 2000). Based on questions with responses ranging from never to three/more times per day, we have found out that 39.1% of our subjects brush their teeth according to the recommendation of at least twice a day. 21.9% brush their teeth three times per day or more. According to our data, around 40% of the entire studied population brushes their teeth less than twice per day. These data are not necessary new because similar trends regarding the same issue were reflected by (Currie, Gabhainn, & Godeau, 2008) where Romania is situated on the last fifth position in Europe.

In order to have a deeper understanding of this phenomenon, we correlated this item to socio-demographic data and other items of our survey. According to our research results, the frequency of brushing teeth is positively correlated to the instruction process ( $r=.118^{**}$ ) and specifically to the instruction made by parents ( $r=.092^{*}$ ) and by the dentistry doctor ( $r=0,108^{**}$ ).



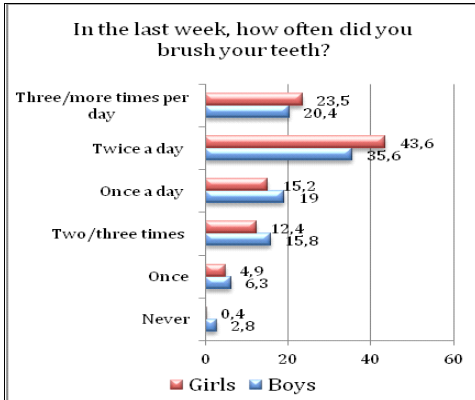


Figure 5. Weekly frequency of teeth brushing (once a day)

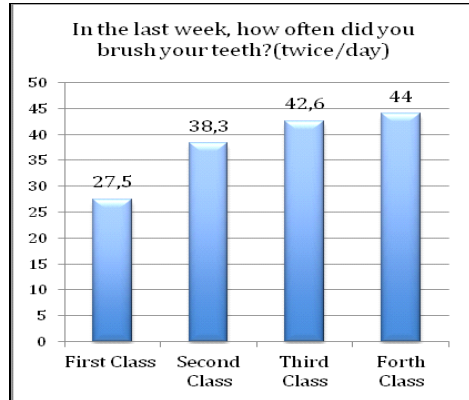


Figure 6. Weekly frequency of teeth brushing (twice per day)

As Figure 5 and 6 show, there are important variations in brushing teeth between boys and girls and throughout the class level of children. Boys more than girls, find themselves in the category that brush teeth less than twice per day, while girls are significantly more in the category that brush teeth twice per day (43.6% girls compared to 35.6% boys). This finding supports once again the hypothesis that girls have a more adequate oral hygiene behavior than boys – a finding that future programmes and public policy should take into consideration.

At the same time, the brushing teeth frequency is positively correlated to the class level of children. The recommended behavior of cleaning teeth at least twice per day is much more obvious once children have grown up. More precisely, brushing teeth twice per day is a behavior met at 27.5% of children from the first grade, 38.3 % of children from the second grade, 42.6% of children from the third grade and 44% for the fourth grade children. This means that a very low level of correct behavior is specific to children from the first and even the second grades, which indicates the necessity to conduct specific programs for children in the first class and second grades.

The period of the day is another aspect in which our research was interested. 66.6% of the interviewed children brush their teeth in the morning, 13,8% at lunchtime, 53.5% in the evening and 25.9% after each meal. Knowing that cleaning teeth in the morning and in the evening is what the specialist recommend as correct behavior, we pay a specific attention to the profile of children that have such behavior. According to our results, there is a strong correlation between the correct brushing and the grade level of the children, as it could be seen in figure 8. It is more than obvious that children from third and fourth grade have a much more adequate behavior in terms of oral hygiene than children from the first and second grades. Based on this result, that indicate a very low level of suitable behavior in the first and second classes, we consider the opportunity to realize specific trainings for these classes.

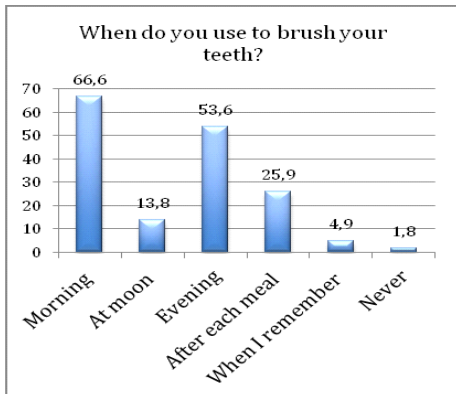


Figure 7. Time of day when brushing teeth is

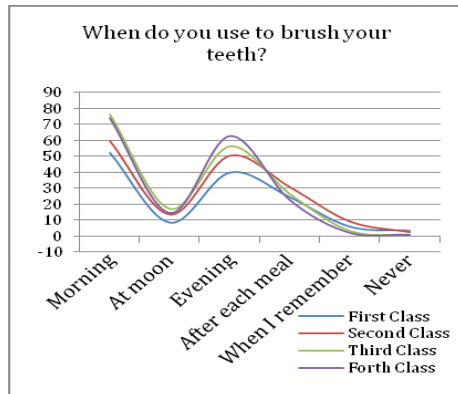


Figure 8. Time of day when brushing teeth is by level class

Another aspect that made the object of analyze was the period of brushing teeth. *Figure 9* shows the general distribution of time accorded for brushing teeth by the entire sample population. 39.4% of our respondents declared that this interval is between 1 and 3 minutes and around 13.5% more than 3 minutes. All the others respondents used to brush the teeth less than 1 minute or they cannot appreciate the period. Without under appreciating the percentage of children that brush enough time their teeth, around 45% of children do not allocate enough time to brush their teeth.

Regarding our comparative analyses between classes, once again, results show an important difference between first and second classes in relation with third and fourth classes. *Figure 10* shows that the highest number of children that *don't know how long it last or until 1 minute* are children from first and second classes. In contrast, the rate of children that declared to brush *between 1-3 minutes* increase with the children's level of study. This highlights that at the early age, children don't have an appropriate practice of brushing teeth, neither in terms of the period of time necessary and recommended.

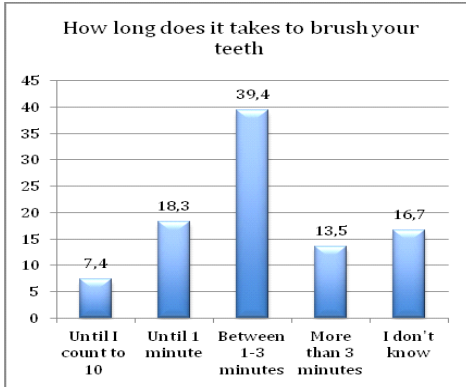


Figure 9. Distribution of time accorded for brushing teeth

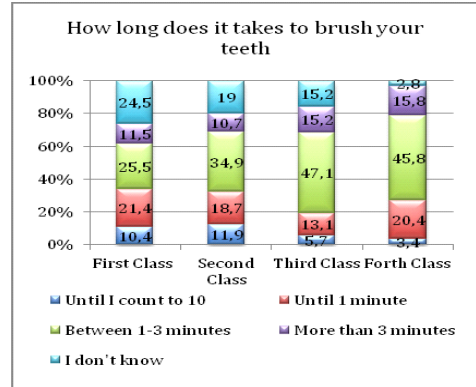


Figure 10. Distribution of time accorded for brushing teeth (by level class)

### ***The relation with the dentistry doctor and its impact***

The relation with the dentist was our last but not less important aspect analyzed. The first dimension analyzed regarding this aspect was the frequency. At that level our data show that 11.2 % of children never meet the dentistry until the moment of our research, 15.9 % made a single visit to the doctor and 71.9% visit the doctor at least twice. From the 11.2 % of children that never went to the dentist, 58.8% of them do not need to go and 11.8% did not go out of fear. In the same time, asking the rest of our sample why they went to the doctor, 30.5% went for caries issues, 16.6% for extraction, 15.9% for control and 8.1 % because of pain. This data highlights, that children use to go to dentist mainly when they have problems, only 15.9 % of them go to the doctor for a periodical control.

The analyze based on the relationship between dentist and children was important not only for having an image about the behavior regarding this issues, but also for understanding the impact of this contact in terms of oral hygiene practice. Analyzing the correlation with other items, we find out that children that visited the doctor correlate significantly and positive with being instructed regarding tooth brushing, frequency of brushing teeth in the last week and moment of the day used for brushing. More precisely, people that had been to the dentist are not just more informed, but also have better practice in terms of oral hygiene behavior. They brush their teeth as recommended at least twice per day, and that happens in the morning and in the evening. More than that, going to visit the doctor correlate positive and significantly with the use of the electric toothbrush ( $r=0.128^{**}$ ), the use of dental floss ( $r=0.133^{***}$ ) and with the verification after brushing teeth by

a member from the family ( $r=0.120^{**}$ ). In consequence, going to visit the doctor has effects not only in the clinical way, but also in instruction and, more important in developing good practice in terms of oral hygiene for the children. Considering these specific effects, it is advisable to start to go to the dentist with children from younger age. This could be recommended specially in the first and second class, where the contact with the dentist meets the lowest point according to our *Figure II*.

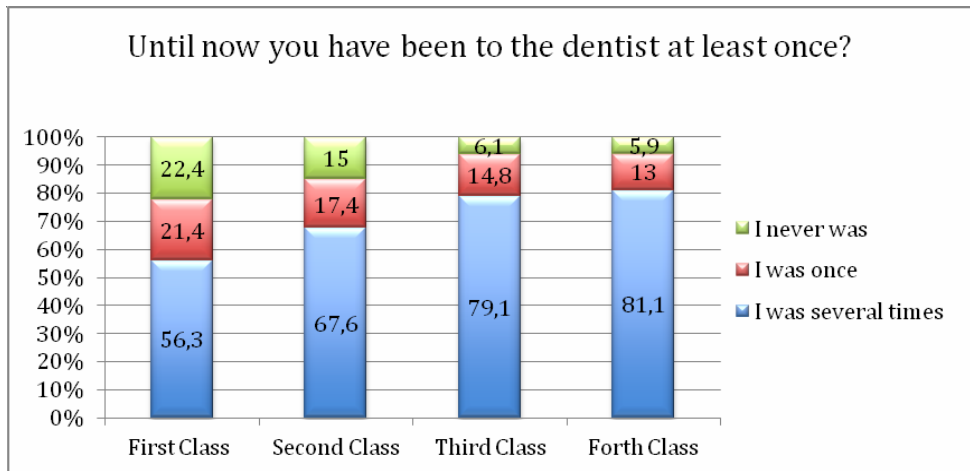


Figure II. Frequency contacts with dentist by level class

## Discussions

Oriented by the concept of oral hygiene behavior, our research was structured on three main dimensions: the first one - information and knowledge, the second one - practice of oral hygiene and the third one - relation with the dentistry doctor. Based on this dimensions, our research presents a general image regarding dental hygiene behavior of the children from Timis County. Our research results show that for specific issues there are significant differences of dental hygiene behavior across gender, rural or urban location of the school, and the class level.

The instruction, in terms of oral health behavior, is a process mainly realized by the parents and the dentist. According to our data, both the parents and the dentist have an important contribution in terms of instruction in the third and the fourth class. In the same time, a significantly reduce level of instruction from both of those agents are realized for the children in the first and second class. At the same class level, other persons as the teacher or the governess play a limited role in the instruction process. Still the role of the teacher seems to be more important

in the schools form rural area, where their actions supplies the more limited activity and presence of the dentist. What is very important to highlight is a specific case of correlation between the higher implication of teacher in the instruction process in rural area and the high level of knowledge of children regarding brushing tooth. That means that the implication of the teacher in the instruction process in rural area had as results a very good knowledge about brushing teeth between the children from rural area. Based on this example, we can assume that the implication of the teacher in the instruction process could have very good results in the instruction of children regarding sanogenous oral health behavior. More than that, considering the very close relation between teacher and children from the early age, the implication of the teacher in the instruction process could be more than efficient. Teacher could supply the low level of influence of the other two classical agents: the parents and the dentist, especially in the first and second class, especially first and second class. As Adair, Burnside and Pine we remind that in order to have a high level of efficiency for instruction school it should be on developing the correct health behaviours as well as providing oral hygiene instruction (Adair, Burnside & Pine 2013). In this way, supplementing the role of teacher in the instruction process in a corroborative way with parents and dentist could conduct to better results in terms of knowledge about suitable oral hygiene behavior.

The three main dimensions: frequency, period of the day and duration of teeth brushing offer a clear image regarding the real behavior in terms do oral hygiene. Regarding the first one our research shows that according to the children responses, more than 50% brush their teeth at least twice per day. According to our data, the children that have such a behavior are children that have been instructed how to brush their teeth by parents or by dentist. In the same time, they are children from the third and fourth class, classes that are associated with a higher level of instruction. More than that, the same category of children – from the third and fourth class - is more likely to have a suitable behavior: brushing teeth in the morning and in the evening and respecting duration between 1 and 3 minute for brushing. In consequence, we can assume that the instruction process has effects not only in terms of knowledge, but also in terms of real oral hygiene behavior. Informed children are more likely to have a suitable behavior in term of oral hygiene and this is why a strategy of informing people from the early age as first of second class could conduct to even better results in terms of brushing teeth.

Probably more than all the others item, the visit to the dentist is the action that correlates mostly with the other indicators of a suitable behavior in terms of oral hygiene. People that had been to the dentist are more informed and in the same time more likely to brush their teeth at least twice per day in the morning and in the evening, and for a period of time between 1 and 3 minute. In additional visiting the dentist is the single item that correlates with the use of complementary cleaning as dental floss, or electrical toothbrushes. On the other way, the visit to

the doctor correlates also with the family behavior. Children that use to visit the doctor are more likely to be verified by their families than children that don't use to do that. Considering the importance of doctors, as the social determinants of health, public health strategies therefore need to be directed at the underlying determinants, the causes of the causes (Newton & Bower 2005). In consequence, we consider that dentist have a major role in developing suitable behavior in oral hygiene for children and no instruction or prevention programme should be set-up without a dentist implication.

## Conclusions

The paper attempted to contribute to our understanding of oral hygiene behavior of the children from primary school. Our findings provide strong support in order to measure the three-selected dimensions of our concept: information and knowledge practice of oral hygiene and relation with the dentist. In additional our paper presents an important contribution regarding the relation that exists between the dimensions of oral hygiene behavior presenting a significant evidence-based data that can support the development of future prevention programme or public policies.

## Acknowledgments

This work was realized with the support of the project: "Parteneriat strategic pentru cresterea calitatii cercetarii stiintifice din universitatile medicale prin acordarea de burse doctorale si postdoctorale – DocMed.Net\_2.0", project no. POSDRU/159/1.5/S/136893.

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