EFFICIENCY OF ORO-DENTAL PREVENTION PROGRAMS AMONG CHILDREN FROM A SCHOOL COMMUNITY IN BOTOSANI COUNTY

Diana Roman[1] , Gianina Iovan [1*], Lorena Roman[1*], Radu Madalin Honciuc[2], Vasilica Toma[3]

[1]Periodontology resident, Department of Periodontology, Faculty of Dental Medicine, „ Gr. T Popa" University of Medicine and Pharmacy Iasi
[1*]Professor,Department of Odontology, Periodontology and Fixed Prosthodontics, Faculty of Dental Medicine, „ Gr.T.Popa" University of Medicine and Pharmacy, Iasi
[1*] Faculty of Dental Medicine, „Gr. T. Popa" University of Medicine and Pharmacy Iasi
[2] PhD, Pedodontics resident, Department of Pedodontics, Faculty of Dental Medicine, „Gr. T. Popa"University of Medicine and Pharmacy Iasi
[3]Professor, Department of Pedodontics, Faculty of Dental Medicine, „Gr. T. Popa" University of Medicine and Pharmacy Iasi

**Correspondent author: Gianina Iovan: gianinaiovan@yahoo.com , Lorena Roman: lorena.roman1301@gmail.com*

ABSTRACT

AIM: The aim of the study was to assess the changes of knowledge the prevention of oro-dental diseases after carryng out an education program among schoolchildren.. **MATERIAL AND METHOD**: The research took place under the project 4 Steps For Preserving Healthy Teeth in partnership with School Inspectorate of Botosani County, Red Cross of Botosani and the Colgate-Palmolive Company, on a group of 52 pupils from Secondary School no. 1 Saveni, Botosani County, most of the children originating from an urban environment (87%).
The investigated group consisted of two test-groups: the experimental group consisted of 28 children from two classes of 4th and 6th grades. The control group consisted of 24 children from other two classes of 4th and 6th. During the study, a test for the assessment of oral hygiene knowledge was applied several times, at different time intervals, both in the initial phase and in the final phase of the paper. **RESULTS AND DISCUSSIONS:** After the comparative analysis of the results obtained from the initial, final and after two years tests it was observed that the students learned their notions about oral hygiene and health. Following the two interventions, the students made progress and developed their oral hygiene skills, showing interest and motivation for such activities.**CONCLUSIONS:** Using an oral-dental prevention programme determines developing oral hygiene-skills in young school children.
KEY WORDS: skills, oral-dental preventions, oral hygiene, children.

INTRODUCTION

Oro-dental prevention involves a multitude of practices and habits that together aim to prevent the occurrence of pathologies in the oro-dental area or their complications. With the evolution and progress of medicine, studies in the field have focused on the prevention of oral and dental diseases and have demonstrated its effectiveness in combating the occurrence of diseases. Primary prevention is represented by all the means and actions taken by both the dentist and the patient in order to avoid the occurrence of dental pathologies. Promoting oral health plays a key role, also having an impact on general health, as there is a close relationship between oral and general health (for example: periodontal disease - diabetes). Thus, oral health

promotion also addresses the inseparable issues of all systemic health diseases (Fontana et al., 2017).

Like many other chronic diseases, dental caries is a pathology of multifactorial etiology caused by the unhealthy "lifestyle" of patients. It is a pathology that can be prevented by adopting healthy behaviors, such as regular oral hygiene, favorable eating habits and routine dental check-ups.

Because childhood is a critical stage in the formation of health habits, and parents are often receptive at this stage, this period provides a unique opportunity for behavioral interventions.

MATHERIAL AND METHOD

The aim of this study was to establish how the application of oral prevention programs in schools is beneficial in that they would ensure the acquisition of useful skills for oral health by young schoolchildren.

The present study included the evaluation of the knowledge of oro-dental hygiene of a group of 52 students from the Gymnasium School Nr. 1 Săveni. The investigated lot consisted of: the experimental sample (two classes of 4th and 6th grade A, Secondary School No. 1 Săveni, consisting of 28 students, 13 girls and 15 boys) and the control sample (two classesof 4th and 6th grade B, Gymnasium School No. 1 Săveni, consisting of 24 students, 13 girls and 11 boys).

The study used a test to assess knowledge of oral hygiene, applied at intervals of one month and two years (in the initial phase and in the final phase of the study).

The research methods were selected in such a way as to meet the main requirements and to prevent possible errors in the investigation and processing of the results obtained.

In order to obtain information about the level of knowledge and skills of oral hygiene of students, the following were used as research tools: the questionnaire and the observation sheets. The stages of an investigation were: the pre-experimental stage entitled, the experimental stage entitled and the post-experimental stage entitled.

The pre-experimental stage aimed to determine the existing level of knowledge about oral hygiene at the time of initiating the research, both at the level of the experimental and control sample.

The applied questionnaire specifically targeted the level of knowledge and skills of students about oral hygiene, being composed of 12 items, with one correct answer.

The results obtained from the application of the questionnaire were centralized, by class categories (experimental class and control class).

From the interpretation of the results and the information obtained from the application of the initial questionnaire, from the systematic observation of the students and from the discussion with the teachers, it was found that there are no major differences between the two samples.

In the experimental stage, the following objectives were achieved: explaining the Bass brushing technique using the Colgate mold and toothbrush, explaining the use of additional means of oral hygiene (flossing and mouthwash), explaining the impact of food on oral health, explaining the importance of regular visits at the dentist, watching the movie “Dr. Măseluță Și Supereroii Dinților Sănătoși ”, debate, discussions, questions in order to correctly fix the information provided. Students had the task to make a drawing with the representation of oral hygiene means (toothpaste, toothbrush, mouthwash and flossing). At the end of the activity, the students received packages containing leaflets with information on oral hygiene, toothpaste and toothbrush provided by Colgate-Palmolive.

At one month, the level of knowledge about the oral health was reevaluated. Thus,

the evaluation consisted in the administration of a sample using the same research tool, the initially applied questionnaire (with 12 items with simple complementary answer), identical for the two classes. After completing the questionnaire, the prevention program was applied in the control class.

In the next step, the results obtained in this test were compared with those obtained in the initial assessment test. The assessment was made by centralizing the correct answers for each of the 12 items.

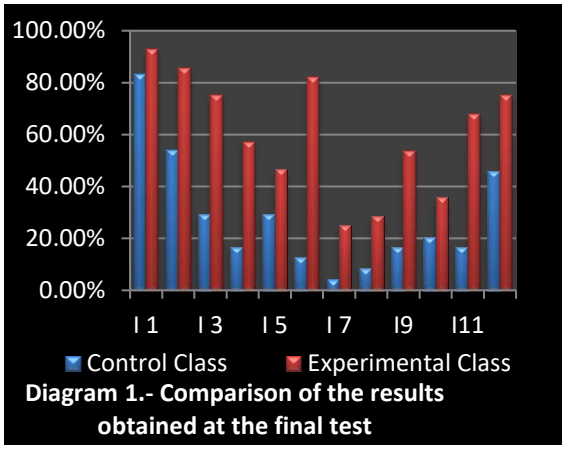

Diagram 1.- Comparison of the results obtained at the final test

In the post-experimental stage, the knowledge of the students from the two classes was re-evaluated, after an interval of two years. Initially, the same questionnaire was applied, focusing the results on the classes, followed by an open discussion on oral health, highlighting the importance of oral hygiene and correcting any misinformation. In the end, they received packages with information leaflets and dental hygiene items.

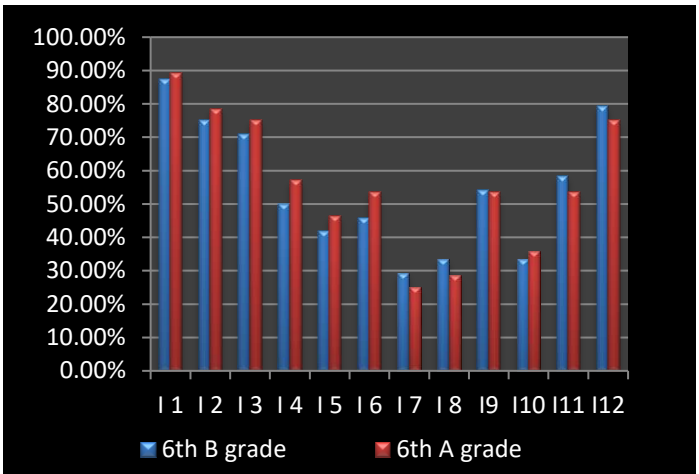

Diagram 2.- Comparison of test results after two years (percentage values)

RESULTS

After the comparative results of the initial and final tests, we found the improvement of the students' level of knowledge about oral hygiene.

Thus, if after the comparison of the initial test, in the control group the average of the correct answers selected by the students was 27.42%, in the experimental group the average was 27.66% (relatively close values), at the final test in the control group , the average of the correct answers increased insignificantly to 28.12%, while in the experimental group the percentage increased considerably to 60.41% ($p = 0.0348$).

The analysis and interpretation of the obtained results indicate a positive tendency to acquire some oral hygiene skills of the students, in favor of the experimental group, which cannot be attributed exclusively to their acquisition from other information sources. This result confirms the practical value of our study.

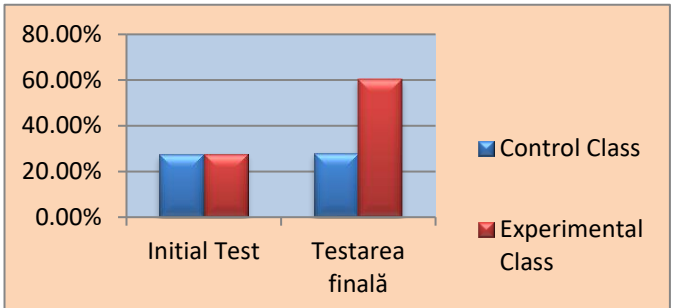

Diagram 3-Comparison of the results of both samples at the initial and final testing

After centralizing the data in tables, the results of the final tests were compared with the test results after two years within each class. In the 4th grade A / 6th gradeA, the average of the correct answers obtained after the final test was 60.41%, and for the test after 2 years of 55.95%. A decrease in correct answers was observed by 4.46%. This can be attributed to the fact that over time, children have forgotten some of the notions of oral hygiene.

After centralizing the results obtained for 4th grade B / 6th grade B it can be seen that there is a statistically significant difference between the two tests (final and after two years). In the final test the average of the correct answers is 28.12%, and in the test after two years the average is 54.85%, the difference being 26.73 percent. These results can be attributed to the fact that only after the application of the final questionnaire, class IV B benefited from an oral prevention program. After two years, following the application of the questionnaire, it can be seen that the notions about oral hygiene have improved.

In the next stage, the level of knowledge from the beginning of the study was compared with the level of knowledge acquired by students during the course and until the end of it. Regarding the fourth grade A / 6 th gradeA, the average of the correct answers to the initial test was 27.66%, and the average for the test after two years was 55.95%. We notice a percentage increase in the average of the correct answers of 28.29%. At the level of 4th grade B / 6th grade B the same can be seen: a significant increase in knowledge about oral hygiene. We notice that in the initial test, 4th grade B obtained an average of the correct answers of 27.42%, and in the test after two years, the average is 54.85%, the difference being 27.43 percent.

The average between classes A and B at the initial test is 27.54%, and the average test after two years is 54.85%, the difference being 27.31%. This validates the hypothesis proposed for research.

Also, there was a decrease in knowledge about oral hygiene at the level of the 6th grade A between the final test (average of correct answers being 60.41%) and testing after two years (average of correct answers being 55.95%) . This indicates the need for more frequent implementation of oral prevention programs in schools, because over time children forget some of the notions and therefore they must be constantly remembered.

Table 1 - Averages obtained from initial, final and two-year tests

	Initial Test	Final Test	After two years Test
4thgradeA/ 6thgrade A	27,66%	60,41%	55,95%
4th grade B/ 6th grade B	27,42%	28,12%	54,85%
AVERAGE	27.54%	-	55.40%

DISCUSSION

Oral health education of children involves informing and developing healthy behavior by influencing conceptions and attitudes individually or collectively, among the school population.

In the period 2009-2017, a wide-ranging action for the promotion of oral health was held in Iasi, entitled “Caravan of Prophylaxis” under the already traditional coordination of Prof. Dr. Norina Forna, on which occasion 25,000 people benefited from free consultations and materials for oral hygiene. The results obtained during

this action indicate the significant impairment of the oral health of the population in the region of Moldova, determined by the lack of knowledge in the field but also by the general socio-economic situation. The results reported in 2017 show that 87.7% of the population has an oral condition affected by caries, periodontal disease, untreated root debris, unidentified edentulous, partially extended edentulous and total edentulous (Forna, 2017).

This study was attended by 60 students of the "Gymnasium School Nr. 1 "Săveni, of which only 58 met the criteria for assessing knowledge of oral and dental hygiene (two children were transferred to another school). Comparisons between test results, both between the two classes and between them, concluded that the application of dental prevention programs in schools is beneficial in ensuring that they acquire skills in oral health.

At the time of the study, there were no significant differences in the level of knowledge of the students in the two groups. Both samples had the average of the correct answers close: for the 4th grade A the average of the correct answers was 27.66%, and for the 4th grade B the average of the correct answers was 27.42%. The highest percentage of correct answers is represented by the first item, suggesting that students in both classes perform tooth brushing in proportion of 80.91%. At the other pole are items 7 and 8 which obtained a percentage of correct answers of only 5.65%. These items directly concerned the use of additional means of oral hygiene (dental floss and mouthwash). The factors that contribute to these results are many, among which we list: poor information about oral hygiene, family environment, irregular visits to the dentist.

Another factor that can lead to improved knowledge about children's oral hygiene is the work of the dentist. The role of the practitioner is to explain to both children and parents the importance of dental prevention and to recommend optimal prophylactic measures for each patient. It was found that the average of the correct answers for the two groups to item 10 (which included the visit to the dentist), is 13.39%. This affects the degree of information on oral hygiene held by schoolchildren. In the study by Cooper D. *et al*. in the U.S., 2017, it was shown that students who did not have access to a dental office had more carious lesions than those who regularly attended the dentist. It has also been shown that the environment in which an individual is raised has a major influence on his or her oral health (*Cooper et al., 2017*).

Another result obtained from the study is the major increase in the percentage of correct answers for the class that benefited from a prevention program, respectively 4th grade A. If initially the correct answers were chosen in a percentage of 27.66% , at the final test the students chose the correct answers in proportion of 60.41%, the difference between the two evaluations being 32.75%. At the level of 4th grade B, the percentage difference between the two tests is insignificant, this being 0.7%. The pertinent conclusion is that there is a positive tendency to assimilate oral hygiene skills, which cannot be put solely on the basis of their acquisition from other information sources.

After an interval of two years, following the evaluation, an increase of 26.73% of the correct answers was found in the case of 4th grade B as a result of the dental prevention program they benefited from 2 years ago. The percentage increase is not as high as in the case of the 4th grade A .

This can be attributed to the fact that from the application of the dental prevention program to the assessment of students' knowledge the time was much longer, 2 years, compared to the fourth grade A where the duration was one month. Therefore, as time goes on, the notions acquired by schoolchildren can be forgotten, which shows that the oral-dental

prevention programs are beneficial, having to be applied more often.

With regard to 4th grade A, the average percentage obtained in the test after two years and the final one decreased by 4.46 percent, proving again that the notions must be refreshed by repeating the oral prevention activities.

The benefits of oral and dental prevention programs have also been observed by Menegaz A.*et al* 2018. which has shown that the frequency of oral and dental pathologies among children in Saudi Arabia has decreased significantly with the assimilation of information on oral hygiene (Menegaz et al., 2018).

Oral diseases, especially carious diseases, are a major problem among the young population. However, studies in the field indicate a declining value of DMFT in the European population. Carvalho J.C. et al 2019 conducted a study on oral health in the last 20 years at European level and concluded that patients with a lower number of carious lesions had in the past benefited from an oral prevention program (*Carvalho et al., 2019*).

The prevalence of untreated carious lesions among young people is 19%. The factors that participate in the appearance of this pathology are multiple, among which we mention: poor socio-economic status, limited access to medical care, poor education about oral health. The researchers concluded that in the case of children, oral hygiene skills are not acquired through pediatric health programs but through activities organized by dentists. For this reason, oral prevention programs among children are essential (*Cooper et al., 2017*).

Even if the oral health education program is not directly related to the immediate adoption of healthy behavior, the improvement and acquisition of students' knowledge remains the key elements of dental prevention among schoolchildren. In this study, participants who benefited from the prevention program assimilated a wide range of information (frequency of tooth brushing, importance of additional means of oral hygiene, correct brushing technique, importance of a balanced and healthy diet, importance of visit to the dentist).

Learning and implementing a correct brushing technique is a challenge for children because it involves changing established daily routines (Naidu et al., 2015).

The family environment plays an important role in the development of children as individuals from all points of view. From an early age, children adopt and reproduce the behavior of their parents, the latter being directly responsible for the development of children's skills. According to Naidu R. *et al.* 2015, children whose parents pay special attention to oral health are more concerned with dental hygiene and have a wide range of skills (*Naidu et al., 2015*).

The effectiveness of an oral prevention program was also observed in the study conducted by Nadazdyova A. *et al*.2017 in which it was found that the DMFT index was significantly lower in patients who regularly participated in prevention programs compared to DMFT- patients who did not benefit (*Nadazdyova et al., 2017*).

CONCLUSIONS

The results of this study indicate the need to implement health education programs in schools, in order to transmit a scientifically correct information, but especially the creation of healthy individual behaviors, which are built in parallel with educational development.

THANKS

Conflicts of Interest: The authors declare that they do not have any conflicts of interest regarding the publication of this paper.

BIBLIOGRAPHY

1. Naidu R., Nunn J., Irwin J., The effect of motivational interviewing on oral healthcare knowledge, attitudes and behaviour of parents and caregivers of preschool children: an exploratory cluster randomised controlled study. BMC Oral Health 2015; 15:101-108.
2. Fontana M., González-Cabezas C., Peralta T. *et al*, Dental Education Required for the Changing Health Care Environment. Advancing Dental Education in the 21Century: Section 3. What Should Oral Health Professionals Know in 2040? 2017; 10:32-42.
3. Nadazdyova A., Sirotnakov D., Samohyl M., The Impact of a Preventive Dentistry Programme on Oral Health: A Pilot Study.Iran J Public Health 2017; 46:15-24.
4. Forna N., Forna D., Murariu A., Dezvoltarea regiunii Moldova privind profilaxia starii de sănătate orală raportat la posibilitățile economice de susținere a acesteia. IBN 2017; 30: 157-164.
5. Cooper D, Kim J, Duderstadt K *et al*., Interprofessional Oral Health Education Improves Knowledge, Confidence, and Practice for Pediatric Healthcare Providers. Front. Public Health 2017; 5:165-172.
6. Menegaz A., Silva A., Cascaes A., Educational interventions in health services and oral health: systematic review. Saude Publica 2018; 52:52-57.
7. Carvalho J.C., Schiffner U., Dental Caries in European Adults and Senior Citizens 1996–2016: ORCA Saturday Afternoon Symposium in Greifswald, Germany. Caries Research 2019;53:242–252.