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Assessment of knowledge on prevention of dental caries in a group of children from disadvantaged families in Romania

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Abstract

The purpose of the paper is the identification of knowledge regarding the prophylaxis of dental caries in a group of children coming from disadvantaged backgrounds. A number of 86 children coming from disadvantaged environments were assessed, registered in SOS Children's Villages Association of Romania - Counseling and Support Centre for Children and Parents of Cisnădie, who received questionnaires applied for this study purpose. Daily brushing requirement is known by a rate of 89.5% children included in the study, 96% of children knowing that they should have their own toothbrush. The toothbrush change frequency is known by 68.6% of study participants. When asked about the technique of brushing, the response rate was only 52.3%, there is a large number of questionnaires that had not marked any answer to this question. The role of auxiliary dental hygiene means is known in the proportion of 79.1% for mouthwash, and 50% for the dental floss. There is a significant difference between flossing and mouthwash (<0,001%), the concepts being known therefore differently. Carioprophylactic nutrition has been recognized by 89,5% of study participants. Most children do not know or they are not enrolled in a program of sealing or fluorization (94,2%). There is a significant difference between the procedures of sealing and fluorization. (<0,001%). A continuing medical edu-

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cation is required for all children, but further efforts should be made to improve the educational level of children from disadvantaged backgrounds.

Keywords: Prophylaxis of dental caries; disadvantaged family environment; questionnaire.

Introduction

Prevention of dental caries aims to ensure the health of teeth and it includes a complexity of methods to increase resistance of dental hard tissues and fight against the cariogenic aggressor factors (Gafar, 1995) In terms of resources allocated to prevention and strategies used internationally, there is no consistency between countries like Denmark, Iceland, Norway or Sweden. (Wang, 1998) The population groups with social and cultural issues require the development of appropriate strategies to promote oral health necessary in local communities by involving parents and key persons of that social environment. (Sundby, 2003)

Also the time the patient is recalled for preventive interventions should be individualized according to oral health and the oral health behaviour. (Wang, 2010) School children are considered an important target group for various health education activities, to print a healthy life style for the rest of their lives. The educational level is dependent on factors like source of information, dental experiences, socio-economic status of parents. (Goel, 2005) Children from disadvantaged families, considered children coming from disadvantaged social backgrounds, represent a disadvantage in terms of proper hygiene habits. (Marza 2009)

Purpose

The aim of this study is to identify the basic knowledge level in this field and according to this the inclusion into a specific educational programm.

1. Identification of knowledge in the field of:
   i. Dental hygiene, both the main way of removing microbial plaque and the secondary ways
   ii. Nutrition with exogenous and endogenous role in prevention of dental caries
   iii. Special ways to increase anti caries resistance

2. Based on questionnaires answers, it's necessary to determine the direction in which the following educational program will be targeted.

Material and method

In 2010 there was initiated a collaboration between „Lucian Blaga" University of Sibiu, SOS Children's Villages Association of Romania - Counseling and Support Centre for Children and Parents of Cisnădie and Procter & Gamble Distribution SRL, in order to design and conduct a training program aimed at enhancing the level of knowledge regarding the prevention of dental caries in children from disadvantaged backgrounds. The pilot project established two stages aimed at determining the initial level of knowledge by applying questionnaires and carrying out a specialized training regarding the ways to prevent dental caries. Closing the assessment loop (assessing the effectiveness of the first educational program) will be done in the next stage of the project and it is not part of this study.

A number of 86 school children were taken into study. Being able to read and write they are able to fill in questionnaires. These forms comprise easy questions with basic specific vocabulary.

The children are coming from SOS Children's Villages Association of Romania. The questionnaires were completed after parents' prior written consent. The questionnaires were completed in the areas of the social welfare institution and not in a dental medicine consulting room. We thus sought to offer the children an environment known, safe, comfortable mentally. We wanted to get a better collaboration of the children during the assessment and education. The initial questionnaire comprised several questions, but after the assessment process (feedback) of the answers and attitudes of participants in the project, some questions were removed, being considered inappropriate for statistical analisys. The rejected questions will be kept for negative references ("not so") in the design of future questionnaires.

Results

The values shown are derived from analysis of answers to questionnaires and they are not verified by clinical examination. We did not wanted to know which the clinical dental status of children is, but to find out the level of knowledge regarding the key factors involved in prevention of dental caries. The statistical interpretation of data was performed with SPSS 16.0.1 for Windows, SPSS Inc, Chicago, USA, 2007 statistical program.

Factor 1 (the main mean of dental hygiene): brushing. Daily brushing requirement is known by a rate of 89.5% children included in the study. The need to use their own toothbrush is known by 96,5% of subjects. The toothbrush change frequency is known by 68.6% of study participants. When asked about the

technique of brushing, the response rate was only 52.3%, there is a large number of questionnaires that had not marked any answer to this question. (table 1)

Table 1. Frequency table for answering questions about brushing

	How many times do you think you should brush your teeth?					
Valid	less than once a day	once a day	twice a day	several times per day	Missing	Total
Frequency	9	9	40	28		86
Percent	10,5	10,5	46,5	32,6		100,0
	Do you think that you should have your own toothbrush?					
Valid	yes	no	I do not know		Missing	Total
Frequency	83	1	2			86
Percent	96,5	1,2	2,3			100,0
	Do you change your toothbrush					
Valid	every three months	every six months	at a year		Missing	Total
Frequency	59	14	13			86
Percent	68,6	16,3	15,1			100,0
	Do you use the toothbrush with movements					
Valid	horizontal	vertical	circular	Total valid	Missing	Total
Frequency	19	8	18	45	47	86
Percent	22,1	9,3	20,9	52,3	47,7	100,0

Factor 2 (auxiliary means of dental hygiene): dental floss and mouthwash. There is a difference between the two adjuvant elements of dental hygiene. Below 50% of respondents know the usefulness of using both methods of prevention of dental caries. Crosstabulation comparative statistical analysis (chi-square test) of answers to two questions showed a statistically significant difference between the level of knowledge on the two concepts of hygiene. (table 2, table 3, graph 1) We questioned whether the answers to two questions are linked to the way the question was placed (suggested answer). The suggested answer is rejected, because in this situation there should not be statistically significant differences between the two groups of answers.

Table 2. Frequency tables with answers to questions concerning the auxiliary means of prevention of dental caries

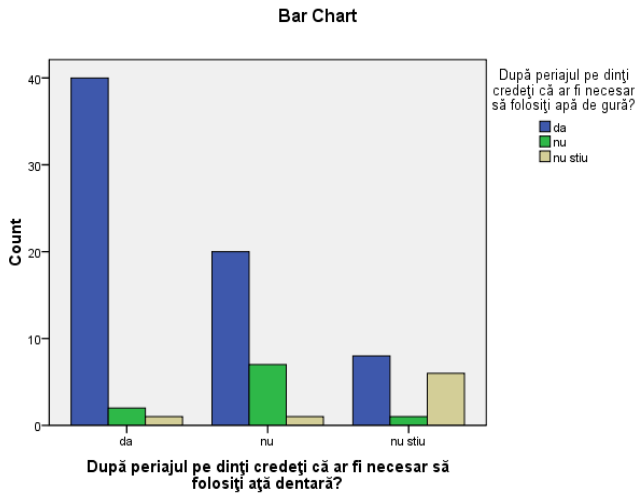
Do you think you should use mouthwash after brushing?			
		Frequency	Percent
Valid	yes	68	79,1
	no	10	11,6
	I do not know	8	9,3
	Total	86	100,0

Do you think you should use dental floss after brushing?			
		Frequency	Percent
Valid	yes	43	50,0
	no	28	32,6
	I do not know	15	17,4
	Total	86	100,0

Table 3. Results of crosstabulation statistical analysis, p<0,001 (0,1%)

Chi-Square Tests dental floss/mouthwash			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27,379	4	,000
Likelihood Ratio	21,391	4	,000
Linear-by-Linear Association	15,536	1	,000
N of Valid Cases	86		

Graph 1. Graphical representation of possible combinations of answer to questions regarding factor 2 (crosstab statistical analysis).



Factor 3 (hygieno-dietetic): cariosprophylactic nutrition. Cariosprophylactic nutrition has been recognized by 89,5% of study participants. The existence of unanswered questions suggests that there is a number of children who need education in this direction. (table 4)

Table 4. Frequency table with answers to question concerning the cariosprophylactic nutrition

Mention the food that keeps your teeth healthy:			
		Frequency	Percent
Valid	fruits and vegetables	77	89,5
Missing	System	9	10,5
Total		86	100,0

Factor 4 (special prophylactic means): fluorization and sealing. Over 50% of subjects respond that they are not included in any specialized program of prophylaxis. (table 5) A significant proportion of 21.4% are children who do not know those two notions. Answers to those two questions were analyzed with a crosstab test and the result shows a significant difference in knowledge of the two notions contained in factor 4 (table 6, graph 6).

Table 5. Frequency table with the summary of answers to questions concerning the special means of caries prevention.

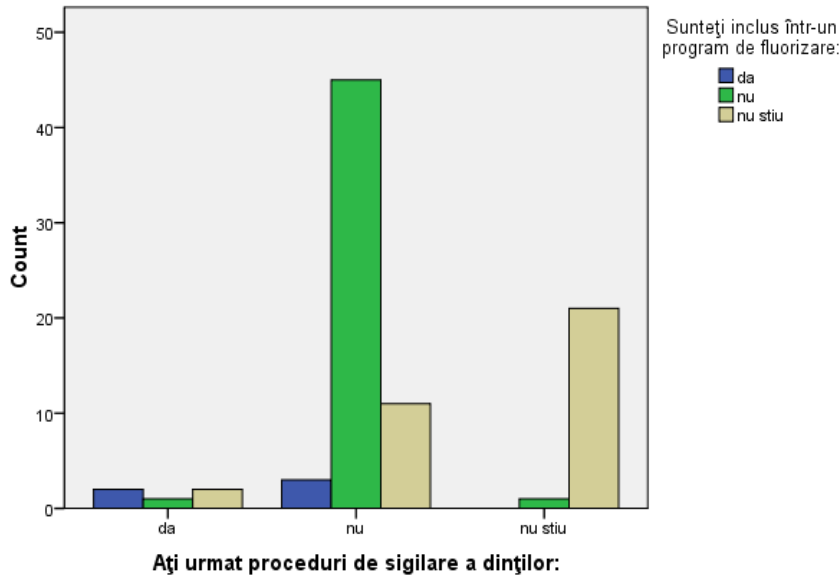
You have followed procedures for sealing teeth:			
		Frequency	Percent
Valid	Yes	5	5,8
	No	59	68,6
	I do not know	22	25,6
	Total	86	100,0

You are part of the fluorization program:			
		Frequency	Percent
Valid	Yes	5	5,8
	No	47	54,7
	I do not know	34	39,5
	Total	86	100,0

Table 6. Results of crosstabulation statistical analysis, p<0,001 (0,1%)

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51,549	4	,000
Likelihood Ratio	50,457	4	,000
Linear-by-Linear Association	28,683	1	,000
N of Valid Cases	86		

Graph 2. Graphical representation of possible combinations of answer to questions regarding factor 4 (crosstab statistical analysis).



Discussions

The questions related to factor 1 revealed the existence of a gradient regarding the knowledge of toothbrushing. It is obvious that basic hygiene concepts such as exclusively use of objects of personal hygiene are known by the vast majority (96,5%) of participants involved in the study. Over three quarters of the participants recognized the correct frequency of daily toothbrushing (79,1%) but only two-third of the participants considered the changing of the toothbrush every three months a necessity, and only a half of them were familiarized with toothbrushing techniques.

Unfortunately, questions about the brushing technique and the time of changing the toothbrush reveal a discrepancy between the need of brushing and its adequate performance. It seems significant that there is a large number of children who have not responded to question 4 („*Use the brush with appropriate movements*"). The educational program regarding toothbrushing has to insist more on the proper toothbrushing techniques because in this field were identified most of the knowledge gaps.

Similar studies conducted in Romania on population samples of ordinary families, by questionnaires addressed to parents, show that all children have their own toothbrush, the 15% brush their teeth after each meal, 62% twice a day, 20% once a day, 3% every two days. (Fleancu 2009) In this study, we examined the level of knowledge about dental hygiene for children from disadvantaged environments and not the declared frequency of oral hygiene procedures. Therefore the results of these two studies are not directly comparable. If we group the answers to this question, depending on the correct deemed value (two or more than two daily brushing / one or less daily brushing), we notice that the values obtained in the two studies are close, 77% / 23% for the above-mentioned study and 79.1% / 21% for our study.

There is little knowledge of other concepts relating to auxiliary hygiene and prophylactic methods. The values we obtained from questions about this issue are lower than those from brushing. There is a significant difference between flossing and mouthwashing (<0, 001%).

The two secondary prophylactic means are very different in difficulty and understanding. The simplest and most intuitive is by far the mouthwash, being used, as its name already says to wash the mouth. Even if its name is very suggestive, the dental floss is not so easy to use and it is surely not being used daily without any previous instruction. This result shows a high need to insist on the training of using the dental floss without neglecting however the importance of the mouthwash.

Carioprophylactic nutrition has been recognized by 89,5% of the study participants, but the degree of compliance with this type of food by children involved in this study is unknown. Other studies related to children from ordinary families a sweets daily consumption rate of 53%. (Fleancu 2009) Although this factor is known by most of the children, it is still part of the educational program.

The analysis of answers to questions about special means of prophylaxis reveals two different phenomena. First the small number of children coming from disadvantaged backgrounds who are included in prophylaxis programs conducted in dental consulting rooms. Secondly the large number of answers of "no" and "I do not know" suggests an increased need for medical education in this direction. This result suggests the need to provide additional information regarding the techniques of fluorization compared with sealing technique. The educational program referring to special prophylactic means will be guided in two directions. One will explain the significance of prophylactic techniques and the other one will enhance the child's access to the prophylactic services. The latter can be obtained by fighting fear of dental treatments and providing information regarding their legal rights. We recall that under current law in the field, the *prophylactic dental* services can be provided free to children who meet certain conditions. Thus at least a part of the children from disadvantaged backgrounds will benefit

from free medical services, inaccessible to their families in the regime of full payment.

Studies conducted in other countries show that socio-cultural and socio-economic factors may be barriers to the addressability to oral healthcare. (Gaercha, 2010; Sundbay, 2003, Edelstein, 2002). Other studies conducted in Europe show that the condition of teeth caries presented similar results in children that addressed to a private health system versus a public health system. (Christensen, 2010)

The study limits are due to the dimension of limited sample used in this study and the fact that only children living in urban areas are included in the study.

Conclusions

Based on the results obtained we believe we have reached the objectives set at the beginning of the project. The gathered information determines the level of knowledge regarding dental carries prophylaxis among school aged children from disadvantaged backgrounds. The socio economic disadvantaged children are familiar with the most important factor of dental hygiene, but they do not know how exactly to use it. They have different knowledge of the auxiliary hygiene means and most of them are not included in any prophylaxis programs.

Following the assessment process, there will be designed for the second stage an improved scale for assessing the knowledge on prevention of dental caries and adapt the educational material to the needs of the target social group. The information content of the next training will be directed to correct the information referring the brushing technique, insisting on the role of flossing to prevent tooth decay, additional explanation of special means of preventing dental caries and the possibilities of access to specialized treatments.

A continuing medical education is required for all children, but further efforts should be made to improve the educational level of children coming from disadvantaged backgrounds.

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