Oral hygiene habits and attitudes in a school population in L’Aquila (Italy)

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Abstract: Aim This study aims to analyse the results of a questionnaire submitted to students of the elementary schools in L’Aquila in order to understand their awareness of a correct caries prevention method by using fluoride. Materials and methods 4th and 5th grade students of elementary schools in L’Aquila were submitted to a questionnaire; from a total of 1205 students, age ranging from 8 to 12, 1094 were questioned; 7 children of 8 years old, 282 of 9, 555 of 10, 243 of 11, 8 of 12, and only 2 of 13, respectively (the last 2 were registered later at school because non-EU citizens). Results Among the Italian population with a low incidence of dental decay, a relatively limited group, called ‘high risk decay group’, revealed a higher incidence of the pathology than the standard one. Conclusion In a multiracial society, as ours, it is important to carry out an effective screening in order to recognize different categories of patients through simple questions inserted in the patient’s case history.

Keywords: Fluoride, Paediatric prevention, Child

Introduction

Dental decay is still one of the prevalent chronic-degenerative disease in almost all countries. It affects all ages, the major category risk being children and adolescents. During the last decades, in occidental countries a steady decrease of the prevalence of dental decay has been observed, trend that does not involve the whole population. Data from epidemiological researches performed during the past years revealed the presence of people with a high risk of dental decay among populations with a low prevalence; this means that there are people with a high risk of dental decay among these [Angelone et al., 1998; Bossu et al., 2003; Sigismondi et al., 1998].

Data about the Italian situation of dental decay prevalence, obtained by the Centre of Collaboration for Epidemiology and Oral prevention of the OMS in 1996, show that, by the age of 12, only 36% of the people examined have all permanent teeth healthy [Abinate et al., 2000]. Among the Italian population with a low incidence of dental decay, a relatively limited group, called ‘high risk decay group’, revealed a higher development of the pathology than the standard.

Into a multiracial society, as our is, it is important to carry out an effective prevention program to recognise the different categories of patients through simple questions to ask the patient while recording the case history [Aps et al., 2002]. This way, it is possible to carry out an effective oral prevention based on individual requirements [Moss et al., 1982; Koch 2003].

This study aims to analyse the results of a questionnaire submitted to the 4th and 5th grade students of elementary schools in L’Aquila in order to understand their awareness of a correct caries prevention method by using fluoride [Freschero et al.; 1999; Scaglione et al., 1999].

Materials and methods

For this study, carried out by the Department of Paediatric Dentistry of the University of L’Aquila, a population of students from elementary schools in the L’Aquila area was selected. This population was divided into six didactic groups, especially those registered for the 4th and 5th grade (ages ranging from 8 to 12 years old) in the 2004/2005 school year. Many schools were considered, belonging to different didactic groups, in order to obtain conclusive data to reveal as accurately as possible the new Italian multiracial society.
This population of school children was handed a questionnaire, between April and June 2005, aimed to determine the real knowledge concerning the children’s oral hygiene habits, effectiveness and use of fluoride, and their eating habits. The questionnaire also has a special area for personal suggestions to improve domestic oral hygiene. This study was conducted in cooperation with the heads of the elementary schools that, in agreement with the parents’ representatives, allowed us to hand in the questionnaire during classes so that no outer interference could influence the students’ answers. The questionnaire is shown in Figure 1.

The questions were expressed to be as straightforward and clear as possible. The first and the second questions were designed to determine whether the children’s teeth were being brushed willingly or not, specifying the time of the day when this was done.

More detailed information about the instruments used for oral hygiene were left for the third and the fourth questions: “Have you ever used dental floss?”, and “Do you always use the same toothpaste?”. The answers were designed to check the level of attention on the oral cavity’s care and the parents’ influence on their children’s daily oral hygiene, since parents choose and buy the toothpaste used by their children. The reason for asking the name of the toothpaste normally used was to find out whether the parents, when they buy it, choose those meant for children. In a related question, the level of knowledge about the fluoride component of the toothpaste was assessed by the questions: “Does your toothpaste contain fluoride?” and “Is it written on the packaging that it contains fluoride?”.

As diet is an important factor in dental caries, the questionnaire also asked about the consumption of cariogenic foods, not just the food per se, but the daily use of chewing-gum and whether the brand consumed contained fluoride [Cagetti et al., 2002].

The central part of the questionnaire analysed the children’s knowledge about the results of fluoride’s action and the reasons and the importance of its use. The six possible answers provided to the question “Do you know the effect of fluoride?” allow us to verify the students’ knowledge about the action of fluoride. In fact, we have consciously inserted false information to have an accurate view about their knowledge and we wondered if these children have a clear idea of the usefulness of fluoride during growth [Basso et al 2000].

Other questions related to fluoride were designed to inform us if in the past the children had used fluoride tablets and whether they continued to use them. In assessing the use of fluoride tablets the parents’ role was considered very important as they are the ones who have to buy them. Accordingly there was the question: ‘Who gives you the fluoride tablets? Your parents or the school?’ knowing that only for a short period of time, about 15 years ago, the schools had supplied daily fluoride tablets. This question had an implied answer, but, as demonstrated later, some of the students answered that they took fluoride at school.

With further questions we wanted to know if the children were aware of the importance of taking fluoride and if they preferred it as chewing-gum or tablets. In addition it was asked whether the use of fluoride had been suggested by the paediatrician, the dentist or by someone else. The last item did not have a prearranged answer, but left the child free to write his/her own opinion about how to preserve the health and beauty of his and his schoolmates’ teeth.

Results

Population. From a total of 1,205 students, with an age ranging from 8 to 12 years, 1,097 questionnaires were returned (Fig. 2). The age distribution was 7 children 8 years old, 282 of 9 years, 555 of 10 years, 243 of 11 years, 8 of 12 years, and only 2 aged 13 years old. The latter were registered later at school because they were non-EU citizens.

Most of the students were born in L’Aquila (990 or 90.4%), 19 in the north of Italy, 24 in the south and 43 in a foreign country. The sex distribution was 603 male (55%), and 494 female.

Oral hygiene habits. The total number of responses was 1,087. For the question “Do you willingly brush your teeth?” 599 (55%) said yes, 60 (5.5%) said no leaving 428 (39%) who said that they not always did it. To the question about the timing of brushing, 740 said that they brushed their teeth after breakfast, 390 after lunch, 783 after dinner, 313 before going out and 219 said they brushed their teeth only when their parents told them to.

A child may use dental floss after the age of 10 and among the ones interviewed 645 (60%) said that they had never used it.

We are reassured by reading some of the questionnaires that some of the students suggested the use of dental floss in order to keep “their teeth’s health and beauty”.

Use of toothpaste. As for the questions about the constant use of a toothpaste brand and about “the name of the toothpaste that you like best”, the
Questionnaire about dental decay prevention

To students attending the schools from L’Aquila

Please give simple answers to the questions from the questionnaire. Don’t try to find the ‘right’ answer, choose the answer that seems right to you. Your answers will be used to study the methods of maintaining the health and beauty of the teeth.

Do you willingly brush your teeth? Yes ❑ No ❑ Not always ❑

When do you brush your teeth? (You can choose more than one answer): When my parents remind me ❑ After lunch ❑ After breakfast ❑ After dinner ❑ Before going out ❑

Have you ever used dental floss? Yes ❑ No ❑

Do you always use the same toothpaste? Yes ❑ No ❑

If you remember write down the name of the toothpaste that you liked best ______________________

Does your toothpaste contain fluoride? Yes ❑ No ❑

Is it written on the package of your toothpaste that it contains fluoride? Yes ❑ No ❑

What do you eat more often:
Candies ❑ Chewing-gum ❑ Chocolate ❑ Other sweets ❑

What kind of chewing-gum do you prefer (You can choose more than one answer):
With fruit flavour ❑ Sugar free ❑ With fluoride ❑

Do you know the exact effect of fluoride:
To whiten your teeth ❑ To have healthy gums ❑ To prevent dental decay ❑ To treat dental decay ❑ To clean better all the teeth ❑ to rearrange the deformed teeth ❑

Were you given fluoride tablets? Yes ❑ No ❑ I don’t remember ❑

If your answer is ‘yes’, do you still take them? Yes ❑ No ❑

Were they given to you at school? ❑ Or by your parents at home? ❑

Do you think that fluoride is important? Yes ❑ No ❑

Yes, but not for all the children ❑

Do you like it best as gums or as tablets? ______________________

The use of fluoride was advised by:
your paediatrician ❑ your dentist ❑

Who advised you?

What would you advise your colleagues to do in order to maintain their teeth healthy and beautiful?

How old are you?
Where were you born?
Where do you live?

Sex: M ❑ F ❑

In accordance with 675/96 law (regarding the privacy of personal information) we state that the present questionnaire was done on condition of anonymity and will be used only as a statistic study.

FIG. 1 - Questionnaire used to assess students in Aquila’s knowledge and attitudes to dental health.
answers were: 395 students always use the same brand of toothpaste and 681 frequently changed it.

Mentadent® was the first choice for 312 of them, followed by Oral B® (172), AZ® (133), Pasta del Capitano® (59) and Colgate® (13). Is important to point out that the brands of toothpaste above mentioned have in the same line products that are not designed for children because they are too abrasive (against-tartar) or contain whitening substances. Most of the interviewed students, 835 (88%), answered yes to the question about the presence of fluoride in the toothpaste they used.

Fluoride. The importance of fluoride is acknowledged almost by all the students interviewed, as shown in the relative graphic, in which 916 (87%) are positive answers, a very few 18 (1.7%) said no and 115 (11%) answered that they associate the effectiveness of fluoride only in some cases of individual deficiency. Fluoride and its mechanism of action, is still not well known by most students, that associate it not only to caries prevention but they ascribe to it other properties: it is important to emphasize that to the question “Why do we use fluoride?”, 329 answers, 1/3 of the total, attribute to fluoride whitening properties, 200 gingival protection, 123 detergent properties and 117 therapeutic properties. Surprisingly, 15 subjects believed that it can straighten the teeth.

Fluoride tablets. To the questions aimed to understand if the children had used fluoride tablets 514 (48%) said they had, while 241 (22%) could not remember. When they were asked if they still used fluoride tablets only 760 gave a reply of whom 114 (15%) said yes. In a related question as to if the fluoride tablets were given or were still given by the teacher at school or by parents at home, among those who answered (601) 125 (20%) replied that the tablets were given by parents and 476 (80%) at the school. The question as to who advised to give tablets was replied to by 695 children and 504 (73%) was by dentists and 136 (19%) by paediatricians, the remainder being prescribed by parents.

From their answers we found out that: 541 students took fluoride tablets, 316 have never taken them and 241 did not remember. If we compare these data with those obtained from the following question it is underlined the fact that among the students who had taken fluoride (541) only 114 continued to take it, while 646 did not use it any more.

Also very important is the analysis of data coming from the question: “How old were you when you stopped taking fluoride tablets?”: 1% of our students are still taking fluoride in comparison to the other...
groups who interrupted it at the age of 10 (21), at 9 (60), at 8 (102), etc. The distribution of responses is shown in Figure 4.

**Diet.** Data about cariogenic food consumption reveal major interest values: 616 students use chewing-gum, 380 eat especially chocolate, 271 prefer candies and a small group eat other sweets (Fig. 3). Data obtained through the next question, when we asked which chewing-gum they prefer, are: 622 preferred sugar free chewing-gum, 536 consume chewing-gum with fruit flavours and another group of 344 students use chewing-gum containing fluoride. It should be noted that some children gave several responses so that the total number of answers was greater than the number of students who answered.

**Oral health advice.** Finally we asked the children which piece of advice they would give to their fellow students about how to maintain their teeth healthy. A variety of answers were received and a lot of them were imaginative. But the most common answer repeated what their parents had probably said to them every day: “to brush their teeth after every meal”, “don’t eat too many sweets”, “to have a dental check-up at least once a year”.

**Discussion**

Analysing the data obtained from the question “Do you willingly brush your teeth?” most of them (599) answered to do it willingly and only a group of 60 children answered that they do not. In the evaluation of the frequency of oral hygiene manoeuvres we hoped to obtain a homogenous answer indicating “morning”, “lunch”, “evening”, but it was noted that these children are not constant in the practice of a correct oral hygiene. In fact 740 children said that they brushed their teeth after breakfast, 390 after lunch, 783 after dinner, 313 before going out and 219 said that they brush their teeth only when their parents tell them to. In other words the great majority brushed after the two main meals of the day, breakfast and dinner. Fortunately, most of them seem to brush their teeth in the evening and at least once more during day that is in the morning or before going out.

It is important to underline the relative excessive number of students that were not conscious of their oral health, despite the fact they are 10-11 years old, and in fact 219 students confessed that they brush their teeth only when their parents ask them to. This data is probably an under estimate. In fact, in a previous study of the Faculty of Dentistry in L’Aquila [Angelone et al., 1998] concerning caries and malocclusion prevalence, it was reported that more than 2/3 of the children in the 3rd, 4th and 5th grade of elementary school had at least one decayed tooth. Therefore, it is unlikely that a correct procedure of oral hygiene was carried out. Out of this emerges the doubt that not all the students who said that they brushed their teeth when their parents ask them to actually do it, as indicated in the questionnaire.

Oral hygiene for older students may include the use of dental floss.

A 10 years old child may use dental floss, but 645 of the questioned students answered that they had never used it. It is worth mentioning that the brands of toothpaste reported on by the students have in the same line of products items that are not designed for children. This is because they are too abrasive (against tartar) or have a whitening effect or a too high fluoride’s concentration [Albergo et al., 1997; Leone et al., 2001]. The use of a toothpaste that contains fluoride is, from a social point of view, an easy and effective method of ‘home’ prevention of dental decay [Chelariu et al., 2003; Ghiglione et al., 1997]. Most of the interviewed students gave an affirmative answer to the question about the presence of fluoride in the toothpaste they use.

Among the students who said that they took fluoride tablets (541) only 114 continued to take them, while 646 did not anymore. This data seems to be significant, because it shows a non-constant behaviour that neutralised the beneficial effect of ‘home’ systemic fluoride and topic prevention.

Interesting is the analysis of the answers to the question about the age when they stopped taking fluoride tablets, as, in fact, the children stopped the systemic fluoride prevention at the beginning of elementary school, or is on the point of doing it around this age.

It is reassuring to find out from this questionnaire that dentists are the ones who have a fundamental role in the primary prevention of dental decay [Rhoshan et al., 2003]: about half of the students confirm that dentist is the first to suggest the administration of fluoride tablets, followed next by the paediatrician and a small percentage said that this was suggested by their parents [Piana et al., 1999].

There are two further results of this questionnaire of importance: chocolate was not their first choice in sweets and, more importantly, they preferred chewing gum over other sweets. The children’s main choice in chewing-gum was the sugar free variety. This is important because sugar-free chewing-gum is certainly among the sweets that have the least...
cariogenic effect for the teeth whether we think of its mechanical cleaning role or of the quantity of saliva that it induces and its fluoride content [Cagetti et al., 2002].

Finally, the same students were asked to give a piece of advice to their schoolmates about how to maintain the health of their teeth. We received a variety of answers and some of them were imaginative, but the most common ones reminded of what their parents probably told them every day: “to brush their teeth after every meal”, “not to eat too many sweets”, “to have a dentist”.

In recent years the Italian population has become multi-ethnic and so dentists have to deal with different categories of patients. Some of them, having economical and social problems, neglect their oral hygiene [Vanobberge et al., 2001] and in these cases the main cause is the parents’ indifference to this problem when they should be the first promoters of the prevention. In cases of careless patients that have a diet rich in cariogenic food, with a scarce and inadequate oral hygiene, with a high caries index and that go to the dentist only when they are in pain, systemic fluoride intake led to a good caries prevention. So, it is the specialist’s duty to distinguish and recognise the different categories of patients through easy questions such as: do you willingly brush your teeth and how many times a day do you do this? Do you use fluoridated toothpaste? Do you use fluoride tablets? Which are your favourite sweets? When do you go to the dentist? while taking the dental history. So, once the type of patient is recognised, the dentist is able to design a personalized prevention programme that fits the needs of the individual [Strohmenger, 1986; Balestriere et al., 1998; Freschero et al., 1999; Poggio et al., 1998; Ponti et al., 2001]

Conclusions

In Italy, due to the growing awareness of both adults and children to the problem of dental decay, there has been a progressive reduction of caries incidence, with a decrease of DMFT index to 1.5, and this is the result of the implementation of special programs based on a topical professional prophylaxis [Strohmenger 1986, 1999, Cagetti et al 2000], a ‘home’ prevention (correct toothbrushing and use of fluoride toothpaste), a proper diet poor in cariogenic foods and use of water containing fluoride. In case children show a low risk of caries, they should have a dentist check up once a year, a diet rich in carioprotective food and they must follow the correct manoeuvres of oral hygiene and use fluoride toothpaste because the use of a systemic prevention may be useless if not harmful and there may be the risk of excessive ingestion of fluoride, along with the well known dental damages.

References

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