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## Evaluation of a 7-year school-based community dental hygiene programme in Portugal by high school teachers

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**Abstract:** *Objectives:* To obtain high school teachers evaluation of a Community Dental Hygiene programme, developed as part of a clinical trial designed to assess the safety of low-level mercury exposure from amalgam restorations. *Methods:* A questionnaire to assess programme evaluation, personal opinion on programme relevance and satisfaction with activities was distributed among teachers. It had a total of 22 questions organized into three groups. *Results:* A total of 25 questionnaires were obtained from teachers who participated in the programme. Ninety-two per cent of the respondents had a positive opinion concerning the existence of the programme. Eighty-eight per cent of the teachers believed that the programme changed student's knowledge about dental hygiene. Ninety-two per cent of teachers supported the existence of the programme and 88% of them disagreed with a statement that participation in the programme was a waste of time. Teachers who did not collaborate actively with dental hygiene activities indicated belief that the programme affected school activities ( $P = 0.003$ ). Teachers who actively participated in the programme believe that dental hygiene activities were important for students ( $P = 0.005$ ). *Conclusions:* Teacher evaluations of this kind of programme are critical for the development of school-based Dental Hygiene Education programmes. Teachers believe that Dental Hygiene Education is crucial for students' well-being.

**Key words:** dental hygienists; health education; health promotion; oral hygiene; programme evaluation; questionnaires; school-based programmes

## Introduction

A high school-based Community Dental Hygiene programme was developed and implemented in 1998 as part of the *Study of the Health Effects of Dental Amalgams in Children* initiated in 1997 as a cooperative agreement among the University of Washington (Seattle), the University of Lisbon (Portugal) and the National Institute of Dental and Craniofacial Research (NIH Grant 1U01DE11894), in collaboration with the Casa Pia School system in Lisbon, Portugal. The clinical trial design and methodology have been described in a prior publication (1); results of the study have also been published (2).

During the first year of the clinical trial activities, the overall poor oral hygiene habits and resultant high caries incidence found among study participants led the researchers to implement a school-based dental hygiene programme. The aims of this programme were to improve oral health and prevent new disease.

Teachers are a key element in the development of school-based dental hygiene programmes. Only the support and participation of the teaching staff in the development of the in-class activities can help the dental hygienists provide students with the necessary information to promote dental health behaviours. Teachers have been found to be willing to teach oral health topics and take other teaching responsibilities in an oral health programme, but they do not want to assume administrative responsibilities (3). Also school programmes that involve dedication of class time for brushing or mouthrinsing supervision affects negatively teachers' motivation (4).

An aspect that is of value for teachers is the existence of workshops for them on oral health; this can improve their knowledge and make them having a more positive attitude towards a school-based oral health programme (5). Education for teachers on dental issues before the implementation of a school-based dental hygiene programme may be of crucial importance for teachers' adherence to the programme activities and also for the transmission of correct information to students. Teachers' knowledge about oral health and prevention methods is incomplete, inaccurate and special attention must be drawn to this issue (6). Dental education is essential to improve oral health knowledge and opinions of this influential population (7).

School-based oral health programmes have had a positive effect on oral health knowledge and attitudes of teachers (3–5) which may lead to a stronger motivation to transmit dental hygiene education to students.

Additionally, the school environment itself plays an important role, as it can provide a basis to promote oral health during impressionable stages of children's lives when lifelong

attitudes, beliefs and skills are developed (8). A healthy school environment is part of every teacher goals and it can be promoted through initiatives such as oral hygiene issues included in the school curricula (9). Many of the major oral health care topics can easily be integrated with basic subjects at school, resulting in an enhancement of sustainable changes in behaviour (10).

Evaluation of such a community programme is necessary for the analysis of the program's success. In this particular programme, participants were asked to complete knowledge tests on their newly acquired oral hygiene knowledge, and their plaque index was scored during dental hygiene appointments at the Lisbon dental school. The dental hygienists managing the activities of the programme were asked to report on their activities on an annual basis. To complete the evaluation process, feedback from participating teachers is essential.

The aim of this study was to obtain the teachers evaluation of the school-based dental hygiene programme and to explore their opinions and satisfaction towards the education programme methodology and relevance.

## Methods

### Programme activities

Didactic sessions consisting of brief information on dental plaque, dental caries, gingivitis, periodontal disease, fluoride, diet, toothbrushing and flossing were implemented in each classroom. These themes were updated and adapted to the participants as they aged over the 7 years of the clinical trial, in consideration for their physiological and mental growth. Bi-monthly fluoride rinses and annual toothbrushing instruction and motivation appointments were also part of the programme.

In addition to the classroom educational activities, clinical trial participants received annual prophylaxis, pit and fissure sealants and topical fluoride applications, in addition to brushing and flossing education at their annual clinical visits.

Programme activities took place in the seven schools of the Casa Pia system during the clinical trial years. Activities started with the identification of the classes with study participants in it and authorization of school directors, teachers and students to participate in the proposed dental hygiene programme.

Not every child in each classroom participated in the clinical trial, but the oral health promotion and education programme was provided not only for study participants but also for their peers as activities took place in the classrooms.

After teacher acceptance of the presence of the dental hygienists in the classroom, the programme started at the beginning of every school year with didactic lessons and motivation for dental hygiene activities.

An important aspect of the programme was the teacher participation at the in-class activities. Teachers were asked to fully participate during the didactic lessons by being present during the programme activities and by collaborating with the dental hygienist in the classroom, and whenever possible to integrate dental hygiene themes in their own teaching programmes.

Besides activities in the classroom, dental hygiene leaflets, posters, schedule books and calendars were distributed to students and teachers as informative and motivational resources. Novelties included personalized pens, bookmarkers, caps and T-shirts displaying dental hygiene reminders and oral health promotion ideas were distributed to students.

Brief lessons on oral health education took place bi-monthly along with the fluoride mouthrinses. Before Christmas and summer breaks, in-class celebrations took place consisting of games and quizzes to promote oral health behaviour during the holidays.

Once a year, an exhibition of dental hygiene related artwork, created by the students during their class activities, took place along with contests and games involving the entire school community.

### Teacher questionnaires

Twenty-five teachers who participated in the school-based programme were asked to evaluate the programme at the end of the study activities.

A simple questionnaire with 22 questions was used, divided into three categories. The first category, with eight questions, consisted of demographic information regarding teacher gender, age, years in profession, professional status and length of participation in the dental hygiene programme. The second group of questions related to teacher evaluation of the programme and was composed of seven questions regarding the relevance and value of the programme activities. The third group comprised seven questions regarding teacher satisfaction with the programme methodology, such as its in-class development during regular activities.

The second and third question groups were answered using a five-point Likert scale. For the programme relevance and value, the scale values were: strongly agree, agree, neither agree or disagree, disagree and strongly disagree. For the satisfaction with the programme development, the items were:

fully satisfied, satisfied, neither satisfied or unsatisfied, unsatisfied and totally unsatisfied.

### Statistical analysis

Descriptive data analysis was used to characterize teacher's answers. For inferential data analysis, Pearson chi-square was used to investigate differences between groups of teachers concerning professional status and gender, their opinions about the programme relevance and their satisfaction with programme methodology.

When looking for association between active participation on programme activities, teacher gender, school and programme evaluation, the statistical measure of choice was the Phi and Cramer's V coefficient.

## Results

A total of 25 questionnaires were obtained from the teachers who participated in the programme. As a result of the teacher placement system in Portugal, there is a large mobility of teachers among schools every year. This situation limits the number of teachers that remain in the same school for long time periods.

In the early years of the programme, there were no records on the number of teachers involved in the programme activities, just the number of classes involved, most of them with the same teacher as we tried to be present in the same areas of knowledge such as biology or technological and visual education.

### Demographic information

Among the 25 teachers, 20 were females (80%) and five males (20%) with ages ranging from 33 to 60 years old (mean = 41, SD = 6.2).

The mean numbers of years as a teacher was 15 and 76% of them were placed in permanency at the school, 20% had a yearly basis contract and 4% were present with other types of contract. All of them were teachers in classes involved in the programme with a median time of programme participation of 2 years, and a range interval of 1–7 years.

### Evaluation of programme relevance

For 92% of the respondents, it was positive to have this programme at the school. This same percentage of teachers supported the existence of the programme, with a vast majority

expressing a 'strongly agree' opinion. Eighty-eight per cent of teachers believed that the programme changed students' knowledge about dental hygiene and the topics discussed during the in-class sessions were relevant to the students.

Forty-four per cent of the teachers felt that the programme changed their knowledge on dental hygiene issues, while 20% said they had not learned anything from the programme, 36% felt that they had no changes on their dental hygiene knowledge.

A positive opinion on programme value is expressed by 88% of teachers, by disagreeing with the statement that participating in the programme was a waste of time, although 32% of the teachers mentioned that programme disrupted classroom activities. The distribution of answers (%) is given in Table 1.

#### Evaluation of satisfaction with programme methodology

For satisfaction with the programme development at school, 76% of respondents were satisfied with the methodology used for activities development.

Concerning the twice a month schedule for activities and the presence of dental hygienists in the classroom for the fluoride mouthrinse and in-class presentations, 72% of teachers were satisfied with the events. Once a year, exhibition of dental hygiene artwork created by students during their class activities was appreciated by 66%. Also, 64% of the teachers were satisfied with the integration of dental hygiene themes in their class curricula.

Twenty-eight per cent of teachers were not satisfied with the time of class interruption because of the development of the programme, while 44% said they were indifferent to this interruption. The distribution of answers is given in Table 2.

Inferential data analysis concerning the various items evaluated for programme relevance and value showed no statistically significant differences between teachers who will be in the same school for their entire professional life and other teachers; still no statistical significance was found between teachers who participated in the programme for a longer time than others.

Still no statistically significant association was found between teachers with different professional status and satisfaction with programme methodology. This was also the case for teacher gender. Teachers who did not collaborate actively with dental hygiene programme ( $n = 6$ ) indicated belief that the programme affected school activities ( $P = 0.003$ ). Teachers who actively participated in the programme ( $n = 19$ ) believe that dental hygiene activities were important for students ( $P = 0.005$ ).

#### Discussion

From the collected information, several issues on planning a community-based dental hygiene programme arise. First of all, it is clear that one of the things that bother most teachers is the presence of a dental hygienist in the classroom, interrupting

Table 1. Teacher answers (%) to evaluation on programme relevance questions

Evaluation of programme relevance	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Programme existence was positive	76	16	8	0	0
Programme changed student's knowledge on dental hygiene	56	32	12	0	0
Topics discussed, in class, were relevant for students	72	16	12	0	0
Dental hygiene programme should exist in school	80	12	8	0	0
Programme changed my knowledge on dental hygiene	8	36	36	0	20
Programme participation was a waste of time	0	0	12	16	72
Programme disrupted classroom activities	8	24	16	24	28

Table 2. Teacher answers (%) to evaluation of satisfaction with programme methodology

Evaluation of satisfaction with programme methodology	Fully satisfied	Satisfied	Neither satisfied or unsatisfied	Unsatisfied	Totally unsatisfied
Satisfaction with programme methodology	36	40	24	0	0
Satisfaction with activities schedule	28	44	28	0	0
Satisfaction with presence of dental hygienist in classroom	32	40	12	12	4
Satisfaction with inclusion of dental hygiene themes in class curricula	16	48	36	0	0
Satisfaction with amount of time of class interruption for programme activities	12	16	44	24	4

class activities; in fact, 48% of teachers feel that the programme disrupted classroom plans. To overcome this situation, we should work early in the morning, before a lesson starts or at the end of school day, or even during a class break. Secondly, it is very important to have teachers involved in the activities, as only the teachers who actively participate in the programme believe that dental hygiene activities were important for students.

The involvement of teachers in the development of dental hygiene activities is fundamental to provide students with support, insight and knowledge to facilitate the habits acquisition process, as students see teachers as the transmitters of knowledge. If teachers are not drawn actively into the process, there will be little chance that they would come to feel the sense of leadership of the area of dental hygiene knowledge transmission. If teachers do not develop leadership in this process, there is little likelihood that the activities will lead to changes in student's practice, behaviour or action.

It is a challenge for health professionals to involve the target groups in the process of defining what a healthy oral cavity means to them. Health professionals must look for active participation, not only of teachers but also of students, because participation involves choice to control oral health conditions, and only when people are able to choose and accept that responsibility we can see results of our educational efforts.

Best results are obtained when a teacher involves himself or herself in the process and dialogue as a partner in the health education process, by asking students, provoking questions and providing ideas, knowledge and promoting healthy habits acquisition.

Another significant aspect that is worthwhile to explore in the planning and implementation of a programme is the transmission of information relevant to the teacher, oriented to them and not only for children, if activities appeal to them they will stay in the classroom. From our observation and experience when planning a programme, it is essential to have preparatory meetings with school directors and teachers to discuss programme goals and also accept teacher suggestions and integrate them in the programme development. This meeting should include the discussion of the programme goals and methodology along with a strong emphasis on the role of school as an environment for good health habits, also the responsibility of teachers as the educators for future health of the children should be addressed.

Health professionals should motivate teachers to create a participatory approach to the development of activities, integrating the dental hygiene issues in their educational models and resources to create projects in health promoting schools,

and finally should influence schools to act as cultural systems that induce changes in rules and routines of dental hygiene, becoming oral health promoting schools.

## Conclusions

Teacher participation in the programme activities was very high and shows their interest in health topics that can improve quality of life in student's populations. The fact that the teacher's opinion was so highly positive regarding the existence of the programme at the schools and the belief that the programme changed student's knowledge on oral health issues shows us that these types of programmes are appreciated and promote the work of dental hygienists.

Active participation in the programme created a greater awareness of the positive aspects of it for the school and for students. Results showing that teachers who did not participate in the programme believed that school activities were disrupted and not important to students, should encourage us to create new ways to interact with the educational team to involve them in a creative process recognized as important for the educational progress of students.

Teacher participation in this kind of programme should be entirely voluntary, but we must try to motivate them to become part of the programme by the use of educational sessions for teachers on the benefits of oral hygiene, involving them in the planning of the activities, empowering them in the programme, and increasing participation and success. Teacher evaluation of this kind of programme is a critical issue for the development of school-based dental hygiene education.

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