



**An evaluation of the oral health educational programme for sixth class pupils in  
Laois and Offaly**

**2006-2007  
Clinical Audit and Research Service**

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## 1 Introduction

The main aim of this report is to describe the background and context of the oral health intervention programme and to present the overall findings of the evaluation carried out by the Clinical Audit and Research Service HSE Dublin Mid Leinster. The evaluation-planning framework developed by Gerrard *et al.* (2004) was adopted to form the basis of the evaluation process (see Appendix 1).

The main purpose of the evaluation was to:

- Assess whether the programme achieved its objectives and targets (as outlined in Section 1.2)
- Document critical success factors and barriers to implementing the programme
- Ensure quality improvement and efficiency in the delivery of this or any future oral health programme.

### 1.1 Background

Oral health means more than good teeth; it is integral to general health and essential for well being. It may be defined as *"a standard of health of the oral and related issues which enables an individual to eat, speak and socialise without active disease, discomfort and embarrassment and which contributes to general well being"* (Kay and Locker 1997). Oral diseases restrict activities in school, at work and at home and the psychosocial impact of these diseases often significantly diminishes quality of life (WHO 2003).

In 1994, the Dental Health Action Plan highlighted the need to develop oral health promotion and prevention programmes in Ireland (Dept. of Health 1994). The plan placed significant emphasis on the importance of oral disease prevention and positive oral health promotion. Subsequently The National Health Promotion Strategy 2000-2005 (Dept. of Health and Children 2000) was explicit in its reference to oral health (National Nutrition Surveillance Centre 2003).

The National Health Promotion Strategy 2000-2005 (Dept. of Health and Children 2000) and the Dental Health Action Plan (1994) form the framework within which the Irish dental services are developing and in which the orientation of service provision appears to be changing from dental treatments services to oral health promotion and prevention of oral ill health (National Nutrition Surveillance Centre, 2003, Petersen and Kwan 2004).

The oral health promotion programme for sixth class pupils in Laois and Offaly (2006) is indicative of such change and the desire of dental staff within the HSE Laois Offaly area to focus on preventative rather than solely on treatment services. The programme, which adopted an educational, common risk factor, settings based approach, was designed for sixth class pupils in the Laois Offaly area and involved collaboration with the Community Nutrition and Dietetic Service. The programme aimed to improve the knowledge, awareness and behaviour of the pupils in relation to hydration, sugar contained in drinks, drinks labelling and interpretation and oral health issues, including the correct use of fluoride.

### **1.1.1 Hydration**

The benefits of water consumption to health and learning are clear. Studies show that hydration status affects mental performance. Rogers *et al.* (2000) observed an increase in alertness with increasing hydration. Others have demonstrated a significant reduction in short term memory, arithmetic ability and vasomotor tracking at just 2% dehydration (Gopinathan 1998). For infants and children the recommended water intake is 1.5ml/kCal per day (Kleiner 1999).

According to Kleiner (1999), symptoms of mild dehydration include thirst, headache, concentrated urine, poorer concentration levels, lethargy, irritability and diminished mental and physical performance. Mild dehydration has been defined as 1-2% loss of body weight which is caused by fluid loss. Chronic dehydration has been linked to a number of disease states including constipation, certain urinary tract infections, bladder, prostate and kidney cancer (Armstrong 1994, Michaud *et al.* 1999).

### 1.1.2 Dental caries and tooth erosion

Dental caries or dental decay is an infectious disease that affects most people in developed countries. They occur when bacteria in dental plaque react with sugar from drinks or food to form acids, which in turn dissolve the tooth enamel.

Tooth erosion is the loss of tooth substance by a chemical process that does not involve bacteria. It is commonly caused by the consumption of acidic drinks or food, for example fruit juices and soft drinks. High and/or frequent intake of acidic drinks, sipping acidic drinks over a prolonged period all increase the risk of tooth erosion.

The type and amount of fluid that children consume affects their dental health. It is the frequency of sugar consumption which increases the amount of tooth decay, and consuming sugary drinks and food between meals carries a greater risk of tooth decay than consuming them only with meals. The intake of large amounts of sugary drinks such as squashes, fizzy drinks, fruit juices and juice drinks on a regular basis by children has been linked to tooth decay and erosion (Dental Health Foundation, Ireland 2004). The HBSC (1999) report found that 63% of school children consume a can of soft drink every 24 hours (Friel *et al.* 1999).

From a pilot project carried out in the primary schools in the former Midland area it was noted that consumption of water by pupils was low whilst the consumption of squashes, fruit drinks and juices was high (Clancy and Johnston 2003). Similar findings were reported by Petter *et al.* (1995) who reported that 50% of school children never drank plain water with the majority drinking squash instead. A qualitative study of primary teachers, conducted in the former MHB in 2004, found that there was a lack of awareness amongst teachers regarding the types of drinks being consumed by their pupils; a lack of knowledge regarding the effect of drink type on health and learning and a resistance amongst teachers to allow water to be consumed in the classroom (Johnston 2004). A study by O'Mullane in 2002 also found that 45% of Irish 5 year old children had evidence of tooth erosion and in 19% of cases the erosion had progressed at least into the dentine. Erosion into the dentine was significantly associated with carbonated drink consumption once a day or more and also with fruit squash consumption once a day or more (O'Mullane 2002).

### 1.1.3 Food labelling

In a study conducted by the National Nutrition Surveillance Centre (NNSC) in 2001 the issue of soft drinks, and advertising and marketing was highlighted as key.

Parents and teachers indicated that they found it difficult to determine which drinks were healthy for their children, as many are advertised as 'healthy' despite containing very high amounts of sugar. The term 'sugarless', 'sugar free', 'low sugar' and 'no added sugar' may only mean there is no added sucrose in a product. The product may, however, already contain sugars that can be listed as fructose, maltose, dextrose, glucose, syrup, molasses, trehalose, invert sugar, maltodextrins, maple syrup and honey: these can also cause decay.

### 1.1.4 Obesity and Osteoporosis

Studies have linked the passive consumption of sugar laden drinks to growing obesity levels amongst children (Ludwig *et al.* 2001), hence the growing concerns when the HBSC reported 63% of school children consume a can of soft drinks every 24 hours (Friel *et al.* 1999).

The current literature reports that consumption of juices, fizzy drinks and squashes is replacing that of milk (Lyttle *et al.* 2000). Particular concern is highlighted about the long term effects of soft drinks displacing milks in the diet of teenagers. If teenagers do not get enough calcium in their formative years this leads to an increased risk of osteoporosis (Wyshak 2000).

The common risk factor approach to health promotion advocates that by targeting a risk factor such as diet this will improve a number of conditions. This is a more effective and efficient way rather than the traditional approach of treating each of the diseases as a separate entity. As Sheiham summarises *"the key concept underlining the common risk factor approach is that promoting health by controlling a small number of risk factors may have an impact on a large number of diseases at a lower cost than disease specific approaches"* (1996 p. 237).

### 1.1.5 Fluoride

The Forum on Fluoridation, Ireland (2002) highlighted the increase in the occurrence of dental fluorosis: a form of discolouration of the tooth enamel. The inappropriate use of fluoride toothpaste during infancy and early childhood is associated with the development of dental fluorosis in the permanent incisor teeth. The Forum in its findings recommended the following:

- Parents should be advised not to use toothpaste when brushing their children's teeth until the age of 2 years of age
- Parents should supervise their children aged 2 to 7 when brushing their teeth and ensure only a small pea-sized amount of fluoride toothpaste is used and swallowing of the paste is avoided
- Paediatric toothpastes with low concentrations of fluoride require further research before the Forum could recommend their use.

SLAN survey results in the former MHB area found that only 17.7% of males and 26.4% of females were using the recommended pea-sized amount of toothpaste (Friel *et al.* 1999).

### 1.1.6 Oral hygiene

Tooth brushing is important for maintaining gingival health. Most Irish adults suffer from some form of periodontal disease. For example, only 16% of 24 year olds had healthy gums in a survey of dental health (Friel *et al.* 1999). Studies have failed to establish a clear association between tooth brushing and caries incidence; hence plaque removal by tooth brushing alone cannot be advocated for caries prevention. However, brushing with fluoride toothpaste is the most important method of delivering fluoride to the tooth surface.

Oral hygiene practices amongst some children are considered to be inadequate. The HBSC report shows that the overall percentage of children in Ireland that reported brushing their teeth more than once a day has only slightly increased since 1998 and can be considered midrange between the ranking of other countries in Europe and North America (Clerkin *et al.* 2002).

## 1.2 Programme aims and objectives

**Priority:** Hydration and healthy drinks.

**Target population:** Sixth class pupils

**Aim:** To improve upon the knowledge, attitude and behaviour of sixth class pupils, in all primary schools ( $n=119$ ), in Laois and Offaly in relation to hydration, healthy drinks and oral hygiene practices.

**Objective 1:** To increase the knowledge of sixth class pupils in relation to hydration, healthy drinks, oral hygiene practices and correct use of fluoride.

**Impacts:**

To show a statistically significant difference in the number of participating pupils who report improved or new knowledge in relation to

1. Hydration
2. Consumption of healthy drinks
3. Oral hygiene practices including the correct use of fluoride.

**Objective 2:** To influence the behaviour and attitude of sixth class pupils in relation to:

1. Hydration
2. Consumption of healthy drinks
3. Oral hygiene practices including the correct use of fluoride.

**Impacts:**

To show a statistically significant increase ( $p<0.05$ ) in the number of sixth class pupils who report:

- brushing their teeth a minimum of twice a day
- using only a pea sized amount of fluoridated toothpaste
- spitting rather than rinsing out after brushing
- having inappropriate drinks at least once a day
- consuming milk and water in school as a healthy alternative to other drinks
- consuming 6-7 glasses of fluid per day and 4-5 glasses during school hours
- usually or always checking food and drink labels for sugar content
- To show a statistically significant decrease ( $p<0.05$ ) in the number of sixth class pupils who report experiencing thirst during class time.

### 1.3 Setting

According to the WHO (2003), the school can provide a supportive environment for promoting oral health. School policies, the physical environment and education for health are essential for attainment of oral health and control of risk behaviours, such as intake of sugary foods and drinks.

*"The school as a setting for interventions has a formative role to play in the child's social, personal and health education. It can provide the environment, the approaches and the variety of learning experiences that will help children to understand themselves, to relate to others, and to establish and maintain healthy patterns of behaviour" (Government of Ireland 1999).*

Children are particularly receptive during this period and the earlier habits are established, the longer lasting the impact. Moreover, the messages can be reinforced regularly throughout the school years. Children may also be equipped with personal skills that enable them to make healthy decisions and to adopt a healthy lifestyle. Schools can also provide an important network and channel to the local community. Health promotion activities can be targeted at the home and throughout the community by school personnel. Similarly, through the pupils, health promotion messages can be passed on to other members of the family.

### 1.4 Target audience

Children need to acquire knowledge and skills that facilitate a healthy lifestyle and help them cope with social and peer pressure. Children are empowered to take control over their own health early in their lives and are encouraged to develop positive attitudes toward preventive measures (WHO 2003). This is particularly crucial when they reach adolescence when they are challenged and exposed to risk factors such as poor dietary practices.

Adolescents demonstrate a need for greater autonomy in oral health decision making and more information about oral self-care. School based educational interventions around oral hygiene and preventive knowledge in this age group has demonstrated short term effectiveness. On balance, the evidence of oral health gain through targeted adolescent programmes shows a reasonable benefit (WHO 2003).

## **1.5 Stages of programme development and implementation**

1. During the development of the intervention, the initiative progressed through a number of stages. The timeline of which is presented in Appendix 2.
2. The first stage saw the gathering of all interested stakeholders (see Appendix 3) wherein, based on a literature review carried out by one of the stakeholders, a programme plan was outlined
3. The next stage involved assessing the availability of the necessary resources and support including health personnel, school personnel, class materials and equipment etc.
4. After the necessary supports were in place, the training resource materials for the intervention were developed. A presentation was also given to all the oral health promoters (OHP) prior to implementation of the programme. The presentation outlined the overall programme, the key messages that needed to be delivered; thus ensuring standardisation in terms of delivery. Also included in the presentation were instructions on correct and unbiased delivery of the questionnaire, process and impact evaluation forms and instructions for contact with school personnel
5. An evaluation sub-committee was also developed to plan, implement and report on the process and impact evaluation of the intervention. The evaluation planning framework developed by Gerrard *et al.* (2004) was used as the basis of the evaluation process (see Appendix 1)
6. Programme and evaluation plan implemented (see Appendix 1 and 4).

## **2 Evaluation**

The purpose of the evaluation and subsequent key questions were established by the evaluation sub-committee:

### **2.1 Purpose**

- Assess whether the programme achieved its objectives and targets
- Document critical success factors and barriers to implementing the programme
- Ensure quality improvement and efficiency in the delivery of this or any future oral health programme.

### **2.2 Key questions**

- Have programme participants and facilitators been satisfied with the programme?
- Have the programme objectives and impacts been achieved?
- What have been the critical success factors and barriers to achieving the objectives and impacts?
- Should the programme be continued?
- Where to from here?

### **2.3 Methods**

Data for the evaluation were collected through:

- Secondary data
- Survey questionnaire pre and post-intervention.
- Evaluation process forms post-intervention.

#### **2.3.1 Measures**

A self-completed questionnaire was designed and administered to a sample of 283 sixth-class pupils in the class room situation. It was administered and completed at the beginning of the programme under the supervision of the oral health promoter (OHP). This was followed by a self-completed postal questionnaire 4-6 months post-intervention, which also coincided with the children's transition into secondary school (see Appendix 5).

A total of eighteen questions were included in the pre-questionnaire and twenty in the post questionnaire. The questions assessed:

- Awareness of hydration and the negative effects of dehydration
- Types and frequency of drinks consumed
- Drinks labels interpretation
- Frequency of tooth brushing
- Amount of fluoridated toothpaste used when brushing

In order to ascertain the views of the children in relation to the oral health changes made since participating in the programme two additional open ended questions were added to the post- questionnaire. National Adult Literacy Agency (NALA) guidelines were applied.

To ensure a high response rate for the post-questionnaire a number of low cost measures were applied (Edwards *et al.* 2005):

- All pupils who returned the questionnaire by the specified date were entered into a draw for an MP3 player.
- All letters were hand signed by the research officer and confidentiality was assured
- Questionnaires were posted in brown envelopes and a stamped return envelope was enclosed
- A follow-up letter with questionnaire was also sent out two weeks after the initial posting, this, however, only resulted in an additional five respondents. Fourteen questionnaires were also returned undelivered. Resources did not allow for any further follow-up.

Hence post- intervention, 283 postal questionnaires were distributed and a total response rate of 51% ( $n=145$ ) was achieved.

To assess the elements of programme development and delivery, a process evaluation form was also designed and completed by facilitators immediately after the programme was completed in each of the schools ( $n=129$ ). A total of 116/129 evaluation forms were returned. The evaluation form also recorded any verbal feedback received from teachers and pupils.

## 2.4 Survey population

The survey population included all sixth class pupils within the Laois, Offaly LHO area. It was estimated that there was approximately 1,711 sixth class pupils for the school year 2005/2006. This number was based on the number of children in 5<sup>th</sup> class for the school year 2004/2005.

The sample size for the study was set at approximately 402; thus allowing for the following factors:

- 5% margin error
- A 95% confidence level
- A response distribution at 50% (recommended where no prior information exists) (Leedy *et al.* 1997).

There was a total of 129 schools registered to take part in Laois and Offaly. For each school the total number of sixth class pupils (approx 1,799) was recorded. The gender breakdown and each school's geographical location were also noted. The number of schools ( $n=22$ ) required to reach the calculated sample size were then randomly selected to ensure representation from each subset (i.e. urban, rural, mixed, all girls and all boys) (see Table 2.1).

Due to time constraints and unanticipated sick leave, only 283 pupils in 17 schools, as opposed to 402 pupils in 22 schools, completed the pre-intervention questionnaire.

**Table 2.1** Stratified sample

	No of urban schools	No of rural schools	Total numbers of schools	No of male pupils	No of female pupils	Total numbers of pupils
<b>Laois</b>	5	6	11	94	93	187
<b>Offaly</b>	6	5	11	108	107	215
<b>Total</b>	11	11	22	202	200	402

## 2.5 Data analysis

The data from the questionnaires were analysed using the SPSS v14.0 statistical package. Ten percent of data entry was also verified to eliminate errors.

The data were initially analysed by obtaining frequency distribution statistics for each variable provided by the descriptive statistics function. A cross-tabulation was run to indicate any significant relationships between variables. Pearson's Chi-square non-parametric test was applied to the frequencies to investigate for significant relationships between two variables. Where responses to questions resulted in some cells not achieving the minimum cell frequency of five (which violates one of the main assumptions of chi-square) the data were collapsed where possible.

All missing data were excluded from the analysis. Two sided significance is assumed throughout at  $p < 0.05$ .

## 2.6 Limitations

There were no objective measures of change in dental health status but simply self-reported outcome measures in relation to awareness, knowledge and behaviour. This, however, is very much in keeping with health promotion research, "*where intermediary risk factors are often the primary focus with the understanding that they will in turn help effect long-term behaviour change and health outcome*" (Friel *et al.* 2002 p.125).

Since this was an open study, both the pupils and the OHP could have reported what they anticipated they should, thus explaining the apparent improvements and success of the programme. This in itself, however, would indicate that the programme was successful in one educational objective: informing the pupils of appropriate oral hygiene practices and fluid intake.

Feedback from teachers and pupils was recorded by the OHPs thus there is the potential for subjective bias.

Due to inaccurate recording of data on the evaluation forms it was not possible to report on the immediate impact of the intervention.

## **2.7 Confidentiality and ethical considerations**

Consent was sought from each pupil's parents/guardians prior to completing the survey questionnaires and taking part in the intervention programme (see Appendix 7).

All dental staff members were informed as to both the legal and ethical obligations they had with regard to confidentiality of records. This message was reinforced at the presentation given to them prior to commencement of the programme.

All data collected for evaluation purposes were treated confidentially and anonymously. Data collected in the course of the overall evaluation will be retained in accordance with the Data Protection Act 2001.

### 3. Presentation and discussion of results

The following section presents the overall findings of the evaluation. It will be presented in two parts: Firstly, addressing the overall process and secondly, the outcome of the programme. A discussion of the results is also included in this chapter where appropriate.

#### 3.1 Process evaluation

Process evaluation seeks data on how the intervention was implemented and may uncover information on unexpected activities and results (Nutbeam 1998). This was achieved through the evaluation forms completed by the oral health promoters (OHP) ( $n=116/119$ ) after the delivery of each programme and from informal feedback received from teachers and children. Aspects reported upon include content and delivery of the programme, problems experienced and support received from school personnel.

##### 3.1.1 Content and delivery of the programme

In 87% of cases, the OHPs were satisfied with their delivery of the programme, reporting pupils to be *“extremely responsive and interested”*, and *“eager to participate”*. One OHP also commented on how the pupils were *“very surprised at the information being given as was the teacher and principal”*. The high levels of satisfaction may also be attributed to the fact that 75% of facilitators reported experiencing no barriers in the delivery of the programme.

For those who were reportedly unsatisfied with their delivery of the programme, the main issue to emerge would appear to be in relation to ‘time’:

*“I would be more comfortable with a shorter programme or more time to deliver the programme”*

*“Impossible to keep within 30mins, over ran by 20mins, permission to do so was granted by the principal”.*

Feedback received from both the pupils and teachers further reflects upon the level of satisfaction reported by the OHPs. Analysis of the evaluation forms indicates that feedback was received from the pupils in 81% of cases, the majority of which was positive and related to the knowledge gained and the behavioural changes that the pupils stated that were going to make. As recorded by one of the OHP:

*“Children said they found the programme interesting and got a lot of information*

*from the day*". Another facilitator expressed how the pupils reported being *"happy to be taught the correct method of tooth-brushing and correct use of toothpaste"*.

For the majority of the programmes delivered (95.7%/n=111) the OHPs felt that the pupils responded well to the programme. The response of the pupils to the various areas of the presentation as perceived by the OHPs is highlighted in Table 3: in 50% of the schools visited, for example, the facilitators reported an excellent response to the tooth brushing element of the intervention.

Compared to the other aspects of the programme, however, children responded least favourably to the Acid Clock exercise (see Table 3). Additional comments recorded by the OHPs verify the difficulty the pupils had with this exercise and that considerable assistance was often required from both teachers and the OHPs in order to complete the exercise. Several teachers also highlighted their concerns in regard to the Acid Clock exercise (see Appendix 3), commenting on how difficult it was to comprehend even *"for the brightest of children"*. In one instance the teacher stated that she *"would question its educational value...a difficult activity with very little value in her opinion"*.

Behavioural issues reported by the OHPs may be attributed to the pupils lack of understanding and hence interest in completing the Acid Clock exercise.

According to one OHP, the *"Children were a bit noisy during acid clock exercise, they did not seem interested or bothered"*. Similar comments were recorded by a number of other OHPs.

**Table 3:** Children's level of response (%) in relation to the key areas of the programme

<b>Response scale %</b>	<b>1 Poor</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10 Excellent</b>
Dehydration					1	5	9	30	33	22
Labelling				2	3	1	9	15	34	36
Tooth brushing					3	3	5	9	30	50
Healthy drinks				2	1	7	13	33	23	21
Acid clock	2	15	8	4	21	21	10	6	8	5

Teachers did express concern over the amount and detail of information being provided. According to one teacher, *“The programme is very long, perhaps one interaction game would be more appropriate, wondered if the children would retain so much information long term”*. Various other teachers expressed similar sentiments. Whilst teachers remarked on how *“the practical exercises helped the children to get the key messages”* it was suggested that perhaps one interactive exercise would be sufficient. Overall, however, school personnel thought, *“it was a very informative programme”* and a *“great opportunity for children”*.

Although it was acknowledged that the programme was both relevant and interesting, it was emphasised by several of the teachers that it was not sufficient to merely target the pupils with this information *“as parents do the shopping”*. One teacher expressed how *“this sounds like a very beneficial programme, however, I really feel that this programme should be aimed at parents especially as their children prepare to start school”*. Another teacher reiterated this point expressing how *“The programme was very long and too much information for one visit. More suitable for parents, perhaps both children and parents together”*. The Principal in another school highlighted how he *“feels parental involvement is very poor in general and need to target this to achieve any improvement or change in behaviour”*. This is further supported by a report published by the NNSC, which states *“School based interventions should allow plenty of scope for whole family involvement, personalisation and links with the wider community”* (2003 p.92).

### **3.1.2 Problems/barriers to programme delivery**

Answers to questions addressing ‘problems experienced’ and ‘barriers to programme implementation’ were similar and additional comments did tend to overlap.

Problems were reported in 18.1% ( $n=21$ ) of cases and those encountered most frequently tended to relate to time, as mentioned earlier in the report, resources and behavioural issues

- **Resources:**

Issues of limited space and resources emerged as a barrier to effective delivery. Whilst in 93% of cases the facilities provided were suitable; for those who found the facilities unsuitable comments tended to relate to the size of the room. It would

appear that it was not always feasible to deliver the programme in the classroom particularly if the sixth class pupils were sharing with other classes. Hence alternative arrangements had to be sourced, which were not always conducive to delivering the programme to a group of pupils.

*"...very small resource room, just sufficient for numbers involved"*

*"Cramped class room"*

*"Small room and limited space".*

- **Behavioural issues:**

Behavioural issues tended to arise when the teachers did not stay in the class-rooms for the delivery of the programme and hence the facilitator would often have to take on the role of teacher as well as facilitator. As one OHP highlighted, *"I felt I had to control the class during the exercises, which I was not really happy with"*. Another commented on how there were *"school tours which meant staff shortages hence when disciplinary issues arose there was no staff members available to sit in on the session!"*.

The fact that teachers left the classroom ( $n=26/22.6\%$ ) was considerably surprising. In a letter to the class teacher outlining the programme, it was emphasised that *"We would appreciate if the teacher could remain in the classroom for the duration of the delivery of the programme."* During the OHPs presentation those present were advised that *"a teacher must remain in the class for the duration of the presentation. This is a legal requirement"* and that *"OHPs are there to deliver a health message not as discipline enforcers"* (see Appendix 8).

As highlighted earlier, the difficulty in explaining and having pupils successfully complete the acid clock exercise was highlighted on a number of occasions as both a barrier and problem.

### **3.1.3 Support**

In the majority of cases (91.4%/ $n=106$ ) all OHPs reported school personnel to be both interested in the programme and very approachable:

*"Principal and teacher very nice and helpful, very interested in the healthy drinks..."*

*"Teacher very interested and reinforced the points I was saying to children, she also seemed to be taking notes herself..."*

*“Teacher was very willing to promote and allows water to be taken during class hours”.*

In their overall evaluation, the OHPs commented on the fact that the co-operation of the teachers *“is vital to the programmes success”*. A number of the OHPs commented on the assistance that school personnel gave in the delivery of the course programme particularly wherein pupil numbers were larger than expected: *“the teacher helped me with giving out materials and also stayed and helped all groups with the exercise”*.

### **3.1.4 Further observations**

In 39.7% ( $n=46$ ) of schools water was observed on the pupil's desks and in 37.1% ( $n=43$ ) of cases alternative drinks were observed. Alternative drinks being consumed included fizzy drinks, Capri-suns, fruit juices, sports drinks, cordials, yogurt drinks etc. It was noted on several occasions, however, that whilst there may not have been bottles of water on the desks children were free to access water from various water fountains in the class room or school building.

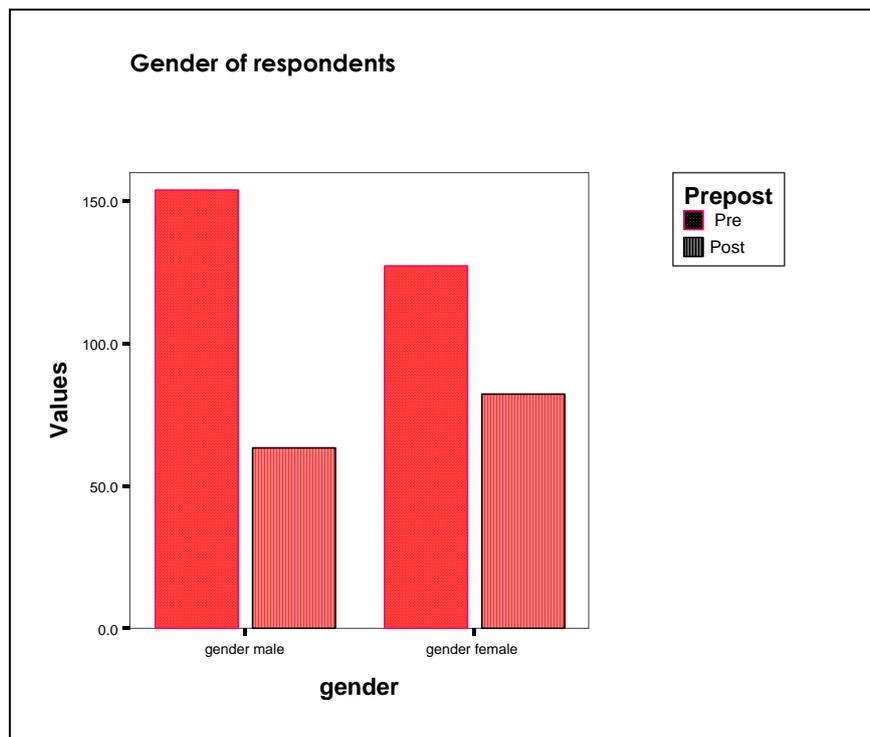
On three different occasions' verbal consent had to be sought from pupils parents: school personnel felt that the signing of the non-consent form had simply been an oversight by the parents. In all three cases verbal consent was given. This, however, did tend to delay proceedings.

### 3.2 Outcome evaluation

The outcome measures selected include reach, and observed knowledge and behavioural change pre and post-intervention. There were no objective measures of change in dental health status but simply self-reported outcome measures in relation to awareness, knowledge and behaviour pre and post-intervention.

Two hundred and eighty three sixth-class pupils completed the baseline questionnaire, and 145 completed the post-test questionnaire, giving a 51% response rate. There were similar portions of males and females pre and post-test (see Figure 3).

**Figure 3** Gender breakdown of respondents' pre (n=281/283) and post (n=145) intervention



#### 3.2.1 Reach

Eight OHPs visited a total of 119 primary schools. Based on the evaluation forms approximately 1,573 sixth class male and female pupils were targeted. However, several observation forms were incomplete and hence this figure was probably exceeded.

In a number of schools the OHPs were also asked to present the programme material to third, fourth and fifth pupils. As highlighted by one OHP: *“I expected 19 children, however there were over 38 very eager children, but all went well...”* hence the difficulty in quantifying the total reach of the intervention. Furthermore, teachers were also reported making reference to the knowledge that they themselves gained and how they would be promoting oral health both in the school and at home, the impact of which is unquantifiable. The knowledge gained by the teachers is also another fundamental reason for teachers to remain in the class rooms during the programme.

### 3.2.2 Learning

According to the OHPs, the learning of information was clearly evident in the questions asked by both pupils and teachers and the feedback they received. The questions asked by the children varied widely, but on the basis of a thematic analysis the main questions to emerge were in relation to the following topic areas: appropriate drinks, dental visits and braces and oral hygiene practices.

<i>Appropriate drinks</i>	<i>Dental visits and braces</i>	<i>Oral hygiene practices</i>
<p>The different amounts of sugar in different drinks?</p> <p>Why is milk a better choice of drink than water?</p> <p>Explain the link between fizzy drinks and erosion again?</p> <p>Why were the companies allowed to advertise bad drinks?</p>	<p>How do you make an appointment with the school dentist?</p> <p>How frequently should you visit the dentist?</p>	<p>If you brush teeth immediately after eating sugars will you get an acid attack?</p> <p>Why spit instead of rinse?</p> <p>How good is mouthwash?</p> <p>Which are better: electric or manual toothbrushes?</p> <p>Was only fluoride toothpaste good?</p>

It would appear that a disproportionate amount of questions in relation to oral hygiene were asked by the children, which constituted a very small section of the programme when compared to hydration, labelling, decay and erosion.

There was no significant association ( $\chi^2=0.38$ ,  $df=2$ ,  $p>0.05$ ) found between the intervention and the level of understanding in relation to information written on labels. However, a significant association was found between the intervention and the level of knowledge with regard to the sugar content of drinks with labels such as

'diet', 'no added sugar' 'fruit juices' and 'sports drinks' (see Table 3.1). It should be noted, however, that 'diet' drinks have no sugar and hence raises concerns.

**Table 3.1** Learning pre and post-intervention

	Pre-intervention n (%)	Post-intervention n (%)	Statistical Test Results
Do you understand what is written on labels?	(n=281/285)	(n=145/145)	$\chi^2=0.38$ , df=2, p>0.05
Yes	105 (37.4)	49 (33.8)	
No	23 (8.2)	8 (5.5)	
Some of it.	153 (54.4)	88 (60.7)	
% of students that reported sugar in the following drinks?			
• Sports drinks	217 (80.7)	136 (97.8)	$\chi^2=23.62$ , df=2, <b>p&lt;0.05</b>
• No added sugar	156 (55.9)	103 (72.0)	$\chi^2=14.14$ , df=2, <b>p&lt;0.05</b>
• Diet	168 (62.2)	108 (76.6)	$\chi^2=12.52$ , df=2, <b>p&lt;0.05</b>
• Fruit juices	140 (51.9)	61 (43.6)	$\chi^2=7.28$ , df=2, <b>p&lt;0.05</b>
• Tooth kind	100 (37.6)	93 (65.5)	$\chi^2=1.426$ , df=2, p>0.05
• Sugar free	65 (24.1)	43 (30.7)	$\chi^2=2.65$ , df=2, p>0.05
• Smoothies	145 (54.1)	82 (59.4)	$\chi^2=5.54$ , df=2, p>0.05

Table 3.2 provides an overview of some of the key messages delivered during the programme and the pupil's recall of such information. In all but one of the key questions, over three quarters of all respondents answered correctly. The lowest percentage observed was in relation to the number of times it is recommended that an individual change their tooth-brush where 61% of respondents stated correctly that you should change your toothbrush twice a year. The majority of respondents (97%) post-intervention reported changing their toothbrush in the last six months.

**Table 3.2** Key messages post-intervention

Post-intervention (n=145) N (%)	True n (%)	False n (%)	Don't know n (%)	Missing n (%)
Fluoride is good for your teeth?	115 (79.3)	10 (6.9)	15 (10.3)	5(3.4)
You should use a pea sized amount of toothpaste when brushing your teeth?	133 (91.7)	9 (6.2)	3 (2.1)	--
You should wash your teeth at least twice daily?	142 (97.9)	2 (1.4)	-	1(0.7)
You should change your toothbrush twice a year?	89 (61.4)	52 (35.9)	2 (1.4)	2 (1.4)
You should try and drink between six and eight glasses of water a day?	133 (91.7)	6 (4.1)	4 (2.8)	2 (1.4)
Fizzy drinks are good for your teeth?	--	141 (97.2)	2 (1.4)	2 (1.4)
Fructose is another name for sugar?	111 (76.6)	9 (6.2)	21 (14.5)	4 (2.8)

### 3.2.3 Behaviour

The following section will be presented under the following subheadings:

- Hydration
- Oral hygiene

#### *Hydration*

A positive increase was observed in the number of pupils drinking between 2-3 and 4-5 glasses of fluid each day while in school and this would contribute to an increase in the total daily fluid intake (see Table 3.3).

Whilst there was no statistical association, an increase was observed in the percentage of pupils reporting the consumption of milk (0.085 df1 p>0.05) and water ( $\chi^2=0.582$ , df=1, p>0.05) post-intervention (See Table 3.3). Surprisingly, there was a significant rise in the consumption of fizzy drinks ( $\chi^2=0.041$ , df=1, p<0.05) and fizzy water ( $\chi^2=0.053$ , df=1, p<0.05) during the school day, and this is of some concern given the aims and objectives of the programme intervention.

A significant association ( $\chi^2=24.22$ , df=1, p<0.05) was observed in the number of times fizzy drinks, fruit juices or sports drinks consumed between meals pre and post-intervention with more students reporting less consumption on a daily basis post intervention (see Table 3.3).

Whilst there was no significant association between the number of respondents checking labels before consuming drinks pre and post intervention, a reported

increase of 10.5% was observed in the number of respondents checking labels 'sometimes' and hence a reduction in the number of pupils reportedly 'never' checking labels (see Table 3.3). It is important that children know which products, in spite of being labelled as healthy, contain added sugar and how in what quantity to empower them to make an informed choice regarding whether to purchase the product or not.

**Table 3.3** Responses in relation to hydration and behaviour pre and post-intervention

	Pre-intervention <i>n</i> (%)	Post-intervention <i>n</i> (%)	Testing
<b>Number of glasses of liquid consumed in school each day?</b>	( <i>n</i> =275/285)	( <i>n</i> =145)	
None	15 (5.4)	4 (2.8)	
<2 glasses	101 (36.2)	43 (29.7)	
2-3 glasses	115 (41.2)	73 (50.3)	
4-5 glasses	31 (11.1)	18 (12.4)	
6-7 glasses	9 (3.2)	5 (3.4)	
8-9 glasses	2 (0.7)	2 (1.4)	
>9 glasses	6 (2.2)	-	
<b>What types of drinks are normally consumed in school each day?</b>			
Water	193 (68.3)	103 (71.0)	$\chi^2=0.58$ , <i>df</i> =1, <i>p</i> >0.05*
Milk	17 (6.0)	12 (11.0)	$\chi^2=0.08$ , <i>df</i> =1, <i>p</i> >0.05*
Smoothies	5 (1.8)	6 (4.1%)	$\chi^2=0.19$ , <i>df</i> =1, <i>p</i> >0.05*
Sport drinks	37 (13.2)	29 (20.0%)	$\chi^2=0.07$ , <i>df</i> =1, <i>p</i> >0.05*
Pure fruit juice	74 (26.3)	41 (28.3%)	$\chi^2=0.73$ , <i>df</i> =1, <i>p</i> >0.05*
Diluted drinks	108 (38.4)	55 (37.9%)	$\chi^2=1.00$ , <i>df</i> =1, <i>p</i> >0.05*
Fizzy drinks	27 (9.6)	24 (16.6%)	$\chi^2=0.04$ , <i>df</i> =1, <b><i>p</i>&lt;0.05*</b>
Fizzy water	9 (3.2)	11 (7.6%)	$\chi^2=0.05$ , <i>df</i> =1, <b><i>p</i>&lt;0.05*</b>
<b>How many fizzy drinks/fruit juices/sports drinks are consumed between meals each day?</b>	( <i>n</i> =283/285)	( <i>n</i> =143/285)	$\chi^2=24.22$ , <i>df</i> =1, <i>p</i> <0.05
Never	10 (3.5)	8 (5.6)	
Once a day	86 (30.4)	48 (33.6)	
2-4 times a day	112 (39.6)	40 (28.0)	
4-6 times a day	18 (6.4)	3 (2.1)	
More than 6 times a day	9 (3.2)	1 (0.7)	
Every second day	4 (1.4)	11 (8.4)	
Once a week	19 (6.7)	12 (7.7)	
On special occasions only	25 (8.8)	20 (14.0)	

<b>Do you check labels on bottles or cartons before consuming them?</b>	(n=282/285)	(n=144/145)	$\chi^2=5.85, df=2, p>0.05$
Yes	26 (9.2)	13 (9.0)	
No	76 (27.0)	24 (16.7)	
Sometimes	180 (63.8)	107 (74.3)	

\* Fishers Exact Test was used were assumptions were not met.

There was a significant association ( $\chi^2=13.51, df=2, p<0.05$ ) between reports of feeling thirsty pre and post intervention. Students were less likely to report being thirsty post intervention (see Table 3.4). This may be attributed to the nature of the secondary school environment where, unlike in primary school, there are more opportunities to access fluids during the change over in classes.

Students were less likely to report having bottles on their class desk post-intervention ( $\chi^2=69.42, df=2, p<0.05$ ); this may be attributed to the fact that they are not allowed bottles on desk (see Table 3.5).

**Table 3.4** Experience thirst during class time pre and post-intervention (n=283).

	<b>Yes N (%)</b>	<b>No N (%)</b>	<b>Sometimes N (%)</b>
Pre-intervention (n=279/285)	163 (58.4)	21 (7.5)	95 (34.1)
Post-intervention (n=144/145)	57 (39.6)	16 (11.1)	71 (49.3)

**Table 3.5** Permitted bottles on class desk pre and post-intervention (n=283).

	<b>Yes N (%)</b>	<b>No N (%)</b>	<b>Don't know N (%)</b>
Pre-intervention (n=281/285)	254 (90.4)	11 (3.9)	16 (5.7)
Post-intervention (n=145)	48 (33.3)	83 (57.6)	13 (9.0)

When asked, post-intervention, whether or not pupils thought having a bottle of water at their desk during class-time would be a good idea, the majority of pupils (90%/n=128) responded 'yes'.

Since the visitation of the OHP, a number of primary school teachers expressed how they were *"now willing to encourage healthy drinks and foods..."* and would try to

put *“the messages across of healthy eating and drinking as part of the school structure”*. In spite of the promotion of benefits of regular fluid intake, however, some teachers were of the opinion that consumption of fluids at lunch breaks was sufficient and that drink bottles at desks were an unnecessary distraction. It was also interesting to note the use of the terms ‘foods’ and ‘healthy eating’ which were not part of the programme.

**Oral hygiene**

Findings in relation to improved oral hygiene are presented under the following sub-headings:

- Frequency of brushing
- Amount of toothpaste used
- Spitting or rinsing after brushing

- ***Frequency of brushing***

Ninety seven percent ( $n= 274$ ) of respondents reported brushing their teeth pre-intervention, this increased to 100% post-intervention.

A significant association was also observed between the intervention and reported tooth brushing with an increase in numbers of those reporting to brush their teeth twice a day post-intervention ( $\chi^2=13.98$ ,  $df=3$ ,  $p <0.05$ ). (see Table 3.6).

**Table 3.6** Number of times teeth are brushed daily pre and post-intervention

	<b>Once a day N (%)</b>	<b>Twice a day N (%)</b>	<b>3 times a day N (%)</b>	<b>Other N (%)</b>
Pre-intervention ( $n=279/285$ )	75(27.7)	164(60.5)	15(5.5)	17(6.3)
Post-intervention ( $n=144/145$ )	20(13.9)	110(76.4)	10(6.9)	4(2.8)

- ***Amount of toothpaste used***

To see if there was an association between students using the correct amount of toothpaste and the intervention, a chi squared test was carried out. A significant association ( $\chi^2=78.85$ ,  $df=2$ ,  $p <0.05$ ) was observed thus indicating that following intervention students were more likely to use a recommended pea sized amount of toothpaste. Table 3.7 provides a breakdown of the overall results.

**Table 3.7** Amount of toothpaste used pre and post-intervention

	<b>Pea-sized amount N (%)</b>	<b>Half brush N (%)</b>	<b>Full brush N (%)</b>	<b>Over-Flowing N (%)</b>	<b>N/A N (%)</b>
Pre-intervention (n=273/285)	70 (24.9)	132 (47.0)	61 (21.7)	10 (3.6)	8 (2.8)
Post-intervention (n=144/145)	100 (69.4)	37 (25.7)	7 (4.9)	-	-

- ***Spitting/rinsing after brushing***

The intervention also sought to increase the number of pupils who report spitting out after brushing their teeth. Hence to determine if there was an association between students spitting and the intervention a chi squared test was applied to the data and a positive association was observed ( $\chi^2=58.96$ ,  $df=1$ ,  $p<0.05$ ) thus indicating that following intervention students were more likely to spit after brushing their teeth. Pupils were encouraged to spit as opposed to rinsing after brushing (HDA 2001).

**Table 3.8** Action taken after brushing teeth pre and post-intervention

	<b>Rinse &amp; swallow n (%)</b>	<b>Rinse &amp; spit n (%)</b>	<b>Just spit n (%)</b>	<b>Just swallow n (%)</b>	<b>N/A n (%)</b>
Pre-intervention (n=272/285)	7 (2.5)	239 (85.1)	25 (8.9)	2 (0.7)	8 (2.8)
Post-intervention (n=145)	1 (0.7)	79 (54.9)	64 (44.4)	-	-

- ***Additional comments***

Based on the thematic analysis of the open questions posed post-intervention addressing changes to eating and drinking habits, 79% of pupils reported making changes to their eating and drinking habits after the OHP visited them in sixth class and 90% reported making changes in terms of how they care for their teeth and gums.

## 4 Conclusion

Initially, it was planned to do an impact, process and outcome evaluation. Due to inaccurate recording of data on the evaluation forms, however, it was not possible to evaluate the immediate impact of the intervention. This was unfortunate as an important element of the evaluation was lost.

In a number of schools the OHPs were also asked to present programme material to third, fourth and fifth class pupils. This had a negative impact in terms of time, but it should also be noted that any future baseline data for these schools will be invalid for the next three years.

In relation to problems/barriers in terms of programme delivery, time and programme activities, namely the Acid Clock Exercise, warrant further attention. In relation to time, it is envisaged that a multi-visit programme would have to be introduced or drastically reduce the programme's content. However, given limited resources in relation to financial and time resources this may not be feasible. In relation to the Acid Clock exercise, this will clearly have to be amended.

Overall there appeared to be increased levels of knowledge with regard to oral hygiene practices, but not to the same extent in any of the other areas focused on in the programme; thus highlighting potential concerns over the delivery of programme material.

The transition from primary to secondary school and the impact on oral health and hydration practices is clearly evident in the findings.

## 5 Recommendations

It is the recommendation of the programme evaluation steering committee that this programme should not be continued in its current format for the following reasons:

- In spite of increased levels of knowledge with regard to oral hygiene practices the objectives in relation to the main areas of focus of the programme were not achieved i.e. hydration and healthy drinks
- It was also evident from the findings reported that increased levels in knowledge do not necessarily correlate to behaviour
- There is limited potential for improvement in certain areas given extremely high baseline findings, for example frequency of tooth-brushing.

It is further recommended that any future programmes should be piloted in nine or ten schools initially prior to full implementation. Thus any problems/ barriers experienced may be addressed prior to full implementation to all primary schools in the area. This in turn would lead to more efficient and effective use of limited resources.

The evaluation report clearly indicates that there were flaws in both the reporting and delivery of this programme. Closer monitoring of programme delivery and process evaluation is essential.

A specific starting month and closing date should be identified by which the OHP should have their visits to schools completed; thus allowing sufficient time to re-allocate any schools that may not have been visited. This would ensure that in spite of illness or time constraints the programme would be delivered in full.

Prior to the commencement of future programmes, a list of standard operating procedures will be forwarded to each school principal. If they agree to these then their school can participate in the programme; For example, a standard operating procedure would have to be introduced that a teacher must remain in the classroom for the duration of the programme. If this is not possible on the arranged day another visit would have to be arranged. This is a legal obligation.

A standard operating procedure should also be introduced for all OHPs addressing issues such as teacher absences in the class room etc. For example, any child

whose parent has already refused consent to the programme should not be contacted on the day by either the OHP or the principal/teacher.

To ensure that the detail and amount of information being delivered is appropriate, it is recommended that programme content and exercises be discussed with teaching personnel. It is also recommended that in relation to training materials, the provision of interactive material, which teachers would be expected to utilise after the training programme, would increase and sustain interest amongst the children.

To ensure that needs are being met and to highlight difficulties before they arise; for example, the class numbers involved, supervision of classes etc., it is recommended that in the further development of this programme and future oral health interventions a full discussion with school personnel be carried out prior to the commencement of the programme.

To date primary and secondary schools would appear to be treated as separate entities in terms of research. This study, however, demonstrates that the transition from primary to secondary school can have negative impacts on pupil's fluid choices. This would lead us to believe that research is warranted to ascertain whether this also extends to the pupils dietary choices.

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Appendix 1 An overview of the evaluation framework

<p><b>Priority:</b>  <b>Target population:</b>  <b>Aim:</b></p>	<p>Oral health and hydration.          6th class pupils          To improve upon the knowledge, attitude and behaviour of sixth class pupils in all primary schools (<math>n=129</math>) in Laois and Offaly in relation to hydration, healthy drinks and oral hygiene practices.</p>		
<p><b>Objective 1</b></p>	<p><b>Key questions (what do we need to know to decide if we achieve this objective and impact)</b></p>	<p><b>What information do we need to answer these questions</b></p>	<p><b>How will this info be collected, by whom and by when?</b></p>
<p>To increase the knowledge of sixth class pupils, in schools in Laois and Offaly in relation to hydration, healthy drinks, oral hygiene practices and correct use of fluoride.</p> <p><b>Identified impact</b>          To show a statistically significant increase in the number of pupils who report improved or new knowledge in relation to hydration, consumption of healthy drinks, oral hygiene practices and correct use of fluoride.</p>	<p><b>Impact evaluation:</b>          Did 80% report improved or new knowledge?           What new or improved knowledge did pupils gain through participation in the programme?</p>	<p>Baseline data on what the current level of knowledge is.           Views of pupils at the end of the session.           Reflections three months later on the impact of the new knowledge.</p>	<p>Self-administered questionnaire pre and four months post-intervention to pupils.           Evaluation form to be completed by facilitators at the end of each session.</p>
<p><b>Objective 2</b></p>	<p><b>Key questions (what do we need to know to decide if we achieve this objective and impact)</b></p>	<p><b>What information do we need to answer these questions</b></p>	<p><b>How will this info be collected, by whom and by when?</b></p>
<p>To influence the behaviour and attitude of sixth class pupils, in schools in Laois and Offaly, in relation to hydration, consumption of healthy drinks, oral hygiene practices and correct use of fluoride</p> <p><b>Identified Impact</b>          To show a statistically significant increase in the</p>	<p><b>Impact evaluation</b>           Have attitudes and practices to oral health hygiene changed as a result of the programme?           Did the programme achieve its targets?</p>	<p>Baseline data on what the current attitude to oral health is amongst pupils.           Baseline data on current practice in relation oral hygiene.</p>	<p>As above</p>

number of sixth class pupils who report brushing their teeth a minimum of twice a day

To show a statistically significant increase in the number of sixth class pupils who report using only a pea sized amount of fluoridated toothpaste

To show a statistically significant increase in the number of sixth class pupils who report spitting rather than rinsing out after brushing

To show a statistically significant increase in the number of sixth class pupils who report having inappropriate drinks at least once a day

To show a statistically significant increase in the number of sixth class pupils who report consuming milk and water in school as a healthy alternative to other drinks

To show a statistically significant increase in the number of sixth class pupils who report consuming 6-7 glasses of fluid per day

To show a statistically significant decrease in the number of sixth class pupils who report experiencing thirst during class time

To show a statistically significant increase in the number of sixth class pupils who report usually or always checking food and drink labels for sugar content.

Views of pupils at the end of the programme.

Reflections three to four months post intervention, on the impact of the new knowledge.

<b>Overall aspects of the plan</b>			
<b>Future actions</b>	<p>What changes need to be made to programme activities?</p> <p>How should issues of effectiveness be dealt with?</p>	<p>Recommendations for modifications from both facilitators and children</p>	<p>Post-intervention questionnaire</p>
<b>Preparation of evaluation report and dissemination</b>	<p>Clinical audit and research staff will be responsible for collection of data from the evaluation, analysis and preparations of the report. Drafts will be presented to the Oral health team for input and comment.</p> <p>The report will be distributed to all relevant stakeholders</p> <p>Journal articles to be written by CA&amp;R and interested key stakeholders.</p>		

## Appendix 2 Time frame

<b>Action</b>	<b>Time Line</b>
Literature search Rationale Project proposal development	Oct 05-Nov 05
Meeting of all relevant stakeholders <ul style="list-style-type: none"> <li>• Community Nutrition and Dietetic services</li> <li>• Dental Services</li> <li>• Clinical Audit and Research</li> </ul>	Nov 05
Development of intervention and evaluation framework	Dec - Jan 06
Implementation of pilot intervention	Jan 06
Process evaluation	Jan – June 06
Impact evaluation, report and recommendations	Sept – Dec. 06

## Appendix 3 Key stakeholders

- Principal Dental Surgeon of Midland area of H.S.E.
- Senior Community Dietitian.
- Clinical Audit and Research department.
- Senior Dental Surgeon.
- Oral health promoters.
- Research Ethics Committee.
- School principals and 6th class teachers.
- 6th class pupils of the school year 05/06.
- 1st year secondary pupils of the school year 05/06.
- GlaxoSmithKline Kline and Beecham, Ireland – Marketing manager.
- Tipperary Water – Marketing manager.
- Tesco Ireland – Marketing Manager.
- Dunnes Stores Ireland – Marketing Manager.
- Centra Ireland – Marketing manager.

## Appendix 4                      Outline of the programme

The school based intervention was delivered to all sixth class pupils in the Laois and Offaly areas. It was estimated that this target population numbered 1,711 for the school year 2005/2006. This number was based on the number of children in 5<sup>th</sup> class for the school year 2004/2005.

Each class received a for-y five minute session designed to address the following elements of oral health and hygiene:

- Hydration
- Healthy drinks
- Oral hygiene practices including correct use of fluoride

All materials utilised were developed by the Dental Health and Community Nutrition Team, HSE, DML. Whilst the teachers were requested to remain in the classroom, on the whole they were not actively involved with administration of the intervention.

Following the delivery of the key messages each pupil was requested to complete the Acid Clock exercise. This exercise used an acid clock to illustrate tooth decay and erosion attacks for a fictitious individual. The child or group would then have to decide whether this individual would be at risk for dental decay, dental erosion and dehydration

The pupils were also given a gift pack containing the following:

- Healthy Toothy Drinks leaflet produced by the community nutrition and dietetic service and dental service of the former Midland area of the HSE. Any Irish speaking schools were provided with leaflets in Irish.
- Aquafresh tokens sponsored by GlaxoSmithKline for tooth brushes and toothpastes redeemable at all major supermarkets
- Tipperary water tokens sponsored by Tipperary Water Ireland, which were also redeemable at all major supermarkets.



**ORAL HEALTH PROMOTING SCHOOLS PROGRAMME**

**Please read and answer the following questions carefully.  
Remember to put a tick  $\checkmark$  in whichever box applies to you.**

1. Name of your primary school: \_\_\_\_\_

2. Are you a boy  or a girl

Q: Did you fill out a questionnaire in 6<sup>th</sup> class before the oral health promoter gave her talk?

**Section 1**

3. Do you brush your teeth? Yes  No

*If No, please go to **Section 2**.*

4. If yes, how often do you brush your teeth?

Once a day  Twice a day  Three times a day   
 Every second day  Once a week  Other \_\_\_\_\_

5. Do you use toothpaste when brushing your teeth?

Yes  No  Sometimes

5b. If yes/sometimes, how much toothpaste do you usually put on your toothbrush?

Pea sized amount  Half brush  Full brush  Overflowing

6. What do you usually do after brushing your teeth?

Rinse and swallow  Rinse and spit out   
 Don't rinse just spit out  Just swallow

7. Have you changed your tooth brush in the last six months?

Yes  No

**Section 2**

8. How many glasses of liquid do you drink while **in** school each day?

None  Less than 2 glasses  2-3 glasses  4-5 glasses   
 6-7 glasses  8-9 glasses  More than 9 glasses

9. Which of the following do you normally drink while in school? (You can tick more than one box)
- |                                     |                          |  |                          |
|-------------------------------------|--------------------------|--|--------------------------|
| Water                               | <input type="checkbox"/> | Fizzy water (e.g. plain/flavoured)           | <input type="checkbox"/> |
| Milk (plain/flavoured)              | <input type="checkbox"/> | Sport drinks (e.g. Lucozade sport, Energize) | <input type="checkbox"/> |
| Smoothies                           | <input type="checkbox"/> | Pure fruit juices (e.g. squeeze, Tropicana)  | <input type="checkbox"/> |
| Fizzy soft drinks (diet & ordinary) | <input type="checkbox"/> | Diluted drinks (e.g. Miwadi)                 | <input type="checkbox"/> |
| Other                               | _____                    |  |                          |

10. Do you get the milk through the milk scheme at school?      Yes          No
11. Do you ever get thirsty during class time?      Yes          No          Sometimes
12. Are you allowed to have a bottle of water at your desk during class time?  
Yes          No          Don't know
13. Do you think having a bottle of water at your desk during class time would be a good idea?  
Yes          No          Don't know
14. How many times do you drink fizzy drinks, fruit juices or sports drinks between meals each day?
- |                         |                          |                           |                          |
|-------------------------|--------------------------|---------------------------|--------------------------|
| Never                   | <input type="checkbox"/> | Once a day                | <input type="checkbox"/> |
| 2-4 times a day         | <input type="checkbox"/> | 4-6 times a day           | <input type="checkbox"/> |
| More than 6 times a day | <input type="checkbox"/> | Once a week               | <input type="checkbox"/> |
| Every second day        | <input type="checkbox"/> | On special occasions only | <input type="checkbox"/> |
15. Do you ever check the labels on bottles / cartons before drinking what's in them?  
Always            Sometimes            Never
16. Do you understand what is written on the labels?  
Yes            No            Some of it
17. Is there sugar in drinks that are labelled:
- |                  |     |                          |    |                          |            |                          |
|------------------|-----|--------------------------|----|--------------------------|------------|--------------------------|
| • No added sugar | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Diet           | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Tooth kind     | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Sugar free     | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Sports drinks  | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Smoothies      | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| • Fruit juices   | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |

18	Question	True	False	Don't know
	Fluoride is good for your teeth?			
	You should use a pea sized amount of toothpaste when brushing your teeth?			
	You should wash your teeth at least twice a day?			
	You should change your toothbrush twice a year?			
	You should try and drink between six and eight glasses of water a day?			
	Fizzy drinks are good for your teeth?			
	Fructose is another name for sugar?			

20. Did you make any changes to your eating and drinking habits after the dental nurse visited you in sixth class?

Yes  No

Please comment on your answer.

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21. Did you make any changes in terms of how you care for your teeth and gums after the dental nurse visited you in sixth class?

Yes  No

Please comment on your answer.

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Thank you so much for your help

## Acid clock exercise 1.

8.15 a.m. Johnny has a glass of milk and some freshly squeezed orange juice.

11.00 a.m. At small break at school Johnny had a small bottle of non-fizzy Tipperary water.

1.00p.m. At big break at school Johnny had a Yop yoghurt drink.

3.30 p.m. When Johnny came home from school he had a glass of milk.

6.00 p.m. Johnny had Miwadi no added sugar orange drink.

8.00 p.m. Johnny had a glass of milk.

Draw the above on the acid clock using the red marker for acid attacks that will cause tooth decay, the blue marker for acidic drinks that may cause erosion and the black marker for non-acid drinks.

Is Johnny at risk for dental decay?                      Yes                       No

Is Johnny at risk for dental erosion?                      Yes                       No

Do you think Johnny would be dehydrated  
by the end of the day?                      Yes                       No

Well done for finishing the exercise!



### Acid clock exercise 2.

8.15 a.m. Peter has one glass of freshly squeezed orange juice.

11.00 a.m. At small break at school Peter didn't have anything to drink.

1.00p.m. At big break at school Peter had a can of diet coke.

3.30 p.m. When Peter came home from school he had carton of Ribena "tooth kind".

6.00 p.m. Peter had two glasses of ordinary Coke with his dinner.

8.00 p.m. Peter had one glass of Diluted Robinson's orange.

Draw the above on the acid clock using the red marker for acid attacks that will cause tooth decay, the blue marker for acidic drinks that may cause erosion and the black marker for non-acid drinks.

Is Peter at risk for dental decay?                      Yes                       No

Is Peter at risk for dental erosion?                      Yes                       No

Do you think Peter would be dehydrated by the end of the day?                      Yes                       No

Well done for finishing the exercise!



Appendix 7 Parental consent form.

Schools Oral Health Promotion,  
Dental Department,  
Midland Area,  
Health Services Executive,  
Health Centre,  
Dublin Road,  
Portlaoise,  
Co. Laois.

Date: 21 November 2006.

Dear Parent/Guardian,

The dental department hope to implement with the support of the school an oral health programme aimed at sixth class pupils in the forthcoming school year. The following topics will be covered in the programme: hydration, healthy drinks, correct tooth brushing technique, recommended use of fluoride, interpretation of drinks labelling.

The type and amount of fluid that children consume affects their learning, concentration levels, mental and physical performance at school as well as their dental health. The benefits of water consumption to health and learning are clear.

**A questionnaire will be administered to a sample number of the children participating both before the programme and the September/ October following the programme to evaluate its' effectiveness.**

**If you do not wish to have your child participate in this questionnaire or in the programme please fill out the slip below and return before December 15<sup>th</sup>. Thank you for your co-operation.**

I, \_\_\_\_\_, parent/guardian of \_\_\_\_\_ (name of child), do not wish my child to participate in the oral health promotion programme for the school year 2005/06.

Name of child: \_\_\_\_\_

Address; \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date of Birth: \_\_\_\_\_

Primary school: \_\_\_\_\_

Signed: \_\_\_\_\_ Parent/guardian.

Please return this to the address at the top of the page.

Thank you.

Appendix 8 Teacher's introductory letter.

**Studies show that hydration status affects mental performance and learning in school. Symptoms of mild dehydration include thirst, headache, concentrated urine, poorer concentration levels, lethargy, irritability and diminished mental and physical performance. The type and amount of fluid that children consume affects their dental health, obesity levels and risk of osteoporosis and childhood fractures.**

Schools Oral Health Promotion,  
Dental Department,  
Health Services Executive,  
Health Centre,  
Dublin Road,  
Portlaoise,  
Co. Laois.

Date: 01 May 2007.

Dear Principal/Teacher,

The dental department plan to implement an oral health programme aimed at sixth class pupils in the forthcoming school year. The following topics will be covered in the programme: dehydration, healthy drinks, correct tooth brushing technique, recommended use of fluoride, interpretation of drinks labelling.

We hope to visit your school in the forthcoming year to have a 30 minute presentation delivered by an oral health promoter to the sixth class pupils in your school. The oral health promoter assigned to your school will be in contact during the year to discuss the programme further and to see if you wish your school to participate in it. We would appreciate if the teacher could remain in the classroom for the duration of the delivery of the programme.

The dental department are most grateful for the co-operation the teachers have provided us over the years. If you have any queries please contact Dr. Olivia Murray at 0502-21135 or Charlotte Johnston at 044-84645.

Kind regards

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