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* Co-chairs



Executive Summary

The aim of this report is to set in context three strands of connected work relating to oral health promotion and to highlight the need for a multi-sectoral and multi-faceted approach to help achieve sustainable improvements in health. The report begins by setting oral health promotion in the broader context of general health promotion and the principles of the Ottawa Charter. Communality of risk factors for oral and general disease is illustrated and highlights the need to encompass oral health as a topic into the general remit of disease prevention and health promotion.

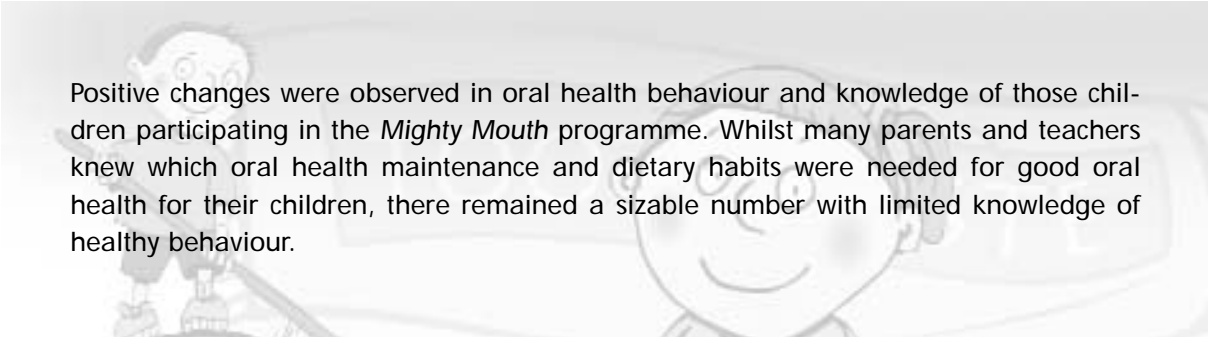
It has long been recognised that inequalities in both general health¹ and dental health^{2,3} exist in society. Socially disadvantaged groups, such as low-income, racial and ethnic minorities and people with disabilities suffer disproportionately from the effects of oral diseases. Some investigators⁴ have emphasised the need to concentrate efforts on children who are socially disadvantaged. The 1997 Eastern Health Board survey of children's dental health revealed a marked inequality in dental health, where five-year-old children of parents with medical cards had twice the level of dental disease as other children. Inequalities in both general and oral health, particularly of children attending disadvantaged schools, were the basic reasons for instigating the research described in this report.

An oral health school intervention programme *Mighty Mouth* was developed which focused on senior infant class children, their parents and teachers in schools deemed disadvantaged by the Department of Education and Science. Objective measures of dental health status were performed on a sample of children attending those schools involved in the *Mighty Mouth* programme. The third component of the research was the development of an information leaflet in relation to the dental services, targeted at socially disadvantaged groups.



The Main Findings

The Education Intervention

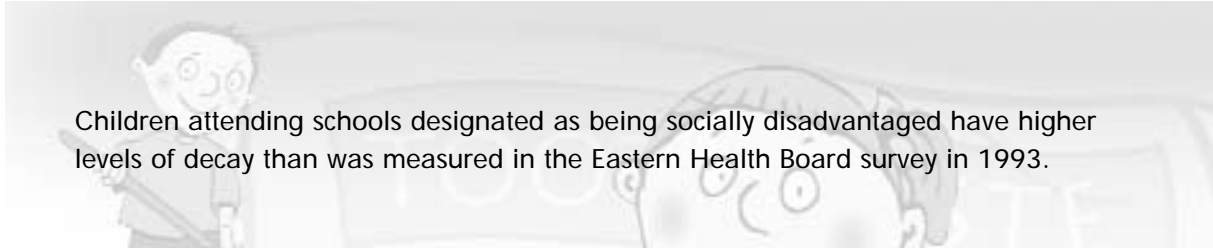


Positive changes were observed in oral health behaviour and knowledge of those children participating in the *Mighty Mouth* programme. Whilst many parents and teachers knew which oral health maintenance and dietary habits were needed for good oral health for their children, there remained a sizable number with limited knowledge of healthy behaviour.

The *Mighty Mouth* programme used a topic-based approach in a school setting and was designed for children from socially disadvantaged schools. The programme aimed to improve awareness, knowledge and behaviour in relation to oral health issues and healthy eating. Following *Mighty Mouth*, it appears that the educational programme had a positive influence on the behaviour and knowledge of the intervention children. Each of the key messages (supervised brushing, correct amount of toothpaste, regular brushing and tooth-friendly foodstuffs) were embraced by the intervention children and appear to have brought about positive changes. In theory, since this was an open study, the children could have reported what they anticipated they should, so explaining the apparent improvements. However, this in itself would indicate that the programme was successful in one educational objective of teaching the children appropriate oral hygiene practices and good eating habits.

Strong, visual messages appear to have been assimilated best by the children. There was almost a four-fold increase in the number of intervention children who reported using a pea-sized amount of toothpaste, a message portrayed using vivid materials in the form of toothfairy boxes and moulding clay. Similarly, colourful posters and colouring books of food and drink were used to highlight the importance of foodstuffs for healthy teeth. These appear to have been successful tools based on the significant increase in the proportions reporting knowledge and behaviour of the healthy option in the food pairs and draw and write tool. Specifically, an increase in knowledge of healthy drinks among intervention children and a decrease in reported consumption of fizzy drinks were observed among these children compared to the reference group⁵. These results compare favourably with those found in a similar nutrition related schools programme⁵.

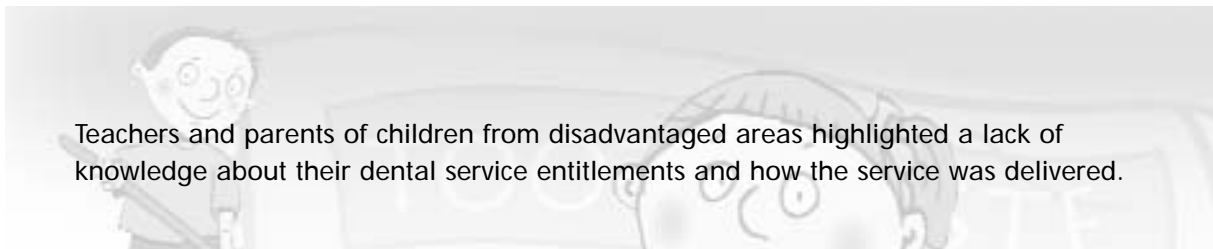
The Oral Health Profile of the Children

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Children attending schools designated as being socially disadvantaged have higher levels of decay than was measured in the Eastern Health Board survey in 1993.

Concurrent to the school intervention was the oral health status measurement of the level of dental decay amongst a sample of children participating in the *Mighty Mouth* programme. The aim of measuring disease levels in this present survey was to establish if the children attending these designated disadvantaged schools had significantly different disease levels to other children in previous surveys. Using a standard measurement technique, results indicate that children attending schools designated as being socially disadvantaged have higher levels of decay than was measured in the Eastern Health Board survey in 1993, and there appeared to be a decline in the number of children who were decay free. Such results suggest that by targeting oral health promotion interventions into these schools those most in need would indeed be reached.

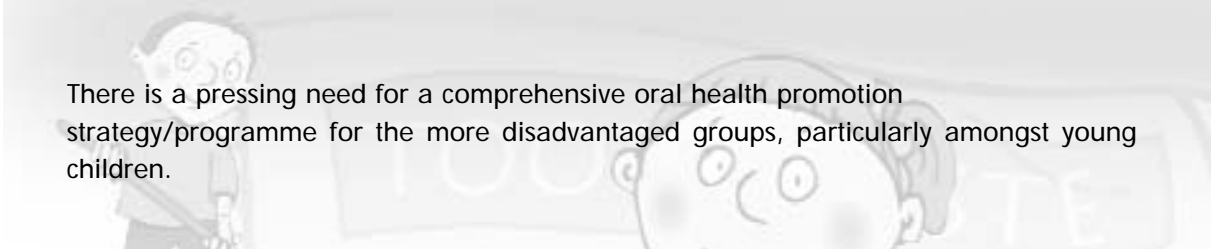
Information on Dental Services Provision

A faint, light-colored illustration in the background of the text box shows a male teacher on the left holding a book, and two children on the right, one with a large smile and one with a neutral expression.

Teachers and parents of children from disadvantaged areas highlighted a lack of knowledge about their dental service entitlements and how the service was delivered.

The third strand of work was in relation to dental service provision. Results of focus groups with teachers and parents of children from disadvantaged areas highlighted a lack of knowledge about their dental service entitlements and how the service was delivered. There was a general lack of awareness that the pre-school children were entitled to a service and also how they could access this service. Teachers and parents were unaware in general that there was a 'dental team'. They were also unclear as to the individual roles e.g. the oral health promoter. Both groups were generally unaware of the emergency service and were unsure how to access the service. Based on this identified need, a leaflet was developed which aimed to provide clear information and to increase awareness of dental services and entitlements available to school-going children.

Overall Recommendation



There is a pressing need for a comprehensive oral health promotion strategy/programme for the more disadvantaged groups, particularly amongst young children.

The results from each of the three strands of oral health related research indicate the need to address the issue of oral health amongst this particular sub-group of the population. By doing so in a multi-disciplinary, multi-sectoral way and by aiming to encompass each component of the Ottawa Charter for Health Promotion, helps ensure a comprehensive programme designed to reduce some of the inequality in oral and general health amongst socially disadvantaged groups of the Irish population.

Chapter 1: Introduction

1.1 Why Oral Health?

The United States Surgeon General's Report '*Oral Health in America*'⁶ recognises the importance of oral health, particularly that of children, and the impact it has on overall health and well being. This is strongly advocated in Ireland through the Dental Health Foundation, Ireland who clearly identify the need to address oral health in the wider context of the Irish population's health, as does the second '*National Health Promotion Strategy 2000-2005*'. This approach is also supported by research that has identified associations between chronic oral infections and heart and lung diseases, stroke, low birth-weight and premature births⁷, highlighting the message that oral health cannot be considered in isolation from other health issues. The main risk factors for oral disease development are dietary sugars, inadequate fluoride intake, smoking, consumption of alcohol and accidents, a number of which are common risk factors for non-oral diseases⁸. In and of itself oral health is an important issue for the general population and service providers. However, the integral nature of oral and general health is without question, and should be taken into account and included in the provision of healthcare and in the design of community programmes⁴.

In the course of the past 30 years great progress has been made in improving the oral health of Irish people. However, not everyone is achieving the same degree of oral health. As with general health, there are a number of possible, overlapping explanations for the variation in oral health achieved by different groups in the population. In many instances, socio-economic factors are an explanation for the range of complex disparities in oral health. A lack of access to community programmes, physical disabilities and other illnesses are clearly barriers to oral health in Ireland. Another major barrier to seeking and obtaining professional oral healthcare relates to a lack of public understanding and awareness of the importance of oral health.

1.2 Oral Health and Disease Prevention

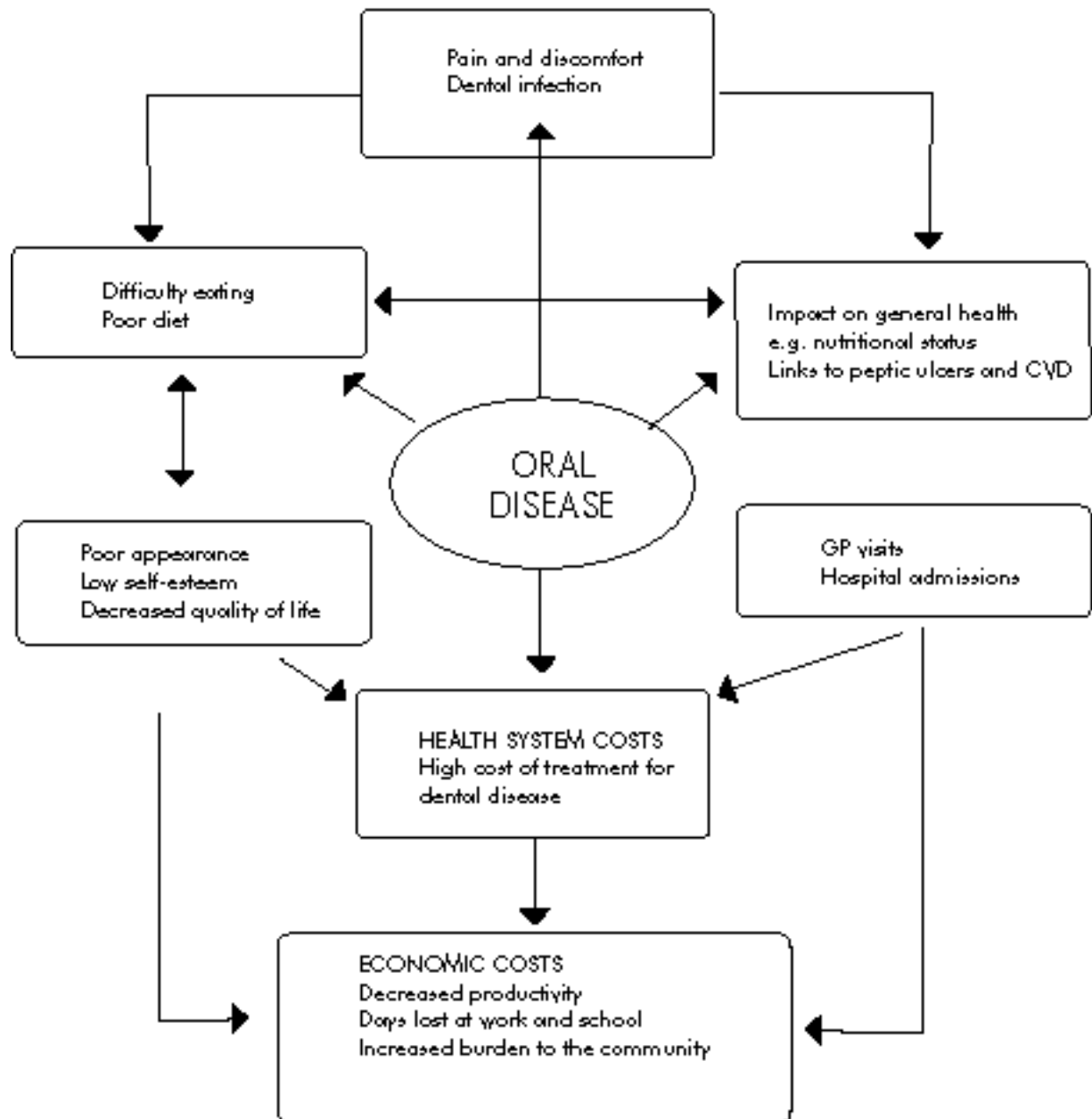
1.2.1 What is Oral Health?

Oral health may be defined as "*a standard of health of the oral and related tissues which enables an individual to eat, speak and socialise without active disease, discomfort and embarrassment and which contributes to general well-being*"⁹. Good oral health is achieved when teeth and the oral environment are not only healthy but also:

- Comfortable and functional - food can be chewed thoroughly and without pain or discomfort and teeth not sensitive to stimuli such as cold.
- Social acceptability - no bad breath, appearance acceptable.
- Absence of sources of infection, which may affect general health¹⁰.

Oral disease has a substantial impact on the individual. The significant personal burden of oral disease due to the associated pain and discomfort may result in difficulty eating and a poor diet and consequently affect appearance, self-esteem and quality of life.

Figure 1: Impact of Oral Disease



Source: "Promoting Oral Health 2000-2004. Strategic Directions and Framework for Action". Public Health Division, Department of Human Services, Dental Health Services, Victoria, Australia

In order to address oral disease, the main risk factors must be taken into consideration. As mentioned previously, these are dietary sugars, inadequate fluoride intake, smoking, consumption of alcohol and accidents.

1.2.2 Dietary Sugars

It has been recognised for many years that sugar is one of the main causes of tooth decay. Harmful sugars are those consumed as table sugars or as sugar added in the manufacture and processing of foods and drinks, as is the case with sweets and sugary drinks. Data from nearly 50 countries studied during the 1960s and 1970s showed an association between the amount of sugar consumed and the level of tooth decay¹¹. Specifically it is the frequency of sugar consumption, which increases the amount of tooth decay caused and consuming sugary foods and drinks between meals carries a greater risk of tooth decay than consuming them only with meals. Sugar is also added to some children's medicines which poses a further threat to the child's teeth.

Recent studies have shown that there is much to be concerned about regarding Irish children's dental health. The most recent research contained in the international report of health behaviour in school-children aged 11-17 years shows that Irish children rank way below other EU countries when it comes to dental self-care¹². Barely half of all Irish children brush their teeth more than once a day, more than 75% eat sweets or chocolate at least once in the same period and 63% consume a can of soft drink every 24 hours. Compared to countries like Canada and Norway, our children eat almost four times more sweets and chocolate and drink three times as many soft drinks.

Focus groups conducted with parents and teachers of children in disadvantaged schools across the three Area Health Boards in the Eastern Region revealed that sugary drinks were popular amongst most children. Parents and teachers also expressed concern about the way some of these drinks were advertised, suggesting they were healthy.

1.2.3 Fluoride

In the Republic of Ireland 73% of the population reside in communities served with water supplies which contain one part per million fluoride. This measure was introduced in 1965 and its beneficial effect is seen in the subsequent improvement of dental health of children and adults. In addition, toothpastes containing fluoride now occupy over 95% of the toothpaste sales in this country and the sale of mouthrinses, many containing fluoride, has also increased considerably over the last 10 years.

On occasions over the past 40 years the issue of the benefits and possible negative aspects of fluoridation has come to the public's attention. Recent increased interest and concern over fluoridation, prompted the Minister for Health and Children to have the question addressed as exhaustively as practicable within a reasonable time scale. Subsequently the Forum on Fluoridation was established in May 2000 and is due to report shortly. The Forum aims to review the fluoridation of public piped water supplies and the programme of research being undertaken on behalf of the health boards in the area, and to report and make recommendations to the Minister for Health and Children.

Fluoride works mainly by slowing down the process whereby the tooth enamel loses calcium and phosphate when exposed to acid following ingestion of food and drinks which contain sugars. It also helps to "heal" surfaces, which show early signs of calcium or phosphate loss, such as an opaque appearance. Hence, most benefit is obtained if the level of fluoride is maintained at an elevated level in the mouth throughout the day. The main advantage of water fluoridation is that its decay reducing effects are available to everybody on the fluoridated water supply. Bottled drinking water contains variable amounts of fluoride depending on the source. Fluoride toothpastes are also an important source of fluoride and these should be used twice a day to maintain the level of fluoride in the mouth; fluoride mouthrinses are particularly useful for people who are prone to high levels of decay and also for people wearing orthodontic braces. Another alternative is a fortnightly fluoride mouthrinse - such mouthrinse programmes are used in a number of schools in non-fluoridated areas.¹⁰

1.2.4 Smoking and Alcohol

Heavy smoking and alcohol intake are the most important risk factors for oral cavity cancer^{13,14} and other diseases of the oral cavity such as oral epithelial dysplasia (OED)¹⁵. The relationship between smoking and oral cancer is well established in areas with both high and low incidences¹⁶. There is also evidence of a dose response between tobacco smoking; the more one smokes the greater the risk of oral cancer and OED¹⁵.

There is evidence to show that the higher incidence of poor dental status in subjects with high alcohol intake may contribute to and worsen the carcinogenic effects of alcohol¹⁷, in addition to increasing the risks of OED¹⁵. There is now convincing evidence that the combined effect of smoking and alcohol consumption is greater than the sum of the risks associated with either, in relation to the development of oral cancer and OED¹⁵.

1.2.5 Accidents

Trauma to teeth happen due to falls, fights, sports, bullying and accidents. One in five children in European countries have broken teeth¹⁸ and in Ireland, approximately one in 12 children will have broken one or more of their permanent teeth before they reach the age of 15 years¹⁰.

Due to the fact that these injuries occur mainly following an accident during normal everyday activities, prevention is difficult. Wearing of mouthguards during organised contact sports will reduce the likelihood of fracturing a tooth. Also, children who have prominent upper incisors are more prone to damage, hence orthodontic correction may be necessary. Assessment for orthodontic treatment through the health boards is provided on a prioritised basis linked to severity of malocclusion.

Chapter 2: Health Promotion

2.1 Principles of Health Promotion

The World Health Organisation's definition of health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". Health promotion, then, is the process which enables individuals, families and communities to increase control over their health¹⁹.

The origins of health promotion date back to the 19th century when sanitary reform was necessary in overcrowded industrial towns. The public health movement began, principally to deal with the malnutrition and infectious disease epidemics, and used a health education approach. Over time the medical services developed with a secondary care provision focus. At the same time disease patterns began to change such that by the early part of the 20th century high levels of chronic diseases were evident in many industrialised countries worldwide. By the late 1960s and early 1970s, there was a growing awareness within the public health arena of the limitations of medicine in combating chronic diseases and the increasing costs of healthcare.

Raeburn and Rootman²⁰ suggest that this realisation in public health marked the development of the modern era of health promotion. The Alma Ata conference in 1978²¹ introduced a declaration on primary healthcare which adopted a holistic approach to health. Its principles of health promotion were further developed in the charter resulting from the first of five global conferences organised by the World Health Organisation. The Ottawa Charter²² argues for the promotion of health through the following five strategic aims:

- (a) Building of healthy public policy: All organisations must take into account the potential health effects of policies developed and implemented by them.
- (b) Creation of supportive environments: Creating a positive social and physical environment, which makes the healthy choice the easy choice.
- (c) Strengthening of community action through public participation so that by involving communities in the identification of their own needs they can plan strategies and implement them to improve health.
- (d) Development of personal skills: Providing individuals with the skills, which are necessary to enable them to cope with the stresses and strains of daily life.
- (e) Reorientation of the health services, i.e. moving away from curative methods to focusing on more preventive methods and moving towards the goal of health gain.

Oral health promotion incorporates all aspects of general health promotion and clearly follows the strategic aims of the Ottawa Charter in its definition.

*"Oral health promotion is any planned effort to build supportive public policies, create supportive environments, strengthen community action, develop personal skills and reorientate health services in the pursuit of oral health goals."*²³

Schou and Locker²⁴ identified three main concepts central to the area of oral health promotion:

Equity and inequality: Equity and inequality refers to the opportunity to be healthy. Barriers of access to oral healthcare include the following: age, cultural differences, language and lack of money.

Empowerment: Empowerment in health promotion involves the provision of health education by health professionals, teaching people the skills which they need to use health information effectively and increasing their confidence in using the options available to them²⁴. Health professionals need to transfer some of the responsibility for health over to the people themselves.

Advocacy: Health professionals need to be technical experts providing evidence for decision-making and lobbying for the implementation of policies, which improve health.

2.2 Health Promotion in Ireland

In recent years there have been a number of developments within Ireland in relation to health promotion, which follow the principles of the Ottawa Charter. One of the main developments includes the formulation of a number of national policies including the *National Health Promotion Strategy 2000-2005*²⁵. A National Consultative Committee on Health Promotion was established in 1995 to foster the multi-sectoral action of health promotion. The committee is chaired at a ministerial level by the Department of Health and Children and has representatives from statutory and voluntary agencies whose actions impact on communities. Developments have also been made with regard to service delivery at the health board level. There are now dedicated Health Promotion Departments, with independent budgets, working closely with Departments of Public Health and voluntary and other statutory organisations.

There is now strong emphasis on research relevant to health promotion in Ireland. Research from community-based needs-assessment through to evaluation research is essential. All such research will provide a robust scientific database crucial to the development of programmes and policies relating to the determinants of health. Needs-assessment allows the health promotion planner to determine what a client or population group needs to enable them to become healthier²⁶. Whilst evaluation research is a key element of health promotion, it has been a largely neglected area of health promotion practice^{27,28}. Evaluation is a complicated process and uses resources which might otherwise be used for programme planning and implementation. However, evaluating activities helps to inform future plans and contributes to the building up of an evidence base for health promotion. Funding bodies, including the Department of Health and Children and the Health Research Board, have financed numerous studies which are either dedicated to or encompass oral health.

Professional training in health promotion is now prominent in Ireland. More third level institutions are offering professional courses in health promotion at a certificate, diploma and postgraduate level. A dedicated Certificate in Oral Health Promotion has been established jointly by the Dental Health Foundation, Ireland and the Department of Health Promotion, NUI, Galway. Additionally, a positive working relationship has been established between the Health Promotion Agency for Northern Ireland, the Health Promotion Unit and the Health Promotion Departments of the regional health boards.

2.3 Oral Health Promotion in Ireland

2.3.1 Policy

The 'National Health Promotion Strategy 2000-2005'²⁵ identifies oral health promotion as one of the topics to be addressed. It aims to improve the oral health of the general population and in particular, people with special needs.

A four-year 'Dental Health Action Plan'²⁹ was produced which identified three main objectives:

- Recognition of a need for multi-sectoral working;
- Importance of the common risk factor approach; and
- Delivery of significant oral health promotion messages.

The plan recognised the challenge to reform the health service and wider inclusion of the national educational system in order to achieve the oral health goals. A specific goal was set to promote the regular daily use of fluoride toothpaste by the whole population over three years of age as a public health measure against dental decay.

2.3.2 Dental Health Foundation, Ireland

Instrumental to oral health promotion in Ireland is the Dental Health Foundation, Ireland, which was established 21 years ago as a charitable trust dedicated to raising the profile of oral health in Ireland. The Foundation is a non-profit making, non-political and equal opportunities independent body, whose mission is to promote oral health in Ireland by providing effective resources or interventions, and by influencing policy through a multi-sectoral, partnership approach. It plays an important role in facilitating and supporting the promotion of oral health in line with the Department of Health and Children's Dental Health Action Plan, and works closely with the Department's Health Promotion Unit providing a focus for oral health within the wider context of health promotion in Ireland. The Foundation provides a complementary role to public health bodies on a national basis and plays a pivotal role in highlighting oral health issues in the public domain, with particular emphasis on socio-economic factors that contribute to disparities in oral health.

The Foundation's commitment to an evidence-based approach to its work, underpins the priority that is placed on core partnership programmes with the Department of Health and Children, the Health Promotion Unit, the Health Boards and universities including the Dental Schools and Centres of Research. The Foundation also works with many other agencies and individuals both within the dental profession, allied health and education professionals and the wider community.

One of the Foundation's biggest undertakings during 2000 was the compilation and publication of its first *'Five-Year Strategic Initiative'*³⁰, which provides a focus and context for the Foundation's work to improve oral health for all people in Ireland over the next five years.

The Foundation identified five strategic objectives, which clarify the role of the Foundation and give it a clear focus for the future. The initiative is based on a diverse range of discussions, critical appraisal of previous programmes and models of best practice in similar organisations abroad. The initiative also provides a framework within which future work programmes will be designed, implemented and evaluated.

2.3.3 Health Boards

It is believed that a range of oral health related activities take place through the health boards across the country but in a somewhat uncoordinated manner. Currently, a review of oral health education/promotion, funded by the Department of Health and Children and conducted by the Centre for Health Promotion Studies, NUI, Galway, is being undertaken to ascertain exactly what exists in terms of related policy, personnel and initiatives and how each of these is implemented. Additionally, a study has been carried out to investigate the attitudes, behaviour and knowledge of special needs groups towards oral health maintenance and service use. Service providers were also surveyed to determine their contact with and perceptions of oral health amongst these groups. The joint report of both surveys will be available shortly.

2.4 Approaches to Oral Health Promotion Initiatives

There are a number of approaches one can choose when planning a health promotion/oral health promotion initiative including: settings, population group, and topic based. Whilst each approach involves a particular focus there is considerable overlap between them.

"A health intervention can be defined as an action which reduces the frequency, duration or severity of disease and promotes the health and well-being of the individual, family or community."³¹

2.4.1 Settings

The use of settings has become popular in health promotion. This approach recognises that there is a valuable opportunity to influence health through policy measures and education within specific settings such as schools, workplaces, hospitals or cities. Efforts are concentrated on making the setting itself a healthier place. This approach means combining healthy policies in a healthy environment, with complementary education programmes and initiatives. Schools provide the most effective and efficient way to reach a large segment of the population, including young people, school staff, families and community members^{32, 33}. Education intervention programmes, including those based in schools, need to meet a number of criteria in order to be effective. The programme should address the needs and interests of the target population e.g. students, the teachers, and the school^{33, 34}. Additionally, the programme needs to be relevant to its goals and it needs to take into account what the target population already know and can do. The programme needs to be culturally appropriate; and to be delivered in a way the target population understands, and teach the skills and knowledge required to improve or strengthen current lifestyle habits.

"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."³⁵

2.4.2 Population Approach

Offering health information and healthy choices direct to the public and on a large scale is another approach to health promotion. With this approach, however, a wider definition of health needs to be taken, one, which takes into account all groups of the population and not just specific sub-groups. A population-based strategy recognises that the occurrence of diseases reflects the behaviour and circumstances of society as a whole, with diseases and risk factors varying tremendously across populations.

By shifting the entire distribution of a risk factor in a favourable direction, large benefits tend to accrue to the whole population. For example, the fluoridation of a population's water supply offers protection to most people from dental decay, whether they brush their teeth or not. Another example of a population-based approach are the Department of Health and Children's National Healthy Eating Weeks. These campaigns aim their messages towards the general population. Another example is that of health surveillance of the general population, for example SLÁN³⁶. Health surveillance is central strategy in the government's health promotion policy. Although this does not necessarily benefit the individual, it may be advocated as providing the necessary information on which to base strategies to improve the health of everyone³⁷. In addition to the general population, specific population groups may be targeted such as children, young people, women, men, older people. Identification of the needs of these particular groups is necessary to then target focused initiatives. The population approach means combining the principle of developing personal skills within a supportive environment and quite often involves strengthening community action.

2.4.3 Topics

The topic-based approach focuses on a particular issue such as oral health or nutrition, as opposed to concentrating on the setting. This approach may suit certain organisations whose main remit is a particular topic, or it can provide a focus that can be easily identified and understood. *The National Health Promotion Strategy 2000-2005*²⁵ has identified oral health as one topic that needs to be addressed. The strategic aim of addressing this topic is to improve the level of oral health in the general population and with a particular emphasis on people with special needs, including disadvantaged groups and people with low incomes.



Chapter 3: Disadvantaged Groups

3.1 General Health of Disadvantaged Groups

There is a significant relationship between health and socio-economic status. Several comprehensive investigations on this issue have been conducted in the United Kingdom. The most notable of these are '*Inequalities in Health: The Black Report*'³⁸ and more recently the '*Independent Inquiry into Inequalities in Health*'³⁹. Both reports conclude that while there have been improvements in the overall level of health, there are discrepancies between the health of people in higher and lower socio-economic groups, with lower socio-economic groups experiencing higher mortality and morbidity for most diseases. Over the past 20 years this gap between social classes has persisted and appears to be widening. Several theories have been put forward to explain these inequalities in health including: The Artefact Theory; The Natural and Social Selection Theory; Materialistic/Structuralistic Explanations; Cultural/Behavioural Explanations. The causes of inequalities in health are complex and varied but inter-related. No theory explains all the findings or is universally accepted, but each theory can be used to explain some aspects of the findings. Black tended to favour the materialistic/structuralist explanation of the inequalities in health and concluded that health inequalities involve access to and use of health services, social policy issues and general features of class, material inequalities and deprivation.

Regardless of these arguments it seems that no matter how social class and health are defined or measured the inequalities persist. Whilst in Ireland data relating to health and social class is scarce⁴⁰ it seems likely that the observed inequalities in health are determined by factors similar to those in the United Kingdom. Interactions between access to and use of health services, social policy issues, class, material inequalities and deprivation and the choices people make and the behaviours they form within the prevailing social and economic environment, all contribute to the inequality in Irish health.

3.2 Oral Health Status of Disadvantaged Groups

As with general health, inequalities exist in oral health. Socially disadvantaged groups, such as low-income, racial and ethnic minorities and people with disabilities, suffer most from oral diseases. There are a number of reasons for this including socio-economic factors, lack of transport, disability or illness, which may limit access to services, lack of financial resources, lack of awareness of oral health and access to healthcare services. The link between oral health and social class was reviewed recently by Locker⁴¹ and was found to be well established, but, as with general health, the explanation for this is still not clear. Watt and Sheiham⁴² reviewed the situation in the United Kingdom and concluded that the main social class difference in dental caries is in young children. They also conclude that treatment services alone will never tackle the causes of oral disease and that oral health inequalities will only be reduced by oral health promotion policies.

Research in the 1970s and 1980s^{43,44} found children in the United Kingdom from lower social classes were less likely to be decay free and more likely to have had toothache and extractions than children from more privileged social classes. In Ireland the association between oral health and social class in children was investigated as part of the 1984 *National Children's Dental Health Survey*⁴⁵. Using the father's occupation as the indicator of social class, it was found that children whose fathers were professional/managerial had a lower mean dmft than unskilled/unemployed fathers. In the 1993 Eastern Health Board children's survey⁴⁶, using possession of a medical card as the indicator of social class, in general the level of dental caries was found to be higher in children whose fathers had medical cards, particularly in the younger age groups.

3.3 Nutrition Status of Disadvantaged Groups

The importance of nutrition and diet as a determinant of general and oral health status is well established. Numerous investigators have documented evidence that the more socially disadvantaged groups are more at risk of developing diseases related to a poor nutrition status e.g. cardiovascular diseases, cancers and oral diseases, when compared to their counterparts in higher socio-economic groups.

Results from the Survey of Lifestyles, Attitudes and Nutrition (SLÁN)⁴⁷ showed that the socially deprived groups in Ireland have a poorer quality diet than higher social groups. Lower social class groups tended to consume less high fibre cereals, fruits and vegetables and significantly more foods high in fats, particularly saturated fats compared to respondents from higher social classes. An important factor in relation to diet and dental caries is a high consumption of sugar-containing foods and drinks. Respondents in social classes 5 and 6 compared to those in social classes 1 and 2, consumed more cakes and biscuits, significantly more dairy desserts and confectionery, as well as fizzy drinks, all of which are high in sugar.



Chapter 4: Oral Health Needs of School Children



4.1 Educational Disadvantage

This section briefly addresses the complexity of the concept 'Educational Disadvantage' and the schemes developed by the Department of Education and Science, aimed at tackling disadvantage among primary school children. The report of the National Economic and Social Council (NESC) describes a general view that disadvantage refers to poor performers, low achievers or those who have not attained high grades⁴⁸. Thus, the term educational disadvantage is used to represent a complex phenomenon which results from the interaction of deep-seated economic, social and educational factors⁴⁹.

One of the key elements of strategy to help meet the objectives of the *National Development Plan 2000 - 2006*⁵⁰ is "a multi-faceted approach to the promotion of Social Inclusion including targeted interventions aimed at areas and groups affected by poverty and social exclusion throughout the community." It is in this context that the targeting of children in designated areas of disadvantage was deemed appropriate.

4.1.1 The Disadvantaged Areas Scheme

The Disadvantaged Areas Scheme was, until recently, the Department of Education and Science's primary mechanism for tackling the impact of socio-economic deprivation in primary schools in Ireland. This scheme provided schools in designated areas of disadvantage with extra funding and special teaching assistance⁵¹. "Schools that applied for disadvantaged status were assessed and prioritised as to need on the basis of socio-economic and educational indicators such as unemployment levels, housing, medical card holders and information on basic literacy and numeracy. In addition, in assessing the relative levels of disadvantage among applicant schools, account was taken of pupil-teacher ratios."⁵¹

4.1.2 Breaking the Cycle

There are a total of 316 primary schools in the Disadvantaged Area Scheme, throughout the country. In 1995 the Combat Poverty Agency and the Educational Research Centre conducted a study, which led to the emergence of the '*Breaking the Cycle Pilot Project*'.

*"The Breaking the Cycle Scheme seeks to discriminate positively in favour of schools in selected urban and rural areas, which have high concentrations of children who are at risk of not reaching their potential in the education system because of their socio-economic backgrounds."*⁵¹

4.1.3 Giving Children an Even Break by Tackling Disadvantage

In January 2001 the Department of Education and Science launched a new initiative '*Giving Children an Even Break by Tackling Disadvantage*' which covers 2,276 primary schools throughout the country. It shall run over a three-year period and has as its key objective:

"To ensure that support services for disadvantaged pupils are properly targeted at those most in need. The level and nature of the support services made available will vary depending on the level of need identified."⁵¹

The schools already receiving support under the previous schemes will retain their entitlements and may be eligible for further entitlements under the new scheme. Traditional approaches to addressing the problem of educational disadvantage have lacked the necessary flexibility to target individual and small groups of pupils suffering educational disadvantage. The system has tended to concentrate resources in schools with the highest concentrations of disadvantaged pupils, while failing to give adequate support to other schools with smaller but nonetheless serious pockets of disadvantage⁵¹.

This new scheme aims to adopt a more targeted approach with support relating directly to the level of concentration in a school of pupils who have background characteristics associated with educational disadvantage. At risk pupils in primary schools throughout the country were identified through a comprehensive survey commissioned by the Department of Education and Science in 2000.

4.2 Existing School-based Programmes

There are a number of oral health relevant school-based initiatives already in existence nationwide such as NEAPS, DEN TV, Bí Folláin and SPHE. Whilst not all of these programmes focus specifically on oral health, they do have a healthy eating component which encourages healthy foods, snacks and drinks and discourages the consumption of sweets and sugary drinks.

4.2.1 Nutrition Education At Primary School (NEAPS)

Nutrition health education has become increasingly prominent in schools programmes worldwide, either as part of dedicated courses such as home economics or wider skills-based programmes^{52,53}. There is evidence that young people develop risk factors^{54, 55, 56} and disease evidence for coronary heart disease early^{57, 58} and indeed in Ireland as elsewhere⁵⁹ obesity is becoming a major public health problem for children. Patterns of eating are changing with a strong reliance on frequent snacking and consumption of so-called junk foods⁶⁰.

A variety of programmes have improved knowledge^{53, 61} and in some cases reported behaviour^{52, 62, 63}. Whilst evaluation of effectiveness can be problematic as improved knowledge may not necessarily affect long-term behaviour⁶⁴, structured programmes can contribute to a wider context-based approach. Bandura's social learning theory⁶⁵ has formed the basis of several programmes^{66,67} in that it encourages capabilities and self-control and employs re-enforcement techniques. A pilot nutrition health education programme in primary schools (NEAPS) was set up based on the Minnesota Hearty Heart Mode⁶⁸ under the auspices of the Department of Education and Science and the Department of Health and Children in conjunction with the North Western and Eastern Health Boards. Until this study was undertaken there had been no Irish nutrition intervention programmes targeted at primary school children as part of the teaching curriculum, though it was a component in various school health education programmes.

The intention was to design suitable educational materials for Irish school children aged eight to 10 years old in order to build awareness of the benefits of healthy eating and regular exercise, induce positive behaviour change towards healthy foods and to increase children's knowledge about healthy eating. Following its evaluation, where positive changes towards healthy food choices were observed in both knowledge and behaviour of the intervention children, NEAPS was implemented nationally.

4.2.2 DEN TV⁶⁹

A pilot oral health programme was developed which aimed to improve oral health knowledge and behaviour amongst Irish school children aged seven to 12 years. The programme comprised two integral components: A television campaign, run over a six-week period, was incorporated into the children's programme *Den TV* on national television with video clips of a member of the pop band Boyzone promoting key oral health messages and a *Smile of the Year* contest. Concurrently, a dental nurse delivered an interactive talk with pupils, showed a video of the *Den TV* oral health programme and distributed posters and leaflets. The aim of this study was to assess the impact of the overall intervention on school pupils' dental health knowledge and reported behaviour. The results are in line with the argument that mass media campaigns work to supplement the one-to-one activities of health professionals in order to effect knowledge and behaviour change.

4.2.3 Social Personal and Health Education (SPHE) in the Primary Curriculum³⁵

SPHE provides particular opportunities to foster the personal development, health and well-being of the child and to help him or her to create and maintain supportive relationships and become an active and responsible citizen in society.

A child's social, personal and everyday experiences and interactions in the home influence health development significantly. It is also affected by a number of other factors: religious and moral beliefs, the morals of society, the media, and the opinions of other people. All of these considerations and particularly the continuing influence of the family, must be taken into account when developing and implementing a programme in SPHE in the school.

Some of the key characteristics of the curriculum are that SPHE:

- Is a lifelong process;
- Is a shared responsibility, between family, school, health professionals and the community;
- Is based on the needs of the child;
- Is spiral in nature;
- Is developed in a combination of contexts; and
- Engages children in activity - based learning.

4.3 The 'Health Through Oral Health - intervention for five and six-year-olds' Programme

The current 'Health Through Oral Health' programme was developed with the recognition that whilst there were other school-based programmes in place, none were specifically targeting disadvantaged groups.

4.3.1 The Origins

The concept and approach for this project originated in the early 1990s within the former Eastern Health Board, Cornmarket and Crumlin areas in Dublin through the Home/School Liaison Scheme. A need was identified by the Home/School Liaison officer to develop a particular programme to address the oral health needs of children. Following consultation with the Dental Services Division, Dr David Clarke and Dr Don Keane, Principal Dental Surgeons and the Dental Health Foundation, Ireland, a pre-pilot project was established entitled '*Mighty Mouth*'. This included an oral health examination of the children involved in the pilot, followed by an educational intervention, which included a strong nutrition component. Process evaluation of the project demonstrated that such an approach was successful, and that a formal evaluation and planning of this project should follow. However, no further funding was available at that time.

4.3.2 The Development

The findings of the 1997 Eastern Health Board's Report of Children's Dental Health confirmed the urgent need to develop an effective and sustained approach to improve the levels of children's oral health. The Principal Dental Surgeons of the Health Board recommended that the original pilot project '*Mighty Mouth*' should be re-examined as a potential mechanism for addressing the oral health inequalities of these children. Subsequently, the Dental Health Foundation, Ireland was commissioned by the Eastern Health Board Dental Services Section to develop the current pilot project.

The pilot project was developed in line with new national, regional and local health, education and social inclusion policies now in position since the early 1990s project. Educational activities are at the core of 'Health Through Oral Health Intervention' and the concept of SPHE has been incorporated into its aims and objectives.

The primary aim of the programme was to focus attention on the importance of oral health for children on an ongoing basis. Specifically, it was designed to inform children, parents, and teachers about oral health maintenance, good nutrition, oral health service provision, and generally the importance of oral health for good general health. By designing and implementing suitable educational materials for socially disadvantaged Irish school children aged five and six-years, the programme intended to build awareness of good oral hygiene practices and hence help induce positive behaviour changes towards healthy practice and dietary habits. This educational, settings-based approach combined individual interaction plus involvement of both teachers and parents of the children, an approach which has been shown to be effective in other oral health education initiatives in Ireland^{5, 69}.

4.3.3 Implementation

There were a number of steps that were involved in the implementation of the *Mighty Mouth* intervention.

Stage 1: Team building and establishing the Steering Committee to oversee the initiative

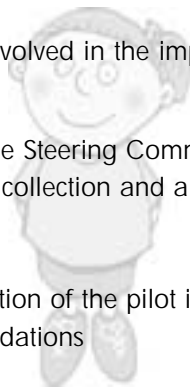
Stage 2: Needs assessment, baseline data collection and analysis

Stage 3: Project proposal development

Stage 4: Development of the intervention

Stage 5: Pre - baseline survey, implementation of the pilot intervention and post test - survey

Stage 6: Evaluation, report and recommendations



4.4 *Mighty Mouth Steering Committee*

4.4.1 Partnerships

It is widely recognised that multi-sectoral collaboration is needed in order to effectively tackle the physical, economic, social and cultural determinants of health. It is within this context that the Dental Health Foundation, Ireland and the three Area Boards in the East agreed the need to bring together key stakeholders in the development of this intervention.

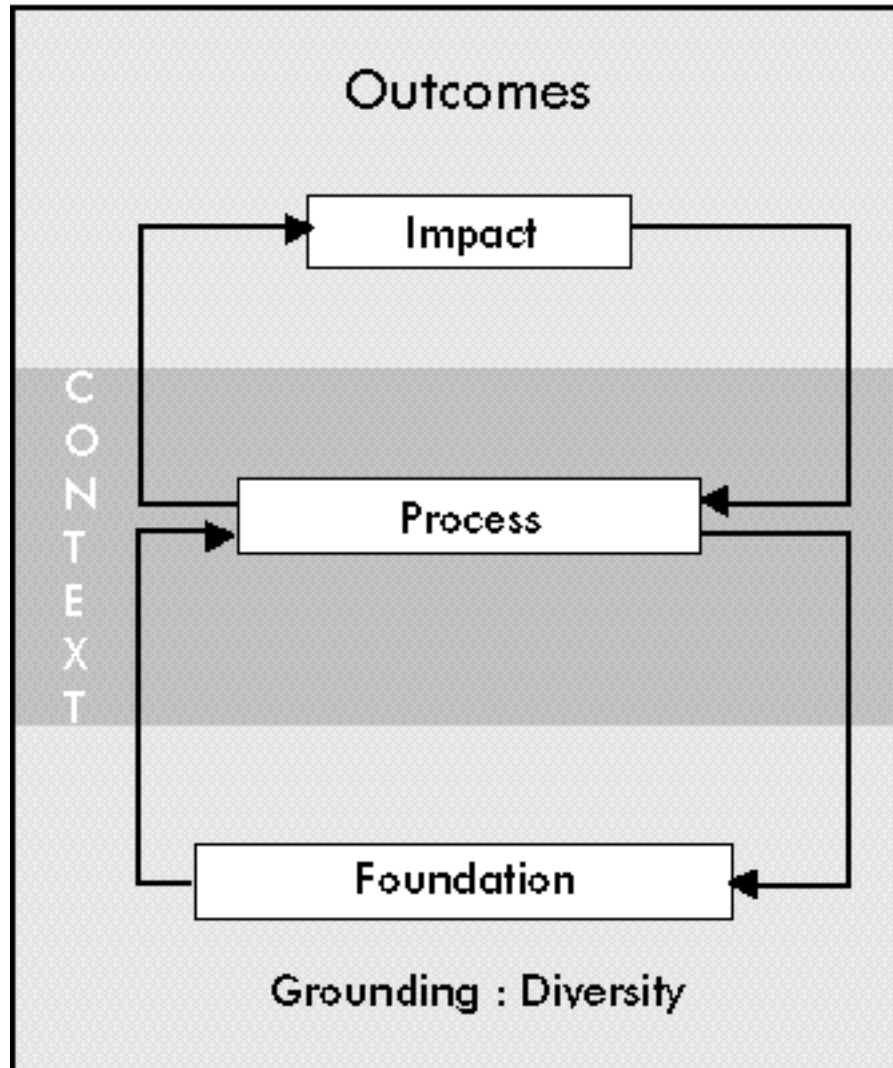
Collaboration as a process of participation through which people, groups and organisations work to achieve desired results, emerged as a key success factor in the development and testing of this initiative.

The Framework Model (figure 2) developed by the Institute of Public Health is used to present the key aspects of collaboration within the *Mighty Mouth* Steering Committee and sub-committee processes.

Source: The Institute of Public Health in Ireland, Partnership Working 1999

Figure 2

The Partnership Framework



4.4.2 The Context

*"All aspects of partnership working are embedded within the context of the wider community."*⁷⁰

The context within which this initiative emerged was considered for its impact on both the intervention itself and the partnerships formed within the steering committee process.

In keeping with the recognition in both the National Health Strategy⁷¹ and *National Health Promotion Strategy 2000-2005*²⁵ of the need for multi-sectoral collaboration, the Mighty Mouth Steering Committee was established, reflecting a primary healthcare approach and was modelled on the principles of the Ottawa Charter 1986²². The aims and objectives of the initiative are consistent with the Department of Health and Children's second '*National Health Promotion Strategy 2000-2005*' and the '*Dental Health Action Plan*'. It also fulfils the requirement of the National Anti-Poverty Strategy.

During the development of the project proposal and the extensive review of current policy and literature, the importance of involving key stakeholders became evident for the successful development of this intervention. "Establishing health alliances involves consultation with, and participation of, all partners, to address the social, economic and environmental determinants of health. It is important that non-health sectors become aware of their capacity to contribute and that their involvement in health promotion interventions is encouraged and supported."²⁵ Therefore, key stakeholders were identified and formally invited to participate on the Steering Committee for this initiative.

4.4.3 The Grounding

*"The principles which should underpin a partnership at all levels include participation, equality of esteem, resource allocation, agreement about outcomes, respect for diversity and individual and collective responsibility for ensuring things go well."*⁷²

The Steering Committee members represented a wide variety of interests, experience and perspective, all of which added to the quality of the programme and the diversity of activity which consequently emerged. Diversity was valued and nurtured throughout the process.

4.4.4 The Core Foundation

*"The core foundation represents the common ground for the partnership: a shared purpose and strategy".*⁷³

The aims and objectives of the Steering Committee were clearly defined and reviewed at the outset. The members of the committee shared common ground and purpose, within the context of their diverse backgrounds. Plamping⁷⁴ recommends "that to help partnerships identify a shared goal; the focus should be on the needs of patients and their whole experience, rather than professions or institutions".

4.4.5 The Process

"The process factors are internal and relate to the specific skills and dynamics of the partnership, which are needed to build effective working relationships and capability."

Key aspects of the process within the context of this intervention, included the following:

- Leadership: Clearly defined and consistent leadership provided by the lead organisations, the Dental Health Foundation Ireland and the three Area Health Boards in the Eastern Region
- Communications channels were clearly outlined and information was readily available through the facilitating body (the Dental Health Foundation, Ireland).
- The sense of 'team' emerged as the initiative progressed, through formal and informal interactions surrounding both the Steering Committee and sub-committee work programmes.

During the development of the intervention, the initiative followed through on a number of stages all of which required very different inputs and expert guidance from the members of the Steering Committee. Members were provided with an opportunity to participate on sub-committees, which focused on key aspects of the programme. The Steering Committee and the relevant sub-committees, were facilitated at all times by the Dental Health Foundation, Ireland in achieving the programmes aims and objectives. As the need arose the following sub-committees were formed:

Resources Sub-Committee

Objective: To develop the training resource materials for this intervention

Evaluation Sub-Committee

Objective: To plan, implement and report on the evaluation of the intervention

Presentation Day and Report Sub-Committee

Objective: To produce the final report on the intervention study with all its relevant facets and to plan the presentation of this report.

4.5 Needs Assessment

To increase the likelihood of an intervention being effective, it is important to identify the issues and needs of the target groups so that materials and instruments can be developed in an appropriate, targeted manner. Since parents and teachers directly influence the knowledge, attitudes and behaviours of five and six-year-old children⁷⁵ it was decided to focus on the needs of these groups. Qualitative research involving focus groups was used to identify parents and teachers behaviour, knowledge and attitudes around oral health, nutrition, toothbrushing practice and dental service provision.

Three schools were randomly selected from each of the three health boards in the East; East Coast Area Health Board, Northern Area Health Board and South Western Area Health Board. Teachers and parents of children from junior and senior infant classes in the selected schools were invited to participate in the study. Two focus groups were held in each of the three areas, one for parents and one for teachers. The participating schools were both boys and girls schools from disadvantaged areas in the Eastern Region. No previous formal oral or nutrition health promotion programmes had been run in any of these schools.

Focus Group Results

A healthy lunch policy was recognised by both parents and teachers as a positive way of encouraging healthy eating amongst the children. Where lunch policies were in place both parents and children were aware of them and took care to abide by them. The drinks children brought to school were high in sugar, with Sunny Delight being the most popular. Even in schools where lunch policies were in place, the drinks did not seem to be as regulated as the food. Where drink regulations did exist, it was mainly a ban against fizzy drinks. The high consumption of sugary drinks was recognised among the parents, but they did try to encourage the children to drink milk at home.

The oral health status of children from these classes was perceived by teachers as being poor, and there was mixed perceptions amongst the teachers as to the standard of oral hygiene practices amongst the children at home. There also appeared to be a lack of information regarding oral hygiene in the home. The practice of supervised brushing varied between parents from no supervision to brushing the teeth for the children. A few of the parents said they found it difficult to get the children to brush their teeth at different times, some didn't brush in the mornings and some didn't brush at night time. Knowledge varied with regards to the correct amount of toothpaste to use, and in some cases even where the parents knew how much to use, the children used more than the recommended amount, either because they liked it or they had fun squeezing it out of the tube. All teachers and parents were unclear about the provision of dental services and the entitlements of the children and their families.

4.6 *Mighty Mouth Intervention*

(See Appendix 1 for timeframe)

Based on results from the needs assessment process, the *Mighty Mouth* programme was designed with the aim of effecting a positive knowledge, attitude and behaviour change amongst socially disadvantaged children in senior infant classes, their parents and their teachers around the key messages; use of a pea-sized amount of toothpaste, supervised regular brushing and consumption of tooth-friendly food and drinks.

The school-based intervention took place over eight weeks in the three Area Health Boards in the Eastern Region. Oral health promoters acted as field workers and there was at least one field worker per classroom. Whilst teachers were asked to remain in the classroom, on the whole they were not actively involved with administration of the intervention. Every class received four lessons, each aimed at a different key message.

1. *Good nutrition*: The intention of this lesson was to help the children identify foods and drinks that are good for their teeth and general well being.
2. *Toothbrushing*: The aim of this lesson was to teach the children proper toothbrushing practices, to encourage them to brush regularly and to teach them how much toothpaste to use.
3. *The Dentist*: This lesson aimed to provide the children with the opportunity to make positive associations with the dentist and to relieve the anxiety when visits are necessary.
4. *The Presentation Day*: This was a day to reward the children for their hard work and to re-cap on what they had learned. The children were then presented with *Mighty Mouth Award Certificates*.

The intervention materials were developed by the Dental Health Foundation, Ireland and the Resource Sub-Committee. They comprised colouring cards, a puppet, a giant toothbrush, children's posters and stickers, drinks posters, tooth fairy box and moulding clay, food pyramid poster⁷⁶ and acid attack - a tooth decay poster. Each lesson involved role-plays, use of the materials and learning songs and poems relating to the key messages. Following completion of each lesson, the children took home worksheets to be completed with the help of their parents. The National Adult Literacy Agency guidelines were used in the development of materials used in the implementation of this pilot intervention.

4.7 *Process Evaluation*

Whilst the intervention was taking place the project workers informally evaluated the process of the intervention, recording aspects of the programme and the process which worked very well, or those which were less successful in the classroom setting. In general, the lessons and activities were very well received and enjoyed by the children. The more popular lessons and activities were the ones in which the children were actively involved and those which were most visually stimulating.

The acid attack poster was very popular. It was bright, colourful and the children were able to understand the concept of the acid "monsters" damaging their teeth. The children were very enthusiastic to participate in holding up the posters of the tooth-friendly or unfriendly drinks. In relation to toothbrushing, the project workers used a large puppet in the form of either a horse or a cow, with plastic teeth. All children were given the opportunity to brush the cow's/horse's teeth and in general this was very popular. The lesson relating to visiting the dentist was conducted by means of a role-play, whereby one child was the patient and the other the dentist. The children were very enthusiastic about this lesson and enjoyed being actively involved.

One problem which emerged, was the fact that teachers knew the programme was being implemented. However, the majority of them did not know the timeframe of the project, the number of visits that were necessary or what exactly the programme entailed. This posed problems for both project workers and the teachers, as the teachers had the day already planned out as had the project workers. Resultantly there was a lack of co-operation from some teachers. The project workers felt that better planned discussions with the teachers would have resulted in better co-operation and support and would have helped to build a good rapport with them. Additionally, the project workers would have been able to identify a suitable time to go into the class, one which would not have interfered with other activities, for example PE or computers. The success of the programme in each class appeared to depend on how much interest the teacher had. Part of the programme depended upon the teacher teaching the class a poem and a song. Not all teachers did this, with some teachers stating that they didn't have the time. This may have been overcome with more communication between the teachers and the project workers prior to the programme delivery. Whilst in general the children welcomed the programme, the oral health promoters found it difficult to manage disruptive behaviour.

It was discovered early in the programme that any materials or exercises sent home were unlikely to be completed. One of the home exercises involved colouring pictures, on the the assumption that all children had crayons at home, however this was not the case. This problem arose in almost every class. As a result children were asked to colour them during class. Requesting the children to colour in the cards during the session caused disruption and it was difficult to hold their attention for the remainder of the session. The project workers hadn't anticipated this extra work and time and as a result it was not built into the time schedule.

4.8 Oral Health Status Objective Measures

Following the needs-assessment and the perception amongst dentists that the oral health status of children in socially disadvantaged schools is poorer than those in more privileged schools, it was decided to conduct an opportunistic survey of the dental health status of the children participating in the *Mighty Mouth* study. The aim is to establish if the children attending designated disadvantaged schools had significantly different disease levels from other children. It is also intended to provide baseline data for possible long-term evaluation of the intervention.

In contrast to the *Mighty Mouth* classroom intervention, the oral health status assessment required consent from a parent/guardian before each child could be examined. Consent forms were sent or delivered to all schools participating in the project. These outlined the nature and purpose of the examination and the parent/guardian were asked to sign positive or negative consent to the dental examination. The teachers were asked to distribute and collect the forms from the children. Only those children who returned signed positive consent could be included in the survey. Those who signed negative consent, who failed to return forms or were absent on the day of examination were not included in the survey.

A team comprising an examiner and a recorder conducted all the examinations. The examiner was a dentist who had been trained and calibrated in the same way as examiners in previous surveys. The recorder was a dental nurse who had also been trained in survey recording. Each child was examined by the dentist, in the schools outside their classrooms. They sat on a chair and a portable light was used for illumination. There was a sterile packet containing a dental mirror and probe for each child. The examination was visual only, the probe only being used to remove debris from the tooth if necessary. Decay was only recorded when the lesion had reached cavitation level. Any tooth recorded as being missing due to decay was scored as having three affected surfaces. If there was any doubt about the lesion the tooth was recorded as being sound.

Since 1952, levels of dental disease in five-year-old children in Ireland have been measured by surveys using the same criteria. The indices used for recording decay in deciduous (baby) teeth in these surveys are dmft and dmfs. These are internationally recognised indices that visually assess each tooth (for dmft) or tooth surface (for dmfs) and record the number of teeth/surfaces that are decayed (d), missing (m) and filled (f). Each affected tooth/surface scored gets a score of 1 and the total number of teeth/surfaces affected are added together to give a single score that reflects the caries experience of that child. A dmft of 0 indicates no experience of dental decay. The maximum dmft score for baby teeth is 20 (all teeth affected by decay). The maximum dmfs is 88 (all surfaces affected by decay).

4.8.1 Results

Due to time constraints and some administrative difficulties not all schools participating in the *Mighty Mouth* programme were included in the dental status survey. In the schools that did participate, not all children returned consent forms or were present on the day of the examination. In total, 602 senior infant children were examined in 20 schools constituting approximately 13% of all children in senior infant classes in designated disadvantaged schools.

From Table 1 it can be seen that there is a sizeable difference between the number of children caries free in the Eastern Health Board (1993) and the *Mighty Mouth* project results. It should be borne in mind, however, that the EHB results are eight years old. This decline in the number of children who are caries free is not exclusive to Ireland, some countries, such as the United Kingdom⁷⁷ have been experiencing an increase in caries levels in five-year-old children in recent years

Table 1: Comparison of the *Mighty Mouth* results with previous surveys in the Eastern Health Board

	1961-63 (EHB)	1984 (EHB)	1993 (EHB)	Mighty Mouth (8 Area Boards)
% of children caries free	19	57	70	60
dmft	5.6	1.3	0.9	1.25
dmfs			1.7	2.45
% of dmft that is d		77	84	78
% of dmft that is m		23	11	18
% of dmft that is f		0	5	4

dmft= 'decayed, missing and filled teeth'; dmfs= 'decayed, missing filled surfaces'

Table 2: dmft and dmfs status of males and females.

	Mighty Mouth (All)	Mighty Mouth Males	Mighty Mouth Females
% of children caries free	60	55	64
dmft	1.25	1.50	1.07
dmfs	2.43	2.74	2.14
% of dmft that is d	78	76	81
% of dmft that is m	18	18	18
% of dmft that is f	4	6	2

Table 2 shows substantial differences in the proportion of children being caries free between males and females. A lower percentage of the boys (55%) examined were caries free compared to their female counterparts (64%).

These results indicate that children attending schools designated by the Department of Education and Science as being socially disadvantaged, have higher levels of decay than was measured in the EHB survey in 1993. The schools in the 'Breaking the Cycle' scheme had even higher levels of disease and an increased proportion of that disease experienced was untreated. These results would seem to indicate that the schools in the study are indeed an appropriate way of targeting dental interventions to those most in need of them.

4.9 Impact Evaluation

4.9.1 Sample

It was estimated that a sample size of 500 senior infant intervention children matched with 500 senior infant reference children was needed to detect a positive change in oral health practices amongst the intervention children. For ease of intervention co-ordination and delivery, the sample was distributed across the three Area Health Boards in the Eastern Region i.e. Northern Area Health Board, South Western Area Health Board and East Coast Area Health Board. Three intervention schools and three reference schools in each area were randomly selected from the list of disadvantaged schools in the East provided by the Statistics Section of the Department of Education and Science. In reality, the total number of senior infant pupils in both the intervention and reference groups was greater than that required by the sample estimates. Ethically and practically, since using children in a classroom setting, it was not possible to exclude children from participating in the study. The extra numbers allow for absenteeism and self-selected non-participation.

4.9.2 Evaluation Design

A pre/post study design with a non-randomised reference group was used to evaluate the impact of the intervention with regards to reported knowledge, attitudes and behaviours of children towards oral health maintenance and dietary habits. The intervention took place at the start of the school year in mid-September. On the first day, before the intervention was delivered, a specially developed questionnaire was completed in the classroom situation with the assistance of the fieldworker. Immediately after the eight-week intervention programme finished the same questionnaire was completed in the same classes. Reference children were also visited by the fieldworker before the intervention programme began but were only asked to complete the baseline questionnaire. These children were again visited by a fieldworker after the intervention programme finished and were asked to complete the same questionnaire. Both types of school received the same questionnaire pre and post intervention, however, at post intervention the intervention school children were asked to answer additional questions, relating to the content of the intervention itself. The responses to these questions are reported elsewhere⁸¹.

4.9.3 Measures

A self-administered questionnaire was designed for five and six-year-old children, with graphics to aid in their comprehension of the questions. Key oral health maintenance questions pertaining to supervised brushing, amount of toothpaste used and timing of brushing were included. One key dietary knowledge question also asked if the children thought sweets were bad for their teeth. Knowledge of and behaviour in choosing healthy foods was assessed using an adapted version of a previously validated food pairing questionnaire used in the Minnesota Heart Health programme and NEAPS⁵. The draw and write tool⁸² was also used, where the children were each given an A3 sized sheet of white paper and were asked to draw something that was good for their teeth. The children completed the questionnaires and the draw and write during class time with the help of the fieldworkers. The children's questionnaire and draw and write technique were piloted in the schools participating in the needs-assessment focus groups. These schools were not included in the main study.

4.9.4 Results

One thousand one hundred and seventy one children completed the baseline questionnaire, 518 intervention and 653 reference, and 920 children completed the post test questionnaire, 377 intervention and 543 reference. Two intervention schools could not facilitate completion of the post-test questionnaires. There were similar proportions of males and females pre and post test, but overall a greater ratio of males to females in the reference group compared to intervention.

At baseline, after controlling for gender response differentials, responses to the questions relating to the key messages of the oral health campaign varied to some extent between intervention and reference children⁸³. Significantly more of the intervention children reported using a pea-sized amount of toothpaste, whereas knowledge and behaviour towards healthy foodstuffs was reportedly better amongst the reference children.

Following the *Mighty Mouth* intervention programme significant differences were observed between the oral health knowledge and behaviour of intervention and reference children (Table 3). In all but one of the key questions, the number of intervention children who reported positive responses increased significantly following the intervention time period. This was not observed amongst the reference children. Whilst not statistically significant, a positive increase was observed post intervention in the number of intervention children reporting their parents brushed their teeth, a finding not observed in reference children.

Significantly more intervention (X^2 329.5, $p < 0.01$) and reference children (X^2 6.47, $p = 0.011$) reported using a pea-sized amount of toothpaste after the intervention programme. The increase in the proportion of intervention children who reported this behaviour was fourfold compared to five percentage points amongst the reference children.

There was a significant increase post-test compared to baseline, in the number of intervention children who reported brushing their teeth in the morning (X^2 11.93, $p < 0.01$) and before going to bed (X^2 8.69, $p < 0.01$). This change was not observed amongst reference children although significantly more did report brushing their teeth after meals at the post test survey compared to baseline, resulting in the proportion being comparable with the intervention children.

Whilst a high proportion of both intervention and reference children knew that sweets were bad for their teeth, this increased significantly to over 90% amongst intervention children following the *Mighty Mouth* programme (X^2 38.54, $p < 0.01$). In all eight food pairs, a statistically significant increase was observed following the intervention programme in the number of intervention children who reported knowing which food was healthier and who reported eating that foodstuff as opposed to the unhealthy option. Although amongst the reference children there were some significant differences between baseline and post-test regarding knowledge of the healthy option within food pairs, this knowledge did not appear to influence the behaviour of these children between baseline and post-test.

Table 3: Oral health behaviour responses pre and post test for intervention and reference children

Behaviour	Intervention		Reference	
	Pre N (%)	Post N (%)	Pre N (%)	Post N (%)
WHO BRUSHES YOUR TEETH?				
I brush my teeth	394 (84.5)	294 (82.6)	502 (85.2)	455 (89.7)
My parents help me to brush my teeth	49 (10.5)	32 (9.0)	62 (10.5)	37 (7.3)
My parents brush my teeth	23 (4.9)	30 (8.4)	25 (4.2)	15 (3.0)
HOW MUCH TOOTHPASTE DO YOU USE?				
I cover the whole toothbrush	278 (55.0)	42 (11.3)	404 (64.1)	289 (53.5)
I cover half the toothbrush	110 (21.8)	22 (5.9)	114 (18.1)	127 (24.0)
I use a pea-sized amount	112 (22.2)	306 (82.3)**	96 (15.2)	111 (21.0)*
I use none	5 (1.0)	2 (0.5)	16 (2.5)	0
AT WHAT TIMES OF THE DAY DO YOU BRUSH YOUR TEETH?				
Morning	382 (73.7)	308 (82.1)**	489 (74.0)	419 (77.4)
After meals	183 (35.3)	134 (35.8)	173 (26.5)	190 (35.1)**
Before bed	365 (70.5)	288 (76.8)**	472 (72.4)	414 (76.5)
ARE SWEETS BAD FOR YOUR TEETH?				
Yes	360 (75.5)	317 (90.8)**	435 (77.3)	409 (79.6)
No	109 (21.6)	24 (6.5)	116 (20.6)	89 (17.3)
Don't know	14 (2.9)	8 (2.3)	12 (2.1)	16 (3.1)
KNOWLEDGE (HEALTHY OPTION RESPONSES REPORTED)				
Milk / Fizzy Drink	422 (84.2)	357 (96.7)**	555 (88.0)	495 (91.2)**
Banana / Lollipop	406 (80.6)	352 (94.6)**	537 (84.7)	471 (89.0)*
Wheatbix / Sugared Cereal	297 (58.5)	296 (81.6)**	409 (64.7)	402 (75.6)**
Yoghurt / Iced Bun	292 (57.6)	286 (77.8)**	435 (69.5)	397 (73.1)
Fruit Juice / Fizzy Drink	418 (83.1)	382 (95.9)**	532 (85.5)	482 (91.1)**
Apple / Chocolate	382 (75.9)	342 (94.5)**	514 (81.8)	464 (87.2)*
Orange / Digestive Biscuits	307 (60.6)	296 (80.7)**	448 (72.3)	420 (79.6)**
Water / Fizzy Drink	399 (79.6)	350 (94.6)**	519 (84.0)	471 (90.1)**
BEHAVIOUR (HEALTHY OPTION RESPONSES REPORTED)				
Milk / Fizzy Drink	346 (69.2)	341 (92.7)**	418 (77.6)	408 (77.1)
Banana / Lollipop	322 (64.1)	323 (87.8)**	427 (67.9)	359 (66.7)
Wheatbix / Sugared Cereal	282 (55.8)	285 (77.4)**	381 (61.8)	357 (66.9)*
Yoghurt / Iced Bun	328 (65.1)	283 (77.3)**	404 (64.4)	357 (68.0)
Fruit Juice / Fizzy Drink	376 (74.5)	326 (90.4)**	455 (74.3)	408 (77.4)
Apple / Chocolate	312 (61.8)	316 (87.5)**	437 (69.3)	347 (66.7)
Orange / Digestive Biscuits	289 (57.6)	261 (71.5)**	382 (60.3)	322 (61.8)
Water / Fizzy Drink	323 (64.5)	316 (89.6)**	433 (70.3)	372 (71.1)

*P<0.05, **P<0.01, significant difference in response pre and post intervention

As shown in Table 4, using the draw and write tool, there was a significant increase observed in the number of intervention children who drew a food which was good for teeth (X^2 26.04, $p < 0.01$) and drink which was also good for teeth (X^2 19.85, $p < 0.01$). Conversely the number of children drawing food and drinks bad for their teeth decreased. These changes were not observed amongst reference children.

Table 4: Proportion of intervention and reference children drawing foods and drinks which were good and harmful for teeth at baseline and post intervention

Behaviour	Intervention		Reference	
	Pre N (%)	Post N (%)	Pre N (%)	Post N (%)
Good Food	347 (87.2)	337 (97.4)**	484 (91.5)	463 (94.3)
Bad Food	128 (32.2)	58 (16.9)**	140 (26.5)	127 (26.2)
Good Drink	135 (85.4)	161 (98.8)**	210 (89.7)	203 (92.3)
Bad Drink	26 (16.6)	4 (2.5)**	29 (12.4)	20 (9.1)

* $P < 0.05$, ** $P < 0.01$, significant difference in response pre and post intervention



Chapter 5: Dental Services: Development of an Information Leaflet

The report on the Health Through Oral Health initiative piloted in the three Area Health Boards in the Eastern Region gave detailed results of focus groups carried out with both parents and teachers from mainstream and disadvantaged schools. These results indicated a gap in knowledge amongst parents and teachers of mainstream and disadvantaged schools about dental service provision. A need was identified for (1) Increased information on the dental services available in a clear and understandable format; and (2) Information on dental service entitlements. This was further supported by a customer focus survey conducted by the Dental Services⁸⁴ for the Eastern Health Board. It reported that approximately three-quarters of clients were dissatisfied with the information they receive about entitlements and the general service. More than a quarter wanted further information about entry into the service and the care of teeth.

The research report '*Information for Health*'⁸⁵ financed by the Department of Health and Children reported as its main finding that there was a lack of adequate information on healthcare and health services for the public. The Library Association of Ireland with support from the Department of Health and Children published '*Well Read: Developing Consumer Health Information in Ireland in 1998*'⁸⁶. This publication was produced to assess the "demand for" and "provision of" consumer health information in Ireland. Research studies have shown that an informed public uses health services more efficiently and complies better with treatment regimes and results in greater patient satisfaction.

Based on this identified need for information, an information leaflet was developed to target parents of children, the children themselves, other healthcare professionals and teachers. A series of focus groups were conducted with parents and children from both mainstream and disadvantaged schools to evaluate the leaflet. A questionnaire was also developed for use as an evaluation tool when the leaflet was piloted in the East Coast Area Health Board. To complement this leaflet, a poster was also designed for waiting areas and it is hoped to adapt this leaflet for facilities such as school web sites and scoil.net

5.1 Needs Assessment

Prior to the development of the leaflet, a number of research steps were undertaken to ensure its need and appropriate construction.

5.1.1 Identification of existing information sources on the Dental Services

A letter was circulated to each Principal Dental Surgeon in the three Area Health Boards in the Eastern Region requesting feedback on information leaflets, posters, advertisement campaigns and any other materials which were available to the general public. Feedback information revealed that there was nothing available apart from a newly created website, which had limited information. Based on this, the production and piloting of an information leaflet was proposed and was supported fully by the Principal Dental Surgeons.

5.1.2 Baseline Survey of Parents

Based on the information obtained from the literature and previous research around information needs in the dental services, a survey was conducted to determine the level of awareness of parents to entitlements and dental service delivery. A questionnaire was devised incorporating issues from the literature review in which the following key areas where information was needed were identified:

- Entitlements
- Service delivery e.g. School Dental Service
- Availability of Emergency Services
- Location of Services
- Role of the Dental Team Members
- Prevention
- Oral Health Promotion



The questionnaire was circulated to parents of pre-school children in pre-school facilities, one in the Northern Area Health Board and one in the East Coast Area Health Board.

Seventy three percent of respondents did not know who is entitled to dental services. The majority of respondents (66%) were unaware of the available services, whilst 63% did not know what emergency services were available. Eighty three percent of parents did not know at what age their child's teeth should be first checked, whilst 93% did not know about the school dental service. Overall the majority of parents (96%) felt they needed more information regarding entitlements and service provision. This questionnaire has now been amended for the long-term evaluation of the leaflet.

5.2 Leaflet Development

Based on key problem areas identified from the above results and the information from an extensive literature review i.e. school dental service, emergency service and dental hygienist, a draft of the text for the leaflet was drawn up.

The leaflet content had to meet the following criteria:

- To deliver a clear and concise message on entitlements
- To identify clearly how the service is delivered
- Provide information on where the services are available
- Act as a health promotion tool promoting key oral health messages which were consistent with those of the Dental Health Foundation, Ireland¹⁰

A graphic designer, (familiar with the NALA guidelines), created a visual format around this text. The leaflet was designed towards the target audience, (the parents, the children, teachers and other health-care disciplines). The graphics needed to be attractive, eye-catching and child-friendly in order to compete well "on the shelf" and additionally, they needed to be clear and not to interfere with the message content.

5.3 Leaflet Evaluation

It was agreed that a suitable evaluation process needed to be put in place to determine the effectiveness of the leaflet. Focus groups with parents and teachers were used to gain information on baseline awareness of issues and to evaluate the leaflet itself. The original questionnaire was adapted to form part of the long-term evaluation process. This would be conducted prior to circulation of the leaflet and then followed up a year later.

Prior to the evaluation process the key stakeholders were contacted and the draft leaflet was reviewed and evaluated by the following groups:

- The management team of the East Coast Area Health Board dental services
- Healthcare professionals
- National Adult Literacy Agency (NALA)
- Parents and teachers
- Dental Health Foundation, Ireland

The NALA emphasised that the English used can never be too simple and that it is very important not to intimidate or embarrass people with literature. The inclusion of pictures to help understand text is imperative when an adult has low levels of literacy. The suggestions were noted and the necessary changes made.

The focus group questions were designed so that the researchers could get information on awareness and knowledge prior to reading the leaflet. The participants of the groups were then given the leaflet to read and two further questions were asked to gain information on the leaflet and the change in awareness and knowledge. The duration of the sessions was approximately 45 minutes, with 15 minutes allocated at the end of the session to address any issues which arose during the focus group, and also to answer any further questions. A facilitator led the discussions using the prepared questions which related to the objectives of the evaluation. The criteria used in the evaluation process of the leaflet were:

- Establishment of base-line awareness of the dental services
- Assess content of the leaflet
- Evaluate usefulness of the leaflet as a method of conveying information to both parents and teachers
- Readability of leaflet
- Usefulness and appropriateness of graphics
- Assess change in knowledge and awareness on dental services and entitlements

Two schools were randomly selected from the Wicklow area, one mainstream and one disadvantaged.

Table 5 shows the distribution of parents and teachers in each school.

Location	Number of teachers	Number of parents
Wicklow (Disadvantaged)	18	7
Greystones (mainstream)	10	9
Total	28	16

Both teachers and parents were unclear about their dental service entitlements and how the service is delivered prior to reading the leaflet. There was a general lack of awareness that pre-school children are entitled to a service and also how they could access this service. This caused concern to both parents and teachers. The overall concern expressed was that the earlier children could access the service the better.

Teachers and parents were unaware that there was a dental team. They were also unclear as to the different members of the team e.g. the oral health promoter. Both groups were generally unaware of the emergency service and were unsure how to access the service.

Teachers in both the mainstream and the disadvantaged schools were aware of the key oral health messages included. However, the level of awareness of the parents of children in the disadvantaged schools was not as great as that of parents of children in the mainstream school. They were not as aware of the pea-sized amount of fluoride toothpaste and appeared to have mixed messages on issues relating to sugary drinks.



Chapter 6: Discussion, Conclusions and Recommendations

6.1 Discussion

Each of the three strands of oral health research reported here arose through policy commitment to oral health promotion at the national and regional level and concern about the continuing inequalities in oral health in children. Both the *National Health Promotion Strategy 2000-2005*²⁵ and the *Dental Health Action Plan*²⁹ aimed to improve the oral health of the general population and in particular, people with special needs, such as socially disadvantaged school children and relevant adults. The action plan specifically called for health service reform and inclusion of the national educational system. One of the key messages in the school intervention programme is based on the plan's specific objective, that the regular daily use of fluoride toothpaste by the whole population over three years of age against dental decay be promoted as a public health measure.

The aim of this report was to set in context the three strands of connected work relating to oral health promotion and to highlight the need for a multi-sectoral and multi-faceted approach to help achieve sustainable improvements in oral health. The report begins by setting oral health promotion in the broader context of general health promotion and the principles of the Ottawa Charter. Community of risk factors for oral and general disease was illustrated and highlighted the need to encompass oral health as a topic into the general remit of disease prevention and health promotion.

It has long been recognised that inequalities in both general health¹ and dental health²³ exist in society. Whilst in Ireland data relating to health and social class is scarce⁴⁰, it seems likely that the observed inequalities in health are determined by factors similar to those in the United Kingdom. Interactions between access to and use of health services, social policy issues, class, material inequalities and deprivation, and the choices people make and the behaviours they form within the prevailing social and economic environment, all contribute to the inequality in Irish health.

Some investigators³ have emphasised the need to concentrate efforts on children who are socially disadvantaged. Socially disadvantaged groups, such as low-income, racial and ethnic minorities and people with disabilities, suffer most from oral diseases. Inequalities in both general and oral health, particularly the oral health inequalities and needs of children attending disadvantaged schools, were the basic reasons for instigating the research described in this report.

A combination of health promotion approaches have been embraced in the three components of research. Oral health being the topic, a settings approach was chosen through which endeavours were made to address the oral health needs of the target population. The schools setting was felt most appropriate for providing a supportive environment for the target group. A population approach was also used to a certain degree, through the development of an information leaflet which is generally distributed through health services.

The oral health school intervention programme *Mighty Mouth* was developed, which focused on senior infant class children in schools deemed disadvantaged by the Department of Education and Science. Objective measures of oral health status were performed on a sample of children attending those schools involved in the *Mighty Mouth* programme. The third component of the research was the development of an information leaflet in relation to the dental services, targeted at socially disadvantaged groups.

Following the school-based oral health intervention programme *Mighty Mouth*, it appears that the educational programme had a positive influence on the behaviour and knowledge of the intervention children. Each of the key messages (supervised brushing, correct amount of toothpaste, regular brushing and tooth-friendly foodstuffs) were embraced by the intervention children and appears to have brought about positive changes. In theory, since this was an open study, the children could have reported what they anticipated they should, so explaining the apparent improvements. However, in itself this would indicate that the programme was successful in one educational objective of teaching the children appropriate oral hygiene practices and good eating habits.

Strong, visual messages appear to have been assimilated best by the children. There was almost a four-fold increase in the number of intervention children who reported using a pea-sized amount of toothpaste, a message portrayed using vivid materials in the form of toothfairy boxes and moulding clay. Similarly, colourful posters and colouring books of food and drink were used to highlight the importance of foodstuffs for healthy teeth. These appear to have been successful tools based on the significant increase in the proportions reporting knowledge and behaviour of the healthy option in the food pairs and draw and write tool. Specifically, an increase in knowledge of healthy drinks among intervention children and a decrease in reported consumption of fizzy drinks was observed among these children compared to the reference group. This result compares favorably with those found in the NEAPS study⁵.

Parental involvement in such programmes is important, as parental attitudes, in addition to their employment status and social deprivation, are considered as reliable predictors of oral health status among children. Whilst parental and teacher participation helpfully informed the needs assessment phase, feedback after the *Mighty Mouth* intervention was limited. Although no formal assessment has been made to date, the positive changes in the children's behaviour may be through the influence of the home packs, or more generally raised awareness towards oral health encouraging a selection of healthier food and drinks at home.

Complementing the school intervention was the oral health status measurement of the level of dental decay amongst a sample of children from schools participating in the *Mighty Mouth* programme. The aim of measuring disease levels in this present survey was to establish if the children attending these designated disadvantaged schools had significantly different disease levels to other children in previous surveys. Using a standard measurement technique, results indicate that children attending schools designated as being socially disadvantaged have higher levels of decay than was measured in the EHB survey in 1993 and there appeared to be a decline in the number of children who were caries free. Such results suggest that by targeting oral health promotion interventions into these schools those most in need would be reached.

The third strand of work was in relation to dental service provision. Results of focus groups with teachers and parents of children from disadvantaged areas, highlighted a lack of knowledge about their dental service entitlements and how the service was delivered. There was a general lack of awareness that the pre-school children were entitled to a service and also how they could access this service. Teachers and parents were unaware in general that there was a dental team. They were also unclear as to the individual roles e.g. the oral health promoter. Both groups were generally unaware of the emergency service and were unsure how to access the service. Based on this identified need for clear information a leaflet was developed and tested.

6.2 Conclusions

The results from each of the three strands of oral health related research indicate the need to address the issue of oral health amongst this particular sub-group of the population. By doing so in a multi-disciplinary, multi-sectoral way and by aiming to encompass each component of the Ottawa Charter for Health Promotion, helps ensure a comprehensive programme designed to reduce some of the inequality in oral and general health amongst socially disadvantaged groups of the Irish population.



The *Mighty Mouth* programme was developed based on parental identification of what they felt was needed for their children. Sustainability of the healthier practices observed following delivery of the *Mighty Mouth* school intervention relies very much on a supportive environment, both in and out of school. The Ottawa Charter²² argues that creating a positive social and physical environment makes the healthy choice the easy choice. *Freeman et al*⁷⁵, found that a combination of parental employment status and attitudes are determinants of child dental health. Whilst many parents and teachers knew which oral health maintenance and dietary habits were needed for good oral health, there remained a sizable number with limited knowledge of healthy behaviour. The needs assessment and focus group discussions around service provision identified that both parents and teachers knew relatively little about dental services, provisions and entitlements. Provision of skills and the creation of supportive environments for parents and teachers could be developed through, for example, information on service provision and appropriately targeted educational campaigns may help benefit their child's oral health status in an indirect manner. Hopefully by participating in the programme itself and its integration into the teaching curriculum, the children, teachers and parents will learn the skills necessary to make informed choices about oral health maintenance and dietary habits which will be supported by schools, regional and national policy.

The issue of soft drinks and advertising and marketing arose as a key issue in the needs assessment of this study. Both parents and teachers expressed strong views on this matter. The results from the focus groups indicate that some parents found it difficult to determine which drinks were healthy for their children's teeth, many are advertised as 'healthy' despite containing very high quantities of sugar. Given the trend towards increased consumption of these 'hidden sugars', it is important that people should know which products contain added sugar and how much, or present risks to dental health as either tooth decay or enamel erosion or both, in order to empower them to make an informed choice regarding whether to purchase the product or not.

The regional public dental services in the three Area Health Boards in the Eastern Region have identified the need to assess and address provision of dental services in that area. Development of the information leaflet was a positive action, which helps service users to make informed choices.

It is hoped that by drawing together the three distinct, but complementary pieces of research, the positive impact which is possible using a combination of such approaches to oral health is highlighted.

6.3 Recommendations

The underlying rationale for this project and the recommendations set out here, is that there is a pressing need for a comprehensive oral health promotion strategy/programme for the more disadvantaged groups, particularly amongst young children. The programme would be based on a partnership between a number of sectors, would be realistic, but appropriate to the scale of the problem, and would include an integrated plan of action with goals, objectives and targets, set out at a national and local level along with defined implementation and evaluation structures.

The sub-committee of the Steering Group has made a number of important recommendations from the three strands of work for future initiatives, from the practical aspects of developing and delivering an intervention programme to policy development.

6.3.1 Recommendations for Future School Initiatives

- Needs Assessment: It is recommended that needs assessment is completed so as to have a clear understanding of the needs of the target group. The need-assessment directed development of the *Mighty Mouth* programme has highlighted the need to provide basic information on the role of the parent in children's oral health at primary care levels, and that clear consumer information is needed on dental service entitlements for parents and teachers alike.
- Key Messages: Due to the low levels of supervised brushing which emerged within the *Mighty Mouth* study, it is recommended that future programmes should place special emphasis on supervised brushing as a matter of urgency amongst children aged seven years and under, particularly when fluoride toothpaste is used. Results from the need-assessment parents focus groups indicated that some children liked the taste of toothpaste and swallowed it and/or used more than the recommended pea-sized amount. This has public health consequences and needs to be addressed.
- Teaching Tools: It is recommended that in relation to materials, the provision of audiocassette copies of poems and songs, which the teachers are expected to teach to the children, will increase interest amongst the children in addition to making it easier for the teachers.

- **Appropriateness:** It is recommended that the teaching tools are targeted for the specific group in question, in this case disadvantaged groups. It is in this context that it is recommended all education and information material should be developed in line with the National Adult Literacy Agency (NALA) guidelines.
- **Communications:** It is recommended for future interventions that a full discussion with teachers is essential prior to commencement of the programme to highlight difficulties before they arise, for example the class numbers involved. These discussions would also minimise disruption to other school activities such as P.E. classes, computer lessons, school sports days, parent-teacher meetings. Full discussions with the teachers would allow clarification of the work expected to be done by the teacher with the support of health promotion personnel, the timing of the lesson, how many visits, and to establish a better rapport with the teacher. The teacher's familiarity with the programme will help increase the success of the intervention. The intervention fieldworkers were aware of and familiar with the '*Guidelines for Health Promotion Facilitators in Schools*'. Communication channels were established through telephone and postal notification, but clearly unforeseen obstacles emerged.
- **Integration and Sustainability:** It is recommended that the *Mighty Mouth* programme and all other future school-based programmes should be developed, integrated and delivered within schools nationwide as part of the SPHE.
- **Consumer Information:** From the results of the focus groups in relation to the leaflet development, it is recommended that an information leaflet with such information be included in the children's school enrolment pack. Additionally it is recommended a leaflet/newsletter to update parents and teachers on which classes are to be screened in the upcoming school year should also be included.
- **Partnerships:** It is recommended that partnerships should be nurtured and developed, through policy implementation and practical support. Break down in communications should be examined and documented, with the objective of achieving continual improvement in cross-sectoral professional practice. Cultural differences in cross-sectoral settings should be identified and explored in order to promote a better understanding and acceptance of such differences. It is recommended that a cross-sectoral approach be adopted to promote oral health in the three Area Health Boards in the Eastern Region and Health Boards throughout the country. This is strongly advocated following the positive experience of the partnership approach adopted in this initiative. This process ensured a broad range of input and ideas, which may not have been addressed, had personnel from a single sector only been included.
- **The Framework Model** is an important and effective means of evaluating the progress of the partnership approach. It provides a framework for action, which should be adopted to suit the specific requirements of each partnership programme. It is important to note that partnerships take many forms and flexibility is therefore required in the adoption of procedures and practices.

6.3.2 Recommendations for Future Policy Development

- The *National Health Promotion Strategy 2000-2005*²⁵: It is recommended that the health-proofing of policies and strategies is fully implemented in line with the *National Health Promotion Strategy 2000-2005*. In the case of oral health promotion in schools, successful policies/programmes will need the co-operation of both the Department of Education and Science and the Department of Health and Children. In particular, there is a need to address drink products as part of healthy food policies in school settings and the Departments of Health and Children and that of Education and Science, have a pivotal role in developing and implementing these policies.
- Public Dental Services Policy. It is recommended that children in disadvantaged schools should be a priority target for dental services. The results from *Mighty Mouth* have shown that children in schools deemed as disadvantaged have poor oral hygiene and health standards. At present the dental services in a number of health boards are not in a position to target children in pre-school or junior infant classes in their screening programme. They are, however, entitled to treatment, posing a dilemma in that if the responsible adults are made aware of this it may create a demand, which cannot be met with the existing resources in place. This issue needs to be addressed in terms of service provision and resources in the public dental health service.
- Food and Nutrition Policy. It is recommended that a Food and Nutrition policy, which lobbies food manufacturers to increase product label information and to regulate advertising and marketing with regard to soft drinks, is important to allow parents make an informed choice in relation to the drinks they allow their children to consume.
- The Health of Our Children – The Future. ‘*The Health of Our Children*’, the second Annual Report of the Chief Medical Officer, Department of Health and Children (September 2001), provides a comprehensive review of the health of Irish children and identifies requirements for the future, including reference to the development of a National Child Health Strategy. The findings in this study confirm the need to fully explore the promotion of children’s oral health and frame it within the context of their overall health and development. A National Child Health Strategy would provide this essential opportunity. Such an approach would also be consistent with the US Surgeons General’s Report on ‘*Children and Oral Health*’ (May 2001).

Appendix 1

Timetable for Completion

Action	Timeframe
Stage 1 Team Building	October – December 1999
Stage 2 Needs Assessment Baseline Data Collection & Analysis	January – June 2000
Stage 3 Project Proposal Development	July 2000
Stage 4 Development of Intervention	August 2000
Stage 5 Pre-Baseline Survey Implementation of Pilot Intervention Post-test Survey	September - December 2000 (nine-week period incl. evaluation)
Stage 6 Evaluation, Report & Recommendations	December 2001

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