Turun yliopisto
University of Turku

EVALUATION OF NOVEL PROGRAMS IN HEALTH COUNSELING

Their Effectiveness in the Oral Health of Young Children, and Their Acceptance by Parents and Professionals in Public Dental Service

Irma Arpalahti

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University of Turku

Faculty of Medicine
Institute of Dentistry
Department of Community Dentistry
Findos-Turku, Finnish Doctoral Program in Oral Sciences

Supervised by

Docent Kaisu Pienihäkkinen, DDS, PhD
Department of Community Dentistry
Institute of Dentistry
University of Turku

Reviewed by

Professor Liisa Suominen, DDS, PhD
Faculty of Health Sciences
School of Medicine
Institute of Dentistry
University of Eastern Finland

Ministerial Counsellor Anne Nordblad, DDS, PhD
Department of Social and Health Services
Ministry of Social Affairs and Health

Opponent

Professor Jorma Virtanen, DDS, PhD
Department of Community Dentistry
Institute of Dentistry
University of Oulu

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To my family

ABSTRACT

Irma Arpalahti

Evaluation of novel programs in health counseling – their effectiveness in the oral health of young children, and their acceptance by parents and professionals in public dental service.

Department of Community Dentistry, Institute of Dentistry, University of Turku
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Aim and design: To evaluate family-based health counseling for young children, and to study the significance of adding parental self-care or the training of professionals to the programs. The effectiveness and acceptability of the programs were evaluated by comparing two new programs with an earlier one.

Subjects and methods: The study was carried out in Vantaa, which was divided into three study areas. The subjects consisted of children born in 2008, particularly firstborn children, while children born in 2006 formed the historical control. The first of the new programs emphasized oral hygiene and use of fluoride, and the second program focused on proper diet and use of xylitol. The main outcome measure was mutansstreptococci (MS) in the dental biofilm of two-year-olds, and the opinions of parents and dental professionals were evaluated using questionnaires.

Results: The programs found wide acceptance among dental professionals. There were no group-related differences found in the MS scores of the two-year-olds. However, all groups combined, father's advanced level of education and child's proper use of xylitol were associated with negative MS scores. In the opinion of parents, the oral healthcare guidance at least somewhat met their expectations.

Conclusions: The present findings suggest that providing training and support for professionals in health education is important. The addition of parental self-care to supplement programs aimed at young children does not improve the program, although it may improve parental readiness to change their own health habits. Counseling for families might be best carried out through a routine patient-centered program.

Keywords: Counseling, Diet, Family-based, Fluoride, Mutansstreptococci, Oral hygiene, Xylitol, Young children

TIIVISTELMÄ

Irma Arpalahti

Kahden uuden neuvontaohjelman arviointi – vaikuttavuus lasten suunterveyteen ja hyväksyttävyys vanhempien ja henkilökunnan keskuudessa.

Sosiaalihammaslääketiede, Hammaslääketieteen laitos, Turun yliopisto
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Tutkimuksen tarkoituksena oli arvioida pikkulasten ja lapsiperheiden suun terveyden edistämistä, ja selvittää vanhempien omahoidon teeman lisäämisen ja henkilökunnan kouluttamisen merkitystä pikkulasten terveysneuvonnassa. Neuvontaohjelmien vaikuttavuutta ja hyväksyttävyyttä arvioitiin vertaamalla kahta uutta ohjelmaa aiemmin käytössä olleeseen.

Materiaalit ja menetelmät: Tutkimus toteutettiin Vantaalla, mikä jaettiin kolmeen tutkimusalueeseen. Tutkimuksen kohteena olivat vuonna 2008 syntyneet lapset, etenkin esikoislapset, ja vuonna 2006 syntyneet muodostivat historiallisen vertailuryhmän. Ensimmäinen uusista neuvontaohjelmista korosti suun puhdistusta ja fluorin käyttöä ja toinen terveellistä ja oikein ajoitettua ravintoa sekä ksylitolin käyttöä. Ryhmiä vertailtiin varhaiseen reikiintymiseen liittyvien mutansstreptokokkien (MS) esiintymisellä kaksivuotiaana, sekä vanhemmille ja henkilökunnalle tehdyillä kyselyillä.

Tulokset: Henkilökunnan mielestä neuvontaohjelmat sopivat hyvin lapsiperheiden suun terveysneuvontaan. Kaksivuotiaiden mutansstreptokokkien määrissä ei havaittu terveysneuvontaohjelmiin liittyviä eroja. Sen sijaan, kun kaikki ryhmät yhdistettiin, esikoislasten isien korkeampi koulutus ja lapsen riittävä ksylitolin käyttö olivat yhteydessä alhaiseen MS tasoon. Vanhemmat olivat mielestään saaneet ainakin jossain määrin odotustensa mukaista tietoa lapsensa suun kotihoidosta.

Johtopäätökset: Tutkimustulosten mukaan henkilökunnan kouluttaminen ja tukeminen terveysneuvontatyössä havaittiin tärkeäksi. Vanhempien omahoidon teeman lisääminen pikkulasten neuvontaan ei ilmeisesti vaikuta suoraan lasten terveysneuvonnassa, vaikka se saattaakin lisätä vanhempien valmiuksia muuttaa omia terveystottumuksiaan. Lapsiperheiden neuvonnassa hyvä tulos saavutettaneen monipuolisella potilaslähtöisellä terveysneuvontamallilla.

Avainsanat: Fluori, Ksylitoli, Lapsiperhe, Mutansstreptokokki, Pikkulapset, Ravinto, Suuhygienia, Terveysohjaus

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ABBREVIATIONS

AAP	American Academy of Pediatrics
AAPD	American Academy of Pediatric Dentists
C	Control group/program
CC, CCG	Caries (control), Current Care Guidelines in Finland
EAPD	European Academy of Paediatric Dentistry
ECC	Early Childhood Caries
EFSA	European Food Safety Authority
F	Oral health and fluoride group/program
ICDAS	International Caries Detection and Assessment System
MI	Motivational Interviewing
MS	Mutansstreptococci
N	New intervention group/program, F and X pooled
NSW	New South Wales
OR	Odds Ratio
p	Value for statistical significance
PDS	Public Dental Service
pH	Scale of acidity in solutions
S-ECC	Severe Early Childhood Caries
SIGN	Scottish Intercollegiate Guidelines Network
TTM	Transtheoretical Model
WHO	World Health Organization
X	Diet and xylitol group/program

LIST OF ORIGINAL PUBLICATIONS

The results of the present study are based on the original publications listed below. All original communications have been reproduced with the permission of the copyright holders.

I. Arpalahti I, Suni J, Pienihäkkinen K. 2009, "Vantaalla suunterveyden edistäminen alkaa lapsista" (Launching of mutans streptococcus plaque testing in 2-year-old children in Vantaa public health care). (In Finnish, with an English summary). *Suomen Hammaslääkärilehti (Finnish Dental Journal),* vol. 16: 20–24.

II. Arpalahti I, Järvinen M, Suni J, Pienihäkkinen K. 2012, "Acceptance of oral health promotion programmes by dental hygienists and dental nurses in public dental service", *International Journal of Dental Hygiene,* vol. 10: 46–53.

III. Arpalahti I, Tolvanen M, Pienihäkkinen K. 2013, "Comparing health promotion programs in public dental service of Vantaa, Finland – clinical trial in 6–36-month-old children", *International Journal of Dentistry*, 757938, doi: 10.1155/2013/757938.

IV. Arpalahti I, Järvinen M, Kommonen H-M, Tolvanen M, Pienihäkkinen K. Parental opinions on children's oral health counseling and readiness to change health habits. *Oral Health and Preventive Dentistry*. Accepted.

1. INTRODUCTION

The implementation and substance of healthcare services in Finland are defined by the Health Care Act (1326/2010) (Ministry of Social Affairs and Health 2010). The main objectives of the Health Care Act are to promote the population's health and wellbeing, to ensure universal access to services, and to reduce health inequalities. In addition, a national action plan outlines policy definitions to reduce socio-economic health disparities (Ministry of Social Affairs and Health 2008). In 2011, Finland passed a decree on health promotion for children, adolescents, and students. In Finland as in all Nordic countries, healthcare services are publicly arranged and free of charge for children. The Nordic healthcare model is characterized by good availability, government involvement, and tax-payer financing (Kristiansen and Pedersen 2000).

In public dental services (PDS) in Finland, oral health promotion for children has been provided individually, to families with children, and at a community level in co-operation with child health clinics, children's day-care centers, and schools. In addition, there has been general improvement in common hygiene and the standard of living, and consequently, children's oral health began to improve in the 1980s (Virtanen, 2001). By the beginning of the 20th century this trend was levelling out. Towards the end of the 2000s, the mean number of decayed teeth has been decreasing, but the proportion of children who are caries-free may have decreased (Widström and Järvinen, 2009). Oral diseases have become polarized in children of families with lower a socio-economic standing or lower level of education (Meriläinen, 2004).

By delivering information about beneficial health habits through individual health counseling, health professionals have succeeded in promoting health with varying results. New methods are needed to reduce disparities, prevent or postpone disease, and diminish the consequences to patients, as well as the costs of curing disease. In order to eliminate disparities in health, counseling must meet the needs and acceptance of the individuals affected. The risk for oral diseases should be identified earlier, before any visible signs, in order to prevent them. With regard to early childhood caries, prevention should begin before birth, by educating expecting families about oral health. The change from professional-centered to client-centered models of health counseling could provide new opportunities to reach families with young children, including those with the greatest need for oral health promotion.

2. REVIEW OF THE LITERATURE

2.1. Health promotion

An international conference on health promotion was organized by the World Health Organization (WHO) and held in Ottawa, Canada in 1986. The aim of the conference was "Health for All by the year 2000 and beyond". The conference presented the international Ottawa Charter, in which health is defined as "a state of complete physical, mental, and social well-being", and a resource for everyday life in social and personal resources and capacities. Through the process of health promotion people can increase and improve their health. The Ottawa Charter includes five priority areas of health promotion: healthy public policy, supportive environments, strengthening community actions, developing personal skills, and moving into the future (World Health Organization 1986). Health promotion works toward the adoption of healthy public policies also in other sectors besides healthcare, and healthy choices must be made the easiest choices. Health education is defined as constructive communication designed for learning in order to improve knowledge and develop the skills necessary for health (Nutbeam 1998). At the American Counseling Association Conference in 2010 (American Counseling Association 2014), a definition of counseling was approved: "Counseling is a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals".

In Finland, the public health program "Health 2015" (Ministry of Social Affairs and Health 2001) was started in 2001, with the purpose of improving health and the functional capacity of people in all age groups, to enable them to lead longer active lives, and to reduce health disparities between different population groups. The initiative was informed by the "Health for All in the 21st Century" program of the World Health Organization. The "Health 2015" program has sought to engage in health promotion in all areas of society. While the program has separate aims for each age group, there are three overarching aims that apply to all people. In the case of children, the aim is to increase health and wellbeing as well as to significantly decrease symptoms related to insecurity or illness. The Ministry of Social Affairs and Health has also published a "Quality Recommendation for Health Promotion" (Ministry of Social Affairs and Health 2006), which supports local authorities in their quality management work and helps municipal boards develop more efficient practices. The aim of the recommendation is to make the promotion of the population's wellbeing and health a high priority.

2.1.1. Public dental service in Finland

According to the Health Care Act (1326/2010) (Ministry of Social Affairs and Health 2010), Finnish municipalities are responsible for the provision of the services under the Primary Health Care Act (66/1972) and the Act on Specialised Medical Care (1062/1989) within their area. Finland is comprised of 320 municipalities, eight of which have more than 100,000 residents. Healthcare, education, and social services employ about 350,000 people. Municipalities provide healthcare services either on their own, or with the assistance of other authorities and private sector providers (Association of Finnish Local and Regional Authorities 2014). Healthcare and social services are financed through taxation. As part of public healthcare, dental services are provided free-of-charge to children and adolescents younger than 18 years and to the mentally disabled. Nearly all children and adolescents – in 2010, about 70% of 0–17-year-olds – use the public dental service (PDS) (Sosiaali ja terveysministeriö 2013). Since 2002, all adults have been incorporated in to dental care through the PDS. Clients 18 years of age or older have to pay for the services, as stipulated in the law on client fees (Ministry of Social Affairs and Health 2014). Half of adults in Finland use private health services (Niiranen et al. 2008), depending on their district. Adults in South and Southwest Finland are more likely to use private instead of public services. Private fees are partly subsidized by the national health insurance. Since 2002, 4.9 million visits have been made yearly to the PDS, most of them to see a dentist. In 2010, 35% of the population visited the PDS. In the age group of 18 and younger, the percentage was 71, among 18–55-year-olds 29, and among those 56 years or older 22 (Sosiaali ja terveysministeriö 2013). About half of the people visited a dentist during the last 12 months, two thirds did so during last two years, and fewer than 20% had not visited a dentist in at least five years (National Public Health Institute 2008). A retrospectively conducted study looked at the regularity of visits to the PDS over a period of three years (2006–2008), and the results showed that children seemed to have visited the PDS annually and that longer intervals were more common among adults (Tuononen et al. 2012). During 2002–2010, the number of dentist visits by children and adolescents decreased (Terveyden ja hyvinvoinnin laitos 2010).

In 2011, Finland passed a decree on health promotion for children, adolescents, and students (Ministry of Justice 2013). The legislation defines the minimum number of visits required for health promotion and dental checkups, conducted at child health clinics, within school healthcare, and at the PDS, all of which work in integration with each other. Regulations concerning the content of the visits were disseminated to all municipalities. The required number of visits in oral healthcare (338/2011 10§) is:

1. One visit for first-time expecting mothers and fathers in order to provide advice regarding oral healthcare and to assess the family's dental care needs.

2. Three examinations before a child reaches school age: at age 1 or 2, 3, or 4, and at 5 or 6 years.

3. Examinations for school children in the first, fifth, and eighth grades.

4. One examination aimed at students to evaluate their need for prevention and management of oral diseases.

Based on individual oral health needs, local authorities are required to arrange more visits, including for oral health promotion. The examinations and preventive visits can be performed by dentists, dental hygienists, or trained dental nurses (Finnish Ministry of Justice 2013). The National Supervisory Authority for Welfare and Health (Valvira 2015) supervises the provision and planning of health promotion for children, adolescents, and students. The municipalities must report on how the predetermined visits are organized and how the needs of those children not attending are taken into account and the necessary support provided.

2.1.2. Models of health education with special reference to oral health

Since the 1960s, several theories and models of health promotion have emerged. At first, they were developed within other fields of medicine, including mental health and other disease management, to be later adopted in the area of oral health. The models are in use both in individual and community level approaches of oral health promotion. Traditional methods of individual health education have been shown to be mostly ineffective, and new approaches will be needed to change health habits (Yevlahova and Satur 2009). Theory-based interventions are more effective than those that are not (Glanz and Bishop 2010). In this century, the three most commonly applied theories are social learning theory (Bandura 1977), the transtheoretical model (Prochaska and DiClemente 1983), and the health belief model (Rosenstock 1966). An emergent method of motivational interviewing arose from a series of unexplained outcomes and led to a theory and research. In healthcare, the professionals should improve the ways in which theories are applied within the framework of health interventions, both those that are individually oriented and those intended to achieve healthier policies and environments. Theories are useful in planning health interventions (Glanz et al. 2002), but they can also help professionals to understand why patients neglect to take care of their health and follow health advice. Health professionals who understand how to use models of health education are better able to motivate people in the context of health interventions. Only the models used in the present series of studies, i.e., the TTM and the MI, will be introduced in detail below.

The Transtheoretical Model (TTM) was first developed in the late 1970s. Originally, it was used for smoking cessation (Prochaska et al. 2002) but was expanded to a broad

range of health and mental health behaviors. TTM is constructed of six stages of change; the progress is cyclical, because during these stages, regression to a lower stage and back again is possible.

- In the precontemplation stage patients have no intention to make any changes. They may not have been informed about the health behavior, or are not able to change; traditional health promotion does not suit all of them.
- In the contemplation stage patients intend to make changes in six months. Some people stay in this stage for a long time, balancing between the costs and benefits of changing.
- In the preparation stage patients have already taken some behavioral steps toward new habits and intend to take action soon.
- Patients in the action stage have already changed their health behavior within six months and reduced their risk for the disease.
- In the maintenance stage, the change has been in effect for more than six months. Patients are less tempted to relapse than those in the action stage.
- Patients in termination stage have no temptation to relapse to their old behaviors.

The processes by which patients are encouraged through the stages are important (DiClemente et al. 1991, Prochaska et al. 2002), and ten such processes are used most frequently. Consciousness raising, dramatic relief, and environmental re-evaluation are used mostly between the precontemplation and contemplation stages. Self-re-evaluation is used between the contemplation and preparation. Self-liberation belongs to the action stage. Helping relationships, counterconditioning, reinforcement management, stimulus control, and social liberation are used in the maintenance stage. In addition, the benefits and costs of changing habits are used as pros and cons in the decisional balance of the process of change. Later on, the 1980s, the concepts of self-efficacy and temptation were integrated into TTM (Bandura 1998). TTM has been used as a framework in oral health interventions, too; results suggest that TTM might be useful in counseling 11–13-year-olds (Kasila et al. 2006). TTM has also been found to help health professionals in counseling (Wade et al. 2013) by providing insight into patients' readiness to change their oral health habits and to better understand why people relapse. In order to maintain patients' level of oral health habits, it is important to offer repeated support.

The Motivational Interviewing (MI) method was developed by Miller (1996) in Bergen, Norway in 1982. It began as a brief intervention for alcoholics as a "drinkers

check-up" (DCU). MI is an evidence-based, psychotherapeutic method that has been used in several trials and interventions of disease management and behavioral change. The MI method has been defined as "a directive, client-centered counseling style for eliciting behavior changes by helping clients to explore and resolve ambivalence" (Rollnick and Miller 1995). In an intervention to manage or change health habits the counselor's critical therapeutic conditions are empathy, congruence, and positive regard, which creates a feeling of acceptance, and the patients are freed to change their behaviors (Miller and Rose 2009). Through reflective listening, counselors make patients feel that they are understood and evoke their own concern. Through empathy, patients are encouraged to verbalize beneficial arguments for change – "change talk" – which decreases their resistance to change.

Evidence for the effectiveness of MI in improving oral health has been evaluated in a systematic review (Gao et al. 2013) and compared with conventional health education. The review included studies concerning periodontal health, smoking cessation, and prevention of early childhood caries (ECC). In one of the four studies on ECC, MI in comparison with conventional education reduced the number of new carious lesions in one to two-year-olds. In other studies on ECC, some positive behaviors were associated with MI. The behaviors included less sharing of utensils, cleaning a child's teeth, or quality of life, but no changes were found in snacking/drinking habits or using a baby bottle. In comparisons of models for individual oral health promotion (Yevlahova and Satur 2009) clinical preventive measures and health education approaches have been found unsuccessful, whereas MI, based on the theory of TTM, has been found most effective in changing patients' health habits, and more cost-effective in comparison with other behavior change models. The above studies suggest that TTM can be used as a framework for understanding a patient's stage of change, whereas MI acts as a method for changing health behaviors.

2.1.3. The role of dental professionals in oral health promotion

Gradually, oral health has become accepted as an essential part of general health, and there has been a paradigm shift from the management of disease to the promotion of health. Economic pressures demand cost-effectiveness, which in dental healthcare can be achieved by delegating more work from dentists to dental hygienists (Johnson 2009). Dental hygienists may have a primary role in patient education by providing advice about oral health, and supporting patients' self-care (Hollister and Anema 2004). In the Nordic countries, there are more dental hygienists per capita than in other European countries. Globally, the highest ratios of dental hygienists per capita are found in Japan, the United States, and Canada (Johnson 2009). The profession of dental hygienists continues to develop as an integral part of oral healthcare.

The basic work of a dental hygienist includes health education, check-ups, implementation of preventive procedures, x-rays, and treatment of periodontal conditions (Luis et al. 2003). There has been a global trend toward increasing the level of independent work, where dental hygienists make their own decisions regarding treatment and care, consulting dentists only when needed (Johnson 2009). The working profile of dental hygienists varies from country to country. They have, for the most part, worked in the PDS and in treating children; in some countries, they are also allowed to perform a limited number of treatments for adults. In Finland and Norway, the treatment most commonly provided by dental hygienists is giving oral hygiene instructions. Dental hygienists work with children and adolescents more so in the public than the private sector (Tseveenjav et al. 2009). Besides dental hygienists, also in-service trained dental nurses are allowed to carry out examinations and preventive procedures for young children, according to the decree on health promotion for children, adolescents, and students (Ministry of Justice 2013).

There is a growing need to delegate procedures from dentists to dental hygienists when the latter are qualified to handle them, but dentists have not always been willing to do so (Abelsen and Olsen 2008). Over the past 25 years, however, the working relationship between dentists and dental hygienists has become more collegial, and nowadays they often work as a team (Johnson 2009). In a recent Finnish survey on dental teamwork, the working attitudes of dental professionals were found to be positive (Karjalainen et al. 2010). A hygienist's good education and experience were the main reasons for a dentist's willingness to refer patients to the hygienist (Karjalainen et al. 2010). To be able to promote oral health at the individual and community levels, dental hygienists must possess a good working knowledge of the models and theories of health education (Hollister and Anema 2004).

Supportive management has been found to be crucial to work performance among nurses (Drach-Zahavy 2004). According to Drach-Zahavy, a supervisor can create a supportive environment by providing a role model for nurses, exhibiting supportive and facilitative behavior, and providing adequate levels of support. A higher level of supervisory support for nurses also resulted in a higher level of performance at work (Drach-Zahavy 2004). Supportive management has been shown to be especially important when implementing new models (Drach-Zahavy 2004). A study on the performance levels of primary nurses (Bergh et al. 2013) highlighted the role of supportive management: managers were found to be important in supporting nurses in creating a culture of shared responsibility for evidence-based work, producing a real process of change in patient education. Additionally, supportive supervisors have been found to be associates with higher job satisfaction and organizational commitment among nurses (Lu et al. 2005, Zangaro and Johantgen 2009).

In order to establish a health promotion program in the dental health service, the competencies of dental professionals need to be improved. It has proven important to engage all members of the dental team, and to train and support them in the delivery of counseling. Providing training in patient counseling by utilizing an established theory of health education has been found to be significant in preventing early childhood caries (ECC) effectively in a program that reoriented primary care services towards prevention (Cashmore et al. 2011). Significant improvements were found in non-dental professionals' self-confidence and self-perceived preparedness in teaching parents about their child's oral health after the professionals had participated in oral health training. These non-dental professionals were found to improve their pediatric oral health knowledge and work satisfaction as well as communication with dental professionals (Chinn 2011). The role of managerial support and a supportive system was found to be important in a multisectoral child health promotion program (Edvardsson et al. 2011). The program aimed to support oral health promotion in healthcare, social services and schools. The results showed the importance of parallel processes taking place in a context of collaboration between the different organizations.

2.2. Determinants of early childhood caries in young children

2.2.1. Early childhood caries

Dental caries affecting children before 71 months of age is defined as early childhood caries (ECC) (AAPD and AAP 2008). The clinical criteria of ECC have been defined in a review (Ismail and Sohn 1999), and it occurs mostly in primary molars and maxillary incisors. The presence of ECC has been diagnosed most commonly by the signs of cavitation, but in some studies also by the signs of incipient carious lesions in the gingival third of crowns. A more severe pattern of ECC has been called severe early childhood caries (S-ECC). Any sign of smooth-surface caries in children younger than three years has been defined as S-ECC (AAPD and AAP 2008). S-ECC has been previously called, among other things, labial caries, rampant caries, nursing bottle caries, and baby bottle tooth decay (Ismail and Sohn 1999). Additionally, a new pattern of severe ECC has been proposed recently (Caufield and Bromage 2012) and it has been defined as hypoplasia-associated severe ECC.

It is important to diagnose ECC as early as possible and to arrest its progression by advising care-givers about risk indicators (Ismail and Sohn 1999). The pain and discomfort of untreated young children with ECC has been found to affect the immediate quality of life in families with young children (Kramer et al. 2013, Martins-Junior et al. 2013) but it may also have an impact on long-term quality of life. ECC has been found to cause problems with sleeping, speaking, and eating (Acs et al. 1999, Leong et al. 2013),

which may affect a child's growth in the long term. In primary teeth ECC may also have some predictive value for caries in permanent teeth later in life (Thomson et al. 2004). Those consequences can be diminished by providing parents of young children with the appropriate guidance.

2.2.2. Risk indicators of early childhood caries

It is easy to understand that the risk indicators for the colonization of MS and the occurrence of ECC are of similar character. The close association between early colonization of MS and early establishment of dental caries was demonstrated already in 1983 (Alaluusua and Renkonen 1983). Today, early colonization of MS is generally considered a good indicator of increased risk for ECC (Thenisch et al. 2006). Children's levels of MS were found to function as an indicator of their future caries (Minah et al. 2008).

During a child's first year of life there are usually no clinical signs of ECC, yet this period may be important in the formation of bacterial flora in the child's mouth. Dental plaque is a biofilm found naturally on teeth and has been found to consist of more than a thousand different types of micro-organisms that are beneficial to humans (Marsh 2009). According to the ecological plaque hypothesis, the biofilm has been regarded as a multicellular organism. It has a more efficient metabolism, it is able to cope with anti-microbial agents, and get more virulent than a single micro-organism alone. The biofilm on most healthy teeth contains a low amount of mutansstreptococci (MS), but in a disease, the levels of acid-producing and acid-tolerating bacteria have been found to increase: if the balance of de- and remineralization of the surface of the tooth is lost, the result is the formation of a cavity (Marsh 2010). A change for the worse in diet has been found to change the pH of the biofilm from neutral to acidic; therefore, approaches that reduce acid production and maintain neutral pH are suggested to be the most suitable for caries prevention (Marsh 2009). The lower the pH, the greater the proportion of MS (Figure 1; Takahashi and Nyvad 2008); high proportions of MS in biofilm may be considered as biomarkers of rapid caries progression (Takahashi and Nyvad 2011). It has also been found that along with MS, *Candida albicans* cells are frequently detected in aggressive forms of ECC. The presence of *Candida albicans* has been found to increase the production of exopolysaccharides, which in turn increases biofilm mass and makes it more virulent (Falsetta et al. 2014).

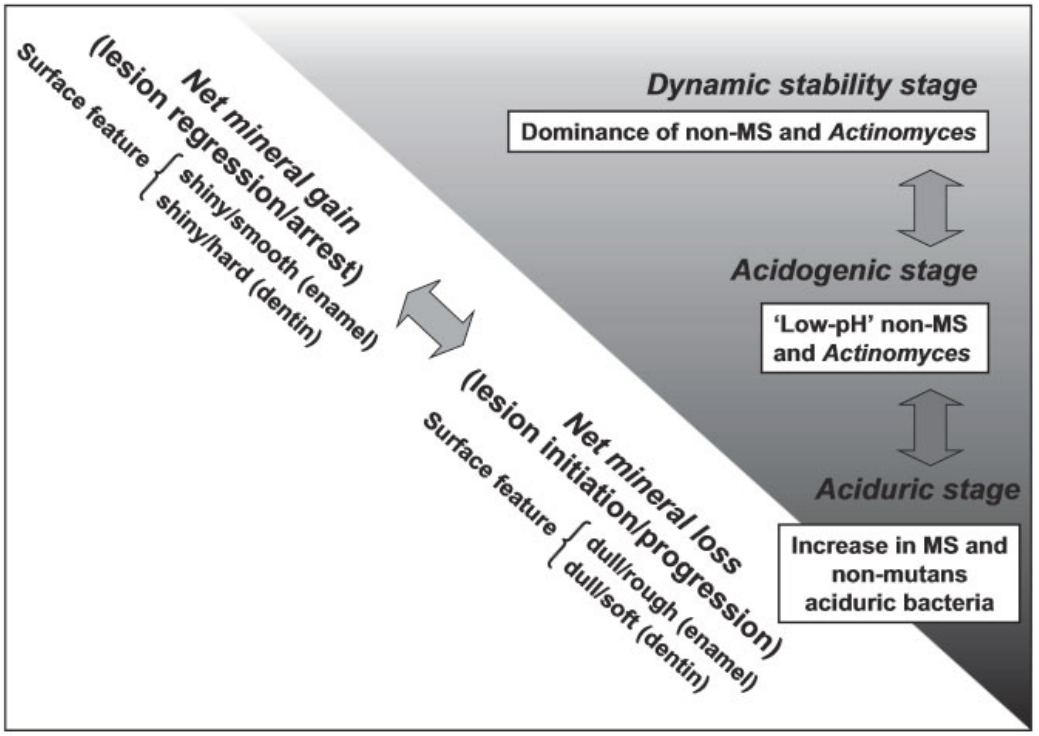


Figure 1. Ecological hypothesis; microbial dynamics and the caries process according to Takahashi and Nyvad (2008) (with permission from S. Karger AG, Basel).

The relationship between the colonization of MS and several risk indicators for ECC has been introduced in a review by Leong et al. (2013); the most important risk factors for ECC during the first 12 months are related to a child's diet and the transmission of MS. MS is also more likely to be transmitted from parent to child if parents themselves have active caries. When parents' diet has consisted of high levels of sugar between meals, this has also been associated with ECC in their children (Agarwal et al. 2011, Hooley et al. 2012). Indicators of early transmission of MS include a mother's high level of MS, a mother tasting a child's food, sharing utensils, and a child's exposure to sugary food or drink several times a day (Leong et al. 2013). Additionally, infants are more likely to get MS if toothbrushing has not been initiated during the first year of life (Wan et al. 2003, Bissar et al. 2013).

A complex combination of biological and social indicators, social and physiological environments, health behaviors, and dental care, all of which influence children's oral health have been presented in a conceptual model by Fisher-Owens et al. (2007). The conceptual model complements the ecological caries model. It proceeds from the biological model and adds indicators of children's oral health by incorporating the five main domains: oral health, child-level, family-level, community-level, and environment. The model shows how these influence oral health during the element of

time. The conceptual model represents a new kind of thinking about how the multilevel approach influences children's oral health from a population health perspective (Figure 2).

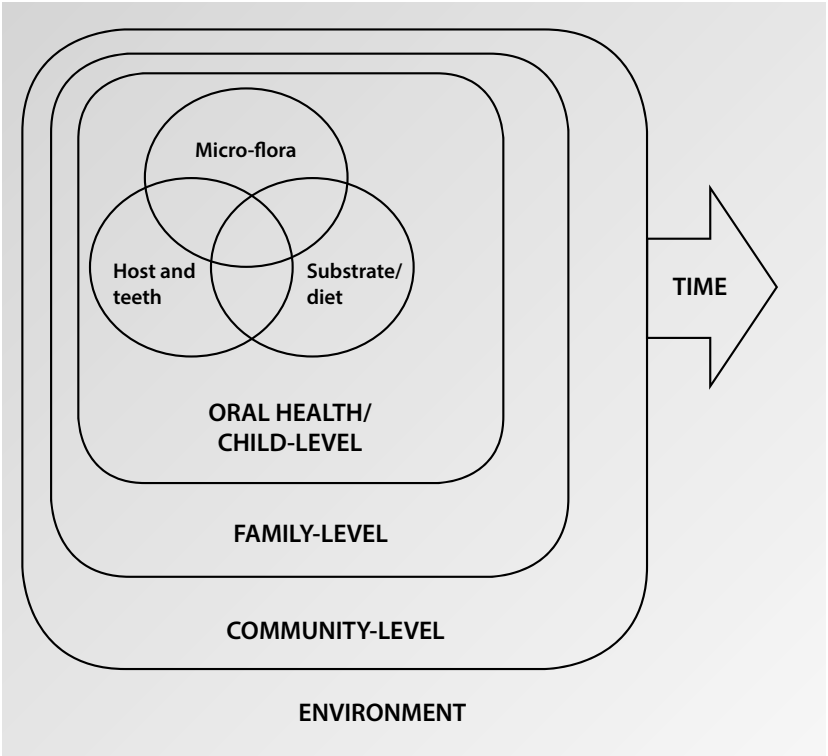


Figure 2. The levels of risk indicators for ECC. The triad was adapted from Keyes (1960); the design was modified from the conceptual model by Fisher-Owens et al. (2007).

The family and parents make up children's proximate environment, and their influence on children's oral health is crucial. Hooley et al. (2012) divided the family-based determinants of children's oral health into six categories: socio-demographic indicators, child feeding practices, parental behaviors, parental oral health, parental attributes, as well as parental attitudes, knowledge, and beliefs. The socio-demographic oral health risk determinants consist of a family's lower social class or income, being a single parent, large family size, a child's higher birth order, parents' lower level of education, ethnicity, and a family's living conditions. The prevalence or severity of caries has been found to be associated with socio-demographic indicators (Hooley et al. 2012). In most cases, firstborn children have been found to have lower rates of caries compared to younger children, but in some studies, firstborns were found to have higher caries rates (Mahesh et al. 2013). Parents' higher education level is often associated with better health choices and children of immigrant or minority

ethnic families, where parents have lower levels of education, are at high risk for caries (Wigen and Wang 2010). The influence of family environment was also studied in a review by de Castilho et al. (2013), which found that parents' dental health habits influenced their children's oral health. The review underlined the importance of interventions for the entire family in terms of toothbrushing and early education about preventive measures at home.

The effect of parents' dietary practices on ECC risk and on the development of children's dietary behaviors has been shown to be important. Weaning a child from the breast or a bottle later than at 12 months and nocturnal feeding have been found to increase the risk of ECC (Hooley et al. 2012). Similarly, on-demand bottle feeding of young children older than 12 months, especially at night (Tinanoff and Palmer 2000), has been found to increase caries. Snacking on sweet foods or drinks between meals, having a bottle of milk or juice as a thirst-quencher, or adding sugar to children's diet or pacifier have also been found to be associated with ECC (Hooley et al. 2012). In a cross-sectional survey of Korean children under six years of age it was shown that the prevalence of S-ECC increased as a result of frequent snacking and soda drinking (Han et al. 2014). Less frequent toothbrushing and delayed initiation of a child to brushing (Bissar et al. 2014) have been found to correlate with ECC. Some associations between parents' and their children's oral health have also been found; the children of parents with previous oral health problems were found to have higher levels of caries (Hooley et al. 2012).

Parental attitudes, knowledge, and beliefs influence the choices that parents model to their children throughout childhood, and they are critical to the children's long-term health behaviors (Hyssälä 1992, Hooley et al. 2012). Some associations have been found between elevated ECC risk and mother's young age, parents' weak internal locus of control, depression, or a grandparent as daytime caregiver (Hooley et al. 2012). A study of the influence of psycho-social indicators in oral health (de-Silva-Sanigorski et al. 2013) showed that parental self-efficacy and health knowledge could be modified by early, well-developed oral health interventions that helped the whole family adopt better health habits. Further interventions in oral health promotion require a better understanding about the parental indicators that may cause poor oral health in children.

2.3. Oral health promotion for young children

Poor oral health may have serious effects on the health and well-being of a young child. Early childhood caries has a high prevalence worldwide even though it is largely preventable. Several evidence-based guidelines for ECC have been presented

recently, including those by the American Academy of Pediatric Dentistry (AAPD 2014a), Department of Health New South Wales (NSW 2009), European Academy of Paediatric Dentistry (EAPD 2008), Scottish Intercollegiate Guidelines Network (SIGN 2010), as well as the Finnish Current Care Guidelines (Current Care 2014). The guidelines are mostly in agreement with one another, while each has added something individual in their recommendations for the parents of young children (Table 1) and infants (Table 2). The guidelines agree on recommendations with strong clinical importance and those based on the strongest evidence. The recommendations include, for instance, oral health education for parents, toothbrushing with fluoride toothpaste, regular meals, water as a thirst-quencher, use of xylitol, and delaying the colonization of MS. The recommendations on each of these topics are based on systematic reviews or randomized clinical trials comparing oral health promotion programs for young children.

Table 1. Recommendations for parents of young children in guidelines on control or management of ECC

	AAPD	NSW	EAPD	SIGN	Current care
Guideline	Policy on Early Childhood Caries(ECC)	Early childhood oral health guidelines for child health professionals	Guidelines on Prevention of Early Childhood Caries	Prevention and management of dental decay in the pre-school child	Caries (control)
Last revised	2014	2009	2008	2005	2014
Parents are responsible for teaching proper oral health habits for their children; they act as a model of healthy behaviour for the child.					Included
Parents should avoid saliva-sharing behaviours in order to prevent or delay the early transmission of oral bacteria (mutansstreptococci)	Included Extra advice: Reducing the parent's/ sibling's MS levels to decrease transmission	Included	Included		Included
Parents are recommended to brush their own teeth twice a day with fluoridated toothpaste.	Included Extra advice: flossing and daily rinsing with NaF mouth rinse.	Included			Included
Targeted programs of oral health and dietary education for prospecting mothers.	Included	Included	Included		
Mothers of young children are recommended to use xylitol chewing gum at least 2–3 times a day in order to prevent or delay the early transmission of MS.	Included		Included		Included Extra advice: 5 grams of xylitol per day
Comprehensive dental examination and treatment of active caries during pregnancy for the mother.	Included	Included			

Table 2. Recommendations for infant's oral health promotion

	AAPD	NSW	EAPD	SIGN	Current care
Guideline	Policy on Early Childhood Caries(ECC)	Early childhood oral health guidelines for child health professionals	Guidelines on Prevention of Early Childhood Caries	Prevention and management of dental decay in the pre-school child	Caries (control)
Last revised	2014	2009	2008	2005	2014
Oral health examinations, health education, and risk assessment	By primary health provider at 6 months of age. A relationship with a dentist at 12 months of age; individual prevention plan and interval for periodic re-evaluation.	An oral health assessment to a child by their first birthday by child health professionals: Lift the lip at 0-5 years to examine the upper front teeth and look for early signs of tooth decay and existing cavities. Refer children at high risk for tooth decay to a dentist.	Regular scheduled visits	By public health nurses as a part of child's overall health assessment. Regular dental care as soon as the first teeth erupt.	Children at the age of 0.5–2, 5–7, and 10–13 should be examined comprehensively.
Oral hygiene Brushing two times a day initiated from the eruption of the first tooth	Included Extra advice: flossing when adjacent tooth surfaces cannot be cleaned with a toothbrush.	Included Extra advice: Adult supervision with tooth brushing is necessary up until 7 years of age. Rinsing mouth with water is after eating, if a toothbrush is not available. Flossing between the child's teeth as soon as two teeth contact each other.	Included	Included Extra advice: brushing or be assisted with tooth brushing by an adult last thing at night, before bedtime and on at least one other occasion.	Included Extra advice: parent and child should especially be advised how to clean the erupting molars.
Fluoride toothpaste	A smear or rice-size amount of toothpaste <3 years of age at moderate or high caries risk. A pea-size amount for children 3 to 6 years of age.	From 18 months old a small pea size amount of low fluoride toothpaste. Toothpastes with reduced levels of fluoride are recommended for children under six years who are not at high risk for dental decay. Use fluoride toothpaste earlier for children whose risk of dental disease may be greater due to e.g. no fluoride in public water supply.	A smear of fluoride toothpaste.	A smear or a pea-sized amount of fluoride toothpaste containing 1000 ppm F +/-10%.	A smear of fluoride toothpaste with 1100 ppm F once a day <3 years of age. A pea-size amount of fluoride toothpaste with 1100 ppm F at the age of 3–5 2 times a day. From the age of 6 the amount of 1450 ppm F toothpaste is ½–2 cm.

	AAPD	NSW	EAPD	SIGN	Current care
Children should spit out toothpaste after brushing but not rinse.	included	Included		Included	Included
Fluoride varnish at least twice a year for children at high risk.	Included		Included	Included	Included
Systemically-administered fluoride	Endorses and encourages the adjustment of fluoride content of domestic community water supplies to optimal (0.7 ppm F) levels where feasible.	Drink tap water because fluoridated drinking water is the most effective and efficient way of preventing dental caries. Fluoride supplements in the form of drops or tablets are no longer recommended and should not be used.	Fluoridated milk and fluoridated salt with high caries prevalence and in areas without water fluoridation. Fluoride tablets on an individual basis.	Fluoride supplements should only be prescribed by dental practitioners on an individual patient basis.	No toothpaste for children less than 6 years of age if there is more than 1.5 mg/l in drinking water.
Dietary advice - No night time bottle feeding - No sugar containing snacks or drinks in between meals	Included Extra advice: breast-feeding should be avoided after the first primary tooth begins to erupt and other dietary carbohydrates are introduced.	Included Extra advice: Tap water especially between meals. Eating whole fruit is preferable to drinking fruit juice. Sticky sweet foods such as honey can cause tooth decay.	Included	Included	Included Extra advice: Water as a first choice thirst-quencher.
Recommendations on xylitol use	Guideline on the use of xylitol (2010) recommends xylitol use to moderate or high caries-risk patients.			Confectionery and beverages with sugar substitutes are preferable to those containing sugars.	Daily use of xylitol, 5 grams per day after meals, prevents caries.
Other Advice given	Non-nutritive sucking habits. Dental development and teething. Injury prevention.	Information on teething to new parents. Introduce a cup at around 6 months and wean children from the bottle at around 12 months of age.		Caries should be diagnosed as early as possible to identify those at increased risk of caries.	Individual instructions in self-care to control caries.
Other recommendations	Parents should be encouraged to have infants drink from a cup at 12 months of age	Advise parents to talk to their children about dental visits in a positive way.		Preventive programmes should be designed to take account of children in deprived areas.	Oral health promotion by adopting good oral health habits should be started already in day care centres.

2.3.1. Oral health education for parents with young children

Parents in families with young children should be advised about effective interventions, because they are responsible for implanting oral health habits in their children; parents act as role models of healthy behaviors for their children (Poutanen et al. 2007a). In a systematic review of the risk indicators of ECC during the first year of life (Leong et al. 2013), the recommendation is to offer advice to parents concerning the dental health of their children. Effective prevention strategies that provide information and guidance about ECC for the mothers of young children may provide cost-effective and carry long-lasting benefits (Ramos-Gomez 2012). In one long-term study, an individual oral health promotion program was initiated during pregnancy and mothers were given educational counseling four times during their children's early years, through the age of 18–19 years (Meyer et al. 2014). The program showed sustained improvement in the oral health and oral health behavior of young adults. A reduction of the incidence of S-ECC was achieved also in a short-term program based on repeated guidance from a mother's pregnancy to the age of 20 months of their children (Plutzer and Spencer 2008). The influence of the family on children's oral health was studied in a systematic review (Castilho et al. 2013) that found that addressing oral health habits and lifestyle, attention should be given to the entire family in order to improve oral health quality of life for children.

The guidelines from AAPD, NSW, EAPD, SIGN, and CCG all highlight that caries is most prevalent in children of families with a lower socioeconomic status, and that ECC is much more likely to affect infants whose mothers have lower levels of education (EAPD 2008, NSW 2009, SIGN 2010, AAPD 2014a, Current Care 2014). The guidelines suggest targeted oral health promotion programs for expecting parents, and the parents of young children (EAPD 2008, NSW 2009, AAPD 2014a). Such programs should be designed to ensure that children who live in underserved areas are ensured access to preventive dental care services and get their particular needs met (SIGN 2010). It is suggested that children in families lower on the socioeconomic scale would benefit from regular oral checkups and counseling, as preventing dental decay or detecting it earlier makes treatment less costly (NSW 2009). Interactive counseling such as motivational interviewing and home visits have been proven effective in low-income and immigrant families (EAPD 2008).

2.3.2. Brushing with fluoride toothpaste

Studies of preschool children have shown that brushing teeth with fluoride toothpaste reduces the prevalence of dental caries (reviewed by Dos Santos et al. 2013), and standard toothpaste has been regarded as a simple and safe population intervention. Based on the results of systematic reviews of studies on the level of fluoride in toothpastes (Ammari et al. 2003, Marinho et al. 2003, Walsh et al. 2010), concentrations of 1000 ppm F and above have been found to prevent caries in children, although it has to be kept in mind that for children younger

than six years of age, high-fluoride-concentration toothpastes or fluoride supplements carry an increased risk of dental fluorosis (Ismail and Bandekar 1999). In a systematic review on the effects of ECC prevention programs (Ammari et al. 2007) fluoride-based interventions were found to be more effective compared to other oral health education programs.

According to guidelines, in the prevention of ECC, the greatest volume of evidence points to the efficacy of toothbrushing with fluoride toothpaste twice a day (AAPD 2014b, SIGN 2010). The recommendation is that parents initiate their children's toothbrushing from the eruption of the first tooth. Brushing can be done with either a manual or electric toothbrush (SIGN 2010, Current Care 2014). According to all of the guidelines, a smear or pea-sized amount of fluoridated toothpaste is enough for preschool children. The recommendation is to spit out excess toothpaste but not rinse with water (NSW 2009, SIGN 2010, AAPD 2014a, Current Care 2014). CC guideline recommends to parents that children younger than three years brush twice a day, but use a smear of fluoridated toothpaste only once a day (Current Care 2014). Applications of fluoride varnish at least two times a year are recommended in almost all guidelines for preschool children at high risk for caries. Systemically administered fluoride supplements (fluoridated milk, salt, or fluoride tablets) were recommended in areas of fluoride deficient drinking water or individually for children at high risk for caries (EAPD 2008, SIGN 2010, AAPD 2014b). The increased risk of fluorosis in the maturing permanent teeth of children under six years of age was taken into consideration in all guidelines. Both EAPD and CC guidelines emphasize the topical rather than the systemic effect of fluoride (EAPD 2008, Current Care 2014). According to guidelines, instructions regarding oral hygiene should be delivered by dental professionals (SIGN 2010), or by primary health-care providers or public dental nurses (SIGN 2010, AAPD 2014a).

2.3.3. Regular meals and water as a thirst-quencher

Already 60 years ago, in a study conducted in Vipeholm, Sweden (Gustafsson et al. 1954), it was found that patients consuming sticky, sugary products between meals had more caries compared with those who only consumed sugar during meals. A systematic review by Anderson (Anderson et al. 2009) found that the frequency of eating sugary products is more important in relation to caries than the quantity of sucrose in the daily diet. The habit of consuming high sucrose snacks and sugar-sweetened beverages usually starts in early childhood and has been shown to be a risk indicator for S-ECC (Ruottinen et al. 2004, Evans et al. 2013, Han et al. 2014). It has been shown that oral health-related lifestyle is adopted in early childhood through the example of parents (Poutanen et al. 2007a), and dietary counseling to the caregivers of infants and toddlers was found to be effective in reducing ECC (Kressin et al. 2009). The effects of soft drinks on health have been evaluated in a systematic review and meta-analysis by Vartanian et al. (2007), which recommends reducing such consumption because of the risk for diabetes and displacement of healthy nutrients by soft drinks.

New Nordic Nutrition Recommendations (Nordic Council of Ministers 2012) focus on quality and the diet as a whole. Among other things, they contain a recommendation with regard to added sugars: "Limiting the frequency of intake of refined sugars, and especially limiting sugar-rich foods as snacks, might contribute to reduced caries risk". Finnish nutrition recommendations highlight the components of a health-promoting diet and regular meals (National Nutrition Council of Finland 2014); and The Beverages in Nutrition, Summary of Opinions (Valsta et al. 2008) favors water or unflavored mineral water between meals. The recommendation of the Finnish Ministry of Social Affairs and Health (2013) promotes healthy habits: in day-care centers, children's teeth should be brushed daily with fluoride-containing toothpaste; the day-care centers should be candy-free; and children should be served one daily dose of xylitol. Regular meals, a well-balanced diet, and fresh water used as a thirst-quencher are also recommended in the CC guidelines (Current Care 2014). All guidelines converge on the recommendations of "no night-time bottle feeding" and "no sugar-containing snacks or drinks between meals" (EAPD 2008, NSW 2009, SIGN 2010, AAPD 2014a, Current Care 2014).

2.3.4. Xylitol use

Xylitol is a five-carbon polyol sweetener which can be found in several plants and fruits. Clinical trials have shown that habitual consumption of xylitol has a caries-preventive effect (Mäkinen 2011). This effect of xylitol has been attributed to its non-fermentability and its ability to decrease the amount of plaque as well as counts of MS (Maguire and Rugg-Gunn 2003, Milgrom et al. 2009, Söderling 2009).

The subjects of most xylitol studies have been schoolchildren or adults, but some studies have also been carried out with preschool-aged children. When xylitol is consumed habitually by preschool-aged children, daily doses ranging from 4.5 to 5 g reduce MS counts significantly (Autio 2002, Mäkinen et al. 2005, Seki et al. 2011). The first study of preschoolers was carried out with three- to six-year-old children at day-care centers (Kovari et al. 2003). The result was that the children who used xylitol chewing gum three times a day (2.5 g xylitol per day) were more likely to be totally caries-free at the age of nine than the children who had instead brushed their teeth following the day-care lunch. In a study that administered a low xylitol-dose (only 0.5–1 g xylitol per day) to two-year-olds, xylitol was not found to prevent caries (Oscarson et al. 2006). The use of xylitol-containing wipes was found to prevent caries in 6–35-month-old children (Zhan et al. 2012), compared with the use of wipes without xylitol. Mothers used the wipes to clean the teeth of their children three times a day, and the total dose of xylitol was 4.2 g. Topical use of xylitol was tested with a xylitol solution at a Finnish public health center in 2002–2011. The 45% solution of xylitol was administered by parents once or twice a day using cotton swabs onto all deciduous teeth until the child was three years old (Mäkinen et al. 2013). Compared to similar, untreated children, the MS colonization and the incidence of caries

at the age of seven years were both significantly lower. In a review of xylitol-containing products for the prevention of dental caries in children and adults (Ripley et al. 2015), the authors conclude that fluoride toothpaste containing xylitol may reduce tooth decay in the permanent teeth of children better than regular fluoride toothpaste, and that not enough evidence was found as to whether any other xylitol products could prevent tooth decay. The results of the above studies suggest that, in many cases, the amount of xylitol has been too small. A proper xylitol dose used regularly may prevent or delay the colonization of MS and prevent ECC in young children.

Regular use of xylitol is recommended for children (AAPD 2010, Current Care 2014); a dose of 5 g xylitol per day following meals may prevent caries, especially if timed before or during the eruption of permanent teeth. Xylitol is also recommended as part of a preventive strategy against ECC in children at moderate or high risk for caries (AAPD 2010).

2.3.5. Delaying the transmission of mutansstreptococci

Xylitol use has obvious potential also in the prevention or delay of transmission of MS from mother to child. Most guidelines encourage the caregivers of infants and toddlers to reduce the early transmission of MS by avoiding saliva-sharing behaviors such as tasting the child's food or sharing eating utensils (EAPD 2008, NSW 2009, AAPD 2014a, Current Care 2014). It has been found that if the mothers of young children use xylitol-containing chewing gums, this may prevent caries in the primary dentition (Isokangas et al. 2000, Söderling et al. 2000, Thorild et al. 2006, Laitala et al. 2013) because it may decrease the transmission of MS from mother to child. Therefore, to prevent or delay the early transmission of MS may be an important and effective strategy in the prevention of ECC. Long follow-up studies on early caries prevention programs directed at the mothers of young children (Köhler and Andreen 2012) to reduce the early colonization of MS in their children have been found effective. They indicate that it is possible to remain MS-negative even up to 19 years of age if a child is not colonized in early childhood, and children who were colonized at a later stage experienced less caries. The guidelines from AAPD, EAPD, and CC (EAPD 2008, AAPD 2010, Current Care 2014) encourage the mothers of young children to use xylitol products regularly at least 2–3 times a day. The CC guideline emphasizes the amount of 5 grams of xylitol per day (Current Care 2014).

2.3.6. Programs in oral health promotion

During the last decade, several prospective controlled trials on oral health programs to prevent ECC have been published (Table 3). They include various aspects of oral health promotion and are aimed at expecting parents (Plutzer and Spencer 2008, Köhler and Andreen 2012, Meyer et al. 2014), children in different age groups, or may employ a risk-based approach (Minah et al. 2008, Meurman et al. 2009, Sundell et.al 2013). Two

Table 3. Prospective control trials by oral health programs for young children

Source Country	Target age	Subjects	Intervention	Conclusion
Meyer et al. 2014 Germany	From pregnancy to 18 years old	First phase 86 pregnant women, phases II–V: 54 3 year olds–26 18 year olds and control 65–35, respectively	Each mother received individual oral health counseling. Between phase II and IV, mothers and children were preventively supervised each 12 months	An "early oral health care promotion" starting during pregnancy may cause a sustained and long-term improvement of the oral health of young adults
Achembong et al.2014 North Carolina, USA	Preschool children, 0–4 years old	920505 kindergarten students from 1998 to 2009	IN to the mouths of babes program (IMBP): up to 6 medical visits by a non-dental health care physicians that provided preventive dental services (child screening and risk assessments, application of fluoride varnish, and parent oral health counseling)	IMBP reduced dental caries among targeted vulnerable children from low-income families, which helped reduce oral health disparities among preschool aged children
Sundell et al. 2013 Sweden	Preschool children, mean age 4 years old	At start one 160 high caries active preschool children in four groups	All groups were exposed to the basic program composed of dietary counselling, oral hygiene instructions and fluoride varnish application, three groups were exposed to one additional preventive measure, and repeated 7 times/2 years by a dental hygienist	Addition of preventive measures on top of an effective basic program is a waste of resources. The effect on oral health of individual reinstruction and motivation, by a dental hygienist, 7 times during the two-year study period should not be underestimated
Van den Branden et al. 2013 Belgium	From 0 to 5 years old	2137 children born between Oct 2003 and July 2004 , the intervention group was 50,5% of the participants	Oral health education program was added to a standard preventive care program during the first 3 years of life.	A multi-component, theory-based intervention at community level had only a limited and temporary effect on oral health-related behaviors
Köhler and Andreen 2012 Sweden	From pregnancy to 19 years old	A follow up of the 19 year old children of first-time mothers with high salivary levels of MS	A caries prevention program for mothers of first borns and their children up to 3 years, and controls at 4, 7, 11, 15, and 19 years of age	Strategies for the prevention of dental caries in early childhood should include measures to prevent or delay early colonization by cariogenic bacteria.
Meurman et al. 2009 Finland	From 18 months to 5 years old	An age cohort of 794 children, 446 in the intervention group and 348 in the control group	Repeated health education to the caretakers of MS positive children and xylitol lozenges for the children	Early risk-based health education targeted to the families of MS-positive children, can reduce the risk for caries in white-collar families

Source Country	Target age	Subjects	Intervention	Conclusion
Pluzer and Spencer 2008 Australia	From pregnancy to 20 months old	Of 649 women enrolled in the program (test group 327, control group 322), 441 had their child examined at follow-up	Mothers in the test group received oral health promotion information during pregnancy, and when child reached 6 and 12 months of age. The information was reinforced in one of the test subgroups by phone	An oral health promotion program based on repeated rounds of anticipatory guidance initiated during the mother's pregnancy was successful in reducing the incidence of S-ECC in these very young children
Minah et al. 2008 Maryland, the USA	From 6 to 15 months old	Prevention group of 219 children evaluated for caries risk, control group children at risk for caries but 12 months older at their initial visit	Caries-risk assessments by clinical examination, questionnaire and mutans MS monitoring. Fluoride varnish applications, dental health counseling, referral for dental treatment, and periodic recalls every 3–6 months.	Administration of prevention measures was shown to reduce dental carious lesions and oral MS in low socioeconomic status infants and toddlers. Oral MS levels were a reliable indicator of future caries status.
Ammari et al. 2007 Jordan Systematic review	From 0 to 5 years old	Dental health education or clinical interventions 123–398 children, controls 95–61. Interventions on use of fluoridated toothpaste 1104–1186 children, control 1073–1176 children	The 7 articles included evaluated the effects of dental health education, prenatal fluoride administration, topical fluoride application, preventive dental programs, and use of fluoridated toothpaste	Fluoride-based interventions appear to be effective in young children, and more studies are required to determine the best method of delivery.
Harrison and Wong 2003 Canada	From 0 to 5 years old	66 Vietnamese mothers and their children at the age of 19–60 months	One-to-one counseling by Vietnamese lay health workers, follow-up telephone calls, supported by "mums 'n tots" groups	One-to-one counseling with regular follow-up provided by a lay person of similar background and culture is an effective way to facilitate adoption of healthy behaviors and to improve oral health of children.

Search in the PubMed (MEDLINE) library in August 2014 on systematic reviews or RCT of prospective controlled trials with programs on parents of young children/ young children's oral health, hygiene, and/or prevention of early childhood caries.

of the programs (Köhler and Andreen 2012, Meyer et al. 2014) continued for more than 18 years, from the pregnancy of the mother up to almost age 20 of the child, but most programs continued for less than five years. All of them offered comprehensive general oral health counseling that included etiology and prevention of caries, oral hygiene instructions with recommendation to use fluoride toothpaste, and dietary counseling. In some of the programs, xylitol products (Meurman et al. 2009) or fluoride toothpaste were delivered to children (Ammari et.al 2007), and in most programs fluoride varnish was applied on a child's teeth. The education was delivered primarily by dental health professionals but also by primary health-care providers (Van den Branden et al. 2013), or even lay health workers (Harrison and Wong 2003). The counseling was given at an office and in some cases also by telephone (Harrison and Wong 2003, Plutzer and Spencer 2008). Most consultations took place individually but some also in small groups of mothers and their children. The best results were achieved in programs that started when parents were still expecting, programs with a risk-based approach, and programs with fluoride-based interventions.

According to the present review, early childhood caries is a preventable disease but still a large problem globally. A great deal is known about the risk indicators of ECC, and much has already been done to improve the quality of oral health in young children. Dental professionals, especially dental hygienists, together with other trained professionals, are able to deliver oral health related information to the caregivers of young children via models of health education. A large number of studies and systematic reviews concerning the prevention of ECC have yielded evidence-based knowledge, and national guidelines have been developed to raise the quality of oral health promotion. Microbiological studies have shown that ECC is caused by acid-producing or acid-tolerating bacteria in the oral biofilm on a child's teeth; these bacteria serve as a biomarker of the conditions in which ECC occurs, and that they are an indicator of future caries. Even if ECC is an oral health disease at the child-level, the risks of the disease are found at the family-level and community-level. Parents are mainly responsible for the oral health of their very young children, and it has been found that educating parents promotes the oral health of their children. It is the responsibility of the community to support parents and work to reduce oral health disparities among children. There is an obvious need within public dental service for practice-based studies on children's oral health promotion, on all ECC risk levels, and their multi-faceted evaluation.

3. AIMS OF THE STUDY

The aim of this study was to evaluate two new oral health promotion programs and a comprehensive program used earlier in the Vantaa PDS, and to develop family-based health promotion on behalf of infants and young children.

The specific objectives were to:

- Take a group of dental professionals with differences in age, education, and practical experience and have them perform the process of MS plaque testing and interpret the results in conformity with each other (I).
- Analyze how dental professionals accepted the new oral health promotion programs, how they experienced them in practice, and how the training affected their motivation for the work (II).
- Assess whether the new family-based programs in oral health promotion or the training of dental professionals had an impact on the colonization of MS in young children (III).
- Assess parents' opinions on the delivery of their young children's oral health counseling and assess their readiness to change their children's or their own oral health habits (IV).

4. SUBJECTS AND METHODS

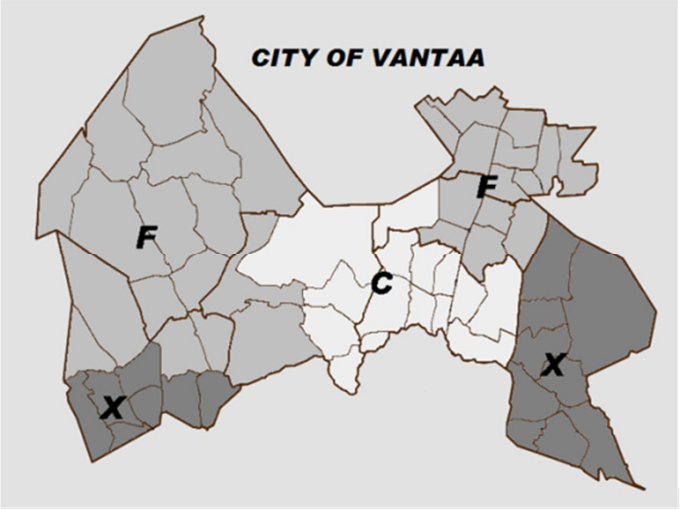
4.1. Design and participants of the study

The starting point of the study was a three-year project on oral health promotion carried out in the Vantaa public dental service (PDS) during 2006–2008. The motive for the project was to develop the oral health program already in use within the organization to address a trend of deterioration in the oral health of Vantaa inhabitants, particularly children and adolescents. During the project, health education and mutansstreptococci (MS) saliva testing were offered to expecting parents, and the professionals involved in children's oral health promotion were given training in the individual counseling of expecting families. The present study started with the aim of evaluating the outcomes of the project and continuing the development of health promotion for newborns and young children.

The present study was carried out in the PDS of Vantaa, Finland during 2008–2011. Vantaa was categorized into three areas that matched each other socio-economically. These three areas were randomly allocated into two study groups (F and X) and a control group (C) through the drawing of lots (Figure 3). Two new oral health intervention programs were created for the families of six- to 36-month-olds and implemented into the study groups (for a description of the interventions, see Chapter 4.2.). Group F emphasized oral hygiene and use of fluoride and group X emphasized proper diet and use of xylitol. The programs were targeted to all families with children born in 2008 who were inhabitants of Vantaa, and delivered on the children's regular dental visits from six to 36 months of age (III). In addition to the children's oral health and oral health habits, the evaluation of the oral health promotion programs included the opinions of dental professionals (I, II) and parents (IV). The characterization of the studies is presented in Table 4. The ethics committee of the Hospital District of Helsinki and Uusimaa granted ethical approval for this study. The study is registered in Clinicaltrials.gov with the identifier NCT01854502.

In the prevention study (III), the participants were children born in 2008 who were inhabitants of Vantaa at the age of 24–36 months. The children who were born in 2006 and were inhabitants of Vantaa at the age of 24–36 months served as the historic control cohort. The families of the firstborn children of the 2008 birth cohort were invited to a more detailed form of participation (the questionnaire part of III and IV) by a letter sent to the parents when the infant was less than one month old. The letter included an informed consent form for the parents on behalf of their newborn child. The dental professionals involved in the children's oral health promotion participated in two questionnaire studies

(I, II). The flow chart of the studies and the numbers of participants are presented in Figure 4.



Inhabitants of Vantaa in 2008	
F-east	48,748
F-west	27,889
F total	**76,637**
C	**49,585**
X-east	28,646
X-west	34,408
X total	**63,054**
Total	**192,522**

(incl. 3,246 of unknown area)

Figure 3. The Vantaa PDS categorized into three matching areas according to the interventions (F=oral hygiene and fluoride, X= diet and xylitol, C= control).

The impact of the programs on the children's health was evaluated using the colonization of MS in dental plaque and oral health habits at the age of 24–36 months as the response variables (III). Comparisons were made between groups F, X, and C within the 2008 cohort, and separately within the group of firstborn children. In order to compare the children born in 2008 to the children born in 2006 (historic control), the latter were categorized retrospectively according to the same areas, even though they were not given special interventions. This comparison made it possible to evaluate the training of the professionals. The conformity in interpreting the plaque tests was studied between the participants and the trainer (gold standard) (IA) (study I). In the evaluation of the acceptability of the programs, the data from the questionnaires for dental professionals (II) and parents of firstborn children (IV) were analyzed for differences between the new programs (F and X pooled) and the control group. Parents' readiness to make changes in the health habits of their children or themselves was analyzed between the new programs and the control group. The outcome measures of the study were related in the case of the professionals to the conformity on the interpretation of the MS tests (I) and to the acceptance and the experiences of the intervention programs (II), in the case of the children to the colonization of MS and oral health habits (III, IV), and in the case of the parents to their readiness to change health habits (IV).

Table 4. Characterization of the studies.

Study	Study type -Participants	Comparison	Outcome measures	Number of subjects/ responder or analyzed	Statistical analysis
I	Questionnaire study -Dental professionals	Dental professionals/ gold standard	Conformity on interpretation of MS plaque test	24/24	Chi square
II	Questionnaire study -Dental professionals	N/C*	Opinions of dental professionals	29/25	Fisher's exact test Mann-Whitney U
III	Prospective intervention study- -Children	F/X/C all children F/X/C firstborn children F+X+C/ historical control	MS colonization at 2-years of age Health habits	Cohort 2008: 2715/1525 Firstborns: 804/617 Cohort 2006: 2673/ 955	Chi square Log reg
IV	Questionnaire study -Parents of firstborn children	N/C	Opinions of parents and their readiness to make changes in health habits	586/397	Chi square Log reg

*F=oral hygiene and fluoride, X=diet and xylitol, N=pooled F+X, C=control, historical control=2006-borns

Two new family-based oral health promotion programs were created for the study groups by a team of dentists, masters of nursing science, and dental hygienists. The interventions were carried out by 28–35 dental professionals who were involved in the health promotion of young children during the study (III). In study groups F and X, parents were given counseling regarding their own health habits, but in the control group C there were no interventions for parents (III). The oral health interventions were carried out at the children's routine oral health visits from six to 36 months of age. The first visit was recommended at the age of 6–12 months and the second visit at the age of 24–30 months. About 10% of the children were assessed to have a high caries risk, and had an extra visit at the age of 18 months. The risk factors were assessed by a team of dental hygienists and dentists. The factors included visible plaque or caries on a child's teeth, use of sugary drinks as thirst-quenchers, bedtime feeding, special healthcare needs, or parents' nonchalant attitude toward dental care, serious social problems in the family, or a family background of recent immigration (III).

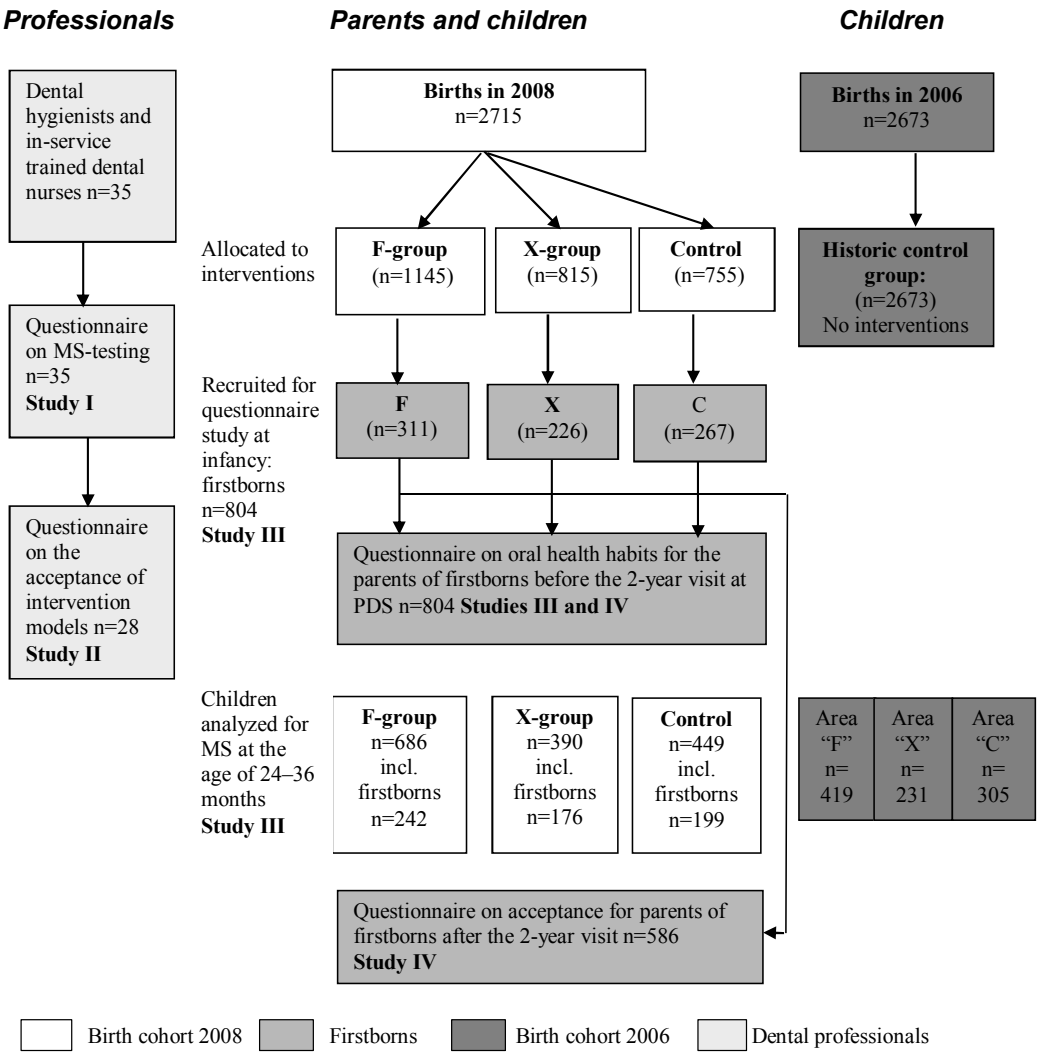


Figure 4. The flow chart of studies I, II, III, and IV, and number of subjects involved.

4.2. Interventions

All interventions aimed at children born in 2008 and their parents in the course of the study are described in Table 5. The control group used the routine oral health program, which was also used earlier in the PDS, and the children in all study groups (III) were treated according to this routine program.

Table 5. Study interventions for children and their parents by group during the children's dental visits from 6–36 months.

	The first dental visit for children at the age of 6–12 months	**Additional dental visit for children at high risk for caries at 18 months**	**The second visit for children at the age of 24–36 months**
Children born in 2008	All basic elements of oral health promotion, counseling given to parents using TTM and MI		All basic elements of oral health promotion, counseling given to parents using TTM and MI, MS-testing
Group F Parents of children born in 2008, incl. parents of firstborn children	Counseling on parents' own self-care using TTM and MI on oral hygiene and use of fluoride		The goals set on previous visits were discussed and the parents were encouraged to continue following them
Group X Parents of children born in 2008, incl. parents of firstborn children	Counseling on parents' own self-care using TTM and MI on proper diet and use of xylitol		
Group C Parents of children born in 2008, incl. parents of firstborn children	No intervention for parents		No intervention for parents
Children born in 2006	All basic elements of oral health promotion		All basic elements of oral health counseling and MS-testing
Parents of children born in 2006	No intervention for parents		No intervention for parents

The routine counseling included guidance on the children's health habits: toothbrushing twice a day with a fluoride-containing toothpaste starting from the eruption of the first tooth, proper timing of meals, a healthy diet and avoiding sugary snacks and drinks, as well as the child's regular use of xylitol products after meals 3–5 times and 5 grams per day. In addition, parents were advised to avoid tasting food off of the child's utensils and to use xylitol products regularly to delay the transmission of MS from parent to child.

In program F, on the child's first dental visit, the parents were given guidance on how to clean their own teeth properly and use fluoride products (III). Tools for cleaning interdental spaces were demonstrated, and samples of dental floss, sticks, or interdental brushes were provided, as well as a toothbrush and one tube of fluoride toothpaste. Teeth-cleaning goals for both parent and the child were set together and written down on a form. In program X, the special elements added for parents included a properly timed and healthy diet and the regular use of xylitol (III). On the child's first visit, both parents were asked to fill in a one-day diary concerning their own diet. They were shown material that demonstrated the sugar content of several foods and drinks and examples of xylitol products. The frequency of meals and snacks and the related pH drop were discussed, and 5 grams of xylitol per day after meals was recommended. Samples of xylitol gum and mints were given to parents and child. Goals for maintaining a healthy

diet and the use of xylitol were set together and entered on a form. On the child's dental visit at the age of 24–36 months, the parents in both new intervention groups (F and X) were encouraged to follow the written goals by repeating them (III) (Table 5).

4.3. Training of the dental professionals

The training of the dental professionals that was begun during the three-year health promotion project was continued during the present study (I, II). All dental hygienists and in-service trained dental nurses who were involved in the health promotion of young children were trained for purposes of the study and in order to improve the quality of oral health promotion in the PDS. Altogether, the training consisted of 40 hours, including seven hours of practical training for each professional.

The dental professionals were given written instructions, training for how to perform MS plaque testing, and for interpreting the results (I). The practical training on plaque testing was arranged during the fall of 2007 at eleven day-care centers for young children in groups of three to five dental professionals. The parents of the children were asked for a written consent on behalf of their children. Interpreting the MS results was repeated in groups and in some cases also individually. After the training, a questionnaire about the dental professionals' opinions on the training and a test to find out the conformity of the interpreting were arranged. The test included 20 photographs of incubated MS strips on PowerPoint slides (Appendix) (I).

The dental professionals were trained to use the new oral health promotion programs through lectures in small groups and through written instructions (II). They were trained to deliver the counseling using the transtheoretical model (TTM) (Prochaska et al. 2002) together with the method of motivational interviewing (MI) (Miller and Rose 2009). TTM was selected as the theoretical framework for preventive counseling in all programs. It helps to determine the individual level of decisional balance, and to focus on personal conversation and goal setting in counseling. The use of MI was combined with TTM for the dental professionals in all programs. TTM was a framework within which to understand the stage of change, and after choosing it, MI can be used as a method for changing the oral health behavior.

In a one-day session prior to the children's two-year visits in fall 2009, the dental professionals were also trained to observe dental decay and to control the progression of caries lesions (III). The session was followed by individual training arranged in groups of three participants; each examined three children and delivered counseling to one child with his/her parent. At the end of each exercise, feedback was given individually on the professionals observations of dental decay and on the use of counseling methods. These training topics were repeated during a later afternoon lecture.

4.4. Questionnaires

Altogether four questionnaires were administered during the study; two for dental professionals (I, II) and two for the parents of firstborn children (III, IV). The first one for the professionals was carried out during a training session; the trainees were allowed to make their choices on paper. The questions of the second questionnaire were sent to each professional by e-mail, and after filling in the form, the respondent printed it out and sent it anonymously to the author. The questionnaire regarding oral health habits was sent to the parents of firstborn children by mail, and they returned it to the PDS at the two-year visit. After the visit, the parents received via e-mail a Webropol-based questionnaire about their opinions of the counseling.

The first questionnaire for professionals concerned the training for plaque-testing. Additionally, they were asked to report if they had gained any practical benefits from the training. The next questionnaire for dental professionals concerned their acceptance of the oral health intervention programs. It was sent to the dental professionals involved in children's oral health promotion by e-mail after the children's first visits to the PDS at the age of six to 12 months (I). The questionnaire consisted of 31–35 structured items depending on the program. In the first section of the questionnaire, the professionals were asked about their age, education, and experience in children's dental care. The second section contained questions about the practices used during appointments. In the third section, the dental professionals were asked for their opinions on the instructions and the materials related to the study. Subsequent sections asked about details of the visits, including the attitudes of the parents, and the recording of the information. In the last section, the respondents were able to report their attitudes toward the work in terms of the training, its effectiveness, their own motivation, and coping with the work. In addition, the chiefs of dental nursing were interviewed about their experiences with the study and any feedback they had received from the dental professionals participating in the study.

In connection with the invitation to the child's two-year examination, the parents of firstborn children were mailed a questionnaire about their own background information and the health habits of their child (III). The parents returned the questionnaires on their child's visit to the PDS. The questionnaires were sent to the present author (IA), who entered the information into the database. The questions concerned the level of education of the parents and the oral health habits of the child. The questions concerning the child's oral health habits asked about the frequency of brushing the children's teeth, use of fluoride toothpaste and xylitol products, and any observed adverse effects resulting from xylitol use. The questionnaire also asked about the frequency of the child's snacks between meals and the use of probiotics. Parents were asked whether they had tasted

food from the child's spoon or cleaned the child's pacifier in their own mouth, and the frequency of xylitol use by the mothers.

After the child's two-year dental visit, the parents of firstborn children were asked for feedback on the oral health counseling (IV). The link to the Webropol-based questionnaire was sent to the e-mail-address the parents had given with the signed informed consent form (Appendix). The timing of the query was in the most of the cases one to four weeks after a child's visit to the PDS at the age of two. If the e-mail address was missing or no longer valid, the query was delayed up to twelve weeks. The parents were informed that their answers would not be reported individually. The questionnaire consisted of 19 structured questions created by a team of dentists and masters of nursing science. Twelve of the 19 questions were derived from the theories of TTM and MI: the delivery of the counseling, goal setting, parental opinions or feelings about the visit, and intentions to make changes in oral health habits. The last seven questions concerned the arrangements of the visits to the PDS; these questions were excluded from the present study, but used in the development of the organization.

All questionnaires were piloted before launch. Some amendments were made in order to make the questions less ambiguous, and new choices added when necessary. The questions had mostly a 3–5 point Likert scale. The questionnaire for parents (IV) was translated also into Swedish, the second official language in Finland, so that parents could choose the language themselves. The questionnaires are all included in the Appendix.

4.5. Clinical examinations and mutansstreptococci determination

Children were clinically examined at their regular dental visits between the ages of six and 36 months (III). The examinations were carried out by dental hygienists or in-service trained dental nurses using a plane mirror and with the child lying in a parent's lap. The information from the clinical examinations, including the number of decayed teeth or teeth with distinct visual changes in enamel, corresponding to ICDAS (ICDAS foundation 2013) values 2 to 6, was recorded in the database. At the two-year visit, the dental professionals tested the children for MS in plaque. The inclusion limits for testing were two years and three years. The presence of MS was determined by Strip Mutans Dentocult SM® test (Orion Diagnostica Oy, Espoo, Finland). Samples of plaque were obtained using four separate microbrushes and applied on the strip from four predetermined tooth surfaces: the interdental spaces and the gingival margin of upper incisors, upper molars, lower incisors, and lower molars. The strips were incubated at 35–37 °C for a minimum of 48 hours. The strips were dried and interpreted according to study instructions (see Appendix) and parents were informed of the test results by letter or telephone. In order to control the quality and to maintain the reliability of MS testing,

the dried tests were then sent to the author (IA), who interpreted all MS tests, blinded for study purposes. To enable a blind set-up between the cohorts, the author reinterpreted most of the earlier tests taken in 2008–2010 and mixed up in random order with all tests taken in 2011.

4.6. Data collection and management

The data from the MS tests was retrieved from the patient records (III). Parents' background information, parents' and children's health habits (prior to the two-year visit), parents' reported opinions of the counseling session, the association between the MS test interpretations of trainees and trainer, as well as the opinions of the dental professionals regarding the oral health promotion programs were retrieved from the questionnaires (I, II, III, IV). The reported opinions of parents were related with the background information from Study III and studied at group level. The MS test scores of 0–3 were dichotomized into MS 0 (score 0) and MS 1 (for scores 1–3) (III). The level of parental education was dichotomized into basic (basic, vocational, or high school) and advanced (college or University degree). Parents' self-reported habits of cleaning the child's pacifier in their own mouth or tasting food from their child's utensils were dichotomized into 0 (seldom or never) and 1 (the other values). The child's reported oral health habits of toothbrushing and the use of fluoride were dichotomized into 1 (at least two times a day) and 0 (the other values). Snacks between meals was dichotomized into 0 (seldom or never) and 1 (the other values), and the use of xylitol into 1 (at least three times a day) and 0 (the other values) (III). The readiness to change health habits was recategorized into three possibilities, depending on whether respondents had made changes, intended to make changes, or had made no changes ("No need to", "Didn't want to make changes", and "No goals set") (IV).

4.7. Statistical methods

In comparing the health promotion programs (III), the main outcome measure was the colonization of MS bacteria in the dental plaque of children aged 24–36 months. The MS values were cross-tabulated and compared by cohort and intervention group. Within the firstborns in the questionnaire study, parental information and the child's reported health habits were cross-tabulated by intervention group. The association of parental information and child's reported health habits with MS was analyzed using univariate logistic regression analyses and multivariate logistic regression analyses with manual backward elimination, where all independent variables for which the regression coefficient did not reach statistical significance were eliminated one by one. Intervention group and area (three matched areas in Vantaa) were included in models as confounders.

The association between the interpretations of MS tests by the trainees and the trainer (I) was evaluated using cross-tabulations (Pearson's chi-square). When comparing the opinions of the dental hygienists and the in-service trained dental nurses regarding the programs (II), the answers reporting experiences and attitudes were cross-tabulated by group, education, age, and experience in children's healthcare. The differences were tested in relation to answering activity, experiences and attitudes between the new programs and the routine program between the dental hygienists and the in-service trained dental nurses, and between the respondents with less or more experience in children's dental care. The statistical significance of the differences between the groups was evaluated with Fisher's exact test and the Mann-Whitney U-test.

The reported opinions and readiness for change (IV) were analyzed by comparing the new programs (combined) with the routine program (Pearson's chi-square). The associations between parents' readiness to change their child's health habits and the dichotomized categories of a child's MS scores or reported health habits were analyzed using multinomial logistic regression, considering the intervention group as confounder.

The statistical software used was PASW Statistics 18.0–20.0 and the level of statistical significance was set at $p<0.05$.

5. RESULTS

5.1. Participation and demographic information

About 60% of the families with children in the birth cohorts of 2006 and 2008 visited the PDS when the child was between six and twelve months old; at the age of two years, the percentages were 66 and 76, respectively. Of those who visited the PDS, MS tests were taken from 57% children in the 2006 birth cohort, from 77% children in the 2008 birth cohort (including the firstborns), and from 95% of firstborn children. Information concerning the oral health habits of children and parental background was received from 94% of the families of firstborn children, of whom 52% were boys and 48% girls (III). The participants being trained on how to proceed and interpret the MS plaque tests included 35 dental hygienists and dental nurses. Of them, 29 took part in the interpretation test and 23 responded to the questionnaire about the training (I). Most of the dental professionals (86%) participated in a questionnaire about their opinions of and experiences with the health promotion programs and their attitudes toward the work after the children's visits to PDS at the age of six to twelve months (II). The response rate for the questionnaire for parents of firstborn children after the two-year visit was 68%. The 390 respondents included 17 males, of whom 80% had an advanced level of education; the figure for non-respondents was 68%, and for all mothers of firstborn children, 76% (IV).

5.2. The impact of the oral health programs

In the 2008 birth cohort as well as in the 2006 birth cohort, the colonization of MS and the incidence of caries among two-year-olds were low. In MS colonization, a decreasing trend was found between the 2008 and 2006 birth cohorts; the MS scores were positive in 11% and 15% of the two-year-olds, respectively. The lowest MS scores in the 2008 birth cohort were found in the control group ($p=0.011$) (Table 6; III), but no group-related differences were found among the firstborns. Two group-related differences were found in the parental background information and the oral health habits of the firstborn children. Parents had not tasted food from the child's spoon as often in group F as in group X ($p=0.011$) and more children had used xylitol at least three times a day in group X compared with those in the control group ($p=0.008$) (Table 7; III). In the questionnaire for parents (IV), the respondents in the new groups (F and X pooled) reported more frequently that they had at least intended to make changes in their own oral health habits compared to the parents in the control group ($p=0.032$) (Table 8; IV). In terms of opinions regarding the delivery of the counseling, there were no differences between the groups.

Table 6. Firstborn children in comparison with the 2008 and 2006 birth cohorts; percentages of negative MS scores at age 24–36 months, by group (retrieved from Study I).

	Firstborn children born in 2008		**2008 birth cohort**		**2006 birth cohort***	
	Total n	%	Total n	%	Total n	%
MS score negative (=0)	617	91	1525	89**	955	85**
F group (oral hygiene and fluoride)	242	91	686	87	419	83
X group (diet and xylitol)	176	89	390	88	231	89
Control group	199	92	449	93	305	86
p-value		*0.658*		***0.011***		*0.129*

* The same areas where the 2008 birth cohort was given interventions.
** p=0.011

Table 7. Parental background information and a child's reported health habits in firstborn children at the age of 24–36 months; percentages within different pairs of intervention groups.

	Bivariate analysis (Pearson's chi square)					
	F / X %	**p**	**F / C %**	**P**	**X / C %**	**p**
Mother's advanced level of education	62/70	*0.092*	62/69	*0.111*	70/69	*0.900*
Father's advanced level of education	51/54	*0.523*	51/58	*0.119*	54/58	*0.403*
Parents have not cleaned the child's pacifier in their mouth	94/95	*0.647*	94/95	*0.449*	95/95	*0.791*
Parents have not tasted food from the child's spoon	61/48	***0.011***	61/55	*0.256*	48/55	*0.172*
Toothbrushing at least 2 times/day	65/59	*0.221*	65/58	*0.153*	59/58	*0.871*
Fluoride use at least 2 times/day	65/60	*0.268*	65/59	*0.225*	60/59	*0.942*
Snacks between meals seldom or never	49/49	*0.886*	49/56	*0.112*	49/56	*0.178*
Child's use of xylitol at least 3 times/day	48/56	*0.130*	48/42	*0.190*	56/42	***0.008***

5.3. The acceptance and quality of the programs

The majority (75%) of respondents to the questionnaire concerning the MS plaque test training (I) agreed at least somewhat that they had gained practical benefit from it. Taking and incubating the tests was seen as easy by 55%, and half agreed somewhat that interpreting the tests was easy, while 40% somewhat disagreed (Figure 5, II). Agreement of the MS test results between trainee and trainer was mostly achieved in cases with no growth or with the most abundant growth of MS bacteria (Table 9, I). A trainer's positive test results found agreement among 83% of trainees; in the case of a trainer's negative results, the figure was 88%. In Study II, the scores MS 0–1 were set as negative and MS 2–3 as positive; the sensitivity of the results was 83%, the specificity 88%, and the

accuracy of the test 85%. If the cut-off point of negative and positive was set between MS 0 and MS 1+, the sensitivity of the results was 84%, the specificity 84%, and the accuracy of the test 84%.

Table 8. Parents' readiness to change health habits after a child's visit to the PDS at 2 years of age; numbers and proportions (%) within groups (retrieved from Study IV).

		New programs		Control		
		n	%		%	
Oral health habits of the child	Made changes	100	38	45	36	
	Intend to make changes	27	10	13	10	
	No need to	125	47	56	45	*0.626*
	Didn't want to make changes	3	1	1	1	
	No goals set	11	4	7	8	
Oral health habits of the parent	Made changes	91	34	30	24	
	Intend to make changes	77	29	26	21	
	No need to	83	31	58	47	***0.032***
	Didn't want to make changes	7	3	3	2	
	Don't know	10	4	7	6	

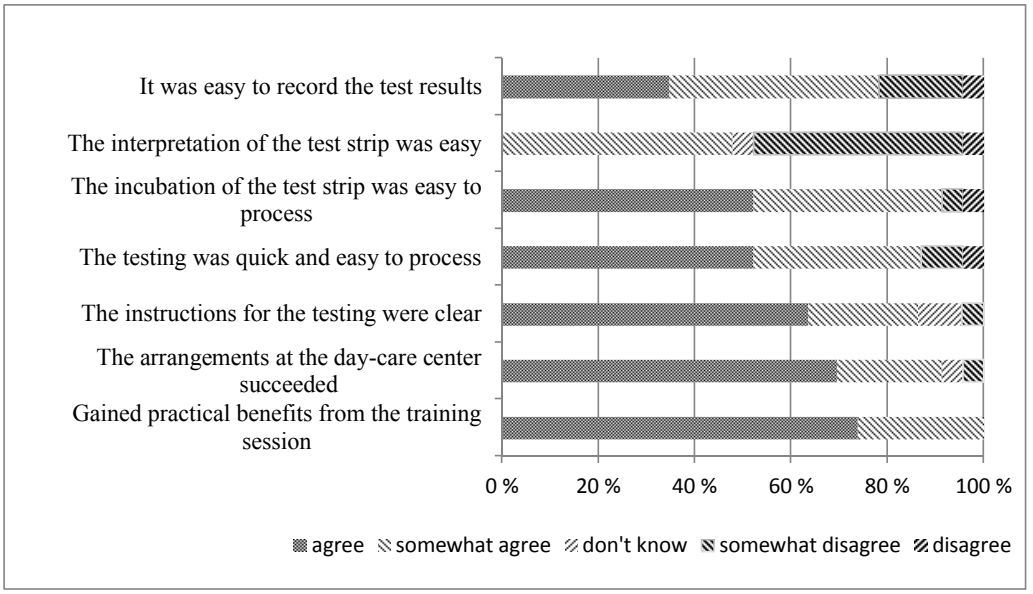


Figure 5. The frequency distribution of the answers to the questions on the training for plaque testing.

Table 9. The numbers and proportions of the interpretations by dental professionals compared with those of the trainer on the MS plaque interpretation test.

		Trainer			
	MS score	**0**	**1**	**2**	**3**
Dental professionals	**0**	49 (9 %)	70 (12 %)	13 (2 %)	0 (0 %)
	1	7 (1 %)	78 (13 %)	44 (8 %)	1 (0 %)
	2	2 (0 %)	26 (5 %)	68 (12 %)	37 (6 %)
	3	0 (0 %)	0 (0 %)	49 (8 %)	136 (23 %)

In the questionnaire concerning the acceptance of the oral health promotion programs, most of the respondents in the new groups, F and X (25/29), reported that they had delivered parental self-care guidance always or at least on most of the visits. In the opinion of 21 of all 25 respondents, the instructions for the oral health promotion programs were at least somewhat suitable for family-based counseling. The study-related training of dental professionals had increased their knowledge or skills at least in some degree in the opinion of 16/25 respondents. The respondents in new programs felt that they had progressed more as dental professionals compared to those in the routine program (p=0.030). About one-third (6/19) of the dental hygienists and two-thirds (4/6) of in-service trained dental nurses felt that their work was now more meaningful than before the study (p=0.047). Motivation for the work had increased more among the in-service trained dental nurses, who had gained more new practices for their work, compared to dental hygienists (II). In the questionnaire for parents (IV) almost all respondents (98%) reported that they had been listened to at least to some extent during the counseling session. Most of them (92%) felt that the oral healthcare guidance they received from the professionals was in accordance with their expectations at least to some extent.

5.4. Family background and health habits

With all intervention groups analyzed together using bivariate analysis, mother's and father's advanced level of education (p=0.006 and 0.026), child's toothbrushing at least two times a day (p=0.031), as well as child's use of xylitol at least three times a day (p=0.006) were found to be associated with negative MS scores. But in multivariate analysis, father's advanced education level (p=0.044) and child's xylitol use at least three times a day (p=0.014) only remained in the (final) model (Table 10; III).

Additionally, firstborn children's favorable health habits and MS scores were compared with the five categories of mothers' (Table 11; III) and fathers' education level (Table 12; III). The proportion of children with favorable health habits mostly

increased with parents' education levels, and the proportion of children with negative MS scores increased with mother's education level but not with father's education level.

Table 10. The logistic regression models of parent- and child-related factors on the presence of MS among firstborn children born in 2008, at the age of 24–36 months, with intervention group and the area as confounders (retrieved from Study III).

	MS score positive*				
	Crude OR	**p**	**OR**	**95% CI**	**p**
Mother born before 1980	0.67	*0.153*			
Father born before 1980	0.77	*0.407*			
Mother's advanced education level	0.44	***0.006***			
Father's advanced education level	0.48	***0.026***	0.51	0.27–0.98	***0.044***
Parents have not cleaned pacifier in their own mouth	0.49	*0.175*			
Parents have not tasted food from the child's spoon	0.86	*0.614*			
Mother's use of xylitol at least 3 times/day	0.89	*0.764*			
Child's toothbrushing at least 2 times/day	0.53	***0.031***			
Child's fluoride use at least 2 times/day	0.61	*0.096*			
Child's snacks between meals seldom or never	0.91	*0.750*			
Child's use of xylitol at least 3 times/day	0.41	***0.006***	0.41	0.20–0.84	***0.014***
Child's use of probiotic products	0.72	*0.290*			
Gender (male=1)	0.74	*0.281*			

*Typing error in the original table in Study III has been corrected.

When the proportion of children with negative MS scores and favorable health habits (cleaning child's teeth at least twice a day and the proper use of fluoride and xylitol) was compared with parents' attitudes to making changes in the health habits of their children, no group related differences were found. But when all groups were analyzed together, the proportion of children with negative MS scores, favorable health habits, or whose mothers had an advanced level of education was lower among families who reported having made or intending to make changes according to the goals set, compared to the families making no changes, consisting of those who reported "No need to", "Didn't want to make changes", and "No goals set" (Table 13, IV).

Table 11. Parental background information, reported oral health habits, and negative MS scores in firstborn children born in 2008, at age two; column n/total n/ percentages within the categories of mother's level of education.

Mother's level of education	Basic	Vocational	High school	College	University degree	p
Parents						
Parents have not cleaned the child's pacifier in their own mouth	23/28 82%	97/111 87%	49/55 89%	221/225 98%	164/167 98%	***<0.001***
Parents have not tasted food from the child's spoon	8/28 29%	45/116 39%	30/57 53%	142/226 63%	107/172 62%	***<0.001***
Child						
Tooth brushing at least 2 times/day	13/29 45%	63/116 54%	37/57 65%	140/227 61%	112/172 65%	*ns.*
Fluoride use at least 2 times/day	11/29 38%	65/116 56%	38/57 67%	143/227 63%	112/172 65%	***0.039***
Snacks between meals seldom or never	9/29 31%	44/114 39%	27/57 47%	122/227 54%	104/170 61%	***0.001***
Xylitol at least 3 times/day	8/29 28%	34/116 29%	28/57 49%	116/227 51%	103/172 60%	***<0.001***
MS plaque test negative (=0)	20/27 74%	92/107 86%	50/55 91%	207/222 93%	156/166 94%	***0.003***

Table 12. Parental background information, reported oral health habits, and negative MS scores in firstborn children born in 2008, at age two; column n/total n/ percentages within the categories of father's level of education.

Father's level of education	Basic	Vocational	High school	College	University degree	p
Parents						
Parents have not cleaned child's pacifier in their own mouth	41/45 91%	143/154 93%	54/57 95%	173/180 96%	121/124 98%	*ns.*
Parents have not tasted food from child's spoon	20/46 44%	77/158 49%	33/59 56%	112/182 62%	81/128 63%	***0.023***
Child						
Tooth brushing at least 2 times/day	26/46 56%	98/159 62%	26/59 44%	113/183 62%	92/128 72%	***0.008***
Fluoride use at least 2 times/day	25/46 54%	101/159 64%	27/59 46%	113/183 62%	90/128 70%	***0.020***
Snacks between meals seldom or never	14/46 30%	72/157 46%	32/59 54%	103/183 56%	74/127 58%	***0.006***
Xylitol at least 3 times/day	16/46 35%	65/159 41%	31/59 53%	94/183 51%	71/128 56%	***0.031***
MS plaque test negative (=0)	36/43 84%	137/153 90%	51/55 93%	170/179 95%	115/122 94%	*ns.*

Table 13. Parents' reported readiness to change the oral health habits of their child in relation to child's MS colonization, reported health habits, and mother's level of education; proportion (column %) within the group.

n	Made changes according to goals 145	Intend to make changes according to goals 40	No changes 203	p[1]	p[2]
MS score negative (=0)	89%	84%	95%	***0.022***	***0.012***
Cleaning teeth at least two times a day	51%	42%	73%	***<0.001***	***<0.001***
Fluoride use at least two times a day	50%	47%	75%	***<0.001***	***0.001***
Snacks between meals seldom or never	49%	61%	51%	0.738	0.289
Xylitol use at least three times a day	46%	34%	55%	0.093	***0.016***
Mother's advanced level of education	64%	66%	74%	***0.049***	0.361

p-values based on logistic regression model when considering intervention group as confounder (for which, all p-values were >0.05)
p[1)] made changes vs. no changes
p[2)] intend to make changes vs. no changes

6. DISCUSSION

The main findings of the present study suggest that promoting the oral health of young children might be possible even in low-caries populations by investing in training and support for the dental professionals who provide oral health counseling to families with young children, and that when considering only children's oral health, comprehensive counseling regarding children's health habits does not need to be supplemented by counseling parents about their own oral health. The training in client-centered counseling was given to all dental professionals for the purpose of enhancing the quality of oral health promotion, which made all groups equally competent in counseling. This may be the reason why no program-related differences were found in the oral health of the children studied. Parents' readiness to change their own health habits can be improved by supporting their own self-care during their children's dental visits which may assist children in adopting better health habits from earliest childhood. In addition, parents' advanced education level and child's regular use of xylitol were found to be associated with better oral health status of children as measured by the colonization of MS in dental biofilm.

6.1. Methodology, reliability and validity

The results of the study indicate that the matching was probably not as successful as hoped. In comparison with the intervention groups, the third area of Vantaa, which served as the control group, seemed the healthiest when evaluated after the study. The children in that area had the lowest level of positive MS scores. According to father's level of education, the control area seemed to be somewhat better off compared with the rest of Vantaa, but according to mother's education, the control area and area X were equally good and area F seemed to have the lowest proportion of advanced level education. Most of the children born in 2008 and living in Vantaa were analyzed between the ages of two and three years. The number of children who did not visit the PDS at that age was high even though the child health clinics reminded families to make dental appointments; nearly all children in Finland visit such clinics regularly. There was migration in and out of the city and families moving between the three study areas. During 2008–2010, in the youngest age group (zero to four-year-olds), 1,100 moved out of Vantaa annually, while 1,150 moved to Vantaa (Statistics Vantaa 2014). Thus, migration resulted in a nearly 9% change in the study birth cohort, and those children who moved to Vantaa during the study did not receive all of the interventions. This may have had some impact on the results for the 2008 birth cohort, though not as substantially in the case of firstborns; the recruiting was done when

children were infants, and only those who left Vantaa were considered dropouts. Among the firstborns, the families were divided into different intervention groups according to their address at the time of their first dental visit at the child's age of six to twelve months, but all children born in 2008 were analyzed at the age of two to three years according to the area in which they lived. Therefore, the firstborns were the true prospective control group with the reliable results. All children born in 2008 and 2006 provided context for the study and enabled us to assess the impact of the training given to the professionals.

In terms of migration within the city of Vantaa, most families seemed to move from the center toward outlying areas, where the family apartments are cheaper and houses suitable for the families with children more plentiful. This means that the control area probably lost more families than the other two areas with the new interventions, and that there were families in the intervention groups that did not receive parental self-care guidance. There were probably also fewer families in the control group that had received counseling in accordance with the new programs. As far as the entire 2008 birth cohort is concerned, it is possible to merely speculate as to the number of families that moved within the city. Among firstborn children, 9% of families moved out of Vantaa per year and 7% moved from one study area to another before the child's dental visit at two to three-year-old, most from the center of the city to northern areas; from group C to group F. Because of migration and other unknown reasons, there were children among the firstborns who had not received interventions, been analyzed for MS, or who, in some cases, had inadequate patient records of their visits. This may have affected the results to some extent. All calculations were, regardless, made according to the method of "intention to treat". The MS analyses were taken from children at the two-year dental visit, thus only the counseling given at their first visits at the age of six to twelve months and 18 months had an effect on the MS scores of the two-year-olds. The impact on parents' self-care, by replicating their own goals on their children's two-year dental visit, may be seen in the future.

A limitation in the questionnaire for parents of the firstborn children was that almost all of the respondents were female. Even though the questionnaire was anonymous, practically all of the respondents took the opportunity to give their name and address in order to receive the reward; these included very few male names. The reason for the overabundance of mothers may be that the questionnaire was sent to the e-mail address received from the parents of newborns with the informed consent (Appendix) and it is usually mothers who care for the baby for the first few months. The level of education of the respondent mothers was higher compared with all mothers of firstborns, which this might restrict the generalization of the results. This finding is, however, in line with earlier findings that suggest that people with a high socio-economic status are more likely to participate in healthcare than those

with a lower status (Bender et al. 2012). The most frequent non-responders in a questionnaire study of Finnish fathers of young children were the youngest and urban fathers (Hyssälä 1992).

The colonization of MS was low in all study groups compared with the earlier findings in Finland (Pienihäkkinen et al. 2005, Meurman et al. 2009) and the number of carious teeth in the two-year-olds was so minimal that the data were not included in the present study. In a population of children with low caries and MS colonization, it is not easy to get significant results through preventive interventions. This was found in a study assessing a high-risk strategy to control dental caries (Hausen et al, 2000), where intensive oral health promotion aimed at high-risk children was not found to be any more effective than the basic prevention given to all children. For all children born in 2008, the number of families that visited the PDS when the child was two years old was higher compared with the historic control group, i.e. the children born in 2006. This means that during the study we were able to attract more families to visit the PDS. It may be because of the invitations for dental appointments for the study sample or thanks to improved co-operation with the child health clinics. With a larger proportion of children visiting the PDS, those born in 2008 probably included more children at high risk of caries, and that should have increased the probability of positive MS scores compared with the children in the historic control group. However, it turned out to be the opposite. A sensitive analysis was done because of missing MS scores in both birth cohorts. Besides the best- and worst-case scenarios, we created a hypothesized scenario, in which the missing MS scores would resemble those of children whose fathers had a basic level of education. In that scenario, the difference between the cohorts was statistically significant although clinically minimal. In comparison with the intervention groups, the control group seemed the healthiest. The difference was not seen in the more homogenous and reliable firstborn children; there were no group-related differences in the MS scores or in the presence of dental caries. This is in line with studies conducted in Sweden (Sundell et.al 2013), Belgium (Van den Branden et al. 2013), and Finland (Meurman et al. 2009).

The fact that the dental professionals were not blinded to the groups probably did not affect the results; they delivered counseling to families according to the area they worked in. For study purposes, I interpreted all MS tests myself, blinded to group and year, and in order to enable a blind set-up between the cohorts, I reinterpreted most of the earlier tests, blinded and mixed up in random order with all tests taken in 2011. In a community-based study with about 35 dental professionals delivering counseling, the results are not as comparable as when only a few professionals deliver the counseling to the families. Therefore, the results of the present study are as close to the reality as in any public dental service.

6.2. The effect of training

The dental professionals, the dental hygienists and in-service trained dental nurses, are responsible for most of the oral health promotion for young children in the present study and they were all given training during the study. The dental hygienists have been trained in health promotion as part of their education and the dental nurses have been trained through work they do. The present professionals who took part in the study carried out the associated tasks as part of their normal daily routines in public dental healthcare. This is why the study may be defined a prospective, practice-based study. Because of the training and the fact that the health promotion was a part of daily work routines at the PDS, the control of the present professionals was probably lighter in comparison with the control in a randomized clinical trial.

The questionnaire asked dental professionals for their opinion as to how meaningful their work on the health promotion of young children had been during their working career. Most answered that they had always felt it was meaningful and some that it was now even more meaningful to them than before the study. Even though the professionals were motivated to promote oral health in families with young children, training them in health counseling models, increasing their evidence-based knowledge of oral health, and providing them with the support of the superiors may result in better oral health for children. Especially those with less prior experience felt that they had advanced as dental professionals and gained confidence and new practices in their work in the course of the study as a result of the training and the support they had received. Studies of primary nurses (Drach-Zahavy 2004, Zangaro and Johantgen 2009, Bergh et al. 2013) have produced similar findings; the support of one's supervisor was found to affect health-care practitioners' attitudes toward their work. Among the dental professionals studied, the work improved more among in-service trained dental nurses than among dental hygienists. They were given new responsibilities compared with their previous work in assisting dentists, and were thus eager to work independently in promoting the oral health of young children.

The findings indicate that it is beneficial to start oral health promotion for families with young children as early as possible and to deliver patient-centered counseling in children's oral healthcare and in self-care for expecting parents according to their needs by using the TTM as a framework to assess parents' stage of change. The use of TTM is supported also by previous literature; it has been found to assist professionals in choosing an individual counseling process and on understanding why patients relapse after the change (DiClemente et al. 1991, Prochaska et al. 2002, Wade et al. 2013). Patient-centered counseling was developed even further as the method of MI was taken into use. The dental professionals were taught to deliver counseling via empathy, reflective listening to parents, making parents verbalize beneficial arguments

for change, and setting individual goals for beneficial oral health habits together with the parents. The use of TTM and MI in combination was adopted in counseling rather well, according to the opinions of parents, measured following their children's dental visits, and most probably improved family-based health promotion. This is in line with a systematic review by Gao et al. (2013), who found the combined use of TTM and MI the most effective compared with other models of health counseling. It was also found that parents' readiness to change their own oral health habits can be promoted during their child's dental visits, and that most parents seem to know when there is no need to change their children's oral health behavior. Listening to parents and focusing the counseling conversation on the issues of oral health that they are willing to accept may be suitable for most families with young children.

6.3. The effect of oral health programs

Counseling aimed at parents' own oral hygiene or the use of fluoride toothpaste did not motivate them to clean their child's teeth or use fluoride more often compared with groups X or C. No differences were found in the giving of snacks between meals either, even though parents in group X were given advice regarding the proper timing of meals. The only differences between the groups were that parents in group F had tasted food less often from the child's spoon compared with group X; and that children were more likely to use xylitol more frequently in group X than in the control group. The present findings suggest that the details or topics of the counseling may not be as important as how the counseling is delivered.

The finding that regular use of xylitol at least three times a day was associated with low MS scores is in line with several microbiological studies of oral biofilm (Söderling 2009, Mäkinen 2011, Seki et al. 2011). In the present study, samples of xylitol and the written goals set in order to use xylitol after meals three times and 5 grams per day were given to the families in Group X, but recommendations to use xylitol after meals at least three times per day were given to all families. According to the questionnaire for firstborns' parents, xylitol was used more in Group X compared with the control group, which may be a result of better motivation among parents in Group X. The proportion of children in all groups of firstborn children who used xylitol at least three times per day increased with the level of education of both mother and father, probably because of better knowledge and the ability to understand the effects of xylitol. This is in line with a study of preschool children in which the combined counseling and xylitol intervention was effective in white-collar but not in blue- collar families (Meurman et al. 2010). The use of xylitol has been very common in Finland for a long time (Nordblad et al. 1995); many day-care centers give children a dose of xylitol after lunch, which is a good way to teach a smart habit, but once a day is not enough. In order to have beneficial

changes in the biofilm, parents should give xylitol at home at least two times a day after meals. According to feedback from the parents, xylitol, when used according to recommendations, was tolerated well by the children in the present study. This is in line with a study on the use of xylitol products in preventing otitis media (Uhari et al. 1998).

6.4. Family-based effects

The finding that parents' level of education had an impact on the health and health behavior of their children probably stems from the fact that those with advanced levels of education are better able to process and receive information, and possess better health literacy. In this study, in the bivariate analysis, the education level of both parents was found to be significant, but in the multivariate analysis father's advanced education level was found to be the most important. This is in line with a systematic review of parental influence on the development of dental caries in children aged zero to 6 years (Hooley et al. 2012), in which parental education was found to be associated with children's oral health. It would be beneficial to tailor patient-centered counseling individually and according to the ability of young children's families to receive the information. More educated parents may not need as much effort from dental professionals and they rely on professionals more than parents with less education. Parents with more education made better and healthier choices because they were probably more able to adopt health information from several kinds of reliable sources, not only from the dental professionals. These findings are supported also by the previous literature (Hyssälä et al. 1992, Wigen and Wang 2010). By listening to parents, what they are interested in, and giving patient-centered counseling based on their knowledge and ability to receive information might yield better results in children's oral health. Adding parental self-care to the dental visits of the child may have comprised too much information for some families but other cases it encouraged parents to change the health habits of the entire family and to set a better model for their children. This was found in a study on the health habits on children (Poutanen et al. 2007b), where parents acted as role models for children. Healthcare should invest more in those families with the greatest need for oral health promotion; they may benefit from it the most.

6.5. General discussion

During this study, about three out of four families with young children made dental appointments with the PDS according to the recommendations. Parents who did not visit the PDS regularly may have had more difficult circumstances because of poor health or financial problems, and may not have had the energy or time to focus on their children's oral healthcare. At present, parents of young children are reminded to make

appointments by letter, and if they do not follow up, they get another reminder. Oral healthcare providers had regular contact with the staff of child health clinics to ensure their support for our oral health promotion efforts as well as their help in reminding parents to make dental appointments. Co-operation with children's day-care centers has also been regular in an effort to make day-care as a healthy place for young children. MS plaque testing of the two-year-olds continued during the study and a few years thereafter. Unfortunately, the manufacturer stopped making the tests in 2013, and no products are available to replace them. New written guidelines to identify the children at high risk for caries were drafted by a group of dental professionals. The guidelines included all levels of children's oral health and the instructions were introduced to the dental professionals in the PDS of Vantaa.

Because dental caries is common, and caused by behavior, it cannot easily be prevented. Oral health habits are not simple to change, because they are adopted in early childhood and parents are responsible for teaching children beneficial habits. Adopting new habits is a process that requires setting realistic goals and empowering over the course of several health counseling visits. A longer follow-up period in the present study, for instance until the age of five years, could have provided results also on dental caries.

By using client-centered counseling – by listening to parents and understanding their needs and ability to receive health information – we can give individual oral health advice. This way, we may be able to avoid the (unnecessary) segmentation of children and/or their families. Several evidence-based studies on dental health promotion have been carried out over the decades, but in order to achieve better oral health more research is needed. Future studies should be carried out for all five risk levels for ECC, at the oral health level and at the individual child level in terms of how to keep the biofilm neutral; at the family-level in terms of how to raise parents' oral health knowledge and skills; and at the community-level in terms of how to improve health counseling. All sectors working close to families with children should join their resources for the benefit of the health and wellbeing of the young child.

7. CONCLUSIONS

- The practical training in mutansstreptococcus testing and the written instructions give dental professionals the confidence to interpret the tests and support the quality and conformity of the testing.
- The majority of dental professionals accepted the new programs well; they gained confidence through the training and new practices for their work. By training dental professionals in client-centered counseling they became better at encouraging parents to join in the counseling conversation and to set goals for better oral health habits.
- With regard to mutansstreptococci colonization, the results suggest that counseling young families might be better carried out through a routine, comprehensive program, focusing only on a few main issues related to children's oral health promotion, rather than by adding counseling of parental self-care to the programs.
- However, the addition of parental self-care to the programs may improve parental readiness for change in their own health habits, and their children may in the long term adopt beneficial health habits from them. The opinions of the parents suggest that the dental professionals have adopted client-centered counseling relatively successfully in their daily routines. Additionally, most of the parents felt that the advice they received through the health counseling was useful and met their expectations.

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Irma Arpalahti

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APPENDICES

Appendices are in Finnish, for translation in English, please contact the author.

1. Kutsu lasten hampaiden terveystutkimukseen ja suostumus tutkimukseen alaikäisen lapsen puolesta. (The invitation to the prevention study including the informed consent.)

2. The MS plaque interpretation test.

3. Palaute plakkitestikalibrointikoulutuksesta. (The feedback form of the MS plaque test training.)

4. Kyselyt ryhmän F, X ja C suorittajille lasten ensikäyntien jälkeen. (Questionnaires for the dental professionals in groups F, X, and C after children's first dental visits.)

5. Kaksivuotiaan terveystottumuskysely. (The questionnaire of the two-year-olds health habits.)

6. Mutansstreptokokki-plakkitestin tulkintaohjeet. (The instructions for interpreting the MS tests.)

7. Lasten hampaiden terveystutkimus -kyselyt ryhmien F, X ja C ensisynnyttäjäperheiden vanhemmille lapsen 2-vuotiskäynnin jälkeen. (Questionnaires for the parents of firstborn children in groups F, X, and C.)

Appendix 1. Kutsu lasten hampaiden terveystutkimukseen ja suostumus tutkimukseen alaikäisen lapsen puolesta. (The invitation to the prevention study including the informed consent.)

VANTAAN KAUPUNKI
VANDA STAD

Sosiaali- ja terveydenhuollon toimiala
Suun terveydenhuolto/ terveyden edistäminen
Ylihammaslääkäri Irma Arpalahti

Vastasyntyneen äidille ja isälle

Kutsu lasten hampaiden terveystutkimukseen

Vantaalla on vuoden 2006 alussa käynnistetty Etelä-Suomen lääninhallituksen rahoittama terveydenedistämishanke. **Yksi sen tärkeimmistä tavoitteista on ehkäistä pienten lasten hammassairauksia**. Hankkeeseen liittyy vuosien 2008–2014 aikana tehtävä lasten hampaiden terveystutkimus, jonka avulla pyritään kehittämään lapsiperheiden terveysneuvontaa.

Kutsumme tutkimukseen ensisynnyttäjien lapsia. Osallistuminen on täysin vapaaehtoista, ja tutkimuksen voi keskeyttää missä vaiheessa tahansa. **Tutkimuksen ulkopuolella olevien lasten hampaiden terveystarkastukset eivät mitenkään poikkea tutkimuksessa mukana olevien lasten terveystarkastuksista.**

Tutkimukseen osallistutaan lapsen tavanomaisten maksuttomien hammasterveystarkastusten yhteydessä noin 1-, 2- ja 5-vuotiaana, sekä lisäksi yksilöllisen tarpeen mukaan. Osalle lapsista tulee viisivuotiaana yksi lisäkäynti, jolloin tutkitaan purenta ja hampaista otetaan jäljennökset. Terveystarkastus- tai tutkimuskäynnit eivät aiheuta lapsille kipua.

Osallistumisella tutkimukseen voitte vaikuttaa **terveysneuvonnan kehittämiseen, ja siten** sekä omien että monien muiden lasten hampaiden terveyteen. **Lapsenne hyötyy osallistumisesta siten, että hän saa henkilökohtaiset kutsut hampaiden terveystarkastuksiin 0–5-vuotiaana. Niiden vanhempien, jotka eivät halua lastaan mukaan tutkimukseen, tulee Vantaalla olevan käytännön mukaan huolehtia alle kouluikäisten lasten hammastarkastusten ajanvarauksista itse.** Tutkimukseen suostuvien kesken arvotaan tuotepalkintoja.

Suostumus tutkimukseen alaikäisen lapsen puolesta:

Lapsen sosiaaliturvatunnus _____ A _____

Olen tutustunut tutkimustiedotteeseen ja annan lapselleni suostumuksen osallistua lasten hampaiden terveystutkimukseen,
Vantaalla ____. ____ 2008 _____
huoltajan allekirjoitus ja nimen selvennys
sähköpostiosoite: _____ @ _____ gsm:_____

Äidin nimi _____ syntymäaika __ / __ 19___

Äiti on ensisynnyttäjä: kyllä ☐ ei ☐

Osallistuiko äiti hammashoitolan sylkitestiin ja terveysneuvontaan? kyllä ☐ ei ☐
(Äiti voi osallistua sylkitestiin maksutta vielä kunnes lapsi on 6 kuukauden ikäinen.)

Isän (toisen huoltajan) nimi _____ syntymäaika __ / __ 19___

Postiosoite	Puhelin	Fax	Sähköposti
Sosiaali- ja terveydenhuollon toimiala Suun terveydenhuolto Koivukylä sosiaali- ja terveysasema Karsikkokuja 15, 4 krs. 01360 VANTAA	040 5709402	8392 5406	irma.arpalahti@vantaa.fi

VANTAAN KAUPUNKI
VANDA STAD

Sosiaali- ja terveydenhuollon toimiala
Suun terveydenhuolto/ terveyden edistäminen
Ylihammaslääkäri Irma Arpalahti

Voisitteko palauttaa suostumuksen **kahden viikon kuluessa** oheisessa palautuskuoressa. Kaikille tutkimukseen mukaan tuleville palautetaan kopio suostumuksesta vastaanottajan allekirjoittamana.

Lisätietoa tutkimuksesta:

Tutkimuksen koko nimi: Vuonna 2008 syntyvien vantaalaislasten suun terveyteen ja purennan kehittymiseen vaikuttavien varhaisten interventioiden vertailututkimus vuosina 2008– 2013.
Tutkimuksessa Vantaa on jaettu kolmeen tutkimusalueeseen, joilla kullakin painotetaan erilaista, mutta hyvään tieteelliseen näyttöön perustuvaa hammassairauksien ehkäisyä. Alueiden jako on tehty jo tutkimussuunnitelmassa, joten tutkittava ei voi valita sitä itse.
Tutkija: ylihammaslääkäri EHL Irma Arpalahti
Tutkimuksen toteutuksesta vastaava: dosentti Kaisu Pienihäkkinen, Turun yliopiston hammaslääketieteen laitos, sosiaalihammaslääketieteen oppiaine.
Tutkimusryhmä: professori Eino Honkala ja emeritusprofessori Pentti Alanen Turun yliopiston hammaslääketieteen laitos, sosiaalihammaslääketieteen oppiaine sekä johtava ylihammaslääkäri HLT, EHL Jorma Suni ja suuhygienisti, terveystieteen yo. Hanna-Mari Kommonen Vantaan kaupungin suun terveydenhuolto.
Tiedonkäsittelystä vastaavat: suunnittelija Pirkko Sailavuo ja erikoistutkija Juhani Riihelä Vantaan kaupunki.
Tutkimusrekisterin ylläpitäjä: Vantaan Kaupungin suun terveydenhuolto, ja siitä vastaa ylihammaslääkäri Irma Arpalahti. Tutkimuksessa kerätään tietoa lapsen perheestä, hampaista, mutans streptokokki-bakteeri plakkitesteistä, suun terveys- ja imeskelytottumuksista ja purennasta. Tutkimusaineisto säilytetään alla olevassa osoitteessa tutkimuksen ja siihen liittyvän raportoinnin ajan.
Tutkimustietoja käsitellään ehdottoman luottamuksellisesti. Tulokset esitellään ainoastaan taulukkoina, joista kenenkään vastaajan henkilökohtaisia tietoja ei voida jäljittää.
Tutkimukseen osallistuville ei makseta korvauksia. Tutkimuksen päätyttyä lasten tavanomainen hammashoito jatkuu Vantaan 0–17-vuotiaiden hoito-ohjelman mukaisin tarkastuksin.
Tutkimuksen tulokset julkaistaan ammattilehtien lisäksi myös vantaalaisissa paikallislehdissä ja internetissä sivulla http://www.vantaa.fi/hammashoito.
Lisätietoa tutkimuksesta antaa ylihammaslääkäri Irma Arpalahti, yhteystiedot alla.

Postiosoite	Puhelin	Fax	Sähköposti
Sosiaali- ja terveydenhuollon toimiala Suun terveydenhuolto Koivukylä sosiaali- ja terveysasema Karsikkokuja 15, 4 krs. 01360 VANTAA	040 5709402	8392 5406	irma.arpalahti@vantaa.fi

Appendix 2. The MS plaque interpretation test.

Appendix 3. Palaute plakkitestikalibrointikoulutuksesta. (The feedback form of the MS plaque test training.)

Palaute plakkitestikalibrointikoulutuksesta

	samaa mieltä	melkein samaa mieltä	en osaa sanoa	melkein eri mieltä	täysin eri mieltä
Etukäteen annetut plakkitestiohjeet ovat selkeät					
Kutsu koulutukseen tuli ajoissa					
Sähköpostissa annetut ohjeet olivat selkeät					
Päiväkoti oli kohtuullisen matkan päässä					
Päiväkodin järjestelyt toimivat hyvin					
Koulutuksesta oli hyötyä käytännön työhön					
Testin suorittaminen on nopeaa ja helppoa					
Testin inkuboiminen on helppoa					
Plakkitestien lukeminen on helppoa					
Plakkitestien kirjaaminen Winhit:iin on helppoa					
vapaa sana					

Appendix 4. Kyselyt ryhmän F, X ja C suorittajille lasten ensikäyntien jälkeen. (Questionnaires for the dental professionals in groups F, X, and C after children's first dental visits.)

Kysely ryhmän F suorittajille

Ympyröi valitsemasi vaihtoehto, voit lisäksi kirjoittaa vapaasti kysymysten jälkeen oleville riveille.

1 Suorittajaa koskevia tietoja

A Ammattinimike

suuhygienisti	hammashoitaja

B Suorittajan ikä

vuotta

C Kokemus alle kouluikäisten lasten terveysneuvonnasta?

kuukautta/vuotta

1 Ajan varaaminen v.2008 syntyneen ensikäynneille

A Kuinka pitkä aika lasten ensikäynneille on tavallisesti varattu?

20 min	30 min	40 min	45 min	50 min	60 min

B Onko ajan pituus ollut toivomustesi mukainen?

aina	useimmiten	joskus	harvoin	ei koskaan

2 Ensikäyntiin liittyvät ohjeet ja -materiaali

A Mitä mieltä olet ennakko-ohjeiden soveltumisesta terveysneuvontaan

soveltuvat erittäin hyvin	soveltuvat kohtalaisesti	en osaa sanoa	soveltuvat huonosti	eivät sovellu neuvontaan

B Miten hammasvälien puhdistuskansio on toiminut neuvonnassa?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Miten esitteet ja materiaalit ovat soveltuneet neuvontaan?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

3 v. 2008 syntyneen ensikäynti

A Onko terveystarkastuksessa ollut käytössä hammashoitotuoli?

aina	useimmiten	joskus	harvoin	ei koskaan

B Kuinka olet pystynyt noudattamaan ohjeita?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Miten vanhemmat ovat suhtautuneet hampaiden puhdistusopetukseen?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

D Kuinka usein huoltaja on saanut puhdistusopetuksen

aina	useimmiten	joskus	harvoin	ei koskaan

E Onko sinulla ollut toisen tutkimusalueen v. 2008 syntyneitä lapsia ensikäynnillä?

kyllä	ei

F jos on ollut, minkä ryhmän?

on ollut X	ei ole ollut X
on ollut C	ei ole ollut C

G Osasitko tai osaisitko antaa neuvontaa toisen ryhmän mallin mukaan?

kyllä osaisin X	en osaa sanoa X	en osaisi X
kyllä osaisin C	en osaa sanoa C	en osaisi C

4 Käynti ja sen kirjaaminen WinHit-ohjelmaan

A Kuinka monta minuuttia käyntiin ja kirjaukseen on yleensä kulunut?

≤ 20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	≥ 60

B Onko käyntiin varattu aika aina riittänyt neuvontaan ja kirjaamiseen?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Oletko käyttänyt valmiiksi kirjoitettuja profiilitekstejä?

aina	useimmiten	joskus	harvoin	en koskaan

5 Suorittajan kokemukset tutkimuksesta

A Oletko kokenut tekeväsi hyödyllistä työtä työurasi aikana?

aina	useimmiten	joskus	harvoin	en koskaan

B Oletko kokenut työsi olevan nyt mielekkäämpää verrattuna aikaisempaan?

mielekkäämpää	jonkin verran mielekkäämpää	en osaa sanoa	vähemmän mielekästä	ei ollenkaan mielekästä

C Oletko kokenut kehittyneesi työntekijänä tutkimuksen aikana?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	en ollenkaan

D Onko tutkimukseen liittyvä koulutus lisännyt tietojasi ja taitojasi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

E Onko tutkimukseen liittyvä koulutus antanut varmuutta työskentelyysi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

F Miten tutkimus on muuttanut asenteitasi terveysneuvontaa kohtaan?

myönteisem-mäksi	hieman myönteisem-mäksi	ei ole muuttanut mitenkään	hieman kielteisem-mäksi	kielteisemäksi

G Onko työsi tehokkuus parantunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

H Onko työmotivaatiosi muuttunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

I Onko tutkimukseen liittyvällä työllä ollut positiivista vaikutusta työyhteisöösi?

kyllä	jonkin verran	en osaa sanoa	vain vähän vaikutusta	ei mitään vaikutusta

J Ovatko tutkimuksen terveysneuvontamallit vaatineet ylimääräistä vaivannäköä?

kyllä	jonkin verran	en osaa sanoa	hieman	ei ollenkaan

K Miten tutkimukseen liittyvät tehtävät ovat vaikuttaneet työssä jaksamiseesi?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

L Oletko kokenut saaneesi tutkimuksen myötä jotain uutta työsi sisältöön?

kyllä	jonkin verran	en osaa sanoa	hieman	en ollenkaan

vapaa sana:

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Kysely ryhmän X suorittajille

Ympyröi valitsemasi vaihtoehto, voit lisäksi kirjoittaa vapaasti kysymysten jälkeen oleville riveille.

1 Suorittajaa koskevia tietoja

A Ammattinimike

suuhygienisti	hammashoitaja

B Suorittajan ikä

vuotta

C Kokemus alle kouluikäisten lasten terveysneuvonnasta?

kuukautta/vuotta

1 Ajan varaaminen v.2008 syntyneen ensikäynneille

A Kuinka pitkä aika lasten ensikäynneille on tavallisesti varattu?

20 min	30 min	40 min	45 min	50 min	60 min

B Onko ajan pituus ollut toivomustesi mukainen?

aina	useimmiten	joskus	harvoin	ei koskaan

2 Ensikäyntiin liittyvät ohjeet ja -materiaali

A Mitä mieltä olet ennakko-ohjeiden soveltumisesta terveysneuvontaan

soveltuvat erittäin hyvin	soveltuvat kohtalaisesti	en osaa sanoa	soveltuvat huonosti	eivät sovellu neuvontaan

B Miten ravinto-ksylitoli-kansio on toiminut neuvonnassa?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Miten esitteet ja materiaalit ovat soveltuneet neuvontaan?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

3 v. 2008 syntyneen ensikäynti

A Onko terveystarkastuksessa ollut käytössä hammashoitotuoli?

aina	useimmiten	joskus	harvoin	ei koskaan

B Kuinka olet pystynyt noudattamaan ohjeita?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Miten vanhemmat ovat suhtautuneet ravintoanamneesin tekoon?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

D Kuinka usein lapsen molemmat huoltajat ovat osallistuneet ensikäyntiin?

aina	useimmiten	joskus	harvoin	ei koskaan

E Onko sinulla ollut toisen tutkimusalueen v. 2008 syntyneitä lapsia ensikäynnillä?

kyllä	ei

F jos on ollut, minkä ryhmän?

on ollut F	ei ole ollut F
on ollut C	ei ole ollut C

G Osasitko tai osaisitko antaa neuvontaa toisen ryhmän mallin mukaan?

kyllä osaisin F	en osaa sanoa F	en osaisi F
kyllä osaisin C	en osaa sanoa C	en osaisi C

4 Käynti ja sen kirjaaminen WinHit-ohjelmaan

A Kuinka monta minuuttia käyntiin ja kirjaukseen on yleensä kulunut?

≤ 20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	≥ 60

B Onko käyntiin varattu aika aina riittänyt neuvontaan ja kirjaamiseen?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Oletko käyttänyt valmiiksi kirjoitettuja profiilitekstejä?

aina	useimmiten	joskus	harvoin	en koskaan

5 Suorittajan kokemukset tutkimuksesta

A Oletko kokenut tekeväsi hyödyllistä työtä työurasi aikana?

aina	useimmiten	joskus	harvoin	en koskaan

B Oletko kokenut työsi olevan nyt mielekkäämpää verrattuna aikaisempaan?

mielekkäämpää	jonkin verran mielekkäämpää	en osaa sanoa	vähemmän mielekästä	ei ollenkaan mielekästä

C Oletko kokenut kehittyneesi työntekijänä tutkimuksen aikana?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	en ollenkaan

D Onko tutkimukseen liittyvä koulutus lisännyt tietojasi ja taitojasi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

E Onko tutkimukseen liittyvä koulutus antanut varmuutta työskentelyysi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

F Miten tutkimus on muuttanut asenteitasi terveysneuvontaa kohtaan?

myönteisem-mäksi	hieman myönteisem-mäksi	ei ole muuttanut mitenkään	hieman kielteisem-mäksi	kielteisemäksi

G Onko työsi tehokkuus parantunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

H Onko työmotivaatiosi muuttunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

I Onko tutkimukseen liittyvällä työllä ollut positiivista vaikutusta työyhteisöösi?

kyllä	jonkin verran	en osaa sanoa	vain vähän vaikutusta	ei mitään vaikutusta

J Ovatko tutkimuksen terveysneuvontamallit vaatineet ylimääräistä vaivannäköä?

kyllä	jonkin verran	en osaa sanoa	hieman	ei ollenkaan

K Miten tutkimukseen liittyvät tehtävät ovat vaikuttaneet työssä jaksamiseesi?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

L Oletko kokenut saaneesi tutkimuksen myötä jotain uutta työsi sisältöön?

kyllä	jonkin verran	en osaa sanoa	hieman	en ollenkaan

vapaa sana:

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Kysely ryhmän C suorittajille

Ympyröi valitsemasi vaihtoehto, voit lisäksi kirjoittaa vapaasti kysymysten jälkeen oleville riveille.

1 Suorittajaa koskevia tietoja

A Ammattinimike

suuhygienisti	hammashoitaja

B Suorittajan ikä

vuotta

C Kokemus alle kouluikäisten lasten terveysneuvonnasta?

kuukautta/vuotta

1 Ajan varaaminen v.2008 syntyneen ensikäynneille

A Kuinka pitkä aika lasten ensikäynneille on tavallisesti varattu?

20 min	30 min	40 min	45 min	50 min	60 min

B Onko ajan pituus ollut toivomustesi mukainen?

aina	useimmiten	joskus	harvoin	ei koskaan

2 Ensikäyntiin liittyvät ohjeet ja -materiaali

A Mitä mieltä olet ennakko-ohjeiden soveltumisesta terveysneuvontaan

soveltuvat erittäin hyvin	soveltuvat kohtalaisesti	en osaa sanoa	soveltuvat huonosti	eivät sovellu neuvontaan

3 v. 2008 syntyneen ensikäynti

A Onko terveystarkastuksessa ollut käytössä hammashoitotuoli?

aina	useimmiten	joskus	harvoin	ei koskaan

B Kuinka olet pystynyt noudattamaan ohjeita?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Onko sinulla ollut toisen tutkimusalueen v. 2008 syntyneitä lapsia ensikäynnillä?

kyllä	ei

D jos on ollut, minkä ryhmän?

on ollut F	ei ole ollut F
on ollut X	ei ole ollut X

G Osasitko tai osaisitko antaa neuvontaa toisen ryhmän mallin mukaan?

kyllä osaisin F	en osaa sanoa F	en osaisi F
kyllä osaisin X	en osaa sanoa X	en osaisi X

4 Käynti ja sen kirjaaminen WinHit-ohjelmaan

A Kuinka monta minuuttia käyntiin ja kirjaukseen on yleensä kulunut?

≤ 20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	≥ 60

B Onko käyntiin varattu aika aina riittänyt neuvontaan ja kirjaamiseen?

erittäin hyvin	hyvin	en osaa sanoa	huonosti	erittäin huonosti

C Oletko käyttänyt valmiiksi kirjoitettuja profiilitekstejä?

aina	useimmiten	joskus	harvoin	en koskaan

5 Suorittajan kokemukset tutkimuksesta

A Oletko kokenut tekeväsi hyödyllistä työtä työurasi aikana?

aina	useimmiten	joskus	harvoin	en koskaan

B Oletko kokenut työsi olevan nyt mielekkäämpää verrattuna aikaisempaan?

mielekkäämpää	jonkin verran mielekkäämpää	en osaa sanoa	vähemmän mielekästä	ei ollenkaan mielekästä

C Oletko kokenut kehittyneesi työntekijänä tutkimuksen aikana?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	en ollenkaan

D Onko tutkimukseen liittyvä koulutus lisännyt tietojasi ja taitojasi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

E Onko tutkimukseen liittyvä koulutus antanut varmuutta työskentelyysi?

kyllä	jonkin verran	en osaa sanoa	hyvin vähän	ei ollenkaan

F Miten tutkimus on muuttanut asenteitasi terveysneuvontaa kohtaan?

myönteisem-mäksi	hieman myönteisem-mäksi	ei ole muuttanut mitenkään	hieman kielteisem-mäksi	kielteisemäksi

G Onko työsi tehokkuus parantunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

H Onko työmotivaatiosi muuttunut tutkimuksen aikana?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

I Onko tutkimukseen liittyvällä työllä ollut positiivista vaikutusta työyhteisöösi?

kyllä	jonkin verran	en osaa sanoa	vain vähän vaikutusta	ei mitään vaikutusta

J Ovatko tutkimuksen terveysneuvontamallit vaatineet ylimääräistä vaivannäköä?

kyllä	jonkin verran	en osaa sanoa	hieman	ei ollenkaan

K Miten tutkimukseen liittyvät tehtävät ovat vaikuttaneet työssä jaksamiseesi?

lisääntynyt	lisääntynyt jonkin verran	en osaa sanoa	vähentynyt hieman	vähentynyt

L Oletko kokenut saaneesi tutkimuksen myötä jotain uutta työsi sisältöön?

kyllä	jonkin verran	en osaa sanoa	hieman	en ollenkaan

vapaa sana:

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Appendix 5. Kaksivuotiaan terveystottumuskysely. (The questionnaire of the two-year-olds health habits.)

VANTAAN KAUPUNKI
VANDA STAD

Suun terveydenhuolto/ Irma Arpalahti

Lasten hampaiden terveystutkimukseen liittyvä kysely kaksivuotiaille

Lapsen etunimi_____

sukunimi _____

ja sosiaaliturvatunnus _____A_____

Lapsen terveystottumukset:
Vastaa kysymyksiin **1–6** niin kuin olette toiminneet kuluneen 6 kk aikana.

1. Kuinka usein harjaat lapsesi hampaat?
- ☐ 2 kertaa/pv
- ☐ 1 kerta/pv
- ☐ muutaman kerran viikossa
- ☐ harvemmin
- ☐ ei ollenkaan

2. Kuinka usein lapsesi käyttää fluorivalmistetta, esim. hammastahnaa?
- ☐ 2 kertaa/pv
- ☐ 1 kerta/pv
- ☐ muutaman kerran viikossa
- ☐ harvemmin
- ☐ ei ollenkaan

3. Mikä fluorivalmiste lapsellasi on käytössä?
(Tarvittaessa voit valita useammankin vaihtoehdon)
- ☐ fluorihammastahna
- ☐ fluoriliuos
- ☐ fluoritabletit
- ☐ muu fluorivalmiste
  - mikä_____
- ☐ ei mitään fluorivalmistetta

4. Mitä seuraavista aterioista lapsesi syö säännöllisesti päivittäin?
- aamiainen ☐ kyllä ☐ ei
- lounas ☐ kyllä ☐ ei
- välipala ☐ kyllä ☐ ei
- päivällinen ☐ kyllä ☐ ei
- iltapala ☐ kyllä ☐ ei

5. Naposteleeko/juoko lapsesi aterioiden välillä jotain seuraavista: makeiset, kakkuset, leivonnaiset, sipsit, tuoremehut, sokeroidut mehut tai virvoitusjuomat
- yli 4 kertaa/pv ☐
- 2–3 kertaa/pv ☐
- 1 _____ kertaa/pv ☐
- 3–4 kertaa/vk ☐
- harvemmin tai ei koskaan ☐

6. Käyttääkö lapsesi ksylitolipurukumia tai -pastilleja?
(Keskimäärin kulumeen 6 kuukauden aikana)
- vähintään 3 kertaa päivässä ☐
- 1–2 kertaa päivässä ☐
- harvemmin ☐
- ei ollenkaan ☐

7. Onko ksylitolin käytöstä aiheutunut lapsellesi jotain ongelmia?
(Tarvittaessa voit valita useammankin vaihtoehdon)
- lapsi ei ole koskaan käyttänyt ksylitolituotteita ☐
- ei tietoa, koska ksylitolia käytetty harvoin ☐
- ksylitolia käytetty, mutta mitään ongelmia ei ole ilmennyt ☐
- lapsi ei osaa pureskella ksylitolituotetta ☐
- ksylitolituotteet kirvelevät suuta ☐
- ksylitolituotteet aiheuttavat vatsavaivoja ☐
- jokin muu ongelma ☐
  - mitä?_____

8. Onko lapsesi käyttänyt jossain vaiheessa probioottituotteita?
Probiootteja on joissakin äidinmaitovastikkeissa, velleissä, puuroissa, juomissa, hapanmaitotuotteissa kuten jugurtissa, ja apteekeista saatavissa tuotteissa.
Kauppanimiä, esim Gefilus, Rela.
- harvoin tai eri ollenkaan ☐
- 1–2 kuukauden ajan ☐
- yli kolmen kuukauden ajan ☐

Lapsen inemistottumukset:

9. Onko lastasi imetetty täysin tai osittain?
- ei ollenkaan ☐
- _____ kuukautta ☐
- edelleen ☐

10. Onko lapsesi käyttänyt tuttipulloa säännöllisesti?
(vain vettä sisältävää pulloa ei lasketa mukaan)

ei ollenkaan ☐
_____ kuukautta ☐
edelleen käytössä ☐

11. Onko lapsellasi ollut käytössä tutti?

ei mitään tuttia ☐
Dento Bon -tutkimustutti ☐
muu tutti ☐
– mikä _____

12. Kuinka pitkään lapsesi on imenyt tuttia?

ei ollenkaan ☐
_____ kuukautta ☐
edelleen käytössä ☐

13. Onko lapsesi imenyt sormea?

ei ollenkaan ☐
_____ kuukautta ☐
edelleen ☐

14. Onko lapsellasi muita imemistottumuksia?

ei mitään ☐
kyllä ☐
millainen? _____
_____
kesto _____kuukautta ☐
imemistottumus jatkuu edelleen ☐

15. Oletko puhdistanut lapsen tutin nuolaisemalla sen suussasi?

ei koskaan ☐
ajoittain ☐
usein ☐

16. Oletko maistanut ruokaa lapsen lusikasta?

ei koskaan ☐
ajoittain ☐
usein ☐

17. Keskimäärin kuinka usein äiti on käyttänyt ksylitolia lapsen syntymästä kaksivuotiaaksi saakka?

vähintään 3 kertaa päivässä ☐
1–2 kertaa päivässä ☐
harvemmin ☐
ei ollenkaan ☐

Perhettä koskevia tietoja:

Äidin nimi _____

syntymäaika: _____(pp.kk.vvvv)

koulutus:
peruskoulu ☐
ammatillinen koulutus ☐
ylioppilastutkinto ☐
amk/opistotason koulutus ☐
korkeakoulututkinto ☐

Osallistuiko äiti hammashoitolan sylkitestiin ja terveysneuvontaan?
kyllä ☐ ei ☐ testin tulos ____

Isän (toisen huoltajan) nimi _____

syntymäaika: _____(pp.kk.vvvv)

koulutus:
peruskoulu ☐
ammatillinen koulutus ☐
ylioppilastutkinto ☐
amk/opistotason koulutus ☐
korkeakoulututkinto ☐

Osallistuiko isä hammashoitolan sylkitestiin ja terveysneuvontaan?
kyllä ☐ ei ☐ testin tulos ____

Samassa taloudessa vakituisesti asuvien alle 18-vuotiaiden lasten syntymävuodet

_____

Antamianne tietoja käsitellään ehdottoman luottamuksellisesti. Tulokset esitellään ainoastaan taulukkoina, joista kenenkään vastaajan henkilökohtaisia tietoja ei voida jäljittää.
Palautus liitteenä olevassa kirjekuoressa postitse tai hammashoitolaan terveystarkastuskäynnin yhteydessä, kiitos vastauksista.

Lisätietoa: Ylihml Irma Arpalahti, irma.arpalahti@vantaa.fi, gsm 040 570 9402

Appendix 6. Mutansstreptokokki-plakkitestin tulkintaohjeet. (The instructions for interpreting the MS tests.)

Mutansstreptokokki -plakkitestin tulkintaohjeet/ IA

- Plakkitesti tulkitaan kuivatusta liuskasta.
- Käytä hyvää valoa ja tarvittaessa suurennuslasia.
- Tulkitse testi siitä alustasta, missä kasvusto on runsainta
- Mutansstreptokokki -bakteerikasvuston pyöreähköt pesäkkeet ovat selkeästi koholla kasvualustasta ja niiden väri voi vaihdella vaaleasta tummansiniseen.
- Epiteelisolu-kasvuston väri vaihtelee vaaleansinisestä tummansiniseen, mutta se ei ole koholla alustasta.
- Kasvualustassa voi joskus harvoin olla koholla olevia ilmakuplia, ne eivät ole mutansstreptokokki -kasvustoa.
- Viljelyalustan reunaan voi muodostua vaalea tai sinertävä "räystäs", se ei ole mutansia, ellei siinä lisäksi ole selkeästi koholla olevia pesäkkeitä.

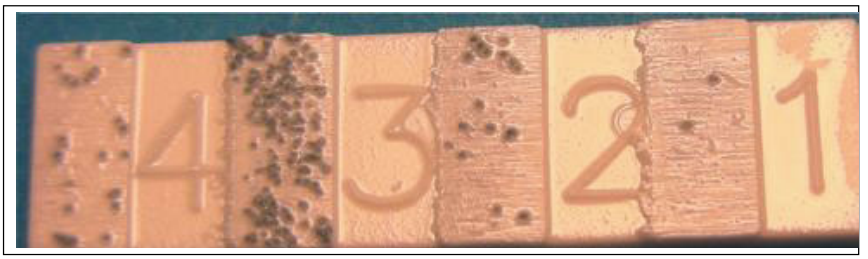
Mutans 0:
ei mitään kasvua
sinisiä epiteelisoluja, väri voi olla tummaakin, mutta ei koholla

Mutans 1:
yksikin selkeästi koholla oleva mutans -bakteeripesäke
muutama yksittäinen tai pareittain oleva mutans -bakteeripesäke

Mutans 2:
koholla olevia pesäkkeitä on selvästi enemmän
pesäkkeet ovat pienempiä ja ne voivat muodostaa "jonoja"

Mutans 3:
kasvualusta on täynnä koholla olevaa kasvustoa

Mallikuva



alustassa 1 yksittäisiä mutans-pesäkkeitä ja vas. reunassa räystäs (Mutans 1)
alustoissa 2 ja 4 jonossa olevia mutans-pesäkkeitä (Mutans 2)
alusta 3 on täynnä mutans -bakteerikasvustoa (Mutans 3)

Verrataan kasvua Orionin Dental tests -mallikarttaan ja pyritään arvioimaan testit niin että käytäntö säilyisi mahdollisimman samana yksittäisen tulkitsijan kohdalla ja eri tulkitsijoiden välillä.

Appendix 7. Lasten hampaiden terveystutkimus -kyselyt ryhmien F, X ja C ensisynnyttäjäperheiden vanhemmille lapsen 2-vuotiskäynnin jälkeen. (Questionnaires for the parents of firstborn children in groups F, X, and C.)

Lasten hampaiden terveystutkimus -kysely F

Tulosta

1. Lapsellesi lähetettiin postitse aika hammashoitolaan, miten se sopi aikatauluusi?

- Varattu vastaanottoaika sopi hyvin.
- Jouduin muuttamaan omaa aikatauluani vastaanottoajan vuoksi.
- Siirsin ajan paremmin sopivaan ajankohtaan.

2. Minkälaisen matkan päässä hammashoitola oli?

- Hoitola oli sopivan matkan päässä.
- Hoitola oli melko kaukana.
- Hoitola oli hankalan matkan päässä.

3. Mitä mieltä olit hoitolan tiloista?

- Hoitolan tilat olivat miellyttävät.
- Hoitolan tilat olivat kohtuulliset.
- Hoitolan tilat olivat epämiellyttävät.

4. Minkälainen lapsesi terveystarkastuksen tehnyt hoitaja oli?

- Hyvin ystävällinen
- Melko ystävällinen
- Keskinkertainen
- Melko epäystävällinen
- Epäystävällinen

5. Kysyttiinkö sinulta, mistä asioista (hampaat, ksylitoli, tutti tms.) haluaisit tietoa suun terveydenhoitoon?

- Kyllä
- En osaa sanoa
- Ei

6. Tehtiinkö lapsesi suun terveystarkastuskäynnillä tavoitteita suun kotihoitoon liittyen?

- Kyllä.
- Kotihoito kohdallaan, ei tarvittu uusia tavoitteita.
- En osaa sanoa.
- Ei tehty.

7. Miten neuvonta toteutui?

- Keskustelimme ja teimme hoitajan kanssa yhdessä tavoitteet lapseni suun kotihoitoon.
- Keskustelimme lapseni suun kotihoidosta ja sain valmiit tavoitteet.
- Hoitaja kyseli jotain ja antoi neuvoja.
- Hoitaja luetteli yleisiä lasten suun hoito-ohjeita.
- Neuvonnan sijaan sain esitteen lapsen suun kotihoidosta.

8. Saitko lapsesi ensimmäisellä käynnillä neuvontaa oman suusi hoitoon, ja mitkä seuraavista toimenpiteistä toteutuivat? (voit valita useita vaihtoehtoja)

- [ ] Hoitaja neuvoi minulle hampaiden harjausta.
- [ ] Hoitaja näytti minulle sopivia hammasvälien puhdistusvälineitä.
- [ ] Hoitaja neuvoi minulle hammasvälien puhdistusta.
- [ ] Hoitaja teki minulle plakkivärjäyksen.
- [ ] Hoitaja teki minulle hampaiden koneellisen puhdistuksen.
- [ ] Hoitaja antoi esitteen, ja merkitsi siihen oman suuni puhdistustavoitteet ja menetelmät.

- [ ] Minulle tarjottiin neuvontaa, mutta en halunnut sitä.
- [ ] Minulle ei tarjottu neuvontaa oman suuni hoitoon, enkä kaivannut sitä.

9. Minulle ei tarjottu, mutta olisin kaivannut jotain neuvontaa oman suuni hoitoon, mitä?

10. Jokin muu syy, miksi en saanut mitään neuvontaa oman suuni hoitoon, mikä?

11. Millaiseksi koit neuvontatilanteen?

- ○ Keskusteleva, sain puhua toivomistani asioista.
- ○ Keskusteleva, mutta hoitajajohtoinen.
- ○ En osaa sanoa.
- ○ Kuulustelumainen tilanne.
- ○ Hoitaja puhui huomioimatta mielipiteitäni.

12. Koitko, että hoitaja kuunteli sinua lapsesi suun terveystarkastuskäynnillä?

- ○ Kyllä kuunteli.
- ○ Kuunteli jonkin verran.
- ○ En osaa sanoa.
- ○ Kuunteli vain vähän.
- ○ Ei kuunnellut.

13. Rohkaisiko hoitaja sinua osallistumaan keskusteluun?

- ○ Kyllä
- ○ En osaa sanoa
- ○ Ei rohkaissut

14. Osallistuitko keskusteluun hoitajan kanssa?

- ○ Kyllä, osallistuin.
- ○ Osallistuin jonkin verran.
- ○ En osaa sanoa.
- ○ Osallistuin keskusteluun vain vähän.
- ○ En osallistunut keskusteluun.

15. Käyttikö hoitaja ymmärrettävää kieltä vai sinulle vieraita ammattisanoja?

- ○ Kyllä, hoitaja käytti ymmärrettävää kieltä.
- ○ Kyllä, hoitaja käytti melko ymmärrettävää kieltä.
- ○ En osaa sanoa
- ○ En ymmärtänyt muutamia ammattisanoja.
- ○ En ymmärtänyt, hoitaja käytti paljon ammattisanoja.

16. Mitä mieltä olet hammashoitolasta saamistasi esitteistä?

- ○ Esitteissä oli paljon hyödyllistä tietoa selkeästi esitettynä.
- ○ Esitteistä oli jonkin verran hyödyllistä tietoa.
- ○ En osaa arvioida esitteitä.

- Esitteistä ei ollut juurikaan hyötyä.
- Esitteistä ei ollut mitään hyötyä.

17. Oletko saanut lapsesi suun terveystarkastuskäynneillä hyödyllistä tietoa?

- Kyllä, sain paljon hyödyllistä tietoa.
- Sain jotain hyödyllistä tietoa.
- En osaa sanoa.
- Sain vain vähän hyödyllistä tietoa.
- En saanut mitään hyödyllistä tietoa.

18. Saitko odotustesi mukaista tietoa lapsesi suusta ja sen kotihoidosta?

- Kyllä, sain kaiken odotusteni mukaisen tiedon.
- Sain jonkin verran odotusteni mukaista tietoa.
- En osaa sanoa.
- Sain vain vähän odotusteni mukaista tietoa.
- En saanut ollenkaan odotusteni mukaista tietoa.

19. Oletko oppinut lapsesi suun terveystarkastuskäynneillä jotain uutta suun kotihoidosta?

- Kyllä, opin monia uusia asioita.
- Opin jotain uusia asioita.
- En osaa sanoa.
- Opin vain vähän uutta.
- En oppinut mitään uutta.

20. Muutitko lapsesi suun kotihoitotottumuksia tavoitteiden mukaiseksi?

- Kyllä, muutin lapsen suun kotihoitoa heti tavoitteiden mukaiseksi.
- Olen harkinnut ottaa tavoitteet käyttöön myöhemmin.
- Lapsen suun kotihoito kunnossa, ei ole tarvetta muuttaa mitään.
- En halua muuttaa mitään lapsen kotihoidossa.
- Ei tehty mitään tavoitteita.

21. Muutitteko huoltajina omia terveyteen liittyviä tottumuksianne lapsen suun terveystarkastuskäynnin jälkeen?

- Kyllä, muutimme jotain omia tottumuksiamme.
- Olemme harkinneet muuttaa jotain omia tottumuksiamme.
- Ei, meillä ei ole tarvetta muuttaa mitään omia tottumuksiamme.
- Ei, emme halua muuttaa omia tottumuksiamme.
- En osaa sanoa.

22. Voit vielä halutessasi antaa hammashoitoon liittyvää palautetta.

Lähetä

Lasten hampaiden terveystutkimus -kysely X

Tulosta

1. Lapsellesi lähetettiin postitse aika hammashoitolaan, miten se sopi aikatauluusi?

- Varattu vastaanottoaika sopi hyvin.
- Jouduin muuttamaan omaa aikatauluani vastaanottoajan vuoksi.
- Siirsin ajan paremmin sopivaan ajankohtaan.

2. Minkälaisen matkan päässä hammashoitola oli?

- Hoitola oli sopivan matkan päässä.
- Hoitola oli melko kaukana.
- Hoitola oli hankalan matkan päässä.

3. Mitä mieltä olit hoitolan tiloista?

- Hoitolan tilat olivat miellyttävät.
- Hoitolan tilat olivat kohtuulliset.
- Hoitolan tilat olivat epämiellyttävät.

4. Minkälainen lapsesi terveystarkastuksen tehnyt hoitaja oli?

- Hyvin ystävällinen
- Melko ystävällinen
- Keskinkertainen
- Melko epäystävällinen
- Epäystävällinen

5. Kysyttiinkö sinulta, mistä asioista (hampaat, ksylitoli, tutti tms.) haluaisit tietoa suun terveydenhoitoon?

- Kyllä
- En osaa sanoa
- Ei

6. Tehtiinkö lapsesi suun terveystarkastuskäynnillä tavoitteita suun kotihoitoon liittyen?

- Kyllä.
- Kotihoito kohdallaan, ei tarvittu uusia tavoitteita.
- En osaa sanoa.
- Ei tehty.

7. Miten neuvonta toteutui?

- Keskustelimme ja teimme hoitajan kanssa yhdessä tavoitteet lapseni suun kotihoitoon.
- Keskustelimme lapseni suun kotihoidosta ja sain valmiit tavoitteet.
- Hoitaja kyseli jotain ja antoi neuvoja.
- Hoitaja luetteli yleisiä lasten suun hoito-ohjeita.
- Neuvonnan sijaan sain esitteen lapsen suun kotihoidosta.

8. Saitteko lapsesi ensimmäisellä käynnillä itsellesi tai koko perheellesi kohdistettua neuvontaa, ja mitkä seuraavista toteutuivat?(voit valita useita vaihtoehtoja)

- [ ] Täytimme molemmat ravintoanamneesin, ja hoitaja antoi koko perheelle neuvontaa niiden perusteella.
- [ ] Täytin ravintoanamneesin, ja hoitaja antoi minulle neuvontaa sen perusteella.
- [ ] Hoitaja neuvoi minun tai koko perheeni syömisen ajoittamisesta tiettyihin ajankohtiin.
- [ ] Hoitaja puhui minun tai koko perheeni ylimääräisestä napostelusta ja lipittelystä.
- [ ] Hoitaja antoi neuvontaa minun tai koko perheeni ksylitolin käytöstä.
- [ ] Minulle tarjottiin neuvontaa, mutta en halunnut täyttää omaa ravintoanamneesiani.

☐ Minulle ei tarjottu itseäni tai koko perhettäni koskevaa neuvontaa, enkä kaivannut sitä.

9. Minulle ei tarjottu, mutta olisin kaivannut itselleni tai perheelleni jotain neuvontaa, mitä?

10. Jokin muu syy miksi en saanut itselleni tai koko perheelleni neuvontaa, mikä?

11. Millaiseksi koit neuvontatilanteen?

- ○ Keskusteleva, sain puhua toivomistani asioista.
- ○ Keskusteleva, mutta hoitajajohtoinen.
- ○ En osaa sanoa.
- ○ Kuulustelumainen tilanne.
- ○ Hoitaja puhui huomioimatta mielipiteitäni.

12. Koitko, että hoitaja kuunteli sinua lapsesi suun terveystarkastuskäynnillä?

- ○ Kyllä kuunteli.
- ○ Kuunteli jonkin verran.
- ○ En osaa sanoa.
- ○ Kuunteli vain vähän.
- ○ Ei kuunnellut.

13. Rohkaisiko hoitaja sinua osallistumaan keskusteluun?

- ○ Kyllä
- ○ En osaa sanoa
- ○ Ei rohkaissut

14. Osallistuitko keskusteluun hoitajan kanssa?

- ○ Kyllä, osallistuin.
- ○ Osallistuin jonkin verran.
- ○ En osaa sanoa.
- ○ Osallistuin keskusteluun vain vähän.
- ○ En osallistunut keskusteluun.

15. Käyttikö hoitaja ymmärrettävää kieltä vai sinulle vieraita ammattisanoja?

- ○ Kyllä, hoitaja käytti ymmärrettävää kieltä.
- ○ Kyllä, hoitaja käytti melko ymmärrettävää kieltä.
- ○ En osaa sanoa
- ○ En ymmärtänyt muutamia ammattisanoja.
- ○ En ymmärtänyt, hoitaja käytti paljon ammattisanoja.

16. Mitä mieltä olet hammashoitolasta saamistasi esitteistä?

- ○ Esitteissä oli paljon hyödyllistä tietoa selkeästi esitettynä.
- ○ Esitteistä oli jonkin verran hyödyllistä tietoa.
- ○ En osaa arvioida esitteitä.
- ○ Esitteistä ei ollut juurikaan hyötyä.

- Esitteistä ei ollut mitään hyötyä.

17. Oletko saanut lapsesi suun terveystarkastuskäynneillä hyödyllistä tietoa?

- Kyllä, sain paljon hyödyllistä tietoa.
- Sain jotain hyödyllistä tietoa.
- En osaa sanoa.
- Sain vain vähän hyödyllistä tietoa.
- En saanut mitään hyödyllistä tietoa.

18. Saitko odotustesi mukaista tietoa lapsesi suusta ja sen kotihoidosta?

- Kyllä, sain kaiken odotusteni mukaisen tiedon.
- Sain jonkin verran odotusteni mukaista tietoa.
- En osaa sanoa.
- Sain vain vähän odotusteni mukaista tietoa.
- En saanut ollenkaan odotusteni mukaista tietoa.

19. Oletko oppinut lapsesi suun terveystarkastuskäynneillä jotain uutta suun kotihoidosta?

- Kyllä, opin monia uusia asioita.
- Opin jotain uusia asioita.
- En osaa sanoa.
- Opin vain vähän uutta.
- En oppinut mitään uutta.

20. Muutitko lapsesi suun kotihoitotottumuksia tavoitteiden mukaiseksi?

- Kyllä, muutin lapsen suun kotihoitoa heti tavoitteiden mukaiseksi.
- Olen harkinnut ottaa tavoitteet käyttöön myöhemmin.
- Lapsen suun kotihoito kunnossa, ei ole tarvetta muuttaa mitään.
- En halua muuttaa mitään lapsen kotihoidossa.
- Ei tehty mitään tavoitteita.

21. Muutitteko huoltajina omia terveyteen liittyviä tottumuksianne lapsen suun terveystarkastuskäynnin jälkeen?

- Kyllä, muutimme jotain omia tottumuksiamme.
- Olemme harkinneet muuttaa jotain omia tottumuksiamme.
- Ei, meillä ei ole tarvetta muuttaa mitään omia tottumuksiamme.
- Ei, emme halua muuttaa omia tottumuksiamme.
- En osaa sanoa.

22. Voit vielä halutessasi antaa hammashoitoon liittyvää palautetta.

Lähetä

Lasten hampaiden terveystutkimus -kysely C

Tulosta

1. Lapsellesi lähetettiin postitse aika hammashoitolaan, miten se sopi aikatauluusi?

- Varattu vastaanottoaika sopi hyvin.
- Jouduin muuttamaan omaa aikatauluani vastaanottoajan vuoksi.
- Siirsin ajan paremmin sopivaan ajankohtaan.

2. Minkälaisen matkan päässä hammashoitola oli?

- Hoitola oli sopivan matkan päässä.
- Hoitola oli melko kaukana.
- Hoitola oli hankalan matkan päässä.

3. Mitä mieltä olit hoitolan tiloista?

- Hoitolan tilat olivat miellyttävät.
- Hoitolan tilat olivat kohtuulliset.
- Hoitolan tilat olivat epämiellyttävät.

4. Minkälainen lapsesi terveystarkastuksen tehnyt hoitaja oli?

- Hyvin ystävällinen
- Melko ystävällinen
- Keskinkertainen
- Melko epäystävällinen
- Epäystävällinen

5. Kysyttiinkö sinulta, mistä asioista (hampaat, ksylitoli, tutti tms.) haluaisit tietoa suun terveydenhoitoon?

- Kyllä
- En osaa sanoa
- Ei

6. Tehtiinkö lapsesi suun terveystarkastuskäynnillä tavoitteita suun kotihoitoon liittyen?

- Kyllä.
- Kotihoito kohdallaan, ei tarvittu uusia tavoitteita.
- En osaa sanoa.
- Ei tehty.

7. Miten neuvonta toteutui?

- Keskustelimme ja teimme hoitajan kanssa yhdessä tavoitteet lapseni suun kotihoitoon.
- Keskustelimme lapseni suun kotihoidosta ja sain valmiit tavoitteet.
- Hoitaja kyseli jotain ja antoi neuvoja.
- Hoitaja luetteli yleisiä lasten suun hoito-ohjeita.
- Neuvonnan sijaan sain esitteen lapsen suun kotihoidosta.

8. Saitko lapsesi ensimmäisellä käynnillä jotain itsellesi tai koko perheellesi kohdistuvaa neuvontaa? Kysymys on tarkoitettu lapsen ensimmäisellä käynnillä mukana olleelle vanhemmalle. (voit valita useita vaihtoehtoja)

- [ ] Kyllä, hoitaja antoi neuvoja omien hampaitteni puhdistukseen ja fluorin käyttöön.
- [ ] Kyllä, ravintoneuvonta kohdistettiin myös itselleni tai koko perheelleni.
- [ ] Kyllä, hoitaja antoi ksylitolin käytön ohjeet myös itselleni tai koko perheelleni.
- [ ] En, mutta olisin kaivannut suun puhdistus- ja fluorin käytön neuvontaa myös itselleni.
- [ ] En, mutta olisin kaivannut ravintoneuvontaa itselleni tai koko perheelleni.
- [ ] En, mutta olisin kaivannut ksylitolin käytön itselleni tai koko perheelleni.

☐ En kaivannut mitään neuvontaa itselleni tai perheelleni.

9. Kyllä, sain itselleni jotain muuta neuvontaa, mitä?

10. En, mutta olisin kaivannut itselleni jotain muuta neuvontaa, mitä?

11. Millaiseksi koit neuvontatilanteen?

- ○ Keskusteleva, sain puhua toivomistani asioista.
- ○ Keskusteleva, mutta hoitajajohtoinen.
- ○ En osaa sanoa.
- ○ Kuulustelumainen tilanne.
- ○ Hoitaja puhui huomioimatta mielipiteitäni.

12. Koitko, että hoitaja kuunteli sinua lapsesi suun terveystarkastuskäynnillä?

- ○ Kyllä kuunteli.
- ○ Kuunteli jonkin verran.
- ○ En osaa sanoa.
- ○ Kuunteli vain vähän.
- ○ Ei kuunnellut.

13. Rohkaisiko hoitaja sinua osallistumaan keskusteluun?

- ○ Kyllä
- ○ En osaa sanoa
- ○ Ei rohkaissut

14. Osallistuitko keskusteluun hoitajan kanssa?

- ○ Kyllä, osallistuin.
- ○ Osallistuin jonkin verran.
- ○ En osaa sanoa.
- ○ Osallistuin keskusteluun vain vähän.
- ○ En osallistunut keskusteluun.

15. Käyttikö hoitaja ymmärrettävää kieltä vai sinulle vieraita ammattisanoja?

- ○ Kyllä, hoitaja käytti ymmärrettävää kieltä.
- ○ Kyllä, hoitaja käytti melko ymmärrettävää kieltä.
- ○ En osaa sanoa
- ○ En ymmärtänyt muutamia ammattisanoja.
- ○ En ymmärtänyt, hoitaja käytti paljon ammattisanoja.

16. Mitä mieltä olet hammashoitolasta saamistasi esitteistä?

- ○ Esitteissä oli paljon hyödyllistä tietoa selkeästi esitettynä.
- ○ Esitteistä oli jonkin verran hyödyllistä tietoa.
- ○ En osaa arvioida esitteitä.
- ○ Esitteistä ei ollut juurikaan hyötyä.

- Esitteistä ei ollut mitään hyötyä.

17. Oletko saanut lapsesi suun terveystarkastuskäynneillä hyödyllistä tietoa?

- Kyllä, sain paljon hyödyllistä tietoa.
- Sain jotain hyödyllistä tietoa.
- En osaa sanoa.
- Sain vain vähän hyödyllistä tietoa.
- En saanut mitään hyödyllistä tietoa.

18. Saitko odotustesi mukaista tietoa lapsesi suusta ja sen kotihoidosta?

- Kyllä, sain kaiken odotusteni mukaisen tiedon.
- Sain jonkin verran odotusteni mukaista tietoa.
- En osaa sanoa.
- Sain vain vähän odotusteni mukaista tietoa.
- En saanut ollenkaan odotusteni mukaista tietoa.

19. Oletko oppinut lapsesi suun terveystarkastuskäynneillä jotain uutta suun kotihoidosta?

- Kyllä, opin monia uusia asioita.
- Opin jotain uusia asioita.
- En osaa sanoa.
- Opin vain vähän uutta.
- En oppinut mitään uutta.

20. Muutitko lapsesi suun kotihoitotottumuksia tavoitteiden mukaiseksi?

- Kyllä, muutin lapsen suun kotihoitoa heti tavoitteiden mukaiseksi.
- Olen harkinnut ottaa tavoitteet käyttöön myöhemmin.
- Lapsen suun kotihoito kunnossa, ei ole tarvetta muuttaa mitään.
- En halua muuttaa mitään lapsen kotihoidossa.
- Ei tehty mitään tavoitteita.

21. Muutitteko huoltajina omia terveyteen liittyviä tottumuksianne lapsen suun terveystarkastuskäynnin jälkeen?

- Kyllä, muutimme jotain omia tottumuksiamme.
- Olemme harkinneet muuttaa jotain omia tottumuksiamme.
- Ei, meillä ei ole tarvetta muuttaa mitään omia tottumuksiamme.
- Ei, emme halua muuttaa omia tottumuksiamme.
- En osaa sanoa.

22. Voit vielä halutessasi antaa hammashoitoon liittyvää palautetta.

Lähetä