CARINA MÅRTENSSON
PROMOTING ORAL HEALTH
Knowledge of Periodontal Disease and Satisfaction with Dental Care
CARINA MÅRTENSSON

PROMOTING ORAL HEALTH

Knowledge of Periodontal Disease and Satisfaction with Dental Care

Malmö University, 2012
Department of Oral Public Health
Faculty of Odontology
This publication is also available in electronic format, please visit:
http://dspace.mah.se/handle/2043/13625
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINAL PAPERS</td>
<td>7</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>8</td>
</tr>
<tr>
<td>POPULÄRVETENSKAPLIG SAMMANFATTNING</td>
<td>10</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>12</td>
</tr>
<tr>
<td>Oral Health</td>
<td>12</td>
</tr>
<tr>
<td>Oral Health Promotion</td>
<td>13</td>
</tr>
<tr>
<td>Oral Health Education</td>
<td>14</td>
</tr>
<tr>
<td>Health Communication Campaigns – Mass Media</td>
<td>15</td>
</tr>
<tr>
<td>Knowledge – Periodontitis</td>
<td>16</td>
</tr>
<tr>
<td>Satisfaction with Dental Care</td>
<td>17</td>
</tr>
<tr>
<td>AIMS</td>
<td>19</td>
</tr>
<tr>
<td>MATERIAL AND METHODS</td>
<td>20</td>
</tr>
<tr>
<td>Papers I and II</td>
<td>20</td>
</tr>
<tr>
<td>Participants and Procedures</td>
<td>20</td>
</tr>
<tr>
<td>Questionnaire Design</td>
<td>21</td>
</tr>
<tr>
<td>Questionnaires I and II</td>
<td>21</td>
</tr>
<tr>
<td>Papers III and IV</td>
<td>23</td>
</tr>
<tr>
<td>Participants and Procedures</td>
<td>23</td>
</tr>
<tr>
<td>Questionnaire Design</td>
<td>24</td>
</tr>
<tr>
<td>Questionnaires I and II</td>
<td>24</td>
</tr>
<tr>
<td>Non-Response Analysis</td>
<td>26</td>
</tr>
<tr>
<td>Statistical Analyses</td>
<td>27</td>
</tr>
<tr>
<td>Ethical Considerations</td>
<td>29</td>
</tr>
</tbody>
</table>
This thesis is based on the following papers


Reprints are made with permission from the publishers.
ABSTRACT

The general aims of this thesis were to evaluate if a mass media campaign, aimed as a health promoting campaign, and visits to a specialist clinic in periodontology could increase the knowledge of periodontitis, symptoms and treatment. A further aim was to analyse expectations and satisfaction with care among patients referred for comprehensive treatment to specialist clinics.

Paper I and II evaluating if a nationwide mass media campaign increased the knowledge of periodontitis (paper I) and factors associated with knowledge (paper II). The evaluations were done using a mail questionnaire in a before and after design. The questionnaires were sent out to 50-75 years old people in Sweden, randomly sampled from the population register. Paper I showed an improvement of correct answers about symptoms and treatment of periodontitis after the media campaign. In paper II, it was shown that education, utilization and perceived importance of oral health were related to knowledge both before and after the mass media campaign. Age and information about periodontitis from dental clinics were associated with knowledge before the mass media campaign.

Paper III and IV evaluated the knowledge of periodontitis, and analysed self-perceived oral health (paper III), expectations on and satisfaction with care (paper IV), and evaluations were also done using a questionnaire in a before and after design. Patients referred to specialist clinics in periodontology for comprehensive periodontal treatment were consecutively sampled for the study. The results in
paper III showed an improvement in correct answers to the knowledge questions after visiting the specialist clinic. The most common self-perceived troubles were bleeding gums and sensitive teeth. Many of the patients experienced their oral health as rather good. In paper IV, the patients expected it to be very important or important to achieve healthy teeth and improved well-being after treatment. In general, many of the patients were satisfied with their dental visits. The patients also appeared be satisfied with the relationship to and the perception of the caregiver.

In conclusion, there was an improvement of knowledge about periodontitis, possibly due to the media campaign and also after visiting a specialist clinic in periodontology. Even if the patients reported troubles from their mouths, they rated their self-perceived oral health as rather good. Achieving healthy teeth and improved well-being were important issues for the patients. Having a good relationship with and confidence in the caregiver seems to indicate satisfied patients.
De övergripande syften med avhandlingen var att utvärdera om en massmediakampanj och besök på en specialistklinik i parodontologi kunde öka kunskapen om parodontit, dess symptom och behandling. Ett ytterligare syfte var att analysera förväntningar inför och tillfredställelse med omhändertagande/behandling hos patienter remitterade till specialistklinik för fullständig parodontal behandling.

I studierna I och II utvärderades om en massmediakampanj ökade kunskapen om parodontit (paper I) samt faktorer som var av betydelse för denna kunskap (paper II). För att genomföra studierna användes postenkäter i en före och efter-design som skickades till ur befolkningsregistret slumpvis utvalda 50-75 åringar i Sverige. Resultatet i studie I visade en ökning av antalet rätt svar på frågor som gällde symptom och behandling av parodontit efter massmediakampanjen. Resultatet i studie II visade att utbildning, graden av tandvårdsbesök och hur viktig munhälsan var kunde relateras till bättre kunskap både före och efter massmediakampanjen.

I studierna III och IV utvärderades kunskapen om parodontit samt gjordes en analys av självupplevd munhälsa (paper III), förväntningar inför och tillfredställelse med omhändertagande/behandling (paper IV) hos patienter remitterade till specialistklinik i parodontologi för fullständig parodontal behandling. För att genomföra studien användes postenkäter i en före och efter-design. Resultatet i
studie III visade en ökning av rätt svar på kunskapsfrågorna om parodontit efter besöket på specialistklinik i parodontologi. Många av patienterna upplevde sin orala hälsa som god, även om en del av patienterna upplevde något besvär från munnen. De vanligaste självupplevda besvär var blödande tandkött och känsliga tänder. Studie IV visade att patienterna förväntade sig att få friska tänder och ökat välbefinnande efter behandlingen på specialistkliniken i parodontologi. Många av patienterna var nöjda med besöken och verkade nöjda med relationen till sin behandlare.

INTRODUCTION

Oral health is an essential part of a good life. Health promotion can be a strategy for improving oral health and well-being, as well as a process for enabling people to increase the control over their oral health. In health promotion, education is essential to give information, knowledge and understanding of health issues. In this context, mass media can be used, but also information from dental caregivers. Health promotion can have different goals. Since periodontitis is a common disease, this thesis has focused on periodontal disease. Knowledge of periodontitis can be a factor that influences oral health. Expectations on, experiences of and satisfaction with dental care could be predictors for how messages about oral health are adopted. Communication between the patient and the caregiver is of important. This thesis is focused on oral health promotion, as well as knowledge and satisfaction of dental care regarding periodontitis.

Oral Health

Oral health is more than a healthy mouth, because it is also a part of general health and well-being (Locker 1997, Petersen & Yamamoto 2005). There are different definitions of oral health. A WHO report (2003) stated that oral health is more than good teeth, it also includes health in general and is essential to well-being (WHO 2003). In Sweden, there was a consensus statement on the meaning of oral health with the definition “Oral health is a part of general health and contributes to physical, psychological and social well-being with perceived and satisfactory oral functions in relation to individual’s requirements as well as absence of disease (Hugoson et al. 2003). This declaration has a holistic perspective on oral health, and from
a public health point of view, oral health must be considered as significant part of general health (Gift & Redford 1992) and quality of life (Reisine et al. 1989, Locker & Slade 1993, Locker 2004).

Oral health can be described from the profession’s views based on clinical examination, and from the patient’s views based on self reports, i.e. subjective oral health. The self-reported oral health can be related to the condition of the mouth based on the individual perspective of oral health (Atchison & Gift 1997). Factors related to self-reported oral health could for example be expectations on treatment, actual status of the mouth and teeth and number of teeth. Self-reported oral health is usually valid and an opportunity to measure oral conditions in a population (Unell et al. 1997, Buhlin et al. 2002). It can also be an instrument for measuring oral health-related quality of life (OHRQoL). To measure OHRQoL a number of instruments have been developed (Johansson et al. 2008). Some of them are the Geriatric/general Oral health Assessment Index (GOHAI) (Atchison & Dolan 1990), Oral Impacts on Daily Performances (OIDP) (Adulyanon & Sheiham 1997) and Oral Health Impact Profile (OHIP) (Slade & Spencer 1994).

**Oral Health Promotion**

Health promotion is a strategy for improving health and well-being in a population. WHO (1986) defined health promotion as a process of enabling people to increase control over and improve their health. Both individuals and groups of people must have the opportunity and ability to identify needs for change and how to cope with the environment to achieve health. Health promotion can be seen as a social and political process to make it possible for people to control factors that increase their health (Nutbeam 1998). An important goal of health promotion is to get people involved in understanding their needs and not only apply the professionally defined needs (Watt & Fuller 2000). Health promotion is a strategy between people and their environment to create a healthier future (Daly et al. 2003, Watt 2005).

There are different strategies for health promotion. Tones & Tillford (1994) describe an empowerment strategy, with the purpose of
enabling people to take control over their own health. To promote health, individuals, communities, political parties, and governments must all be involved (Schou & Locker 1997) because oral health promotion is focusing on the determinants of health (Daly et al. 2003). Downie et al. (1996) regarded health promotion as overlapping spheres of health education, prevention and health protection.

**Oral Health Education**

In oral health promotion, education is an activity for promoting health and preventing diseases. Health education can be defined as a combination of learning opportunities designed to facilitate voluntary adoption of behavior, which is beneficial for health. It may have an impact on both knowledge and behavior and has been defined as “any planned combination of learning experiences designed to predispose, enable and reinforce voluntary behavior conducive to health in individuals in groups or communities” (Frazier & Horowitz 1995. p. 124). Glans et al. (2002) regarded health education as a strategy for both individuals and environments aimed to improve health behavior in order to enhance health and quality of life.

Traditionally, oral health education has been aiming to increase patients’ knowledge on factors behind dental diseases and prevention of dental diseases in the form of information and advice from the caregiver (Freeman 1999). The patient has been rather inactive, and the concept has shown to be rather ineffective (Yevlahova & Satur 2009). Oral health education must also influence the patient’s involvement in the decision-making regarding their own oral health (Koelen & Lindström 2005). Education increases the possibility for the people to take control over their own health options (Wallack 1990, Schou & Locker 1997).

Lacking knowledge on oral health could be a barrier to oral preventive efforts. For example, lack of knowledge has been found among topics such as the definition of periodontitis, risks associated with periodontitis, and preventive measures. Knowledge about preventive measures has been related to oral health behavior (Deinzer et al. 2009). In this context, mass media as well as the personal relationship in a clinical encounter can be used to influence knowledge (Mcdonald 2002).
Health Communication Campaigns – Mass Media

Mass media are characterized as a means of communication independent of person-to-person contact. Essential components of mass media are the involvement of many viewers, how they adopt the message, and that the messages are impersonally mediated (Reid 1996, Tones 1996). Since mass media try to develop specific outcomes and are issued to several people, often during a specified period of time, they can be used as a tool in health communication campaigns. Mass media have been such a tool in oral health promotion and disease prevention (Randolph & Viswanath 2004) to increase knowledge. Mass media affect not only oral health knowledge, but also attitudes and behavior (Noar 2006), and they also aim to increase attention and motivation for desired actions (Mcdonald 2002) with the purpose to improve health in society (Wakefield et al. 2010).

In an oral health context, mass media can be used to increase public awareness and knowledge, and to prepare individuals for lifestyle changes influencing health and wellness. Mass media campaigns have also been used to promote products. The use of fluoride dentifrices and toothbrushes can, for example, partly be credited to the influence of mass media (Downer 1993). Bakdash et al. (1983) stated that individuals who had been exposed to a mass media campaign could identify periodontal disease better than individuals who had not been exposed. A national dental health campaign was conducted in Finland with the message “your own dentist is calling”, to push the dentist to take active responsibility for getting their patients to make regular visits. The effect of the campaign was an increased motivation to dental visits, but there was no evidence of a change in health behavior (Murto ma & Masalin 1984). Schou (1987) evaluated a mass media campaign with the aim to increase the knowledge and awareness of dental health. The result showed a high degree of recollection of the campaign and that mass media are a possible instrument for improving oral health. In a campaign in Norway, aiming for preventive knowledge and behavior related to periodontal disease, increased knowledge was reported (Rise & Søgaard 1988). However, Kay & Locker (1998) mean that mass media are ineffective for promoting either knowledge or behavioral
change, while Watt et al. (2001) means that mass media campaigns could increase awareness.

Knowledge – Periodontitis
One part of this thesis is focused on oral health and knowledge about signs, symptoms and treatment of periodontitis. During the last decades, improvements in oral health have occurred (WHO 2003). However, periodontitis is still a prevalent disease in adult populations, even if decreases have been reported (Albandar 2005, Hugoson & Norderyd 2008). Periodontitis is a multi-factorial infectious disease (Albandar 2005) and is influenced by several factors, such as socioeconomic, demographic and genetic factors (Albandar 2002), or lifestyle factors such as smoking (Axelsson et al. 1998, Hugoson et al. 2011). Also, psychosocial factors, such as stress (Axtelius 1999, Johannsen et al. 2006, Rosania et al. 2008) seem to have an impact. Nowadays, there has been a focus on the relationship between general health and periodontal health, especially in relation to cardiovascular diseases (Loos 2006, Renvert et al. 2010), respiratory diseases (Azarpazhooh & Leake 2006) and diabetes (Preshaw et al. 2012). Furthermore, the disease seems to increase with age (Sheiham & Netuveli 2002).

The severity of periodontitis is usually documented by clinical examination, including bleeding on probing (BOP), registration of probing pocket depth (PPD), and registration of tooth mobility, calculus, and X-ray examination. The common care for patients with chronic periodontitis includes information, oral hygiene instructions, non-surgery or surgery debridement to reduce pocket depth (Renvert & Persson 2004).

Periodontal disease is not necessarily a painful disease, but the treatment programme of periodontitis can sometimes be uncomfortable and painful. Pain in connection to dental treatment can be described as an unpleasant sensory and emotional experience associated with tissue damage (Okeson 2005). The intensity and experience of pain during periodontal treatment can vary. Chung et al. (2003) showed in a study that most of the patients experienced limited pain during pocket probing and treatment, while some of the patients (15%) experienced pain during treatment. Karadottir et
al. (2002) showed that pain related to pocket probing tended to be more severe compared to instrumentation. Pain can also be related to previous painful experiences, expectation of painful treatment and anxiety about dental treatment (Maggirias & Locker 2002).

Dental fear and anxiety are associated with strong negative feelings in relation to dental treatment (Abrahamsson et al 2002, De Jongh & Stouthard 1993). Dental fear can interfere with the patient’s compliance with dental care and, as a consequence, may result in poorer dental and periodontal health (Ng & Leung 2008). In periodontal treatment there could be a relationship between anxiety and pain experienced during treatment (Chung et al 2003). Fardahl & Hansen (2007) reported that a sample refereed for periodontal specialist treatment, nearly 12 % rated themselves to have anxiety because fear of pain. Periodontology patients have reported higher anxiety levels for dental hygienist treatment than patients at general dental clinics (Hakeberg & Cuhna 2008). Furthermore, pain and anxiety can be related to the patient’s expectations of and satisfaction with dental care.

**Satisfaction with Dental Care**
Expectations of dental care and dental services vary among patients and are influenced by different factors, such as the image of the dentist, satisfaction with the patient’s previous visit at a dental clinic, dental equipment, staff appearance, hygiene, waiting room facilities and the situation when patients are waiting for service (Clow et al. 1995). Another factor influencing expectation is communication. The care giver should be communicative and informative, i.e. telling the patient about the treatment procedures, what he/she is doing and asking about the patient’s specific problems. A gap in the communication can lead to frustration between the patient and the dentist (Lahti et al. 1995). When treating patients with periodontal disease, the patients must be informed about their individual needs and treatment options to feel comfortable and to have control over the treatment situation (Abrahamson et al. 2008, Stenman et al. 2009). Meeting the expectations between the patient, and the care provider can perhaps lead to satisfaction.
Measuring the patient’s satisfaction with care can be a central tool to evaluate care, the quality of care, and the relationship between the care provider and the patient (Kress & Shulman 1997). Patient satisfaction can depend on how patients perceive themselves in relation to the care system (Newsome et al. 1999 a). Patient satisfaction can also be associated with care delivery, beliefs of the care giver, and with pain (Skaret et al. 2005). A good relationship between the clinical practice and the patient is important for gaining satisfaction, both for the patient and the care professionals (Newsome et al. 1999 b). Satisfied patients are important for the dental practice for developing and performing dental care. Understanding the patients’ experiences and expectations, as well as satisfaction, could be a key to successful dental treatment.
The general aims of this thesis were to evaluate if a media campaign aimed as a health promotion campaign, and visits to a specialist clinic in periodontology could increase the knowledge on periodontitis, symptoms and treatment. A further aim was to analyse expectations and satisfaction of care among patients referred for comprehensive treatment to specialist clinics.

The specific aims of the individual papers were:

- to evaluate if a mass media campaign regarding periodontal disease could increase the knowledge of symptoms and treatment option of periodontal disease in the general population, by investigating the number of correct answers to knowledge questions before and after a mass media campaign (paper I)
- to analyse factors associated with knowledge of periodontitis and changes in knowledge before and after a mass media campaign, in relation to social attributes, care system attributes and oral health aspects (paper II)
- to investigate changes in knowledge of periodontal disease among patients referred to periodontal specialist clinics before and after treatment, and to investigate the patients’ self-perceived oral health before visiting the specialist clinic (paper III)
- to investigate expectations on and satisfaction with treatment among patients referred for comprehensive treatment to specialist clinics in periodontology, and to explore factors associated with satisfaction and controlling for confounding variables in a regression analysis (paper IV)
MATERIAL AND METHODS

This thesis is based on two different question batteries including four questionnaires. The results are based on empirical data.

Papers I and II
Participants and Procedures
In 1999, the Swedish Association of Periodontology initiated a mass media campaign involving newspapers, radio and television. The campaign was considered as a health promotion campaign with the purpose to increase the knowledge of periodontitis. Messages to the press were sent out, resulting in newspaper articles, radio programs, and broadcasts in local and nationwide television. Brochures with information about periodontitis were produced with the purpose of increasing the public awareness of periodontitis and they were meant to be spread to patients who visited dental clinics. The effect of the campaign was assessed through a mail questionnaire in a panel design, i.e. the participants were involved in the study on two occasions. The sample was randomized from the national population register, 50-75 years old in Sweden and thus representative of the nationwide population. The first questionnaire was issued before the mass media campaign started and the second one when the campaign had ended. There were nearly six months between the first and second questionnaires. The first one was sent to 900 respondents, and the response rate was 70%. The second one was sent to 874 respondents as 26 respondents had either moved, refused to participate or were deceased. It had a response rate of 65%. A total of 64% (n=558) of the respondents completed both questionnaires. There were 48% women and 52% men responding to the questionnaire and the mean age was 61 years.
Questionnaire Design
The questionnaires were constructed at the Department of Oral Public Health, Malmö University, by Lennart Unell and Björn Söderfeldt in cooperation with Kristianstad University. The questionnaire included 20 questions with fixed choices regarding attitudes about teeth, dental visits and diagnosis, symptoms and treatment concerning periodontitis. There was also information about marital status, ethnicity, work and education. Age and gender were given from the sampling frame. The questionnaire was the same on both occasions, except for one question added to the second questionnaire concerning whether the respondents had received any information about periodontitis from the dental personnel.

The questionnaires were coded and only the author could link the code with a name. The respondents were also given information, how the sample were selected and how more information about the study could be obtained.

Questionnaires I and II
To analyse the differences in knowledge before and after the campaign, two questions focusing on symptoms and treatments of periodontitis were selected from the questionnaire. The first question was: “You can note in various ways that you are suffering from a dental disease, such as caries or periodontitis. Do you know which of the following troubles and symptoms that might indicate that you suffer from caries or periodontitis?” The response alternatives were: black and brown plaque on the teeth, gingival bleeding, sensitive teeth, toothache, mobile teeth, halitosis, aching mouth, coated tongue, increased space between the teeth. Gingival bleeding (Ainamo et al. 1982, Joss et al. 1994), mobile teeth and increased space between the teeth (Salvi et al. 2008) were chosen as correct answers. The second question was: “Dental disease can be treated in various ways. There are also many types of examinations in dentistry. Do you know which of the following types of treatments and examinations that is intended for caries and periodontitis?” The response alternatives were: scaling, gingival surgery, careful dental hygiene, cleaning between the teeth, pocket probing, X-ray examination, filled teeth, polishing of discoloured teeth, sealing with
fluoride and fluoride tablets. Pocket probing (Badersten et al. 1981), X-ray examination (Molander et al. 1991, Salonen et al. 1991), scaling (Badersten et al. 1981) and gingival surgery (Renvert et al. 1985) were chosen as correct answers for periodontitis. Careful dental hygiene and cleaning between the teeth were regarded as correct answers for “both caries and periodontitis”, because these alternatives are also well known preventive methods against caries (Axelsson & Lindhe 1981). The response alternatives should be combined with either “caries”, “periodontitis”, “both caries and periodontitis”, “neither caries nor periodontitis” or “I don’t know”.

To evaluate changes in knowledge, the two knowledge questions from the first questionnaire were combined. The combination was used for three variables, knowledge before, knowledge after and knowledge difference. Knowledge before was calculated for the first questionnaire, before the mass media campaign, knowledge after for those responding to the second questionnaire after the mass media campaign. Knowledge differences includes those responding to both questionnaires and was calculated by subtracting responses before and responses after. Ten other questions were used and classified from different domains named social attributes, care system attributes and oral health aspects.

To measure the importance of oral health in relation to general health, six questions from the questionnaire were used (paper II). These questions were subjected to a factor analysis resulting in two factors, perceived importance of oral health and importance of living conditions constructed as additive indices of relevant questions. Perceived importance of oral health was regarded as an oral health aspect while importance of living conditions was regarded as a social attribute.

Social attributes
Regarding social attributes, the following variables were used:

- Age (in years) and gender.
- Marital status (married/single).
- Ethnicity (not born in Sweden/born in Sweden).
• Work measured by the question “How many hours per week do you work?” coded in four ordinal categories.
• Education (primary education/secondary education).
• Importance of living conditions as stated above.

_Care system attributes_
Regarding care system attributes the following variables were used:
• Utilization of dental care (less than twice a year (other)/twice a year).
• Care system (private dental service/public dental service).
• Information about periodontitis at the time of the dental visit (no/yes).

_Oral health aspects_
Regarding oral health aspects, the following variables were used:
• Satisfaction with teeth measured by the questions “Are you satisfied with your teeth?” coded in five ordinal categories.
• Satisfaction with chewing ability measured by the question “Are you able to chew all kinds of food?” was coded in six ordinal categories.
• Perceived importance of oral health as described above.

_Papers III and IV_
Participants and Procedures
These studies were also based on mail questionnaires in a before and after design. Patients referred to five public specialist clinics of periodontology in southern Sweden for comprehensive periodontal treatment were consecutively sampled for the study. The specialist clinics in periodontology perform examinations of periodontal tissues, do the diagnostics, prevent and treat periodontal disease. This includes procedures such as information and instruction to prevent periodontal diseases and sub- and supra-gingival scaling, often performed by a dental hygienist (Johnson 2009). The treatment can also include gingival surgery performed by the dentist at the specialist clinic.
The first questionnaire was sent by mail to 273 patients from December 2007 to January 2009 before their first appointment at the specialist clinic. The response rate was 31% (n=85). This questionnaire was distributed by the staff at the different specialist clinics of periodontology. A second questionnaire was sent after approximately 6 months to those patients who answered the first questionnaire. For the second questionnaire, a reminder was sent after four weeks with a letter explaining the importance to respond to the questionnaire. After another four weeks, a reminder with a new questionnaire and a stamped return envelope was sent to the non-respondents. The response rate was 73% (n=62). In total, 23% of the respondents answered both questionnaires. There were 57% women and 42% men responding to the questionnaire and the mean age was 54 years.

Questionnaire Design
The first questionnaire included 12 questions concerning knowledge of symptoms and treatment of periodontitis, (the same questions as in paper I and II), self-perceived oral health, quality of life, expectations about treatment of periodontitis, questions about health in general, as well as about oral health. There were also questions about marital status, ethnicity, work and education. The second questionnaire included 10 questions concerning knowledge of symptoms and treatment of periodontitis (the same question as in papers I and II), and satisfaction with periodontal treatment. Age and gender were given from the sampling frame.

The questionnaires were coded and only the author could link the code with a name. The respondents were also given information in writing about the study, how the sample was selected, that the questionnaire was coded, and how they could be given further information about the study when the first questionnaire was distributed. They were also asked to give a written consent.

Questionnaires I and II
The procedures for the knowledge questions were the same as for papers I and II. Two questions were used for measuring self-perceived oral health, one to evaluate troubles in the mouth, and one to
evaluate the impact of oral conditions on everyday well-being. The first question was: “One can have many different troubles from the mouth and teeth. Do you for yourself experience that you have one or more of the following troubles or worries?” (Unell 1999, Stålnacke et al. 2003). This question was analysed with the score for each item and with a summarized score ranging from 17 (no troubles) to 68 (maximum of troubles). The second question was assessing the impact of oral conditions on everyday well-being by using the Oral Health Impact Profile (OHIP 14) (Slade 1997) with one more response alternative, namely “all the time”. The answers were rated “all the time”=5, “very often”=4, “fairly often”=3, “sometimes”=2, “hardly ever”=1 “never”=0 and “not applicable to me”=no response. The total score for the index (range 0-70) was calculated by adding the individual points for each question.

To analyse expectations on treatment at the specialist clinic in periodontology, three questions were selected. The first question was: “What do you hope to achieve with the planning treatment?” (Hakestam et al. 1996). This question was evaluated for each item in percent and was subjected to a factor analysis resulting in two factors, “good teeth” and “social expectations”. The second question was: “How do you think you will experience the coming treatment?”, evaluated in percent for each item. This question was constructed by the Department of Prosthetic Dentistry in Malmö and the Department of Education at Lund University (Dr Rune Flink). The third question was the Dental Anxiety Scale (DAS), analysed as sum of scores (Corah 1969).

Four questions were selected to measure experience of and satisfaction with treatment. The first question was: “What experience do you have of the information and treatment from your dentist or dental hygienist?” The question was from the eight-item version of the Humanism Scale (Hauck et al.1990) and as used by Johansson et al. (2011), evaluated in summarized scores. The items for answering were: “my dentist/dental hygienist was interested in me as a person”, “even if I have small problems, my dentist/dental hygienist was concerned”, “I have had confidence for my dentist/dental hygienist decisions”, “my dentist/dental hygienist respected my ideas”, “I
have had the opportunity to talk to my dentist/dental hygienist if something has troubled me”, “my dentist/dental hygienist has been interested in my life”, “my dentist/dental hygienist has been easy to talk to” and “my dentist/dental hygienist seems to have understood when I have talked about problem”. A second question was: “What experience do you have of the visits at the specialist clinic?” This question contains seven items from the Dental Visit Satisfaction Scale (DVSS) (Corah et al. 1984, Hakeberg et al. 2000). A third question was: “The experience and satisfaction of the dental care situation could depend on how you perceive the relation to the dentist and the dental hygienist”. This question contained five items from the Helping Alliance Questionnaire The items were: “I feel I can depend on my dentist/dental hygienist”, I have respected the dentist/dental hygienists´ view about my dental problems”, I have liked the dentist/dental hygienist as a person”, “a good relationship has formed with my dentist/dental hygienist”, “the dentist/dental hygienist and I have had meaningful exchanges” (Luborsky et al. 1996). The fourth question was: “What did you think was difficult with the treatment?” This question was constructed by the Department of Prosthetic Dentistry in Malmö and the Department of Education at Lund University (Dr Rune Flink). To measure social attributes, the same questions were used as in paper III.

The following variables were used for measuring social attributes:

- Age (in years) and gender.
- Marital status (married/single).
- Ethnicity (not born in Sweden/born in Sweden).
- Work measured by the question “How many hours per week do you work?” coded in four ordinal categories.
- Education (primary education/secondary education).

**Non-Response Analysis**

In studies with a before and after measurement, there are three groups of respondents: 1) those not responding on any occasion, 2) those responding on one occasion and 3) those responding on both occasions. In the analyses, age and gender were used for the entire study population (paper I-IV).
Out of the 874 questionnaires that were issued (papers I and II), a difference in age \( (p=0.043) \), but none as to gender \( (p=0.667) \) was found. The tendency to respond was tested in a logistic regression model with both age and gender as independent variables. The relationship to age was retained. There was a 2% increase in the risk of default answers for each additional year of age. Gender was still non-significant \( (p=0.667) \). In paper II, there was an internal non-response rate on the knowledge questions. The response rate was 36\% \( (n=316) \) with complete data for all questions on both occasions. This net sample \( (n=316) \) was assessed for representativity. Non-respondents were assessed for gender, age and education. As to gender, there was no significant difference between respondents and non-respondents \( (p=0.575) \). The respondents were younger than the non-respondents \( (p<0.001) \). The group with primary education had more non-respondents than the group with secondary education \( (p=0.001) \).

As to papers III and IV, the first questionnaire \( (n=273) \) was issued with a response rate of 31\% \( (n=85) \). Differences were neither found for age \( (p=0.122) \), nor for gender \( (p=0.176) \) between respondents and non-respondents. The second questionnaire was issued to 85 respondents with a response rate of 73\% \( (n=62) \). There were no differences for age \( (p=0.095) \) or gender \( (p=0.055) \) between respondents and non-respondents.

**Statistical Analyses**

The tests used are presented in a table (Table 1). To analyse differences in responses before and after the mass media campaign, the Wilcoxon rank sum test was used (paper I) and the Chi-square test (paper II) \( (Altman 1997) \). In a before and after comparison, it is desirable to consider the possibility of a randomly correct answer. Hence, Cohen’s Kappa \( (Streiner & Norman 2008) \) was included in the before-after coherence measurement (papers I and III). Among those changing their answers, the quota between those changing from wrong to correct and those changing from correct to wrong were calculated. In the drop out analysis, logistic regression was used (paper I). Change in knowledge were analysed for bivariate relations as to social attributes, care system attributes and oral health aspects.
Independent samples t-test and Spearman rank order correlation were used (paper II) (Altman 1997). Data were also analysed by multiple linear regression analysis with the variables knowledge before, knowledge after and knowledge difference as dependent variables (paper II) and with DVSS sum as a dependent variable. For the model, four variables were used from the questionnaire: gender (female set as 1 and male set as 0), age (in years), education (primary education set as 0 and secondary education set as 1) and work (paper IV). Cook distances (change in dependent variable when excluding a case) were calculated for detection of influential outliers and residual plots inspected for signs of heteroscedasticity (uneven distribution of residuals) (papers II and IV) (Studenmund 1997).

For several multi-item measures, a Principal Component Analysis (PCA) was used with varimax rotation based on a correlation matrix. Internal consistency was calculated with Cronbachs’ alpha (papers III and IV). Spearman rank order correlation analyses were used to measure correlations between the question about troubles from the mouth and the OHIP additive score. To analyse bivariate relations in correct answers and social attributes (marital status, ethnicity, gender and education), Mann-Whitney U-test and an ANOVA test (work) were used (paper III) (Streiner & Norman 2008).

Statistical significance was defined as p<0.05. The analyses were done using SPSS version 6.1 for the Macintosh (paper I), SPSS version 10.0 (paper II) and 17.0 for Windows (paper III and IV).
Table 1. Statistical analyses used in paper I-IV

<table>
<thead>
<tr>
<th>Paper</th>
<th>Analyses</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Differences between groups</td>
<td>Wilcoxon rank sum test</td>
</tr>
<tr>
<td></td>
<td>Changes</td>
<td>Cohen’s Kappa coefficient</td>
</tr>
<tr>
<td></td>
<td>Exploring associations</td>
<td>Logistic regression analysis</td>
</tr>
<tr>
<td>II</td>
<td>Correlation</td>
<td>Independent samples t-test</td>
</tr>
<tr>
<td></td>
<td>Correlation analyses</td>
<td>Spearman Rank order correlation</td>
</tr>
<tr>
<td></td>
<td>Exploring association</td>
<td>Multiple regression analysis</td>
</tr>
<tr>
<td>III</td>
<td>Differences between two groups</td>
<td>Chi-square test</td>
</tr>
<tr>
<td></td>
<td>Changes</td>
<td>Cohen’s Kappa coefficient</td>
</tr>
<tr>
<td></td>
<td>Multi item measures</td>
<td>Principal component analysis</td>
</tr>
<tr>
<td></td>
<td>Internal consistency</td>
<td>Cronbach’s alpha</td>
</tr>
<tr>
<td></td>
<td>Correlation analyses</td>
<td>Spearman Rank order correlation</td>
</tr>
<tr>
<td></td>
<td>Difference between groups</td>
<td>Mann-Whitney U test</td>
</tr>
<tr>
<td></td>
<td>Differences between three groups</td>
<td>ANOVA</td>
</tr>
<tr>
<td>IV</td>
<td>Differences between two groups</td>
<td>Chi-square test</td>
</tr>
<tr>
<td></td>
<td>Multi-item measure</td>
<td>Principal component analysis</td>
</tr>
<tr>
<td></td>
<td>Internal consistency</td>
<td>Cronbach’s alpha</td>
</tr>
<tr>
<td></td>
<td>Exploring associations</td>
<td>Multiple regression analysis</td>
</tr>
</tbody>
</table>

**Ethical Considerations**

The ethical guidelines in the Declaration of Helsinki (2008) have been taken into account with the principles of justice, autonomy, goodness and of doing no harm. In papers I and II, the participants were randomly sampled from the Swedish population register. They were invited to the study through a questionnaire with information about professional secrecy. There was information that the questionnaire was coded with a number, and that only people working with the study could link the code number to a name. It was stated that it was voluntary to participate. In papers III and IV, the participants were sampled consecutively at five different specialist clinics in periodontology. Here as well, the questionnaires
were coded with a number and only people working with the study could link the code to a name. The respondents in studies III and IV were given information in writing about the study and were asked to give a written consent. The studies III and IV were approved by the Regional Research Ethics Board in the Southern region (Dnr 435/2007). A similar permission was not requested at the time of paper I and II.
RESULTS

Paper I. Knowledge about periodontal disease before and after a mass media campaign

After the campaign, there was a general improvement among the respondents concerning the knowledge questions about periodontitis. All variables except gingival bleeding (p=0.058) and scaling (p=0.453) demonstrated significant improvements. Most of the questions presented a significant increase in the number of correct answers in percent units and quota between the first and second questionnaire. The numbers changing from wrong to correct answers were about twice as high as those changing from correct to wrong for the variables mobile teeth, increased space between the teeth, gingival surgery and pocket probing. Kappa values were calculated to examine consistency. The Kappa values varied from 0.38 to 0.60 (Table 2 and Table 3).
Table 2. Percentage distributions of the respondents that giving correct and wrong answers before and after the mass medial campaign, and quota in change from “wrong to correct” answer in relation to from “correct to wrong” answers.

<table>
<thead>
<tr>
<th>Correct answer</th>
<th>Before (%)</th>
<th>After</th>
<th>p-value</th>
<th>Quota*</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival bleeding</td>
<td>56</td>
<td>61</td>
<td>&lt;0.058</td>
<td>1.62</td>
<td>370</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>57</td>
<td>65</td>
<td>&lt;0.003</td>
<td>2.32</td>
<td>365</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>39</td>
<td>49</td>
<td>&lt;0.001</td>
<td>2.38</td>
<td>356</td>
</tr>
<tr>
<td>Scaling</td>
<td>34</td>
<td>36</td>
<td>&lt;0.453</td>
<td>1.20</td>
<td>380</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>51</td>
<td>60</td>
<td>&lt;0.001</td>
<td>2.63</td>
<td>350</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>51</td>
<td>60</td>
<td>&lt;0.001</td>
<td>2.52</td>
<td>365</td>
</tr>
<tr>
<td>X-Ray examination</td>
<td>32</td>
<td>40</td>
<td>&lt;0.013</td>
<td>1.78</td>
<td>348</td>
</tr>
<tr>
<td>Careful dental hygiene **</td>
<td>65</td>
<td>73</td>
<td>&lt;0.001</td>
<td>1.99</td>
<td>376</td>
</tr>
<tr>
<td>Cleaning between the teeth **</td>
<td>56</td>
<td>66</td>
<td>&lt;0.001</td>
<td>2.03</td>
<td>380</td>
</tr>
</tbody>
</table>

*Change from wrong to correct answer in relation to from correct to wrong answer.
**The alternative was linked with “both caries and periodontitis”
Table 3. The differences in percent units as well as quotas and Kappa values between the correct answers in the study before \( (t_0) \) and after the campaign \( (t_1) \).

<table>
<thead>
<tr>
<th></th>
<th>Percent units ( t_1-t_0 )</th>
<th>Quota ( t_1/t_0 )</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival bleeding</td>
<td>5</td>
<td>1.1</td>
<td>0.53</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>8</td>
<td>1.1</td>
<td>0.58</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>10</td>
<td>1.2</td>
<td>0.50</td>
</tr>
<tr>
<td>Scaling</td>
<td>2</td>
<td>1.2</td>
<td>0.50</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>9</td>
<td>1.2</td>
<td>0.60</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>9</td>
<td>1.2</td>
<td>0.59</td>
</tr>
<tr>
<td>X-Ray examination</td>
<td>8</td>
<td>1.2</td>
<td>0.36</td>
</tr>
<tr>
<td>Careful dental hygiene *</td>
<td>8</td>
<td>1.1</td>
<td>0.46</td>
</tr>
<tr>
<td>Cleaning between * the teeth</td>
<td>10</td>
<td>1.2</td>
<td>0.38</td>
</tr>
</tbody>
</table>

* This alternative was linked with “both caries and periodontitis”
Paper II. Factors behind change in knowledge after a mass media campaign targeting periodontitis

Significant differences were found for primary and secondary education regarding knowledge of periodontitis before and after the mass media campaign. Those indicated secondary education had better knowledge both before and after the campaign (p= < 0.0005). Individuals visiting dental clinics twice a year or more also had better knowledge than those who visited a dental clinic less frequently both before (p=0.001) and after the campaign (p=0.005). No statistically significant association to knowledge differences was found, except for “perceived importance of oral health” (p=0.015).

In the multiple regression models of knowledge before and after the campaign, there were a number of independent variables showing influence on the dependent variables. Of the social attributes, age was related to knowledge before (p=0.001) the campaign. Those who had a secondary education had almost 10% higher scores on knowledge both before and after the campaign (p=< 0.005) compared to those who had a primary education. Among the care system attributes, high care utilisation was related to more knowledge both before (p=0.003) and after the campaign (p=0.010). Respondents who had received information in a dental clinic about periodontitis had nearly 20% more knowledge before the campaign, compared to those who had not received information (table 4).
### Table 4. Multiple regression models of knowledge before and after the campaign and differences in knowledge.

<table>
<thead>
<tr>
<th>Knowledge before (0-9)</th>
<th>Knowledge after (0-9)</th>
<th>Knowledge differences (B-A)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variable</strong></td>
<td><strong>b</strong></td>
<td><strong>p</strong></td>
</tr>
<tr>
<td>Social attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>-0.06</td>
<td>0.001</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.02</td>
<td>0.921</td>
</tr>
<tr>
<td>Marital status (married)</td>
<td>-0.32</td>
<td>0.225</td>
</tr>
<tr>
<td>Ethnicity (born in Sweden)</td>
<td>0.56</td>
<td>0.126</td>
</tr>
<tr>
<td>Work (1-4)</td>
<td>0.13</td>
<td>0.209</td>
</tr>
<tr>
<td>Education (secondary)</td>
<td>1.24</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Importance of living condition (4-10)</td>
<td>0.02</td>
<td>0.838</td>
</tr>
<tr>
<td>Care system attributes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care utilisation (high)</td>
<td>0.69</td>
<td>0.003</td>
</tr>
<tr>
<td>Care system (private)</td>
<td>0.15</td>
<td>0.516</td>
</tr>
<tr>
<td>Information about periodontitis</td>
<td>1.98</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Oral health aspects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with teeth (1-5)</td>
<td>0.19</td>
<td>0.211</td>
</tr>
<tr>
<td>Chewing ability (1-6)</td>
<td>-0.28</td>
<td>0.060</td>
</tr>
<tr>
<td>Perceived importance of oral health (9-20)</td>
<td>0.18</td>
<td>0.003</td>
</tr>
<tr>
<td>New information about periodontitis</td>
<td>0.78</td>
<td>0.111</td>
</tr>
</tbody>
</table>

Adj R-square: 0.16, 0.14, -0.01
F/df1/df2: 8.28/13/486, 4.80/14/313, 0.78/14/296
Model significance: <0.0005, <0.0005, 0.695

---

Paper III. Knowledge of periodontitis and self-perceived oral health

Before the patients visited the specialist clinics in periodontology, correct answers to the knowledge questions about periodontitis ranged from 42% to 70%. Approximately 6 months after their first visit, the percentages of correct answers ranged from 60% to 88%. Some of the improvements of correct answers were statistically significant, as for increased space between the teeth, scaling and x-ray.
A quota was calculated to analyse the difference between correct answers between the first and second questionnaire. Kappa values were calculated, varying between 0.15 and 0.43 (Table 5).

Table 5. Percentage distributions, quota and Kappa values of the respondents giving correct answer before visiting the specialist clinic ($t_0$) and after 6 months ($t_1$).

<table>
<thead>
<tr>
<th>Correct answer</th>
<th>Correct answer</th>
<th>Quota ($t_1/t_0$)</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before ($t_0$)</td>
<td>After ($t_1$)</td>
<td>$p$</td>
</tr>
<tr>
<td>Gingival bleeding</td>
<td>54</td>
<td>71</td>
<td>0.073</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>60</td>
<td>76</td>
<td>0.141</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>44</td>
<td>66</td>
<td>0.001</td>
</tr>
<tr>
<td>Scaling</td>
<td>42</td>
<td>60</td>
<td>0.006</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>64</td>
<td>82</td>
<td>0.193</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>67</td>
<td>60</td>
<td>0.147</td>
</tr>
<tr>
<td>X-ray examination</td>
<td>52</td>
<td>64</td>
<td>0.001</td>
</tr>
<tr>
<td>Careful dental hygiene *</td>
<td>70</td>
<td>88</td>
<td>0.224</td>
</tr>
<tr>
<td>Cleaning between the teeth *</td>
<td>67</td>
<td>74</td>
<td>0.104</td>
</tr>
</tbody>
</table>

* This alternative was linked with “both caries and periodontitis”
Statistically significant differences in correct answers in relation to gender were found ($p=0.044$) before the first appointment at the specialist clinic. Females had better knowledge than males. After visiting a specialist clinic in periodontology, there was a statistical difference in *ethnicity* ($p=0.019$).

Self-perceived oral health was measured regarding troubles in the mouth and was summarized, resulting in a score between 17 (no troubles) and 55 (big troubles). The mean value was 24 (SD 7.4) and the median value was 23. Five percent of the patients had a score of 17. The most common self-perceived trouble were *bleeding gums* (70%) and *sensitive teeth* (51%). The items were analysed by a PCA. After exclusion of items with low communalities, 10 items remained and revealed two factors. Factor one named as *pain* with an variance explanation of 41% and factor two named as *aesthetics* with an variance explanation of 22%. The internal consistency was tested with Cronbachs’ alpha and was 0.87 for the first factor and 0.78 for the second factor.

The OHIP14 questionnaire was used to analyse the impact of oral conditions on everyday well-being. The mean additive score was 7.40 (SD 9.0), the median score was 4.0 and ranged from 0 to 43. Fiftyfour percent of the participants had a score between 0 and 4 and 31% indicated a score of 0. The most commonly reported problem was to the item *painful aching in the mouth* belonging to the area of *physical pain*.

In a correlation analysis between the summarized score of troubles from the mouth, the previously obtained *pain* and *aesthetics* factors were used to evaluate covariation to the summarized OHIP score. The *aesthetics* factor correlated with the summarized OHIP score ($r=0.384$, $p<0.001$) There was no correlation to the *pain* factor ($r=0.229$, $p=0.064$). A correlation analysis was also made between the additive score of OHIP and the knowledge questions. No correlations were found.
Table 6. Expectations of treatment in percent (%).

|                                      | Very important | Important | Less important | Unimportant | n  | *
|--------------------------------------|----------------|-----------|----------------|-------------|----|-----
| Better appearance                    | 15 (26)        | 39 (41)   | 19 (28)        | 27 (10)     | 82 (372) |
| Easier to chew                       | 42 (67)        | 37 (27)   | 7 (2)          | 14 (3)      | 81 (394) |
| Certainty to have healthy teeth      | 82 (70)        | 15 (26)   | 0 (2)          | 2 (1)       | 85 (391) |
| Avoidance of further dental care in many years | 23 (46) | 31 (36)   | 19 (11)        | 26 (7)      | 77 (371) |
| Freedom from pain                    | 74 (53)        | 19 (30)   | 5 (6)          | 1 (11)      | 82 (355) |
| Improved general well-being          | 76 (70)        | 17 (26)   | 1 (2)          | 5 (2)       | 81 (387) |

* Reference figures Hakestam et al. 1996
The items were subjected to a PCA, resulting in two factors, *good teeth* and *social expectations*. The variance explanation was 63% and all communalities were deemed as satisfactory. Cronbach’s alpha was used for testing the factor consistency, and was 0.77 for *good teeth* and 0.36 for *social expectations*.

The DAS questionnaire was used for measuring the expected level of anxiety related to treatment. Summarized scores ranged from 4 (no fear) to 20 (extreme fear). The mean score for the patients was 9.5 and the median score was 9.0 (SD 4.82). Sixty percent of the patients had a summarized score between 4 and 9, and 26% had a summarized score between 13 and 20. Females had a higher mean score (10.5) than males (7.9) (p=0.144).

The short form of the Humanism Scale was used for measuring the perception of and satisfaction with the caregiver. The patients were satisfied with the information and their relationship with the dentist/dental hygienist. More than 50% strongly agreed to the items except for the item *my dentist/dental hygienist has been interested in my life*, where only 30% strongly agreed. In a summarized score, (range 8-40) ranging from 1 (strongly disagree) to 5 (strongly agree), the mean score was 35. Of the respondents, 67% had a score between 35 and 40.

Seven items from the Dental Visit Satisfaction Scale (DVSS) was used to measure satisfaction in general with the visits at the specialist clinic in periodontology. Many of the respondents strongly agreed or agreed to the items. Summarising the scale resulted in a score between 7 (strongly disagree) and 35 (strongly agree). The patients had a summarized score with a mean value of 31 and a median value of 33 (SD 4.82). Fortytwo percent had a summarized score of 35.

The satisfaction with the dental care situation was also investigated with five items from the Helping Alliance Index, measuring the relationship between the patient and the therapist. Many of the respondents answered that they totally agreed or agreed rather well to the items (Table 7).
The items were analysed in a PCA and resulted in two factors, named as relation and as confidence. Explanation of variance was 50% for the first factor and 38% for the second factor. Cronbach’s alpha was 0.90 for the first and second factor, respectively.

Table 7. Satisfaction of the relation between the patient and the caregiver in percent (%)

<table>
<thead>
<tr>
<th></th>
<th>Totally agree</th>
<th>Agree rather well</th>
<th>Uncertain</th>
<th>Agree rather bad</th>
<th>Not agree at all</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel I can depend on my dentist/dental hygienist</td>
<td>67</td>
<td>26</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>I have respected the dentist/dental hygienists’ view about my dental problems</td>
<td>67</td>
<td>28</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>I have liked the dentist/dental hygienist as a person</td>
<td>63</td>
<td>30</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>A good relationship has formed with my dentist/dental hygienist</td>
<td>57</td>
<td>35</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>The dentist/dental hygienist and I have had meaningful exchanges</td>
<td>43</td>
<td>38</td>
<td>15</td>
<td>2</td>
<td>2</td>
<td>60</td>
</tr>
</tbody>
</table>
Regarding experience with the most difficult part of the treatment, 59% absolutely or partly agreed that the treatment took a long time. A few felt bad after the treatment (22%), and 18% felt it was difficult to get away from work (Table 8).

Table 8. Experience of treatment in percent (%)

<table>
<thead>
<tr>
<th></th>
<th>Absolutely agree %</th>
<th>Partly agree %</th>
<th>Do not agree %</th>
<th>Absolutely not agree %</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>The treatment took a long time</td>
<td>15</td>
<td>44</td>
<td>24</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>I was worried about the visits</td>
<td>27</td>
<td>15</td>
<td>28</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>It was often painful</td>
<td>17</td>
<td>22</td>
<td>40</td>
<td>22</td>
<td>60</td>
</tr>
<tr>
<td>I felt bad after treatment</td>
<td>7</td>
<td>15</td>
<td>37</td>
<td>42</td>
<td>60</td>
</tr>
<tr>
<td>It was difficult to get away from work</td>
<td>5</td>
<td>13</td>
<td>25</td>
<td>57</td>
<td>60</td>
</tr>
</tbody>
</table>

In a multiple regression model with the DVSS sum as a dependent variable, three independent variables showed significant associations, (relation, confidence and gender). Those feeling confident and having a good relationship with the caregiver were more satisfied than those who did not. Males were less satisfied with the caregiver than females. $R^2$ was high, (0.76) (Table 9).
Table 9. Multiple regression model of DVSS sum as a dependent variable (n=60).

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>b</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation (range 1-15)</td>
<td>0.690</td>
<td>0.001</td>
</tr>
<tr>
<td>Confidence (range 1-10)</td>
<td>3.123</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-1.954</td>
<td>0.017</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.063</td>
<td>0.094</td>
</tr>
<tr>
<td>Education (primary)</td>
<td>-0.157</td>
<td>0.832</td>
</tr>
<tr>
<td>Work (1-4)</td>
<td>-0.243</td>
<td>0.442</td>
</tr>
<tr>
<td>DAS (sum of scores)</td>
<td>0.092</td>
<td>0.267</td>
</tr>
<tr>
<td>AdjR²</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>F/d.f. 1/d.f. 2</td>
<td>27.102/7/49</td>
<td>0.000</td>
</tr>
</tbody>
</table>
DISCUSSION

Methodological Discussion
In papers I and II a sample from the national population register of 50-75 years olds in Sweden were randomly selected. For papers III and IV, a sample from specialist clinics in periodontology was selected.

The studies are based on self-assessments through questionnaires where validity and reliability can be discussed and could be doubtful in any questionnaire. Evaluating a mass media campaign, there are biases in the questionnaire validity. It is difficult to determine if there was an association between exposure to the campaign and the outcome. However, some of the questions in the questionnaire have been used in other studies and are therefore partly tested for validity (Unell et al. 1996, Bagewitz et al. 2000). It is shown that mail questionnaires have validity for questions about periodontal diseases, especially for questions about changing positions of the front teeth and problems with gingival bleeding (Unell et al. 1997). In papers III and IV, some of the questions were taken from established survey instruments, such as the DVSS, OHIP, DAS, Humanism scale and the Helping Alliance questionnaire (Hakeberg et al. 2000, Slade 1997, Corah 1969, Hauck et al. 1990, Luborsky et al. 1996). These instruments are tested for validity and reliability. Regarding the reliability of the low Kappa values (paper I), it should be noted that the statistics are used somewhat unconventionally here, as an indicator of change rather than a test-retest measure. A low Kappa value indicates change (papers I and II).
Strengths and Weaknesses

The studies were performed in a cohort design, a strategy where the investigator studies a group over time. The special strength of a cohort design is the established relation between previous events and the outcome over time (Kazdin 1998). A cohort group shares the same characteristics or experiences within a defined time period. The disturbing covariates are largely under control, since few personal characteristics change over six months. The participants were included on two occasions, one before the mass media campaign and one after the campaign (papers I and II), as well as one before visiting the specialist clinic in periodontology and one after treatment (papers III and IV). There were nearly six months between the two questionnaires in both studies. During these six months, the patients have had the possibility to receive information that may result in changes in knowledge and also the opportunity to be treated at the specialist clinic in periodontology and hereby get information about periodontitis. In sum the panel or cohort design is strength of the study.

The high dropout is a weakness and can be a common problem in cohort designs. The representativeness of a study may depend on the response rate. The response rate in papers I and II was relatively satisfactory, where 64% of the sampling frame answered both questionnaires. In these papers, there was however, an internal non-response to the knowledge questions, leaving a net of 36% with complete data. In papers III and IV, only 23% of the sample completed both questionnaires. It is important to have in mind that patients who did not respond may be different compared to those who did respond. There may be several reasons for non-response, such as lack of time, lack of interest, education (Brussaard et al. 1997) or behavioural and sociodemographic factors (Korkeila et al. 2001). The length of the questionnaire and follow-up has been found to increase non-response (Edwards et al. 2002). To increase the response rate, there were two reminders but the response rate was still low.

The low response rate in papers III and IV may be partially explained by the fact that the routines for the distribution of the first questionnaire could not be controlled, because it was sent to the
patients by the staff at the different departments in periodontology. Further explanations may be that the patients did not feel that the questionnaire concerned them and that the information about the study was insufficient. Another factor may be that the patients were not aware of having periodontitis (Karlsson et al. 2008), even if they were referred to the specialist clinic in periodontology, since chronic periodontitis can be without symptoms at an early stage (Gilbert & Nuttall 1999). The information from their primary caregivers may not have been complete. Finally, even if the patients may feel loyal to their dentist, they do not necessarily feel loyal to an unknown university/department which could influence the response rate.

**Discussion of Findings**

The first step in this thesis was to analyse if a mass media campaign aimed to be an oral health promotion campaign could increase the knowledge of symptoms and treatment of periodontitis. The second step was to analyse changes in the knowledge of periodontal disease, expectations on and satisfaction with care among patients referred for comprehensive treatment at specialist clinics of periodontology. The main findings were that an increased knowledge after the mass media campaign was shown (paper I), and that an element of personal contact connected with the campaign may be an important factor (paper II). Furthermore, knowledge about periodontitis also increased after visiting a specialist clinic in periodontology. The patients reported troubles from the mouth even if they rated their self-perceived oral health as rather good (paper III). Having confidence and a good relationship to the caregiver indicated satisfaction with the dental care (paper IV).

**Mass Media Campaign – Health Promotion**

Mass media can be used in health campaigns and may attempt to increase the knowledge and reduce health problems, but also to stimulate an active interest in health problems in the society. There are, however, both strengths and weaknesses in using mass media for health communication. Mass media have the capability to reach and influence a lot of people at the same time (Tones 1993), but it is difficult to determine the exposure to the mass media campaign (Swinehart 1997). Messages about health have to compete with a
crowded world of messages and can be more or less meaningful for different individuals. This is a communication dilemma for mass media. There is also a lack of personal feedback, which makes it difficult to tailor the message to the actual need of the intended audience. In spite of this, mass media can play a significant role for disease prevention and for health promotion in creating awareness of health risks. Furthermore, mass media campaigns have become a tool for promoting healthy behaviour and can therefore be important to health practitioners in their efforts to improve health in the society (Wakefield et al. 2010), and they can have an effect on health knowledge, beliefs, attitudes and behaviour (Noar 2006).

In health promotion, the population as a whole must be involved in the context of everyday life, rather than focusing only on people’s risk for specific diseases. Since oral health promotion seeks to achieve improvements in oral health and reduce inequalities, determinants of health must be taken into consideration. Periodontitis is a complex disease influenced by individual characteristics, such as lifestyle factors, but also by socioeconomic circumstances. Therefore, it must be considered as an integrated element of general health and well-being. The population approach to periodontitis must be applied also to the determinants of health in general in order to reduce the underlying causes that make the disease common. In a population approach, oral health must be integrated with general health to make it more effective.

Knowledge of Periodontal Disease
An improvement in knowledge about periodontal disease was observed after the mass media campaign (paper I). A problem in the analyses of the results is that it is unknown whether the respondents were exposed to the mass media campaign. There is a possibility that increased knowledge after the campaign could be due to personal contacts with a dentist or dental hygienist, because some of the respondents may have visited a dental clinic during the campaign. An association was found between information periodontitis from a dental clinic and knowledge before the campaign (paper II). There was also improved knowledge about periodontitis among patients who had visited a specialist clinic in periodontology (paper III) which
could confirm that personal contact gives knowledge, which is in accordance with Karlsson et al. (2008), who showed that knowledge related to periodontal disease came from information given in connection with treatment at dental clinics. Furthermore, perceived importance of oral health, representing the subjective and individual perspective on health, seems to be a predictor for knowledge (paper II). High importance of oral health may result in more frequent dental visits and thus more personal contacts with dental clinics, which may lead to increased knowledge of periodontal disease. Still, it cannot be excluded that the media campaign had an effect.

Educational level seems to be a predictor for knowledge. Respondents with higher education had better knowledge than those with lower education, both before and after the mass media campaign (paper II). Educational level could be a factor in oral health and oral health knowledge is a mechanism behind socioeconomic differences in oral health. For example, Paulander et al. (2003) reported that people with higher education had less need for periodontal treatment, and Norderyd et al. (1999) found that there was a higher share of respondents with no bone loss in a higher education group compared to a lower education group. Health in general is also influenced by socioeconomic factors. Heart diseases and diabetes are, for example, more common among lower educated people (Socialstyrelsen 2009)

Self-Perceived Oral Health
Self-perceived oral health can be expressed as the apprehension of what is normal for oral health and also as the experience of the care delivery system. It can be expressed in the context of oral health and quality of life. The results from this study population (paper III) showed that many of the respondents rated their oral health as good, despite being referred to a specialist clinic in periodontology for comprehensive treatment. Some variables in the questionnaire were related to troubles from the mouth, but 80% or more of the respondents reported no troubles. However, there were areas where troubles were reported, such as sensitive teeth and gingival bleeding. Bleeding gums may be obvious to the patients when brushing their teeth and can probably be experienced as a negative sign of oral health. Self-reported questions are asked in combination with clinical
examination to confirm validity. Questions about gingival bleeding have been found to be valid for reporting self-perceived oral health. Buhlin et al. (2002) reported that questions about gingival bleeding were related to clinically examined gingivitis. Gilbert and Nuttall (1999) found that questions about bleeding gums related to tooth brushing were reasonably sensitive. A review of Blicher et al. (2005) showed that self-reports had a good potential for assessing periodontal disease. Airila-Månssson (2007) reported that patients with self-reported periodontal disease were also diagnosed with the disease. However, Gilbert & Nuttall (1999) found a poor association between self-reported oral health and clinical examination, except for bleeding gums. Hence, even if different results about self-reported oral health are found, it may be valid for detecting periodontal conditions (Pinelli & de Castro Monterio 2007), and it can be used as an epidemiological tool in studies of periodontal health (Buhlin et al. 2002).

Self-perceived oral health can also be evaluated in the context of oral health-related quality of life. The OHIP 14 questionnaire, which was used in paper III, is a common OHRQoL tool. A low OHIP score indicates good OHRQoL. The mean additive score for OHIP related to the patients in paper III was 7.40, and ranged from 0 to 43. The mean score, however, was higher than previously reported. Bernabé and Marcenes (2010) showed a mean additive score of 5.3, Einarson et al. (2009) 6.4, and Dahl et al. (2011) 4.1 when assessing the oral health and quality of life. In these studies, the participants were from a general population, while ours were patients referred for comprehensive periodontal treatment. Most of the problems were attributed to “painful aching in the mouth” belonging to the area physical pain (Paper III). Also, Dahl et al. (2011) and Lahti et al. (2008) found frequently problems related to this area in a Norwegian and a Finnish population, respectively.

Even if the additive score of OHIP was higher than in other studies, 31% of the respondents reported no troubles. This is in accordance with Dahl et al. (2011), who reported that 35% in a Norwegian population reported no troubles according to the OHIP questionnaire. This is surprising, since periodontal disease ought to give problems and have an impact on well-being and the quality of
life. We know that periodontal disease can have a negative effect on individual’s well-being and quality of life (Locker 1988, Inglehart & Bagrminin 2002). It has, for example, been shown that deeper periodontal pockets indicate poorer OHRQoL (Needleman et al. 2004, Ng & Leung 2006, Bernabe & Marcenes 2010).

**Expectations and Satisfaction with Dental Care**

The patient’s expectations of dental care may depend on factors built up prior to treatment, e.g. if the treatment will relieve pain or improve the oral health and general well-being. There can also be ideas about an “ideal dentist” (Lahti et al. 1995). On the question measuring expectation of the coming treatment in paper IV, there were only minor differences between some alternatives, with an almost totally affirmative response. Similar results were found in a study including prosthodontic patients, showing that improved well-being from the coming treatment was very important (Hakestam et al. 1996). To have healthy teeth, free from pain and improved well-being must be an obvious goal for the patient after treatment. These results can also indicate that the patient’s rate their oral health high and probably regard oral health as a part of their general health.

Expectation of treatment was also measured with DAS (Dental Anxiety Scale) summarized score. DAS showed that one fifth of the patients reported a summarized score of 13-20 (mean score 9.5). This result may indicate that the patients were expecting pain during the periodontal treatment. Hakeberg & Cunha (2008) reported that perceived pain in relation to periodontal treatment affected dental anxiety. In their study, 7.3% of the patients reported a DAS sum of score higher than 13, Abrahamsson et al. (2007) reported a somewhat lower summarized mean score of DAS among periodontal patients (8.8) compared to our study (paper IV). Higher levels of dental anxiety may lead to an avoidance of dental care. Thus, it is important to try to fulfil the patient’s expectations, not only for a successful treatment, but also to reduce pain and anxiety to be able to get satisfied patients.

Measuring satisfaction with care is a complex matter, as it is associated with quality of care (Kress & Shulman 1977) and related
to the care system (Newsome 1999a). To measure satisfaction with dental care, three different instruments were used (paper IV), the Humanism Scale for measuring patient’s perception of the caregiver in a holistic perspective, the DVSS for measuring the dental visit in general to reflect the cognitive and behavioural satisfaction between the patient and the caregiver and the Helping Alliance Questionnaire for measuring the relationship between the patient and the dentist/dental hygienist. The overall results evaluated with these instruments indicated that the patients’ satisfaction with the dental care was good. Recently, Narby (2011) suggested that it is important that the patients feel involved in the treatment and have faith in the caregiver. The seven items of the DVSS showed that most of the patients were satisfied with the dental visits (paper IV). This could be the result of good communication between the caregiver and the patient and that the caregiver is concerned about the patient’s problem. Communication is important to make the patients feel that they have control of the situation during treatment (Stenman et al. 2009).

Still, more than half the patients here felt that the treatment took a long time, and a fifth of them felt bad after treatment and some felt it was difficult to get off work for treatment. This did not affect their satisfaction with the dental care. Having confidence, having a good relationship with the care provider and having good communication were more important for their satisfaction with the dental care.
It is probably possible to increase the knowledge about periodontitis through a health promotion campaign in mass media. Education, utilization of dental care, as well as high subjective importance of oral health are all factors contributing to such an effect. Patients referred to specialist clinics in periodontology for comprehensive periodontal treatment increased their knowledge. The patients’ rated their self-perceived oral health as rather good even if some of them reported troubles from the mouth. Having a good relationship with, and confidence in, the caregiver were important factors for the patient’s satisfaction with the dental care.
ACKNOWLEDGEMENTS

Writing a thesis is like a journey in a world of learning opportunities. This journey would not have been possible without support and encouragement. I want to thank all those who made it possible for me to reach the goal of my journey, this thesis. In particular, I want to express my sincere gratitude to:

Björn Söderfeldt, my supervisor, for excellent scientific guidance, constructive criticism and support during this thesis journey. Thank you for bringing me to the exciting world of research, and thank you for believing in me.

Pia Andersson for excellent co-authorship, guidance and support. Special thanks for your active interest and positive attitude at the final stages of my thesis journey.

Stefan Renvert and Arne Halling, my co-authors, for guidance, active interest and support at the beginning of the thesis work.

Björn Axtelius my co-author, for guidance, active interest and participation in this thesis.

Lennart Unell for making the questionnaire.

Alborz Soltani for your friendly assistance at the Department of Oral Public Health, Malmö University.
Ingrid Rejnfeldt, my colleague, who has taken me “down on earth”, and to all my other colleagues at the Dental Hygienist program for their support and interest in my thesis.

Åke, my husband, our children Lina and Andreas and my daughter-in-law Johanna for reminding me of the most important things in my life, as well as my mother Inga for her love and support to me and my family.

Kristianstad University and the Department of Health Sciences, my financers.

The five specialist clinics in periodontology who made it possible to collect data for the thesis.


Community Dentistry and Oral Epidemiology 25:284-290.


PAPERS I-IV
Knowledge on periodontal disease before and after a mass media campaign

Carina Mårtensson1, Björn Söderfeldt2, Arne Halling1 and Stefan Renvert1

Abstract

The aim of this study was to evaluate if a mass media campaign regarding periodontal disease could increase the knowledge in the general population of diagnoses, symptoms and treatment options of periodontal disease. More specifically, the aim was to investigate the number of correct answers to knowledge questions before and after the campaign. The Swedish Association of Periodontology conducted the campaign through brochures, newspapers, radio and TV. The effect of the campaign was evaluated by a pre- and post campaign questionnaire with a cohort design. From a national population register of 50-75 years olds in Sweden, 900 persons were randomly sampled for the study. A total of 64% of the sample answered both questionnaires.

The result of the study showed an improvement among the respondents. There was a significant increase in the number of correct answers regarding diagnoses, symptoms and treatments of periodontitis. In the questionnaire, correct answers regarding “Mobile teeth” increased from 57% to 65% (p=0.003) and “careful dental hygiene” from 65% to 73% (p=0.001). Kappa value’s were calculated for consistency in the reply and all kappa value’s were low especially for the questions “X-ray” (0.36) and “Cleaning between the teeth” (0.38). It was concluded that the campaign probably was successful from a public health knowledge standpoint.

Key words
Periodontitis, oral health promotion, oral health, mass media campaigns

1Department of Health Sciences, Kristianstad University, Kristianstad, Sweden,
2Department of Oral Public Health, Faculty of Odontology, Malmö University, Malmö, Sweden
Kunskap om parodontal sjukdom före och efter en massmediakampanj

CARINA MÅRTENSSON, BJÖRN SÖDERFELDT, ARNE HALLING OCH STEFAN RENVERT

Sammanfattning


Resultatet av studien visade på en ökad andel respondenter som svarade rätt på frågorna i enkäten gällande diagnos, symptom och behandling av parodontit efter kampanjen. På frågorna “Rörliga tänder” ökade andelen rätt svar från 57% till 65% (p=0.003) och på ”Noggrann munhygien” ökade andelen rätt svar från 65% till 73% (p=0.001). Kappavärden beräknades för att undersöka överensstämmelsen av svarsfrekvensen hos respondenterna. Samtliga kappa värden var låga, speciellt för frågorna ”Undersökning av käkben med röntgen” (0.36) och ”Rengöring mellan tänderna” (0.38). Dess resultat tyder på en ökad kunskap hos respondenterna. Mot denna bakgrund kan kampanjen tolkas som positiv och betydelsefull ur ett folkhälsoperspektiv.
Introduction
From a public health viewpoint, oral health is considered as a significant part of general health (10) and a part of the quality of life (25, 16). Periodontitis is an important disease in this context. It is caused by complex mechanisms, where causes can be found among genetic and demographic factors (2). Psychosocial circumstances and lifestyle factors such as smoking and poor oral hygiene (5, 6, 19) are also of importance. The incidence and severity of periodontal disease tend to increase with age (17, 20). Periodontitis is more prevalent in adult populations (12, 23). Therefore, periodontitis is an important target for oral health promotion.

Health promotion is a strategy for improving health in a population. WHO (39) defined health promotion as the process of enabling people to increase control over, and improve, their health. To reach health, an individual or a group of individuals must be able to identify and to realise ambitions, to satisfy needs, and to change or cope with the environment. Health promotion can thus be seen as a broad social and political process with the aim to make it possible for the people to control the factors that increase health (21).

Oral health promotion is a part of general health promotion. Preventions in dental services have been aimed at caries and periodontal diseases with the attention focused on reduced sugar intake, improved oral hygiene and to stop smoking. Some of these factors are implicated in other chronic disorders. Therefore, promoting general health and oral health can have common goals (31). As in general health promotion, oral health promotion does not simply reduce disease to biological factors but also promotes feelings of wellbeing and social acceptability (24). Health promotion involves actions from individuals, communities, political parties and governments (30).

In health promotion the use of mass media can be an important part. Mass media campaigns have been used to promote products, to deliver messages and to influence a part of or the general population. Use of fluoride dentifrices and toothbrushes can partly be credited to the influence of mass media (11). Rise & Søgaard (27) conducted a campaign in Norway to study the importance of media to increase the preventive knowledge and behaviour related to periodontal disease. Knowledge and behaviour related to periodontal disease improved as a result of the campaign. Schou (29) studied the use of magazines and television for increasing the knowledge and awareness of dental health. The information was aimed at behavioural changes. The result of the study showed a high degree of recollection of the campaign.

To contribute to this discussion, the aim in this study was to evaluate if a mass media campaign regarding periodontal disease could increase the knowledge of diagnosis, symptoms and treatment options of periodontal disease in the general population. More specifically the aim was to investigate the number of correct answers to knowledge questions before and after a campaign.

The paper is thus limited to change in knowledge. Whether this leads to behavioural change is another matter, beyond the scope of this paper.

Material and method

The campaign
The Swedish Association of Periodontology initiated in 1999 a mass medial campaign involving, newspapers, radio, TV and brochures with the goal to increase the public’s awareness of periodontitis. The brochures were meant to be spread to the patients when they visited dental clinics. Messages to the press describing periodontitis were sent to approximately 300 newspapers and to the radio and TV stations. This resulted in 40 newspaper articles, 25 radio broadcasts, six long radio programmes and five broadcasts in local TV. There was also a programme about periodontitis in nationwide TV (33).

Study base
The effect of the campaign was evaluated using a questionnaire with a cohort design. The first questionnaire was issued before the campaign started and the second questionnaire when the campaign had ended. The same respondents received the questionnaire before as well as after the campaign. From a national population register of 50-75 year olds in Sweden, 900 persons were randomly sampled for the study. The first questionnaire was sent to 900 persons and the second to 874 persons since 26 persons had moved, refused to participate or were deceased.

The questionnaires were coded with a number. Only persons working with the study could link the code number with a name. The key to the codes was kept at the Department of Oral Public Health, Faculty of Odontology, Malmö University, and has been destroyed after completion of the study.
Data collection

The questionnaire included 20 questions concerning attitudes about teeth, quality of life and questions about diagnosis, symptoms and treatment of caries and periodontitis. The first questionnaire was sent during March - April 1999 together with a stamped envelope with a request of an answer within 10 days. A reminder was sent three weeks later in a letter explaining the importance to answer the questionnaire and that an answer within 10 days would be desirable. After another three weeks an additional reminder with a new questionnaire and a stamped envelope was sent to non-respondents. The response percentage after the first questionnaire was 42%, after the first reminder 53%, and after the second reminder, a total of 68% had answered the questionnaire. When the campaign was completed, the second questionnaire was sent during October - December 1999. This one was sent similarly to the first one with a covering letter. The questionnaire was the same but with an additional question to the respondents, if they since the last evaluation had received any information about periodontitis from dental personnel. The response percentages were first 42% and then 47% after the first reminder. After the second reminder, a total of 64% replied to the second questionnaire.

Drop out

874 questionnaires were sent at both occasions with a response rate of 64%. Gender and age was known for non-responders. Bivariately, there was a difference in age ($p=0.043$, t-test) but no difference in gender ($p=0.6647$, Chi2-test) in study participation. The response tendency was tested in a logistic regression model, with the variables age and gender as independent variables. There was no statistically significant difference due to gender, while the age weakly affected the response tendency, OR=1.02 ($p=0.0448$). This means there was a 2% increased risk of a default answer for each additional year of age.

Questionnaire design

On the first page in the questionnaire the responders were informed about why the study was conducted, how the sample was selected, that the information was coded, as well as who could give them further information about the questionnaire and the study. The questionnaire contained twenty questions with different fixed choices.

In this paper, two questions from the questionnaire were selected to evaluate if there was a difference in knowledge about periodontitis before and after the campaign. The response alternatives to the questions were to be linked with periodontitis (the alternatives were “caries”, “periodontitis”, “both caries and periodontitis”, “neither caries nor periodontitis” and “I don’t know”). The word periodontitis was used in the questionnaire without explanation or definition, since the intention was to assess knowledge about that.

The first question was:

You can note in various ways that you are suffering from a dental disease, such as caries or periodontitis. Do you know which of the following troubles and symptoms that might indicate that you suffer from caries or periodontitis?

There was a list of black and brown plaque on the teeth, gingival bleeding, sensitive teeth, toothache, mobile teeth, halitosis, aching mouth, coated tongue and increased space between the teeth as symptom and troubles of caries and/or periodontitis. Gingival bleeding (1, 13), mobile teeth or increased space between the teeth (22) were chosen as correct answers.

The second question was:

Dental diseases can be treated in many ways. There are also many types of examinations in dentistry. Do you know which of the following types of treatments and examinations that are intended for caries and periodontitis?

Also here there was a list of treatments and examinations for caries and periodontitis: scaling, gingival surgery, careful dental hygiene, cleaning between the teeth, pocket probing, X-ray examination, filled teeth, polishing of discoloured teeth, seals with fluoride and fluoride tablets. Pocket probing (7) and x-ray scans on the bone (18, 28) scaling (7) and gingival surgery (26) were chosen as correct answers for periodontitis. Careful dental hygiene including cleaning between the teeth was regarded as correct answers for “both caries and periodontitis” because these alternatives also are well known preventive methods against caries (4).

Statistical analyses

Since there is a dependency between the observations in a panel study, a non-parametric test, Wilcoxon rank sum test (3) was used to analyse consistency in responses before and after the campaign. In a before-after comparison, it is also desirable to consider the possibility of a randomly correct answer hence Cohen’s Kappa (32) was...
Included in the before-after coherence measurement. Among those changing their answers the quotients between those changing from wrong to correct and those changing from correct to wrong were calculated. In the drop out analysis, logistic regression was used. Statistical significance was defined as $p < 0.05$. The analyses were done using SPSS version 6.1 for the Macintosh.

**Result**

After the campaign there was a general improvement among the respondents concerning the knowledge of periodontitis regarding diagnosis, symptoms and treatment. Consistency in responses was high as tested by the Wilcoxon test. The numbers changing from wrong to correct were about twice as high as those changing from correct to wrong (Table 1).

Table 1 shows that most of the questions presented a significant increase in the number of correct answers. In order to simplify the table, which is based on nine cross tables, the difference was calculated in both percent units and the quotients between the first and the second questionnaire. Kappa values were calculated so that the consistency in the reply could be examined. These results are shown in Table 2.

The table shows that there were large percent units variations between the answers before and after the campaign. The kappa values varied and were all statistically significant.

**Discussion**

The aim of this paper was to evaluate if a mass medial campaign regarding periodontal disease could increase the knowledge of diagnoses, symptoms and treatment.

### Table 1. Percentage distributions of the respondents that giving correct and wrong answers before and after the mass medial campaign, and quota in change from “wrong to correct” answer in relation to from “correct to wrong” answers.

<table>
<thead>
<tr>
<th>Correct answer</th>
<th>Before (%)</th>
<th>After (%)</th>
<th>$p$-value</th>
<th>Quota</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival bleeding</td>
<td>56</td>
<td>61</td>
<td>&lt;0.058</td>
<td>1.62</td>
<td>370</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>57</td>
<td>65</td>
<td>&lt;0.003</td>
<td>2.32</td>
<td>365</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>39</td>
<td>49</td>
<td>&lt;0.001</td>
<td>2.38</td>
<td>356</td>
</tr>
<tr>
<td>Scaling</td>
<td>34</td>
<td>36</td>
<td>&lt;0.453</td>
<td>1.20</td>
<td>380</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>51</td>
<td>60</td>
<td>&lt;0.001</td>
<td>2.63</td>
<td>350</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>51</td>
<td>60</td>
<td>&lt;0.001</td>
<td>2.52</td>
<td>365</td>
</tr>
<tr>
<td>X-Ray examination</td>
<td>32</td>
<td>40</td>
<td>&lt;0.013</td>
<td>1.78</td>
<td>348</td>
</tr>
<tr>
<td>Careful dental hygiene **</td>
<td>65</td>
<td>73</td>
<td>&lt;0.001</td>
<td>1.13</td>
<td>376</td>
</tr>
<tr>
<td>Cleaning between the teeth **</td>
<td>56</td>
<td>66</td>
<td>&lt;0.001</td>
<td>1.18</td>
<td>380</td>
</tr>
</tbody>
</table>

*Change from wrong to correct answer in relation to from correct to wrong answer.

**This alternative was linked with “both caries and periodontitis”

### Table 2. The differences in percent units as well as quotas and Kappa Values between the correct answers in the study before ($t_0$) and after the campaign ($t_1$)

<table>
<thead>
<tr>
<th>Percent units</th>
<th>Quota $t_1/t_0$</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival bleeding</td>
<td>5</td>
<td>1.1</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>8</td>
<td>1.1</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>10</td>
<td>1.2</td>
</tr>
<tr>
<td>Scaling</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>X-Ray examination</td>
<td>8</td>
<td>1.2</td>
</tr>
<tr>
<td>Careful dental hygiene *</td>
<td>8</td>
<td>1.1</td>
</tr>
<tr>
<td>Cleaning between * the teeth</td>
<td>10</td>
<td>1.2</td>
</tr>
</tbody>
</table>

* This alternative was linked with “both caries and periodontitis”
treatments. To measure the effect of the campaign a cohort design was used (9). The same respondents thus got the questionnaire before and after the campaign. In general, there was an improvement in correct answers before and after the campaign.

Mass media are powerful forces in modern society and therefore an important element in health promotion (34). The media function has its importance in community health based promotion because of its dissemination and expose to the public in general (8). Oral health promotion and mass media are shown to be effective in changing people knowledge (27,38) which seems to be confirmed in this study.

Media and campaign information are by definition given to many people without personal contacts. The message and impact could be more or less meaningful to different individuals. Communication attempts are conducted to do more than ensure that the message had been understood. There will also be a learned outcome such as change in belief and attitude outcome (34). In mass media campaigns there are no immediate feedback and it can be difficult to reach the intended target group - a communication dilemma. Kay & Locker (14) mean that no specific conclusions can be made regarding the role of mass media and their effectiveness in knowledge and behavioural changes following oral health promotion, while Watt et al. (37) means that mass media campaigns have their strength in increased awareness. It seems as if the present results in this study supports that there could have been an increase in knowledge. This does not mean that there necessarily have been any behavioral changes, nor does it mean that there was a long lasting effect of the campaign. Still, this study demonstrates a short term increase in knowledge, which seems difficult to ascribe other occurrences than the campaign. Maybe an explanation can be that the campaign included an element of personal contact between dentists/dental hygienists and patients. It was thus not only restricted to mass media. There is evidence for that mass media are more effective if they include personal contact elements (35).

Commenting the results more in detail, one may note that for Table 2, the difference in percent units may be an understatement of the real difference. The quota value between the correct answer before and after the campaign shows an effect of the campaign even if some of the results did not display a significant improvement. For understanding the kappa values one should have in mind that it is desirable that the values should be low i.e. that there are differences in responses before and after the campaign. This was especially the case for X-rays and cleaning between the teeth, but as a whole the values were low.

An important question is the validity and reliability of the questions. The low kappa values could indicate a low test – retest reliability of the questions. The time interval of 6 months should be enough to minimise recall of the first response. Our conclusion is that the reliability is sufficient for the contention that real changes have occurred. Concerning validity there is no “golden standard” possible for the questions here. It is shown that mail questionnaires have good validity for questions about periodontal diseases, especially for questions about changing position of the front teeth and problems with gingival bleeding (36).

In all studies there are strengths and weaknesses. One strength of this study is the cohort design. The special strength in a cohort design lies in the established relation between antecedent events and outcomes during time (15). A weakness of the study is that factors outside the campaign were not controlled, since there was not and could not be a control group. The campaign was comprehensive and nation wide. The high drop-out is another problem. The interpretation of the results should be done with caution. Further the present study did not include behavioural change since its focus was on change in knowledge. The changes were also registered for relatively short time period, so no conclusion can be made of a long-term effect. Still the results do indicate an increased knowledge among the respondents concerning diagnoses, symptoms, as well as treatments of periodontitis. Therefore, from a public health awareness point of view the campaign probably was successful.

It is important that oral health is considered as significant as the general health for a public health viewpoint. Increased dental health awareness of the public might help to step up the role of dental services in the effort to improve the public health. Continued studies are necessary in the form of a deepened drop-out analysis and a multivariate analysis finding social differentials in the receptivity for the campaign.

References
2. Albandar JM. Global risk indicators for periodontal

Address: Carina Mårtensson Kristianstad University Department of Health Sciences SE - 291 88 Kristianstad Sweden E-mail: carina.martensson@hv.hkr.se
Factors behind change in knowledge after a mass media campaign targeting periodontitis

Abstract: The aim of this study was to investigate changes in knowledge before and after a mass media campaign, in relation to social attributes, care system attributes and oral health aspects. The study was based on a questionnaire in a cohort design, sent out to 900 randomly sampled people aged 50–75 in Sweden. The response rate to the questionnaire before and after the campaign was 70% and 65% respectively. Sixty-four percent answered both questionnaires. Two questions addressed knowledge, while 10 questions aimed to measure social attributes, care system attributes and oral health aspects. Data were analysed for bivariate relations as to change in knowledge and social attributes, care system attributes and oral health aspects. Data were also analysed in multiple regression analysis with knowledge before, knowledge after and knowledge differences as dependent variables. The results showed that there were a number of independent variables with influence on the dependent variables. Of the social attributes, secondary education gave almost 10% \((P < 0.001)\) better knowledge both before and after the campaign. Among care system attributes, high care utilization was related to knowledge both before and after the campaign. The most important factors for knowledge about periodontitis were education, care utilization and perceived importance of oral health. In conclusion, this study demonstrates that mass media might increase knowledge about periodontitis as a health promotion strategy.

Keywords: education; mass media and campaigns; oral health and knowledge; promotion; social impact
Introduction

From a public health viewpoint oral health is an essential component of a good life and also considered as an important part of general health (1). Improvements in oral health have occurred in Scandinavia and other industrialized societies during the last 50 years. This includes the two major dental diseases, caries and periodontitis (2). However, periodontitis is still prevalent in the adult population in Sweden (3) and its incidence and severity tend to increase with age (4). There are also possible associations between coronary heart disease (5, 6) and diabetes mellitus (7, 8). Therefore, periodontitis is an important target for oral health promotion.

Based on the hypothesis that behavioural change is preceded by information, improvement in knowledge is an essential part of health promotion. Education results in a change in knowledge (9), increasing the possibilities for people to take control over their own health options (10, 11). An important method in such a context is the use of media. Using mass media, the public can be updated about health risks and mass media can play a supporting role for disease prevention and health promotion (12). Mass media can be used to influence knowledge and attitudes by series of signs and symbols, encoded in the messages to raise attention and motivation for desired actions (13).

Knowledge and awareness through mass media can prepare individuals for lifestyle changes, influencing health and wellness (1). In an oral health context, media have also been used to increase public awareness and knowledge. Bakdash et al. (14) evaluated a mass media campaign targeting periodontal awareness, showing that individuals who had been exposed to the campaign could identify periodontal diseases better than those who had not. Campaigns aiming to increase knowledge and awareness about oral health based on ‘women’s magazines’, ‘television commercials’ and ‘materials for home use’ have been reported to have a similar, but rather weak effect (15). Rise et al. (16) found that a campaign about periodontal disease had an effect on preventive knowledge and behaviour related to periodontal diseases. After a national campaign encompassing the adult population in Sweden regarding periodontal diseases, increased knowledge was found (17).

The knowledge about which factors have an effect on receptivity for media messages in an oral health context is scarce. In this paper, the aim was to analyse factors associated with knowledge of periodontitis. More precisely, changes in knowledge before and after the mass media campaign were analysed in relation to social attributes, care system attributes and oral health aspects.

Methods

The campaign

In 1999 the Swedish Association of Periodontology initiated a mass media campaign in Sweden with the purpose of increasing knowledge of periodontitis. It was also intended as a health promotion campaign. The campaign involved newspapers, radio, television and brochures. Information describing periodontitis was sent to approximately 300 newspapers and to the radio and television stations. This resulted in 40 newspaper articles, 25 radio broadcasts, six long radio programmes and five broadcasts on local television. There was also a programme about periodontitis on nationwide television (18).

Study base

The study was carried out in collaboration with the Swedish Association of Periodontology and based on a mail questionnaire with a panel design to 900 randomly sampled individuals aged 50–75 in Sweden. The first questionnaire was sent to the respondents before the campaign (n = 900) and a second one after the campaign (n = 874). There were nearly 6 months between the first and the second questionnaires. The response rate to the questionnaire before the campaign was 70%, but 65% to the one after. In all, 64% (n = 558) of the respondents answered both questionnaires (17).

Dropout

As a first step in the analysis, non-response was studied in relation to the sample of 558 persons who responded to both questionnaires. There was a difference in age (P = 0.043, t-test) but no difference in gender (P = 0.665, chi-square test) in relation to the study population (17). There was also a sizeable internal non-response, regarding the knowledge questions, leaving a net of 316 (36%) respondents with complete data on all questions on both occasions. Because of the large internal non-response rate, the net sample was assessed for representativeness. Non respondents were analysed with the variables gender, age and education. There was no significant difference between the respondents and non-respondents according to gender (P = 0.575). There was, however, a significant difference in age (P < 0.0005). The respondents were younger than the non-respondents. A significantly higher share of non-respondents was also found in the group with ‘primary education’ in relation to the group with ‘secondary education’ (P = 0.001).
Questionnaire design

The questionnaire contained 20 questions concerning attitudes about teeth, quality of life, and questions about diagnosis, symptoms and treatment of periodontitis. Two questions from the questionnaire were selected for evaluation of the difference in knowledge about periodontitis before and after the campaign. The response alternatives to the questions were to be linked with periodontitis. The term 'periodontitis' was used in the questionnaire without explanation or definition, as the intention was to assess whether the term was known among the public.

The first knowledge question was: ‘You can note in various ways that you are suffering from a dental disease, such as caries or periodontitis. Do you know which of the following troubles and symptoms might indicate that you suffer from caries or periodontitis?’ The response alternatives were: black and brown plaque on the teeth, gingival bleeding, sensitive teeth, toothache, mobile teeth, bad breath, aching mouth, coated tongue and increased space between the teeth. Gingival bleeding, mobile teeth and increased space between the teeth were chosen as correct answers in analyses of the question.

The second question was: ‘Dental diseases can be treated in many ways. There are also many types of examinations in dentistry. Do you know which of the following types of treatments and examinations are intended for caries or periodontitis?’ The response alternatives were: scaling, gingival surgery, careful dental hygiene, cleaning between the teeth, pocket probing, X-ray examination, filled teeth, polishing of discoloured teeth, sealing with fluoride and fluoride tablets. Scaling, gingival surgery, careful dental hygiene, cleaning between the teeth, pocket probing and X-ray were chosen as correct answers in analyses of the question.

In combining these questions, the maximum number of correct answers was nine. The combination was used for three variables: knowledge before (A), knowledge after (B) and knowledge difference (B−A). In this study, these questions were used as dependent variables in the statistical analyses.

Ten additional questions from the questionnaire were used as independent variables in relation to the knowledge questions. The questions were taken from three different domains: social attributes, care system attributes and oral health aspects.

Social attributes

Regarding social attributes the following variables were used:

- **Age in years** was given from the sampling frame, as was gender. Gender was used as a binary variable with the alternatives ‘female’ and ‘male’, with female set as 1 and male as 0.
- **Marital status** was measured by the question: ‘What marital status do you have at present?’ Response alternatives were: ‘married/live together’, ‘single/living alone’. It was used as a binary variable with the two alternatives ‘single’ and ‘married’. Those who were single were set as 1 and those married as 0.
- **Ethnicity status** was measured by the question: ‘How long have you been living in Sweden?’ Response alternatives were: ‘always’, ‘grew up in Sweden’ and ‘arrived to Sweden as an adult’. It was used as a binary variable with the alternatives ‘born in Sweden’ and ‘born outside Sweden’. Those who were born in Sweden were set as 1 and outside Sweden as 0.
- **Work** was measured by the single question: ‘How many hours per week do you work?’ Response alternatives were: ‘full-time job’ (more than 35 hours/week), ‘part-time job’ (15–34 hours/week), ‘1–14 hours per week’ and ‘not working at all’. The variable was used as is, coded in four ordinal categories.
- **Education** was measured by the question: ‘What education do you have?’ Response alternatives were: ‘elementary school/nine-year compulsory school’, ‘junior secondary school/folk high school’, ‘two years’ high school’, ‘three or four years’ high school’, ‘university education’ and ‘other education’. This question too was used as a binary variable with the alternatives ‘primary education’ including ‘elementary school/nine-year compulsory school’, ‘junior secondary school/folk high school/secondary school/two years’ high school’ and ‘secondary education’ including ‘three or four years’ high school’, ‘university education’ and ‘other education’. Those who indicated secondary education were set as 1 while primary education was set as 0.

Care system attributes

Regarding care system attributes, the following variables were used:

- **Utilization of dental care** was measured by the question: ‘How often do you visit a dental clinic?’ Response alternatives were: ‘twice a year or more’, ‘once a year’, ‘every second year’, ‘infrequently’ and ‘don’t remember’. It was used as a binary variable with those who indicated twice a year or more set as 1 and the others as 0.
- **Another question about care system attributes** was: ‘Where did your most recent visit to a dental clinic occur?’ Response alternatives were: ‘public dental care’, ‘private dental care’, ‘specialist dental care’, ‘hospital dental care’, ‘dental school’ and ‘don’t remember’. It was used as a binary variable with those who indicated public dental service including ‘public
dental care’, ‘specialist dental care’, ‘hospital dental care’ and ‘dental school’ set as 1 and private dental service set as 0.

About information, one question was used: ‘Did you at your latest dental visit receive any information about...?’ Response alternatives were: ‘oral hygiene’, ‘diet’, ‘fluoride’, ‘tobacco’, ‘estimates of costs’, ‘caries’ and ‘periodontitis’. Those indicating information of periodontitis were set as 1 and the remainder as 0.

Oral health aspects

Regarding oral health aspects, the following variables were used:

Satisfaction was measured by the question: ‘Are you satisfied with your teeth?’ Response alternatives were: ‘yes, very pleased’, ‘yes, pleased’, ‘neither pleased, nor displeased’, ‘rather displeased’ and ‘very displeased’. The variable was coded in five ordinal categories.

Another satisfaction question was: ‘Are you able to chew all kinds of food such as nuts and apples?’ Response alternatives were: ‘yes, very well’, ‘well’, ‘fairly well’, ‘no, not really well’, ‘no poorly’ and ‘no, very poorly’. The variable was coded in six ordinal categories.

In the questionnaire after the campaign, one additional question was used: ‘Have you since your latest dental examination experienced that you have had more information about periodontitis from dental personnel?’ The response alternatives were: ‘yes’, ‘no difference since before’ and ‘have not visited a dental clinic’. It was used as a binary variable with the alternatives ‘yes’ and ‘no’. Those who indicated ‘yes’ were set as 1 and those who indicated ‘no’ were set as 0. The variable was named ‘New information about periodontitis’.

Six questions about the importance of general health in relation to oral health were used. The questions were:

1 How important is it to be able to chew all kinds of food?
2 How important is it not to have any visible missing teeth?
3 How important to you is oral health in relation to general health?
4 How important is it to be able to travel and have pleasure?
5 How important is it to have a pleasant residence?
6 How important is it to have regular personal dental care?

All questions had scale alternatives from 1 to 5, where 1 meant ‘of no importance’ and 5 meant ‘of great importance’. The questions were factor-analysed, resulting in two factors called ‘perceived importance of oral health’ including questions 1, 2, 3 and 6 and ‘importance of living conditions’ including questions 4 and 5. In Tables 1 & 2, the factor ‘importance of health’ was regarded as belonging to the oral health domain, while the factor ‘importance of living conditions’ was regarded as a social attribute.

Statistical methods

Data were analysed for bivariate relations as to change in knowledge and social attributes, care system attributes and oral health aspects. Independent sample t-test and Spearman rank order correlation were used (19). Data were also analysed by multiple regression analyses with knowledge before (A), knowledge after (B) and knowledge difference (B−A) as dependent variables. Cook distances, change in dependent variable when excluding a case, were calculated for detection of influential outliers. Residual plots were inspected for signs of heteroscedasticity, i.e. uneven distribution of residuals (19). For statistical analyses SPSS for Windows 11.0 was used (SPSS, Inc, Chicago, IL, USA). Statistical significance was defined as \( P < 0.05 \).

Results

Significant differences were found between primary and secondary education in knowledge of periodontitis before and after the mass media campaign in the bivariate analyses. There was also a difference as to marital status. Married had better knowledge after the mass media campaign. Individuals receiving information about periodontitis from dental personnel had significantly better knowledge both before and after the mass media campaign. No statistically significant association with knowledge difference was found, except for ‘Perceived importance of oral health’ (Table 1).

In the multiple regression models of knowledge before and after the campaign, there were a number of independent variables showing influence on the dependent variables. Of the social attributes, the most important variable was secondary education, which gave an almost 10% higher score both in knowledge before and knowledge after, compared with those with primary education. There were no differences as to gender and ethnicity. Among the care system attributes, high care utilization was related to knowledge both before and after the campaign. Respondents who had received information about periodontitis had nearly 20% better knowledge before than those who did not. Visiting a dental clinic twice a year or more was also related to knowledge. The oral health related variable ‘chewing ability’ was connected with the dependent variable knowledge after. Respondents with poorer capability to chew had less knowledge. In the model of knowledge difference, there were no independent variables significantly associated with the dependent variable (Table 2).
Discussion

In a previous report it was found that a mass media campaign was associated with increased knowledge about periodontitis (17). In this paper, it was shown that education, utilization and high subjective importance of oral health were related to knowledge, both before and after the campaign. Age and information about periodontitis from dental clinics were associated with knowledge of periodontitis before the campaign. The finding that education may be an important determinant for knowledge of periodontitis is not surprising. Similar results have been reported earlier. Paulander et al. (20) reported that education was related to need for treatment of periodontitis and Norderyd et al. (4) found that respondents with no bone loss had higher education. Also Unell et al. (21) reported that those with higher education had fewer damaged teeth.

Utilization of dental care was also associated with knowledge of periodontitis before and after the mass media campaign. This result is in accordance with Bader et al. (22), who reported that individuals regularly visiting dental clinics were rather well informed about periodontal diseases. The dentist or dental hygienist may give information about periodontitis. Persons visiting dental clinics are more often open to assimilating dental messages. Bakdash et al. (14) reported that regular dental visitors viewed and recalled messages about periodontal disease from a periodontal television campaign more frequently than irregular visitors. There was also a relation between age and knowledge of periodontitis before the campaign, similar to the relation between age and having the disease (4, 23). Older people were generally more knowledgeable about treatment and signs of periodontitis (22). However, in this paper we did not find that the knowledge of periodontitis increased after the campaign in relation to age.

| Table 1. Bivariate relations between knowledge and social attributes, care system attributes and oral health aspects |
|---------------------------------------------------|---|---|---|---|---|---|
| SOCIAL ATTRIBUTES                                  | MEAN | n  | P     | MEAN | n  | P     | MEAN | n  | P     |
| Gender                                            |     |    |       |     |    |       |     |    |       |
| Female                                            | 2.89 | 260 | 0.718 | 3.87 | 182 | 0.044 | 0.65 | 157 | 0.119 |
| Male                                              | 2.98 | 247 |        | 3.65 | 181 |        | 0.32 | 159 |        |
| Marital status                                    |     |    |       |     |    |       |     |    |       |
| Married                                           | 3.04 | 390 | 0.078 | 4.01 | 286 | 0.001 | 0.43 | 248 | 0.223 |
| Single                                            | 2.55 | 116 |        | 2.86 | 75  |        | 0.74 | 67  |        |
| Ethnicity                                         |     |    |       |     |    |       |     |    |       |
| Not born in Sweden                                | 2.65 | 58  | 0.078 | 3.34 | 45  |        | 0.35 | 37  |        |
| Born in Sweden                                    | 2.98 | 449 | 0.084 | 3.83 | 317 | 0.054 | 0.50 | 279 | 0.363 |
| Work†                                            | 0.10 | 507 | 0.019 | -0.11| 329 | 0.054 | -0.05| 316 | 0.223 |
| Education                                         |     |    |       |     |    |       |     |    |       |
| Primary                                           | 2.46 | 331 |        | 3.22 | 210 |        | 0.52 | 190 |        |
| Secondary                                         | 3.85 | 175 | <0.0005| 4.57 | 147 | <0.0005| 0.43 | 126 | 0.677 |
| Importance of living conditions†                  | 0.05 | 503 | 0.242 | -0.04| 329 | 0.465 | -0.07| 314 | 0.217 |
| Care system attributes‡                           |     |    |       |     |    |       |     |    |       |
| Other                                             | 2.63 | 315 |        | 3.54 | 223 |        | 0.55 | 192 |        |
| Twice/year or more                                | 3.46 | 191 | 0.001 | 4.35 | 130 | 0.005 | 0.42 | 119 | 0.575 |
| Care system                                       |     |    |       |     |    |       |     |    |       |
| Private dental service                             | 2.94 | 336 |        | 3.99 | 231 |        | 0.45 | 204 |        |
| Public dental service                              | 2.94 | 168 | 0.918 | 3.54 | 109 | 0.142 | 0.71 | 94  | 0.265 |
| Information about periodontitis                    | 2.74 | 462 |        | 3.64 | 317 |        | 0.46 | 278 |        |
| Yes                                               | 4.93 | 45  | <0.0005| 4.58 | 46  | 0.025 | 0.65 | 38  | 0.558 |
| Oral health aspects                                |     |    |       |     |    |       |     |    |       |
| Satisfaction                                      |     |    |       |     |    |       |     |    |       |
| With teeth†                                       | 0.01 | 507 | 0.796 | -0.02| 331 | 0.731 | -0.09| 316 | 0.096 |
| Chewing ability‡                                   | 0.13 | 507 | 0.004 | -0.14| 331 | 0.012 | -0.02| 316 | 0.762 |
| Perceived importance of oral health†              | 0.10 | 503 | 0.021 | 0.02 | 329 | 0.723 | 0.13 | 314 | 0.015 |

*Knowledge difference (B-A) analysed from the questionnaire before the campaign.‡Knowledge difference (B-A) analysed from the questionnaire after the campaign.†Spearman rank order correlation.
Perceived importance of oral health was associated with knowledge about periodontal disease both before and after the campaign. This is not surprising. Higher salience of oral health ought to be followed by greater interest and thus better knowledge.

A weakness in this study is the high dropout of complete data on the knowledge questions. Non-response of 30–35% is usually regarded as acceptable for questionnaires (24). In our study there was a response rate of 64% (n = 558) answering both questionnaires. Still only 36% of the sampling frame answered with complete data on both occasions to the knowledge differences variables. In the dropout analysis it was found that there was a higher share of non-respondents in the group of primary education. This might have improved the results and therefore the results have to be interpreted with caution.

There are biases in questionnaire validity. It could therefore be difficult to determine, e.g., whether there was an association between exposure to the campaign and outcome. Some of the items in the questionnaire in our study were taken from other questionnaires (25, 26), and were partly tested for validity. Due to the nationwide address of the campaign, it was not possible to have a control group.

The effects in this study were analysed by questionnaires in a cohort design (27). The valuable for the study was that the same respondents received the questionnaire before and after the campaign. A cohort design also has to consider the time elapsed between the implementation and the outcome measure. In this study there were approximately 6 months between our two questionnaires. A longer time span would probably have resulted in less knowledge improvement, since the campaign was not continuous but rather limited in duration.

Mass media can be useful for oral health promotion and education to many people in a specified period of time. Oral health promotion comprises a range of complementary approaches including building healthy public policy, creating supportive environments and strengthening public policy. These aspects were not studied here. A disadvantage in the use of media is that there is no direct contact with the audience missing the possibility of dialogue and feedback with the respondents. Mass media campaigns have other drawbacks. Many people will not be exposed to the campaign, many will not pay any attention, some will not understand or believe the message and some are not motivated to act or will forget the message. Therefore, a successful outcome of a campaign cannot be taken for granted (29).

However, Tones (28) says that the lack of informative depth in the mass media can be compensated by the capability to influence a large number of people. Public health campaigns can therefore be a useful tool for oral health promotion and education.

| Table 2. Multiple regression models of knowledge before and knowledge after the campaign and differences in knowledge |
|--------------------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| **Independent variable**                         | Knowledge before (0–9) (A), n = 499 | Knowledge after (0–9) (B), n = 327 | Knowledge differences (B–A), n = 310 |
|                                                  | b                               | P                               | b                               | P                               | b                               | P                               |
| Social attributes                                |                                  |                                  |                                  |                                  |                                  |                                  |
| Age (in years)                                   | −0.06                           | 0.001                           | 0.02                            | 0.303                           | 0.03                            | 0.161                           |
| Gender (female)                                  | 0.02                            | 0.921                           | 0.27                            | 0.321                           | 0.29                            | 0.177                           |
| Marital status (married)                         | −0.32                           | 0.225                           | 0.01                            | 0.970                           | 0.33                            | 0.192                           |
| Ethnicity (born in Sweden)                       | 0.56                            | 0.126                           | 0.72                            | 0.094                           | 0.19                            | 0.567                           |
| Work (1–5)                                       | 0.13                            | 0.209                           | 0.02                            | 0.876                           | −0.12                           | 0.339                           |
| Education (secondary)                            | 1.24                            | <0.0005                         | 1.42                            | <0.0005                         | 0.04                            | 0.868                           |
| Importance of living conditions (4–10)           | 0.02                            | 0.838                           | −0.16                           | 0.154                           | 0.08                            | 0.333                           |
| Care system attributes                           |                                  |                                  |                                  |                                  |                                  |                                  |
| Care utilization (high)                          | 0.69                            | 0.003                           | 0.76                            | 0.010                           | 0.08                            | 0.739                           |
| Care system (private)                            | 0.15                            | 0.516                           | −0.16                           | 0.583                           | 0.08                            | 0.717                           |
| Information about periodontitis                  | 1.98                            | <0.0005                         | 0.40                            | 0.390                           | 0.03                            | 0.939                           |
| Oral health aspects                              |                                  |                                  |                                  |                                  |                                  |                                  |
| Satisfaction with teeth (1–5)                    | 0.19                            | 0.211                           | 0.34                            | 0.098                           | 0.00                            | 0.963                           |
| Chewing ability (1–6)                            | −0.28                           | 0.060                           | −0.52                           | 0.003                           | 0.01                            | 0.933                           |
| Perceived importance of oral health (9–20)       | 0.18                            | 0.003                           | 0.16                            | 0.034                           | 0.01                            | 0.830                           |
| New information about periodontitis              | 0.78                            | 0.111                           | 0.62                            | 0.103                           |                                  |                                  |
| Adj. $R^2$                                       | 0.16                            | 0.14                            | −0.01                           |                                  |                                  |                                  |
| F/df, 1/df, 2                                    | 8.28/13/486                     | 4.80/14/313                     | 0.78/14/296                     |                                  |                                  |                                  |
| Model significance                              | <0.0005                         | <0.0005                         | 0.695                           |                                  |                                  |                                  |
References

Knowledge of periodontitis and self-perceived oral health a survey of periodontal specialist patients

Carina Mårtensson 1, Björn Söderfeldt 2, Björn Axtelius 2, Pia Andersson 1

1School of Health and Society, Kristianstad University, Kristianstad, Sweden
2Department of Oral Public Health, Faculty of Odontology, Malmö University, Malmö, Sweden

Running title: Knowledge and self-perceived oral health

Keywords: Periodontitis, knowledge, self-perceived oral health

Carina Mårtensson
Kristianstad University
School of Health and Society
SE- 291 88 Kristianstad
Sweden
Phone +46 (0)44 20 40 74
Fax +46 (0)44 20 40 19
E-mail: carina.martensson@hkr.se
Abstract
The aim of this study was to investigate changes in knowledge of periodontal disease among patients referred to periodontal specialist clinics. A further aim was to investigate the patients’ self-perceived oral health before the treatment. Patients referred to five specialist clinics in periodontology for comprehensive periodontal treatment were consecutive sampled. The study was based on a questionnaire in a before and after design. The first questionnaire was sent to the patients before visiting the specialist clinic and the second was sent after six months. Four questions were analysed, two to measure knowledge about periodontitis and two to measure the patients' self-perceived oral health. The first questionnaire was sent by post to 273 patients with a response rate of 31%. The second questionnaire was sent to 85 patients with a response rate of 73%.

The results of the study showed a statistically significant improvement of correct answers on the knowledge questions after six months was found for scaling (p=0.006), X-ray examination (p=0.001) and increased space between the teeth (p=0.001). The most frequent self-perceived trouble from the mouth was bleeding gum (70%) and sensitive teeth (51%). In conclusion knowledge of periodontitis improved after visiting the specialist clinic of periodontology. Many of the patients experienced some problems of the mouth.
**Kunskap om parodontit och självupplevd mun hälsa hos patienter remitterade till specialistklinik i parodontologi**

Carina Mårtensson, Björn Söderfeldt, Björn Axtelius, Pia Andersson

**Sammanfattning**

Syftet med studien var att undersöka om patienters kunskap om parodontit ökade efter behandling på specialistklinik i parodontologi. Ett ytterligare syfte var att undersöka patienternas självupplevda munhälsa före behandling på specialistklinik.


Resultatet visade att det fanns en statistisk signifikant ökning av rätt svar på kunskapsfrågorna efter besöket på specialistkliniken när det gällde ”scaling” (p=0.006), röntgenundersökning (p=0.001) och ”ökade mellanrum mellan tänderna” (p=0.001). De mest frekventa rapporterade besvären från munnen var ”blödande tandkött” (70%) och ”känsliga tänder” (51%). Sammanfattningsvis ökade kunskapen om parodontit efter besöket på specialistkliniken i Parodontologi när det gäller rätt svar på kunskapsfrågorna. Många av patienterna upplevde något besvär från munnen.
Introduction

In Western countries improvement in oral health has occurred during the last decades (45). However, periodontitis is still a prevalent disease in adult populations, even if decreases have been reported (3, 17). Periodontitis is an infectious disease, influenced by several factors, such as genetic, demographic and socioeconomic factors (2) or lifestyle factors such as smoking and poor oral hygiene (5, 31). Psychosocial factors, e.g. stress (6, 19, 37) also seem to have an impact. Furthermore, the disease seems to increase with age (32, 39). Currently, there has also been focus on the association between periodontal health and general health, especially cardiovascular disease (25, 36) respiratory disease (33) and diabetes (43).

Lacking knowledge of oral health could be a barrier to effective oral preventive efforts. It is shown that knowledge about prevention of periodontitis is related to oral health behaviour (12). Therefore, oral health education aimed at improving knowledge could be important to prevent periodontal problems (26). Furthermore, the patient’s knowledge of periodontitis and level of education can influence the severity of the disease. Paulander et al. (35) reported that people with higher education had less need for periodontal treatment. It has also been reported that high education, frequent care utilization, and perceived importance of oral health are related to higher knowledge of periodontitis (28).

Oral health can be described from the profession’s view based on clinical examinations, and from the patient’s view based on experience and satisfaction. From the profession’s view, the severity of periodontitis is usually documented by clinical findings, for example bleeding on probing and pocket depth (1). From the patient’s view, experience and satisfaction together with symptoms such as bleeding when brushing and bad breath, can affect the individual’s well-being and quality of life (25). Associations between oral health and quality of life have been reported. In patients with periodontitis, deeper periodontal pockets indicated poorer oral health-related quality of life (8, 31, 30). The experience and satisfaction of oral health is based
on self reports and can be valid to identify periodontal conditions (35). It can also be used as an epidemiological tool in studies of periodontal health (10).

Periodontitis can be characterised by a slow progression and the signs are seldom obvious for the patient in the beginning of the disease. Therefore, patient’s awareness and knowledge of the disease are important. To our knowledge, no studies in these areas have focused on patients referred to specialist clinics.

**Aim**

The aim of this study was to investigate changes in knowledge of periodontal disease among patients referred to periodontal specialist clinics before and after treatment. A further aim was to investigate the patient’s self-perceived oral health before visiting the periodontal specialist clinic.

**Material and method**

**Study base**

The study was based on a mail questionnaire in a before and after design. Patients referred to five public specialist clinics of periodontology in southern Sweden for comprehensive periodontal treatment were consecutive sampled for the study. Periodontology is a recognized speciality in Sweden with specialist clinics both in the public and private dental health services. The specialist clinics in Periodontology perform examinations of periodontal tissues, diagnose, prevent and treat periodontal diseases. This includes procedures as information and instruction to prevent periodontal diseases and sub and supra gingival scaling, often assessed by a dental hygienist (18). The treatment can also include gingival surgery performed by the dentist.
The questionnaires were coded with a number and only persons working with the study could link the code with a name. The respondents were given written information about the study, how the sample was selected, that the questionnaire was coded, and how they could be given further information about the study. They were also asked to give a written consent. The study was approved by the Regional Research Ethics Board in the Southern region (Dnr 435/2007).

The first questionnaire included 12 questions concerning knowledge of symptoms and treatment of periodontitis, self-perceived oral health, quality of life, expectations about treatment of periodontitis, questions about health in general, as well as about oral health. There were also questions about marital status, ethnicity, work and education. The second questionnaire included 10 questions concerning knowledge of symptoms and treatment of periodontitis, and satisfaction with periodontal treatment. Age and gender were given from the sampling frame.

The first questionnaire was sent by mail to the patients during December 2007 until January 2009 before their first appointment at the specialist clinic. This questionnaire was distributed by the staff at the different clinics of periodontology. A second questionnaire was sent after approximately 6 months to those patients who answered the first questionnaire. For the second questionnaire, a reminder was sent after four weeks with a letter explaining the importance to respond. After another four weeks, a reminder with a new questionnaire and a stamped envelope was sent to the non-respondents.

Response

From five different Departments of Periodontology, 273 questionnaires were sent by regular mail to patients in connection to their first appointment at the clinic. The response rate to the questionnaire was 31% (n=85). Patients answering were 64% (n=54) women and 36% (n=31)
men. Gender and age were known for the non-respondents. In a bivariate analysis, no difference was found either in age (p=0.122, t-test) nor in gender (p=0.176, Chi2-test) between the respondents and non-respondents. The second questionnaire was sent by mail to the 85 respondents answering the first questionnaire. The response rate was 73% (n=62), 68% were women and 32% were men. There was no difference in age (p=0.095, t-test) or gender (p=0.055, Chi2-test) between the respondents and non-respondents as to the second questionnaire.

The mean number of the patients (n=61) visiting the clinics of Periodontology during the six months was 4.27. The mean number visiting a dental hygienist was 3.53 and visiting a dentist was 2.53. 40% of the participants (n=61) visited the dental hygienist and 20% visited the dentist more than four times during the six months.

**Data collection**

In this paper, two questions were selected to evaluate knowledge of periodontitis. Another two questions were selected to indicate self-perceived oral health, one to evaluate troubles in the mouth, and one to evaluate the impact of oral conditions on everyday well-being.

Two questions were used for evaluating knowledge of periodontitis focusing on symptoms and treatment. The response alternatives were to be linked with periodontitis (response alternatives were “caries”, “periodontitis”, “both caries and periodontitis”, “neither caries nor periodontitis” and “I don’t know”). The first question was: “You can note in various ways that you are suffering from a dental disease, such as caries and periodontitis. Do you know which of the following troubles and symptoms that might indicate that you suffer from caries or periodontitis”? Alternatives for answering were: “black and brown plaque on the teeth”, “gingival bleeding”, “sensitive teeth”, “toothache”, “mobile teeth”, “bad breath”, “aching mouth”, “coated tongue”, and “increased space between the teeth”. Gingival
bleeding, mobile teeth and increased space between the teeth were chosen as correct answers. The second question was: ”Dental diseases can be treated in many ways. There are also many types of examinations in dentistry. Do you know which of the following types of treatments and examinations that is intended for caries and periodontitis?” The variables for answering were: “scaling”, “gingival surgery”, “careful dental hygiene”, “cleaning between the teeth”, “pocket probing”, “X-ray examination”, “filled teeth”, “polishing of discoloured teeth”, “sealing with fluoride” and “fluoride tablets”. Pocket probing, X-ray examination, scaling, gingival surgery, careful dental hygiene and cleaning between the teeth were chosen as correct answers. Careful dental hygiene and cleaning between the teeth was regarded as correct answer in connection to “both caries and periodontitis”. These questions have earlier been used by Mårtensson et al. (27).

In combining the two knowledge questions, the number of possible correct answers was nine. The combination was used for three variables “knowledge before” (A), “knowledge after” (B) and “knowledge differences” (B-A).

To evaluate self- perceived oral health, the first question was: “One can have many different troubles from the mouth and teeth. Do you for yourself experience that you have one or more of the following troubles or worries”? The items for answering can be seen in table 3. Each item could be answered by using the alternative “no troubles” regarded as 1, “some troubles” regarded as 2, “quite many troubles” regarded as 3 “and big troubles” regarded as 4. The total score ranged from 17 (no troubles) to 68 (maximum of troubles). This question has earlier been used by Unell (44) and Ståhlnacke et al. (42).

The second question to evaluate self- perceived oral health was aiming to assess the impact of oral conditions on everyday well-being. The Oral Health Impact Profile 14 (OHIP) questionnaire was used (41). All the items began in the same way: “How often have you as result of your oral cavity, teeth, jaw or prostheses during the past year experienced the
following situations”? The items were divided into seven dimensions, “functional limitation
“physical pain”, “psychological pain”, “physical disability”, “psychological disability”,
“social disability” and “handicap”. The answers were rated, “all the time” = 5, “very often” =
4, “fairly often” = 3, “sometimes” = 2, “hardly ever” = 1, “never” = 0 and “not applicable to
me” rated as no response. The total score for the index (range 0-70 points) was obtained by
adding the individual points for each question.

Social attributes, age and gender, were given from the sampling frame. Marital status
was assessed by the question: “What marital status do you have”? Response alternatives were:
“married/live together”, “living alone” and “another”. It was used as a binary variable with
the two alternatives “married” (married/live together) and “single” (living alone and another).
Ethnicity status was measured by the question: “How long have you been living in Sweden”? 
Response alternatives were: “always”, “grown up in Sweden” and “arrived to Sweden as an
adult”. It was used as a binary variable with the alternatives “born in Sweden” (always) and
“born outside Sweden” (grown up in Sweden/arrived to Sweden as an adult).

Education was measured by the question: “What education do you have”? The response
alternatives were: “elementary school/nine year compulsory school”, “junior secondary
school/ folk high school/two years high school”, “three or four year high school”, “university
education”, and “other education”. Also, this question was used as a binary variable with the
alternatives “primary education” (elementary school/nine year compulsory school, junior
secondary school/ folk high school/two years high school) and “secondary education” (three or
four years high school, university education and other education). Work was measured by the
single question: “How many hours per week do you work”? Response alternatives were: “full
time job” (more than 35 hours /week), “part time job” (between 15-34 hour/week), “between
1-14 hours per week” and “not working at all”. This was used as three variables: “full time
job” (more than 35 hours /week), “part time job” (between 15-34 and 1-14 hours per week) and “not working at all”.

**Statistical method**

Cross tabulation and Chi2-test were used to analyse consistency in responses (4). To test changes in correct answers, Cohen’s Kappa was used (41) in the before and after measurement.

To analyse common self- perceived characteristics of troubles from the mouth, Principal Component Analysis (PCA) was used with varimax rotation based on a correlation matrix. Internal consistency was calculated with Cronbach’s alpha. The OHIP items were analysed with additive scores for each item. Spearman correlation analyses were used to measure correlations between question about troubles from the mouth and the OHIP additive score.

To analyse bivariate relations in correct answer and social attributes (marital status, ethnicity, gender and education), Mann-Whitney $U$-test and an ANOVA test (work) were used. A post hoc pair-wise comparison for “work” was adjusted by the Bonferroni method (30). Data analyses were performed by SPSS (Statistical Package for the Social Sciences version 17.0) Statistical significance was defined as $p<0.05$.

**Results**

**Knowledge questions**

For the first questionnaire, before visiting the specialist clinic, the percentages of giving correct answers to the knowledge questions ranged between 42% and 70%. As to the second questionnaire, the percentages of correct answers varied between 60% and 88%. Thus, there was an improvement among the respondents concerning correct answers to the knowledge questions between the first and the second questionnaire. Some of them were statistically
significant (Table 1). The differences in correct answer between the first and second questionnaire were calculated in quota. To examine the consistency in the responses, Kappa values were calculated varying between 0.15 and 0.72 (Table 1).

Statistically significant differences in correct answers in relation to gender were found (p=0.044) before the first appointment at the specialist clinic (A). Females had better knowledge than males. After six months (B), there was a statistical difference in “ethnicity” (p=0.019). No statistically significant differences were found in difference (B-A) in the bivariate analyses.

**Self-perceived oral health**

The items aimed to measure the respondent’s self-perceived oral health regarding troubles in the mouth were summarized and resulted in a score between 17 (“no troubles”) and 55 (great troubles), with a mean value of 24 (Sd 7.4) and a median value of 23. Five percent of the patients had a score of 17. The most common self-perceived trouble was “bleeding gums” (70%) and “sensitive teeth” (51%) (Table 2). The items were analysed by a PCA. After exclusion of items with low communalities, 10 items remained, and revealed two factors, factor one (F1) named as “pain” and factor two (F2) named as “aesthetics”. Explanation of variance was 41% for the first factor and 22% for the second factor (Table 3). The internal consistency was tested with Cronbach’s alpha and was 0.87 for the first factor and 0.78 for the second factor.

Analysing the impact of oral condition on everyday well-being, as measured with the OHIP14 questionnaire, the mean additive score for the respondents was 7.40 (sd 9.0), median score 4.0 and ranged from 0 to 43. Thirty-one percent of the participants had a score of 0 indicating “no troubles” and 54% had a score between 0 - 4. Regarding the separate items in
the OHIP questionnaire the most frequent problems were in the dimension “Physical pain” (Table 4).

To measure if there was a correlation between the summarized score of troubles from the mouth, the factor “pain”, and “aesthetics” were related to the summarized OHIP. The factor “aesthetics” correlated with the summarized OHIP score ($r = 0.384$, $p < 0.001$) There was no correlation as to “pain” ($r = 0.229$, $p = 0.064$). A correlation analysis was also made between the additive score of OHIP and the knowledge questions. No correlations were found between OHIP additive score and the two questions about knowledge.

**Discussion**

There was an improvement in correct answers after visiting the specialist clinic in periodontology regarding to the knowledge questions about periodontitis. In the separate items of troubles from the mouth, 50% or more reported no troubles, except for bleeding gums and sensitive teeth. Furthermore, in the OHIP measure, over 31% of the respondents stated that they never had troubles from the mouth affecting everyday well-being.

The improvement in correct answers on the knowledge questions before and after six months was significant in some variables in accordance with a previous study evaluating a mass media campaign (27). In the present study, the improvement of correct answers may relate to the personal contact between the caregivers and patients. Karlsson et al. (20) reported that knowledge related to periodontal disease came from information given in relation to treatment at dental clinics. The patients in our study most likely visited a dental hygienist and received information about periodontitis and its treatment. The dental hygienist has a key position to promote and prevent oral health (18) for improving knowledge and thereby influencing the patient’s ability to change oral habits. However, increasing knowledge does not necessarily result in behavioural change. Kay and Locker (21) suggest that oral health
education can lead to improved knowledge, but there is little evidence for behavioural change. That was not evaluated in this study.

There was a statistically significant gender difference in correct answers to the knowledge questions before visiting the specialist clinic of Periodontology. After six months, the only significant difference according to the knowledge questions was found between patients born in Sweden compared to those born outside Sweden. In an earlier study Mårtensson et al. (28) the level of education was a determinant for knowledge, which was not found in this study.

A lot of the respondents in our study experienced their oral health as rather good, despite the referral to a clinic of Periodontology for comprehensive periodontal treatment. For some of the variables measuring troubles from the mouth, 80% or more reported no troubles. Variables in the assessment tool related to periodontal disease showed, however, a higher degree of troubles. Regarding bleeding gums, as many as 70% reported “some” to “big troubles”. Gingival bleeding may be obvious for the patient when brushing their teeth which is in accordance with Gilbert and Nuttall (16) reporting bleeding gum as a predictor.

The validity of self-perceived oral health can be regarded as a consensus between expressions used in the dental clinic and in self-reported questionnaires. Blicher et al. (8) showed lesser validity in a self-reported question asking about “gum disease” than asking about “periodontal disease”. Nevertheless, Unell (44) reported good validity for questions about changing position on the front teeth and problems with gingival bleeding, but less congruence for periodontitis. Dietrich et al. (13) found that individual questions of self-reported periodontal disease had low predictive power and low sensitivity. The self reports can depend on the understanding what is normal for oral health and the specific symptoms for different diseases. It can also be influenced by cultural values (11) and the past experience of
Therefore, it is important that oral health information is understandable when it is given.

A common used instrument to measure self-perceived oral health is the OHIP questionnaire. The OHIP mean additive score (7.40) in our study was higher than reported by Bernabé and Marcenes (7) who had a mean score of 5.4. Furthermore, Einarson et al. (15) reported a mean score of 6.4 when assessing the periodontal disease and quality of life. However in both those studies the participants were from the public population, while ours were patients referred for comprehensive periodontal treatment.

The questionnaires were analysed in a cohort design and the same respondents received the questionnaire before visiting the department of periodontology and after six months. The strength in a cohort design is the relation between earlier events and outcome during time (22). During the six months, the patients have had possibilities to receive repeated information that may result in change in knowledge.

The high drop-out is an obvious weakness in this study since the representativeness in a study my be depending on the response. In this study, only 23% of the sampling frame answered with complete data on both questionnaires. The first questionnaire was sent to the patients by the staff at the different departments in Periodontology. Due to routines at the departments the distribution could not be controlled. Furthermore chronic periodontitis can be without symptoms in the early stage (16) and it is not certain that the patients were informed that they had the disease before referral. Thus, the patients felt that the questionnaire did not concern them.

Those patients who did not respond may be different in other aspects compared to those who did. Reasons for non-response could be lack of time, lack of interest, education (9) or behavioural and socio demographic factors (23). In a study (28) higher education was a predictor for answering. Our data about the drop-out only includes information about age and
gender where no differences were observed. As a lot of factors influence the response rate, and the fact that only 23% answered with complete data, indicates that the results in this study must be interpreted with caution.

In summing up this study showed that correct answers to the knowledge questions improved after visiting a specialist clinic of Periodontology. The patients rated their self-perceived oral health as rather good although many reported some troubles from the mouth.

Acknowledgement

The staff at the four specialist clinics of Periodontology are gratefully acknowledged for participation in this study.
References


Table 1. Percentage distributions, quota and Kappa values of the respondents giving correct answer before visiting the specialist clinic (t₀) and after six mounts (t₁).

<table>
<thead>
<tr>
<th>Correct answer</th>
<th>Correct answer (t₀)</th>
<th>Correct answer (t₁)</th>
<th>p-value (t₁/t₀)</th>
<th>Quota (t₁/t₀)</th>
<th>Kappa value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival bleeding</td>
<td>54 84</td>
<td>71 56</td>
<td>0.073</td>
<td>1.31</td>
<td>0.23</td>
</tr>
<tr>
<td>Mobile teeth</td>
<td>60 83</td>
<td>76 59</td>
<td>0.141</td>
<td>1.27</td>
<td>0.18</td>
</tr>
<tr>
<td>Increased space between the teeth</td>
<td>44 84</td>
<td>66 58</td>
<td>0.001</td>
<td>1.50</td>
<td>0.43</td>
</tr>
<tr>
<td>Scaling</td>
<td>42 83</td>
<td>60 57</td>
<td>0.006</td>
<td>1.35</td>
<td>0.36</td>
</tr>
<tr>
<td>Gingival surgery</td>
<td>64 83</td>
<td>82 55</td>
<td>0.193</td>
<td>1.28</td>
<td>0.72</td>
</tr>
<tr>
<td>Pocket probing</td>
<td>67 83</td>
<td>84 57</td>
<td>0.147</td>
<td>1.26</td>
<td>0.19</td>
</tr>
<tr>
<td>X-ray examination</td>
<td>52 82</td>
<td>64 59</td>
<td>0.001</td>
<td>1.23</td>
<td>0.43</td>
</tr>
<tr>
<td>Careful dental hygiene *</td>
<td>70 83</td>
<td>88 58</td>
<td>0.224</td>
<td>1.25</td>
<td>0.15</td>
</tr>
<tr>
<td>Cleaning between the teeth *</td>
<td>67 84</td>
<td>74 57</td>
<td>0.104</td>
<td>1.10</td>
<td>0.21</td>
</tr>
</tbody>
</table>

* These alternatives were linked with “both caries and periodontitis”
Table 2. Percentage distribution of experience regarding troubles from the mouth

<table>
<thead>
<tr>
<th></th>
<th>No troubles %</th>
<th>Some troubles %</th>
<th>Quite many troubles %</th>
<th>Big troubles %</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tooth colour</td>
<td>56</td>
<td>29</td>
<td>9</td>
<td>6</td>
<td>84</td>
</tr>
<tr>
<td>Tooth shape</td>
<td>68</td>
<td>21</td>
<td>7</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Tilted/angulated teeth</td>
<td>69</td>
<td>24</td>
<td>5</td>
<td>2</td>
<td>84</td>
</tr>
<tr>
<td>Gaps between the teeth</td>
<td>77</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>84</td>
</tr>
<tr>
<td>Lack of space between the teeth</td>
<td>56</td>
<td>33</td>
<td>6</td>
<td>5</td>
<td>84</td>
</tr>
<tr>
<td>Burning sensation in the mouth</td>
<td>84</td>
<td>11</td>
<td>5</td>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>Wounds or blisters in the mouth</td>
<td>76</td>
<td>18</td>
<td>4</td>
<td>2</td>
<td>84</td>
</tr>
<tr>
<td>Change in sense of taste</td>
<td>84</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>84</td>
</tr>
<tr>
<td>Pain from the jaw</td>
<td>80</td>
<td>16</td>
<td>1</td>
<td>2</td>
<td>85</td>
</tr>
<tr>
<td>Clicking or crackle sounds from jaw</td>
<td>80</td>
<td>14</td>
<td>5</td>
<td>1</td>
<td>85</td>
</tr>
<tr>
<td>Problem to open your mouth</td>
<td>81</td>
<td>14</td>
<td>3</td>
<td>1</td>
<td>85</td>
</tr>
<tr>
<td>Squeaking or squeezing</td>
<td>69</td>
<td>18</td>
<td>2</td>
<td>10</td>
<td>82</td>
</tr>
<tr>
<td>Bleeding gum</td>
<td>30</td>
<td>50</td>
<td>13</td>
<td>7</td>
<td>85</td>
</tr>
<tr>
<td>Bad breath</td>
<td>56</td>
<td>33</td>
<td>5</td>
<td>6</td>
<td>85</td>
</tr>
<tr>
<td>Problems from tooth filling material</td>
<td>79</td>
<td>16</td>
<td>4</td>
<td>1</td>
<td>83</td>
</tr>
<tr>
<td>Troubles from crowns and bridges</td>
<td>83</td>
<td>12</td>
<td>5</td>
<td>0</td>
<td>82</td>
</tr>
<tr>
<td>Sensitive teeth</td>
<td>48</td>
<td>34</td>
<td>12</td>
<td>5</td>
<td>85</td>
</tr>
</tbody>
</table>
Table 3. Principal Component Analysis for troubles in the mouth (minor loadings <0.20 not stated)

<table>
<thead>
<tr>
<th>Items</th>
<th>Communality</th>
<th>F1   (trouble)</th>
<th>F2   (aesthetics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning sensation in the mouth</td>
<td>0.772</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>Wounds or blisters in the mouth</td>
<td>0.735</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Pain from the jaw</td>
<td>0.720</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Clicking or crackle Sounds from the jaw</td>
<td>0.675</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Troubles from crowns and bridges</td>
<td>0.433</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Change in sense of taste</td>
<td>0.505</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Tooth colour</td>
<td>0.470</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>Tooth shape</td>
<td>0.825</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>Tilted/angulated teeth</td>
<td>0.717</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Lack of space between the teeth</td>
<td>0.511</td>
<td>0.71</td>
<td></td>
</tr>
</tbody>
</table>

Variance explanation 41% 22%
<table>
<thead>
<tr>
<th>Item</th>
<th>Never %</th>
<th>Hardly ever %</th>
<th>Sometimes %</th>
<th>Fairly often %</th>
<th>Very often %</th>
<th>All the time %</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional limitation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Trouble pronouncing words</td>
<td>77</td>
<td>10</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>2. Sense of taste has worse</td>
<td>79</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td><strong>Physical pain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Painful aching in the mouth</td>
<td>53</td>
<td>9</td>
<td>28</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>81</td>
</tr>
<tr>
<td>4. Uncomfortable to eat food</td>
<td>59</td>
<td>9</td>
<td>13</td>
<td>10</td>
<td>4</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td><strong>Psychological discomfort</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Been self-conscious</td>
<td>60</td>
<td>11</td>
<td>15</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td>6. Felt tense</td>
<td>61</td>
<td>11</td>
<td>15</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>79</td>
</tr>
<tr>
<td><strong>Physical disability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Diet been unsatisfactory</td>
<td>59</td>
<td>9</td>
<td>14</td>
<td>10</td>
<td>4</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>8. Had to interrupt meal</td>
<td>87</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td><strong>Psychological disability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Difficult to relax</td>
<td>63</td>
<td>10</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td>10. Been embarrassed</td>
<td>76</td>
<td>8</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td><strong>Social disability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Been irritable with others</td>
<td>63</td>
<td>6</td>
<td>23</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>78</td>
</tr>
<tr>
<td>12. Difficulty doing usual jobs</td>
<td>81</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>79</td>
</tr>
<tr>
<td><strong>Handicap</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Felt life less satisfactory</td>
<td>74</td>
<td>7</td>
<td>12</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td>14. Totally unable to function</td>
<td>83</td>
<td>10</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>78</td>
</tr>
</tbody>
</table>
Expectations and satisfaction with care for periodontal specialist patients

CARINA MÅRTENSSON¹, BJÖRN SÖDERFELDT², BJÖRN AXTELIUS², PIA ANDERSSON¹

¹ School of Health and Society, Kristianstad University, Kristianstad, Sweden
² Department of Oral Public Health, Faculty of Odontology, Malmö University, Malmö, Sweden

Running head: Expectation, satisfaction and specialist care

Carina Mårtensson
Kristianstad University
School of Health and Society
SE-291 88 Kristianstad
Sweden
Phone +46 (0) 44 20 40 74
Fax +46 (0) 44 20 40 19
E-mail: carina.martenson@hkr.se

Number of tables: 9
Abstract

Objective
The aim of this study was to investigate expectations on and satisfaction with treatment among patients referred for comprehensive treatment to specialist clinics in periodontology and to explore factors associated with satisfaction in regression analysis.

Materials and Methods
Patients referred for comprehensive periodontal treatment were sampled for the study. The study was based on a questionnaire in a before and after design. The first questionnaire was sent to the patients before their first appointment at the specialist clinic. The second questionnaire was sent after approximately six months. Three questions were used to measure expectations and four questions to measure satisfaction. The first questionnaire was sent to 273 patients with a response rate of 31% and the second questionnaire was sent to 85 patients with a response rate of 73%. In non-response analysis, no difference between respondents and non-respondents were detected as to age and gender.

Results
Many of the patients viewed it as important or very important to have healthy teeth (98%) and improved well being (93%) after periodontal treatment. More than 50% of the patients were satisfied with the relation to the caregiver. When measuring the satisfaction in general, 42% indicated the highest score on the summarized Dental Visit Satisfaction Scale. Having confidence (p ≤ 0.001) and a good relation (p= 0.001) to the caregiver indicated higher satisfaction.

Conclusion
Having a good relation to the caregiver and having confidence to the caregiver, seems to indicate satisfied patients receiving periodontal treatment at periodontal clinics.

Key words: Expectation, Oral health, Periodontitis, Satisfaction
Introduction

Periodontitis is an infectious disease with varying severity, and it is a prevalent disease in adult populations [1, 2]. There is also a relation between periodontitis and quality of life [3, 4]. The treatment programme of periodontitis [5] can sometimes be uncomfortable and painful [6]. It can also have features of dental anxiety [7].

Patients visiting dental clinics have different expectations on reception and treatment. Their expectations can be influenced by for example the image of the dentist and the latest visit to a dental clinic [8]. An important factor influencing expectations is communication between the dentist and the patient [9, 10]. Communication factors and the personal relationship between the patients and the dental team have been reported to be important in treatment of periodontitis [11, 12].

Patient satisfaction is of importance for dental clinics and can depend on how patients perceive themselves in relation to the care system [13]. It can also be associated e.g. with care delivery, with beliefs of the caregiver and with pain control [14]. There may also be links to previous care, treatment compliance, health status, and health outcomes [15] as well as to treatment compliance [16]. A good relationship between the clinical practice and the patient is of importance for gaining satisfaction, both for the patient and the professionals [17]. Satisfied patients are important for any dental practice for developing and performing dental care. Understanding of patient’s experiences and expectations, as well as satisfaction, could be a key to successful dental treatment.

Aim

The aim of this study was to investigate expectations on and satisfaction with treatment among patients referred for comprehensive treatment to specialist clinics in periodontology. A
further aim was to explore factors associated with satisfaction, controlling for confounding variables in regression analysis.

Material and method

Study base

The study was based on a mail questionnaire in a panel design. Patients referred for comprehensive periodontal treatment at five specialist clinics in the south of Sweden were randomly sampled for the study. Periodontology is a recognized speciality in Sweden with clinics both in private and public dental health services. Treatment can be performed either by a dental hygienists or a dentist. The questionnaires were coded and only the persons working with the study could link the code with a name. Written information about the study was given to the respondents how the sample was selected, the coding of the questionnaire, and how to get further information about the study. A written consent was requested. The study was approved by the Regional Research Ethics Board in the Southern region (Dnr 435/2007).

The first questionnaire included 12 questions and the second questionnaire included 10 questions [18]. Age and gender were given from the sampling frame. The first questionnaire was sent by the staff at the different clinics of periodontology to the patients (n=273) before their first appointment at the specialist clinic. The response rate to that questionnaire was 31% (n=85). A second questionnaire was sent after approximately 6 months to the 85 respondents who answered the first questionnaire. The response rate to the second questionnaire was 73% (n=62).

Drop out

The response rate to the first questionnaire was obviously low. Patients answering were 64% women and 36% men. For the non-respondents, gender and age were known. In a bivariate analysis, no differences between the respondents and non-respondents were found, neither in
age (p=0.122, t-test) nor in gender (p=0.176, Chi2-test). For the second questionnaire, the response rate was 73% (n=62), with 68% women and 32% men. No differences in response as to age (p=0.095, t-test) nor gender (p=0.055, Chi2-test), were found in the statistical analyses.

Data collection

First questionnaire

From the first questionnaire [18] three questions were selected to analyse expectations of treatment at the specialist clinic in periodontology.

The first question was: What do you hope to achieve with the planned treatment? The response items were:

- better appearance
- easier to chew
- certainty to have healthy teeth
- avoidance of further dental care in many years
- freedom from pain
- improved general wellbeing

The response alternatives were: “very important”, “important”, “less important”, and “unimportant”. This question has been used earlier by Hakestam et al. [19].

The second question was: How do you think you will experience the coming treatment? The response items were:

- it will take time
- it will be painful
- it will be expensive
- it will be difficult to get away from work
The response alternatives were: “absolutely agree”, “partly agree”, “disagree” and “absolutely not agree”. This question was constructed by the Department of Prosthetic Dentistry in Malmö and Department of Education at Lund University (Dr Rune Flink 1992).

The third question was the Dental Anxiety Scale (DAS) which is used to measure the feelings of fear and anxiety in relation to dental treatment. DAS contains four items about level of fear/anxiety ranging from 1 (no fear) to 5 (extreme fear). The DAS sum of scores (range 4-20) is used to measure dental anxiety [20]. Scores of 13 or above indicate a dentally anxious individual [21].

Second questionnaire

From the second questionnaire, four questions were selected to measure experience and satisfaction of treatment.

The first question was: What experience do you have of the information and treatment from your dentist or dental hygienist? The items for answering were:

- my dentist/dental hygienist was interested in me as a person
- even if I have small problems my dentist/dental hygienist was concerned
- I have had confidence in my dentist/dental hygienist decisions
- my dentist/dental hygienist respected my ideas
- I have had the opportunity to talk to my dentist/dental hygienist if something has troubled me
- my dentist/dental hygienist has been interested in my life
- my dentist/dental hygienist has been easy to talk to
- my dentist/dental hygienist seems to have understood when I have talked about a problem
The response alternatives were: “strongly agree”, “partly agree”, “uncertain”, “partly disagree”, and “strongly disagree”. The question is fetched from the eight-item version of the Humanism Scale [22]. The scale is summarized (ranged 8-40) and translated into a Swedish version [23].

The second question measuring satisfaction was: What experience do you have of the visits at the specialist clinic? The items for answering were:

- after talking with the dentist/dental hygienist I know what the condition of my mouth is
- after talking to my dentist/dental hygienist I have a good idea of what changes to expect in my dental health
- the dentist/dental hygienist told me all I wanted to know about my dental problems
- I really felt understood by my dentist/dental hygienist
- the dentist/dental hygienist was thorough in doing the procedures
- I was satisfied with what the dentist/dental hygienist did
- the dentist/dental hygienist seemed to know what they were doing during my visit

This question contains seven items from the Dental Visit Satisfaction Scale (DVSS). Originally, there are ten items divided in three parts: “information/communication”, “understanding/acceptance” and “technical competence”. The scale is scored on a Likert scale from 1 to 5 (“strongly agree”, “agree”, “uncertain”, “disagree”, and “strongly disagree”). The higher score indicates more satisfaction [24, 25].

The third question was: The experience and satisfaction of the dental care situation could depend on how you perceive the relation to the dentist and the dental hygienist. Here are some statements. The items for answering were:

- I feel I can depend on my dentist/dental hygienist
• I have respected the dentists/dental hygienist’s view about my dental problems
• I have liked the dentist/dental hygienist as a person
• a good relationship has formed with my dentist/dental hygienist
• the dentist/dental hygienist and I have had meaningful exchanges

The response alternatives were: “totally agree”, “agree rather well”, “uncertain”, “agree rather bad” and “not agree at all. This question contains items from the Helping Alliance Questionnaire measuring the relation between the patient and the therapist [26] as previously used by Johansson [23].

The fourth question was: What did you think was difficult with the treatment? The items for answering were:
• the treatment took a long time
• I was worried about the visits
• it was often painful
• I felt bad after treatment
• it was difficult to get away from work

The response alternatives were: “absolutely agree”, “partly agree “, “do not agree” and “absolutely not agree”. This question was constructed by the Department of Prosthetic Dentistry in Malmö and Department of Education at Lund University (Dr Rune Flink 1992).

Two questions were used to measure work and to measure education. Work was measured by the single question “How many hours per week do you work?” Response alternatives were: “full time job” (more than 35 hours/week), “part time job” (15-34 hours per week), “1-14 hours peer week” and “not work at all”. The question was coded in four ordinal categories. Education was measured by the question: “What education do you have?” Response alternatives were: “elementary school/nine year compulsory school”, “junior secondary school/technic high school/two years high school”, “three or four years high school”,
“university education” and “other education”. Education was dichotomized into “primary education” (elementary school/nine year compulsory school, junior secondary school/folk high school/two years high school) and “secondary education” (three or four years high school, university education and other education). Age (in years) and gender were taken from the sampling frame.

Statistical methods

To measure the consistency in responses, cross tabulation, Chi2-test and t-test, were used [27]. The DAS and DVSS items were analysed with additive scores. To analyse experience and satisfaction of dental treatment and care, a Principal Component Analysis (PCA) was used. Cronbach’s alpha was used to measure internal consistency.

Data were analysed in a multiple regression model with DVSS sum as a dependent variable. For the model, four variables were used from the questionnaire: gender (female set as 1 and male set as 0), age (in years), education (primary education set as 0 and secondary education set as 0) and work.

Data analyses were performed in PASW version 17.0. Statistical significance was defined as P<0.05.

Results

Expectations about treatment

There was small difference between some alternatives about expectations before visiting the specialist clinic in periodontology. For the response alternative “certainty to have healthy teeth”, 98% of the participant stated that it was “very important” or “important” (Table 1). The questions were subjected to a PCA, resulting in two factors, interpreted as (F1) “good teeth” and factor two (F2) “social expectations” (Table 2). The variance explanation was 63%
and all communalities were deemed as satisfactory. Cronbach’s alpha was used to test the factor consistency and was for factor one 0.77 and for factor two 0.36.

Most of the respondents expected the coming treatment at the specialist clinic to be expensive (Table 3). The expected level of fear/anxiety related to treatment was measured with DAS. Summarized score ranged from 4 (no anxiety) to 20 (extreme fear). The mean score for the patients was 9.5 and the median score was 9.0 (SD 4.82). 60% of the patients had a summarized score between 4 and 9 and 26% had a summarized score of 13-20. Females had a mean score of 10.5 and males had a mean score of 7.9 (p= 0.144).

**Satisfaction with dental care**

The respondents had a good experience of and were satisfied with the information and relation to the dentist/dental hygienist as measured by the short form of the Humanism Scale measuring the perception of the caregiver. More than 50% totally agreed to the items except for interest in the patients life where only 30% totally agreed (Table 4). In a summarized score ranging from 1 (do not agree at all) to 5 (totally agree) (range 8-40), the mean score was 35. Of the respondents, 67% had a score between 35 and 40.

The general satisfaction with the visits at the clinic of periodontology was measured by the Dental Visit Satisfaction Scale (DVSS). Most of the respondents strongly agreed or agreed to the items (Table 5). In sum the scale resulted in a score between 7 (strongly disagree) and 35 (strongly agree) with a mean value of 31 and a median value of 33 (SD 4.82). Of the respondents, 42% had a score of 35.

The satisfaction of the dental care situation was also investigated with the Helping Alliance Index (5 items) measuring the relation between the patient and the therapist. Many of the respondents answered that they totally agreed or agreed rather well to the items (Table 6). The items were analysed in a PCA and resulted in two factors named as relation
(F1) and as confidence (F2). Explanation of variance was 50% for the first factor and 38% for the second factor (Table 7). The internal consistency was tested with Cronbach’s alpha and was 0.90 and for the first and 0.90 for the second factor.

To the question what was difficult with the treatment, 59% agreed or totally agreed that the treatment took a long time. A few felt bad after treatment, 22% and 18% thought it was difficult to get away from work (Table 8).

In a multiple regression model with DVSS sum as a dependent variable, the independent variables with significant associations were relation, confidence and gender. Those who felt confidence and felt related to the caregiver were more satisfied than those who did not. Males seemed to be less satisfied with the caregiver. $R^2$ was high 0.76 (Table 9).

Discussion

In this study, many of the patients considered it very important or important to achieve healthy teeth and improved well being after the treatment. More than 50% were satisfied with the relation between the dental hygienist/dentist and 42% indicated the highest score on the summarized dental visit satisfaction scale. Having confidence and a good relation to the caregiver indicated higher satisfaction with periodontal care.

Expectation

Small differences were found in some response alternatives to the question about expectation with the coming treatment. Achieving healthy teeth and improved well being seem to be important issues for the patients. This is in accordance with Hakestam et al. [19], also showing that prosthodontic patients expected improved well-being from the coming treatment. These results can indicate that the patients rate their oral health highly, but also the fact that they probably regard their oral health as a part of the general health. As suggested,
oral health is a part of general health and well-being, [28] and general diseases and oral
diseases have common risk factors [29].

In the factor analysis of expectations to find a model of the items (Table 2), two
factors were interpreted as “good teeth” and “social expectations”. Cronbach’s alpha was
satisfactory for “good teeth” ($\alpha 0.77$) and can be regarded as satisfactory [30], while there was
a low alpha for “social expectations” ($\alpha 0.36$). This can be due to the number of items and
their low intercorrelation.

Expectations on treatment and dental anxiety as measured by the summarized
DAS showed that 60% of the patients did not feel fear related to the coming treatment (mean
score of 9.5 and a median score of 9.0). However, 26% had a summarized score over 13
which indicate dental anxiety [31]. In accordance to this result, Abrahamsson et al. [32]
reported a DAS sum mean score of 8.8 on periodontal patients treated by dental hygienists.
Hakeberg and Cunha [7] reported that common procedures related to periodontal treatment
(i.e. scaling pocket probing and anaesthesia) performed by dental hygienist were experienced
as painful in both general and periodontal patients. In their study DAS sum of score over 13
was reported from 7.3% of the respondents with a mean score of 6.5 and a median score of
5.0.

Satisfaction

Satisfaction with care is complex because it can be regarded as a compound of the patients
perception of the dentist’ technical competence, interpersonal factors, convenience, cost and
facilities [17], and communication [9]. It can also be a determinant of compliance [33] i.e.
how a person’s behaviour agrees with medical advice [34]. It can also depend on a time
factor, where regular dental visits indicate more satisfied patients [21]. However, the time
factor was not investigated in this study.
Most of the patients were satisfied with the dental visits in general as shown by the DVSS scale. It seems that there was a good communication between the caregiver and the patient, and that the caregiver was concerned about the patient’s problem. Stenman et al. [12] showed that satisfaction with dental care was closely related to the communication with the dental team. In a validity test, the DVSS showed that communication was of importance for satisfaction [24].

Another instrument used in this study, the Humanism Scale, also indicated satisfied patients and over 50% of the respondents had a mean score between 35 and 40 the maximum value. The scale is supposed to have a holistic perspective on the patient [22]. The high score could indicate that the relation between the caregiver and the patients was of an holistic character.

The patients also seemed to be satisfied with the relationship and the perception of the caregiver was positive as measured with the Helping Alliance index. This is an important factor, since a good relationship between patient and caregiver and positive beliefs of the caregiver affect the patient’s satisfaction [14]. Narby [35] suggested that it is important that patients have trust for the caregiver and feel involved in the treatment. The items to measure relationship, as measured with the Helping Alliance index, were factor analysed with the purpose to analyse the stability of the items, resulting in the two factors “confidence” and “relation”. In the regression analysis, both factors emerged as important for satisfaction.

Satisfaction with dental care has been reported to be associated with socio-demographic factors such as age, education, and gender [15]. In this study, we found an association to gender, where males were less satisfied than females. However, Skaret et al. [14] found that males were more satisfied with dental care. Also relation and confidence were related to satisfaction. This is not a surprising relation since the patient’s relation to the
dentist/dental hygienist and feeling confidence ought to be an important factor. The better the interacting between the patient and the care provider, the better the patient will feel [36].

A strength in this study could be the cohort design [37], i.e. the same respondents were participating two times, before and after they visited the specialist clinic in periodontology. Only well developed and established question batteries were used and the results here add to their validity. A weakness in this study is the low response rate. In this study, only 23 % of the respondents from the sampling frame were responding to both questionnaires. There can be various reasons for non-response, such as lack of time, lack of interest, education [38], or behavioural and social demographic factors [39]. It may also be that the patients did not feel that the questionnaire concerned them. Another weakness is the lack of clinical data of the patients. Therefore the results must be interpreted with caution.

**Conclusion**

In conclusion having, a good relation to the caregiver and having confidence in the caregiver seem to indicate satisfied patients receiving periodontal treatment at periodontal specialist clinics.
References


Table 1. Expectations of treatment in percent (%).

<table>
<thead>
<tr>
<th></th>
<th>Very important</th>
<th>Important</th>
<th>Less important</th>
<th>Unimportant</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% *</td>
<td>% *</td>
<td>% *</td>
<td>% *</td>
<td></td>
</tr>
<tr>
<td>Better appearance</td>
<td>15 (26)</td>
<td>39 (41)</td>
<td>19 (28)</td>
<td>27 (10)</td>
<td>82 (372)</td>
</tr>
<tr>
<td>Easier to chew</td>
<td>42 (67)</td>
<td>37 (27)</td>
<td>7 (2)</td>
<td>14 (3)</td>
<td>81 (394)</td>
</tr>
<tr>
<td>Certainty to have healthy teeth</td>
<td>82 (70)</td>
<td>15 (26)</td>
<td>0 (2)</td>
<td>2 (1)</td>
<td>85 (391)</td>
</tr>
<tr>
<td>Avoidance of further</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dental care in many years</td>
<td>23 (46)</td>
<td>31 (36)</td>
<td>19 (11)</td>
<td>26 (7)</td>
<td>77 (371)</td>
</tr>
<tr>
<td>Freedom from pain</td>
<td>74 (53)</td>
<td>19 (30)</td>
<td>5 (6)</td>
<td>1 (11)</td>
<td>82 (355)</td>
</tr>
<tr>
<td>Improved general</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wellbeing</td>
<td>76 (70)</td>
<td>17 (26)</td>
<td>1 (2)</td>
<td>5 (2)</td>
<td>81 (387)</td>
</tr>
</tbody>
</table>

* Reference figures Hakestam et al. 1996
Table 2. Principal Component Analysis for expectations on dental treatment in relation to the planned treatment (minor loadings <0.20 not stated)

<table>
<thead>
<tr>
<th>Items</th>
<th>F1 (good teeth)</th>
<th>F2 (social expectations)</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty to have healthy teeth</td>
<td>0.81</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Improved general wellbeing</td>
<td>0.79</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Freedom from pain</td>
<td>0.72</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Easier to chew</td>
<td>0.65</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Avoidance of further dental care in many years</td>
<td>0.82</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>Better appearance</td>
<td>0.66</td>
<td>0.54</td>
<td></td>
</tr>
</tbody>
</table>

Variance explanation 39% 24%
<table>
<thead>
<tr>
<th></th>
<th>Absolutely agree %</th>
<th>Partly agree %</th>
<th>Disagree %</th>
<th>Absolutely not agree %</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>It will take time</td>
<td>33</td>
<td>40</td>
<td>21</td>
<td>6</td>
<td>82</td>
</tr>
<tr>
<td>It will be painful</td>
<td>41</td>
<td>37</td>
<td>13</td>
<td>8</td>
<td>84</td>
</tr>
<tr>
<td>It will be expensive</td>
<td>74</td>
<td>21</td>
<td>2</td>
<td>2</td>
<td>82</td>
</tr>
<tr>
<td>It will be difficult to get away from work</td>
<td>14</td>
<td>32</td>
<td>19</td>
<td>34</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Strongly agree</td>
<td>Partly agree</td>
<td>Uncertain</td>
<td>Partly disagree</td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------------</td>
<td>--------------</td>
<td>-----------</td>
<td>-----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>My dentist/dental hygienist was interested in me as a person</td>
<td>63</td>
<td>18</td>
<td>11</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Even if I have small problems my dentist/dental hygienist was concerned</td>
<td>68</td>
<td>18</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>I have had confidence for my dentist/dental hygienist decisions</td>
<td>77</td>
<td>14</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>My dentist/dental hygienist respected my ideas</td>
<td>62</td>
<td>25</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>I have had the opportunity to talk to my dentist/dental hygienist if something has troubled me</td>
<td>87</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>My dentist/dental hygienist has been interested in my life</td>
<td>30</td>
<td>17</td>
<td>30</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>My dentist/dental hygienist has been easy to talk to</td>
<td>75</td>
<td>18</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>My dentist/dental hygienist seems to have understood when I have talked about a problem</td>
<td>58</td>
<td>25</td>
<td>10</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 5. Experience of visits at the specialist clinic in percent (%)  

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>After talking with the dentist/dental hygienist I know what the condition</td>
<td>55</td>
<td>37</td>
<td>5</td>
<td>3</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>of my mouth is</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After talking to my dentist/dental hygienist I have a good idea of what</td>
<td>52</td>
<td>40</td>
<td>7</td>
<td>2</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>changes to expect in my dental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The dentist/dental hygienist told me everything I wanted to know about</td>
<td>62</td>
<td>27</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>my dental problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I really felt understood by my dentist/dental hygienist</td>
<td>57</td>
<td>32</td>
<td>10</td>
<td>2</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>The dentist/dental hygienist was thorough in doing the procedure</td>
<td>77</td>
<td>19</td>
<td>2</td>
<td>3</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>I was satisfied with what the dentist/dental hygienist did</td>
<td>71</td>
<td>19</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>The dentist/dental hygienist seemed to know what they were doing during</td>
<td>76</td>
<td>17</td>
<td>5</td>
<td>2</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>my visit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Totally agree</td>
<td>Agree rather well</td>
<td>Uncertain</td>
<td>Agree rather bad</td>
<td>Not agree at all</td>
<td>n</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>-----------</td>
<td>------------------</td>
<td>------------------</td>
<td>----</td>
</tr>
<tr>
<td>I feel I can depend on my dentist/dental hygienist</td>
<td>67</td>
<td>26</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>I have respected the dentists/dental hygienists’ view about my dental problems</td>
<td>67</td>
<td>28</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>I have liked the dentist/dental hygienist as a person</td>
<td>63</td>
<td>30</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>A good relationship has formed with my dentist/dental hygienist</td>
<td>57</td>
<td>35</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>The dentist/dental hygienist and I have had meaningful exchanges</td>
<td>43</td>
<td>38</td>
<td>15</td>
<td>2</td>
<td>2</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 7. Principal Component Analysis on experiences of the dental care situation, the
relation to the dentist and the dental hygienist (minor loadings <0.20 not stated)

<table>
<thead>
<tr>
<th>Items</th>
<th>F1 (relation)</th>
<th>F2 (confidence)</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>A good relationship has formed with my dentist/dental hygienist</td>
<td>0.93</td>
<td></td>
<td>0.90</td>
</tr>
<tr>
<td>The dentist/dental hygienist and I have had meaningful exchanges</td>
<td>0.90</td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td>I have liked the dentist/dental hygienist as a person</td>
<td>0.80</td>
<td></td>
<td>0.80</td>
</tr>
<tr>
<td>I have respected the dentist/dental hygienists view about my dental problems</td>
<td>0.95</td>
<td></td>
<td>0.94</td>
</tr>
<tr>
<td>I feel I can depend on my dentist/dental hygienist</td>
<td>0.87</td>
<td></td>
<td>0.90</td>
</tr>
</tbody>
</table>

Variance explanation 50% 38%
Table 8. Experience of treatment in percent (%).

<table>
<thead>
<tr>
<th>Experience</th>
<th>Absolutely agree</th>
<th>Partly agree</th>
<th>Do not agree</th>
<th>Absolutely not agree</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>The treatment took a long time</td>
<td>15</td>
<td>44</td>
<td>24</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>I was worried about the visits</td>
<td>27</td>
<td>15</td>
<td>28</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>It was often painful</td>
<td>17</td>
<td>22</td>
<td>40</td>
<td>22</td>
<td>60</td>
</tr>
<tr>
<td>I felt bad after treatment</td>
<td>7</td>
<td>15</td>
<td>37</td>
<td>42</td>
<td>60</td>
</tr>
<tr>
<td>It was difficult to get away from work</td>
<td>5</td>
<td>13</td>
<td>25</td>
<td>57</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 9. Multiple regression model of DVSS sum as a dependent variable (n=60)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>b</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation (range 1-15)</td>
<td>0.690</td>
<td>0.001</td>
</tr>
<tr>
<td>Confidence (range 1-10)</td>
<td>3.123</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-1.954</td>
<td>0.017</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.063</td>
<td>0.094</td>
</tr>
<tr>
<td>Education (primary)</td>
<td>-0.157</td>
<td>0.832</td>
</tr>
<tr>
<td>Work (1-4)</td>
<td>-0.243</td>
<td>0.442</td>
</tr>
<tr>
<td>DAS (sum of scores)</td>
<td>0.092</td>
<td>0.267</td>
</tr>
<tr>
<td>AdjR²</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>F/d.f. 1/d.f. 2</td>
<td>27.102/7/49</td>
<td></td>
</tr>
<tr>
<td>Model significance</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONNAIRE
Mun- och tandhälsan är allmänt mycket god i Sverige. För att upprätthålla och förbättra den behövs dock fortsatt arbete, bl.a. hälsupplysning och bättre information. På initiativ av Svenska Parodontologföreningen kommer en informationskampanj att inledas inom kort med syfte att ge kunskaper om sjukdomen parodontit och om möjligheter till behandling.

Hur har kampanjen fungerat?

För att på bästa sätt kunna bedriva detta informationsarbete görs denna undersökning. Den handlar om vilken uppfattning Du har om parodontit och dess behandling redan nu, före den utökade informationen.

Du är utvald

900 personer i åldern 50-75 år har slumpvis valts ut från befolkningsregistret för undersökningen. Du är en av dem.

Dina synpunkter är viktiga

Vi är säkra på att Du har synpunkter som är viktiga för oss och att vi genom Din hjälp kan få bättre uppfattning om hur vi i samverkan med patienterna skall hantera parodontit.

Vi ber Dig fylla i och sända in enkäten.


Tystnadsplikt


Upplysningar

Vill Du ha mera upplysningar om undersökningen eller om Du har frågor kan Du ringa tandhygienist Carina Mårtensson, 044-242150

Med vänlig hälsning

Högskolan i Kristianstad
Stefan Renvert
Docent

Avd för samhällsodontologi
Björn Söderfeldt
Professor

1. Hur viktigt är det att kunna tugga all sorts mat?
   ![Rating Scale]

2. Hur viktigt är det att inte ha några synliga tandluckor?
   ![Rating Scale]

3. Hur viktig är Din tandhälsa i förhållande till Din allmänna hälsa?
   ![Rating Scale]

4. Hur viktig är möjligheten till nöjen och resor?
   ![Rating Scale]

5. Hur viktigt är det att ha en trivsam bostad?
   ![Rating Scale]

6. Hur viktigt är det att kunna gå regelbundet till tandvård?
   ![Rating Scale]

7. Ungefär hur ofta går Du till tandvård?
   - Två eller flera gånger/år
   - En gång/år
   - Vartannat år
   - Mera sällan
   - Minns ej

8. Var skedde Ditt senaste tandvårdsbesök?
   - Folktandvård
   - Privattandvård
   - Specialisttandvård
   - Sjukhus tandvård
   - Tandvårds högskola
   - Minns ej

9. Har Du de senaste tolv månaderna besökt någon eller några av följande:
   - Allmäntandläkare
   - Specialisttandläkare
   - Tandhygienist
   - Profylaxtandsköterska
   - Minns ej

10. Fick Du vid Ditt senaste tandvårdsbesök information om något eller några av följande?
    - Munhygien
    - Kost
    - Fluor
    - Tobak
    - Kostnad för behandling
    - Karies
    - Parodontit
11. Ville Du ha, men fick inte, vid Ditt senaste tandvårdsbesök information om något eller några av följande?
- Munhygien
- Kost
- Fluor
- Tobak
- Kostnad för behandling
- Karies
- Parodontit

12. Har Du fått någon eller några av dessa behandlingar eller undersökningar någon gång?
- Lagning av hål
- Skrapning av tandsten
- Bro/brygga eller krona
- Avtagbar protec
- Röntgen av tänder
- Mätning av tandkörtssflickor

13. Är Du nöjd med Dina tänder?
- Ja, mycket nöjd
- Ja, i stort sett nöjd
- Varken nöjd eller missnöjd
- Nej, ganska missnöjd
- Nej, mycket missnöjd

14. Kan Du tugga all sorts mat, t.ex. nötter eller äpplen?
- Ja, mycket bra
- Bra
- Ganska bra
- Nej, inte särskilt bra
- Nej, dåligt
- Nej, mycket dåligt

15. Man kan märka på olika sätt att man lider av en tandsjukdom, som karies eller parodontit. Känner Du till vilka av följande besvär eller symtom som kan vara tecken på att man har karies eller parodontit?

<table>
<thead>
<tr>
<th>Besvär/symtom</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svarta/bruna beläggningar på tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blödning från tandkött</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ilningar i tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandvärk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rörliga tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dålig andedräkt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveda i munnen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beläggningar på tungan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ökade mellanrum mellan tändera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16. Tandsjukdomar kan behandlas på många olika sätt. Det finns också många slags undersökningar som utförs i tandvården. Känner Du till vilka av följande behandlingar och undersökningar som gäller för karies eller parodontit?

<table>
<thead>
<tr>
<th>Behandling/undersökning</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skrapning av tandsten nere i tandköttfickorna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation av tandkott</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Noggrann munhygien</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rengöring mellan tändera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mätning av tandköttsfickor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undersökning av käkbenet med röntgen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fyllning av hål</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Putsning av missfärgade tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lackning med fluor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluortabletter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Hur länge har Du bott i Sverige?
- ☐ Alltid
- ☐ Har vuxit upp och gått i skola i Sverige
- ☐ Har kommit till Sverige som vuxen

18. Hur mycket förvärvsarbetar Du i genomsnitt?
- ☐ Heltid (mer än 35 tim/vecka)
- ☐ Deltid (mellan 15-34 tim/vecka)
- ☐ Mellan 1-14 tim/vecka
- ☐ Inte alls

19. Vilken utbildning har Du?
- ☐ Folkskola, enhetsskola, grundskola
- ☐ Realskola, folkhögskola, 2-årigt gymnasium eller dylikt
- ☐ Tre- eller fyraårigt gymnasium
- ☐ Högskoleutbildning
- ☐ Annan utbildning, vilken?

20. Vilket civilstånd har Du för närvarande?
- ☐ Gift, sammanboende
- ☐ Ogift, ensamboende

TACK FÖR DIN MEDVERKAN!
På initiativ av Svenska Parodontologföreningen har en informationskampanj bedrivits med syfte att ge kunskaper om sjukdomen parodontit och om möjligheter till behandling.

För att på bästa sätt kunna bedriva detta informationsarbete görs denna undersökning. Du fick tidigare i år ett frågeformulär bl a. om vilken uppfattning Du har om parodontit och dess behandling. Vi vill nu undersöka om Din uppfattning har förändrats sedan dess och om Du har nätts av den utökade informationen.

900 personer i åldern 50-75 år har slumpvis valts ut från befolkningsregistret för undersökningen. Du är en av dem.

Vi är säkra på att Du har synpunkter som är viktiga för oss och att vi genom Din hjälp kan få bättre uppfattning om hur vi i samverkan med patienterna skall hantera parodontit.

Vi ber Dig fylla in och sända in enkäten.

Använd bifogade portofria svarskuvert när Du skickar in enkäten, helst inom 10 dagar. Deltagande i undersökningen är förstås helt frivilligt. Även om Du inte hade tillfälle att svara förra gången är det viktigt för undersökningen att Du svarar denna gång.


Vill Du ha mera upplysningar om undersökningen eller om Du har frågor kan Du ringa tandhygienist Carina Mårtensson, 044-242150

Med vänlig hälsning

Högskolan i Kristianstad
Stefan Renvert
Docent
Avd för samhällsodontologi
Björn Söderfeldt
Professor

1. Hur viktigt är det att kunna tugga all sorts mat?
   - Inte alls viktigt
   - Oerhört viktigt

2. Hur viktigt är det att inte ha några synliga tandluckor?
   - Inte alls viktigt
   - Oerhört viktigt

3. Hur viktig är Din tandhälsa i förhållande till Din allmänna hälsa?
   - Inte alls viktigt
   - Oerhört viktigt

4. Hur viktig är möjligheten till nöjen och resor?
   - Inte alls viktigt
   - Oerhört viktigt

5. Hur viktig är det att ha en trivsam bostad?
   - Inte alls viktigt
   - Oerhört viktigt

6. Hur viktigt är det att kunna gå regelbundet till tandvård?
   - Inte alls viktigt
   - Oerhört viktigt

7. Ungefär hur ofta går Du till tandvård?
   - Två eller flera gånger/år
   - En gång/år
   - Vartannat år
   - Mera sällan
   - Minns ej

8. Var skedde Ditt senaste tandvårdsbesök?
   - Folk tandvård
   - Privat tandvård
   - Specialist tandvård
   - Sjukhustandvård
   - tandvårds högskola
   - Minns ej

9. Har Du de senaste tolv månaderna besökt någon eller några av följande:
   - Allmäntandläkare
   - Specialist tandläkare
   - Tandhygienist
   - Profylax tandsköterska
   - Minns ej

10. Fick Du vid Ditt senaste tandvårdsbesök information om något eller några av följande?
     - Munhygien
     - Kost
     - Fluor
     - Tobak
     - Kostnad för behandling
     - Karies
     - Parodontit
11. Ville Du ha, men fick inte, vid Ditt senaste tandvårdsbesök information om något eller några av följande?

- Munhygien
- Kost
- Fluor
- Tobak
- Kostnad för behandling
- Karies
- Parodontit

12. Har Du fått någon eller några av dessa behandlingar eller undersökningar någon gång?

- Lagning av hål
- Skrapning av tandsten
- Bro/brygga eller krona
- Avtagbar protes
- Röntgen av tänder
- Mätning av tandköttsfickor

13. Är Du nöjd med Dina tänder?

- Ja, mycket nöjd
- Ja, i stort sett nöjd
- Nej, ganska nöjd
- Nej, mycket nöjd

14. Kan Du tugga all sorts mat, t.ex. nötter eller äpplen?

- Ja, mycket bra
- Bra
- Ganska bra
- Nej, inte särskilt bra
- Nej, dåligt
- Nej, mycket dåligt

15. Man kan märka på olika sätt att man lider av en tandsjukdom, som karies eller parodontit. Känner Du till vilka av följande besvär eller symtom som kan vara tecken på att man har karies eller parodontit?

<table>
<thead>
<tr>
<th>Besvär/symtom</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svarta/bruna beläggningar på tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blödning från tandkött</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ilningar i tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandvärk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rörliga tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dålig andedräkt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveda i munnen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beläggningar på tungan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ökade mellanrum mellan tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16. Tandsjukdomar kan behandlas på många olika sätt. Det finns också många slags undersökningar som utförs i tandvården. Känner Du till vilka av följande behandlingar och undersökningar som gäller för karies eller parodontit?

<table>
<thead>
<tr>
<th>Behandling/undersökning</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skrapning av tandsten nere i tandköttsfickorna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Operation av tandkött</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>0</td>
</tr>
<tr>
<td>Noggrann munhygien</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Rengöring mellan tänderna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mätning av tandköttsfickor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Undersökning av käkbenet med röntgen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fyllning av hål</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Putsning av missfärgade tänder</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Lackning med fluor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fluortabletter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

17. Har Du sedan förra undersökningen upplevt att Du fått mer information av tandvårdspersonal om parodontit?
   - ☐ Ja
   - ☐ Ingen skillnad mot förr
   - ☐ Har ej besökt tandvård

18. Hur länge har Du bott i Sverige?
   - ☐ Alltid
   - ☐ Har vuxit upp och gått i skola i Sverige
   - ☐ Har kommit till Sverige som vuxen

19. Hur mycket förvärvsarbetar Du i genomsnitt?
   - ☐ Heltid (mer än 35 tim/vecka)
   - ☐ Deltid (mellan 15-34 tim/vecka)
   - ☐ Mellan 1-14 tim/vecka
   - ☐ Inte alls

20. Vilken utbildning har Du?
   - ☐ Folkskola, enhetsskola, grundskola
   - ☐ Realskola, folkhögskola, 2-årigt gymnasium eller dylikt
   - ☐ Tre- eller fyraårigt gymnasium
   - ☐ Högskoleutbildning
   - ☐ Annan utbildning, vilken?

21. Vilket civilstånd har Du för närvarande?
   - ☐ Gift, sammanboende
   - ☐ Ogift, ensamboende

TACK FÖR DIN MEDVERKAN!
Förväntningar, kunskaper och tillfredställelse i samband med parodontal behandling
Bakgrund till undersökningen

Syfte
Syftet med studien är att undersöka patienters kunskap om parodontit, förväntningar och upplevelser av parodontal behandling.

Genomförande
200 personer som remitteras till specialistavdelningar i södra Sverige kommer att väljas ut till undersökningen och Du är en av dem. Vi är säkra på att Du har synpunkter som är viktiga för oss och att vi genom Din hjälp kan få bättre uppfattning om hur vi i samverkan med patienten kan skapa ett gott behandlingsresultat.
Vi ber Dig gå igenom frågorna i enkäten och försöka besvara dem så fullständigt som möjligt. Skicka den ifyllda enkäten till Högskolan Kristianstad i det bifogade portofria svarkuvert tillsammans med det medgivandeformulär som medföljer enkäten.

Tystnadsplikt

Upplysningar
Vill Du ha mer upplysningar om undersökningen eller om Du har frågor kan Du ringa Leg. Tandhygienist, Odont. lic Carina Mårtensson 044-20 40 74.

Med Vänliga Hälsningar

Högskolan Kristianstad
Institutionen för Hälsovetenskaper
Pia Andersson
Leg Tandhygienist, Dr odont. vet
Carina Mårtensson

Malmö Högskola
Avd för samhällsodontologi
Björn Söderfeldt, Professor
Björn Axtelius, Docent

Leg Tandhygienist, Odont. lic

Man kan ha olika besvär från munnen och tänderna. Upplever Du för Din egen del att Du har något eller några av nedanstående besvär eller bekymmer?

Markera med ett kryss den ruta som bäst motsvarar Ditt svar.

<table>
<thead>
<tr>
<th>Besvär</th>
<th>Inga besvär</th>
<th>Vissa besvär</th>
<th>Ganska mycket besvär</th>
<th>Stora besvär</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tändernas färg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tändernas form</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sneda eller utstående tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>För glest mellan tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>För trångt mellan tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveda i munnen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sår eller blåsor i munnen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smakförändringar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smärta runt käkleden</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knäppningar och knaster från käklederna</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Svårighet att gapa stort</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandgnissling/pressning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blödning från tandköttet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dålig andedräkt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Besvär från tandfyllnadsmaterial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Besvär från kronor och broar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ilningar i tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Hur ofta har Du under det senaste året, upplevt följande situationer på grund av problem med Dina tänder, mun, proteser eller käkar?

Markera med ett kryss i den ruta som bäst motsvarar Ditt svar.

<table>
<thead>
<tr>
<th>Frågan går ej att tillämpa på mig</th>
<th>Hela tiden</th>
<th>Mycket ofta</th>
<th>Ganska ofta</th>
<th>Ibland</th>
<th>Ganska</th>
<th>Aldrig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svårigheter med att uttala ord</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Känt att smakförmågan har försämrats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Har haft smärta i Din mun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Har haft obehag med att äta mat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Känt Dig osäker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Känt Dig spänd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Har haft en otillfredsställande kost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Har varit tvungen att avbryta måltider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haft svårt att koppla av</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blivit generad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varit irriterad på andra människor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haft svårighet att utföra de vardagliga sysslorna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Känt att livet i allmänhet varit mindre tillfredsställande</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varit totalt oförmögen att fungera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Man kan märka på olika sätt att man har en tandsjukdom, som karies eller parodontit. Känner Du till vilka av följande besvär eller symtom som kan vara tecken på att man har karies eller parodontit?

Markera med ett kryss i den ruta som bäst motsvarar Ditt svar.

<table>
<thead>
<tr>
<th>Besvär/symtom</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svarta/bruna beläggningar på tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blödning från tandköttet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ilningar i tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandvärk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rörliga tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dålig andedräkt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sveda i munnen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beläggningar på tungan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ökade mellanrum mellan tändera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Tandsjukdomar kan behandlas på många olika sätt. Det finns också många olika undersökningar som utförs i tandvården. Känner Du till vilka av följande behandlingar och undersökningar som gäller för karies eller parodontit?

Markera med ett kryss i den ruta som bäst motsvarar Ditt svar.

<table>
<thead>
<tr>
<th>Behandling/undersökning</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skrapning av tandsten nere i tandköttsfickorna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Operation av tandköttet</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Noggrann munhygien</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Rengöring mellan tänderna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mätning av tandköttsfickor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Undersökning av käkbenet med röntgen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fyllning av hål</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Putsning av missfärgade tänder</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Lackning med fluor</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fluortabletter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
5. Nedan följer två frågor om vad Du har för förväntningar på behandlingen på specialistkliniken.

Sätt ett kryss i den ruta som bäst stämmer in på Dig.

**A. Vad hoppas Du uppnå med den kommande behandlingen?**

<table>
<thead>
<tr>
<th>Behandling/undersökning</th>
<th>Oviktigt</th>
<th>Mindre viktigt</th>
<th>Viktigt</th>
<th>Mycket viktigt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bättre utseende</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lättare att tugga</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Få friska tänder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inte behöva uppsöka tandvård på många år</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ej ha ont i tänderna</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Må bättre rent allmänt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B. Hur tror Du att Du kommer att uppleva den kommande behandlingen?**

<table>
<thead>
<tr>
<th>Förutsättning</th>
<th>Instämmer absolut inte</th>
<th>Instämmer inte</th>
<th>Instämmer delvis</th>
<th>Instämmer absolut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Det kommer att ta lång tid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det kommer att göra ont</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det kommer att bli dyrt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det kommer bli svårt att komma ifrån arbetet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sätt ett kryss i den ruta som bäst stämmer in på Dig.

<table>
<thead>
<tr>
<th></th>
<th>Instämmer inte alls</th>
<th>Instämmer delvis inte</th>
<th>Osäker</th>
<th>Instämmer delvis</th>
<th>Instämmer helt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regelbunden kontakt med läkare är det bästa sättet för mig att undvika att bli sjuk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mina närstående betyder mycket för om jag är frisk eller sjuk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>När jag blir sjuk är det mitt eget fel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det beror till stor del på tur hur fort jag återhämtar mig från sjukdom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min goda hälsa beror till stor del på tur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Den huvudsakliga orsaken till min hälsa är vad jag själv gör</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Om jag tar hand om mig kan jag undvika sjukdom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vad jag än gör, är det troligt att jag blir sjuk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Markera med ett kryss i den ruta som Du anser passar bäst.

A. I allmänhet, hur skulle Du vilja säga att Din hälsa är:

- □ Utmärkt
- □ Mycket god
- □ God
- □ Någorlunda
- □ Dålig

B. Hur tror Du att Dit allmänna hälsotillstånd är jämfört med Dina jämnårigas?

- □ Mycket bättre
- □ Något bättre
- □ Lika med mina jämnårigas
- □ Något sämre
- □ Mycket sämre
- □ Vet ej

C. Hur tror Du att Din tandhälsa är idag jämfört med Dina jämnårigas?

- □ Mycket bättre
- □ Något bättre
- □ Lika med mina jämnårigas
- □ Något sämre
- □ Mycket sämre
- □ Vet ej

Kryssa för det alternativ som Du tycker passar bäst.

A. Försök att tänka Dig in i situationen att Du har tid för besök hos tandvården i morgon. Hur skulle Du känna Dig?

☐ Jag skulle inte tycka det var otrevligt på något sätt
☐ Jag skulle inte bekymra mig om det nämnvärt
☐ Jag skulle nog känna mig lite orolig
☐ Jag skulle vara rädd för att det skulle bli obehagligt och smärtsamt
☐ Jag skulle vara skräckslagen inför vad tandläkaren/tandhygienisten skulle göra

B. Tänk Dig nu situationen att Du sitter i väntrummet och väntar på Din tur. Hur känner Du Dig då?

☐ Alldeles lugn
☐ Lite orolig
☐ Spänd
☐ Nervös och ängslig
☐ Så nervös och skräckslagen att jag förmodligen skulle känna mig sjuk

C. Tänk Dig nu att det är Din tur. Du tar plats behandlingsstolen och ser hur tandläkaren/tandhygienisten gör i ordning sina instrument. Hur tror Du att Du skulle känna dig?

☐ Alldeles lugn
☐ Lite orolig
☐ Spänd
☐ Nervös och ängslig
☐ Så nervös och skräckslagen att jag förmodligen skulle svettas och känna mig sjuk

D. Tänk Dig att Du sitter hos tandläkaren/tandhygienisten. Han/Hon skall just sätta igång med att skrapa bort tandsten. Hur skulle Du känna Dig?

☐ Alldeles lugn
☐ Lite orolig
☐ Spänd
☐ Nervös och ängslig
☐ Så nervös och skräckslagen att jag förmodligen skulle svettas och känna mig sjuk
Studier av vård och hälsa tar alltid hänsyn till individens situation. Det gäller t.ex. sådant som familj och utbildning, med också social bakgrund. Därför kommer här några sådana frågor.

Sätt ett kryss i den ruta som stämmer bäst på Dig.

9. Hur länge har Du bott i Sverige?
   - Alltid
   - Har vuxit upp och gått i skola i Sverige
   - Har kommit till Sverige som vuxen

10. Hur mycket förvärvsarbetar Du i genomsnitt?
    - Heltid (mer än 35 tim/vecka)
    - Deltid (mellan 15-34 tim/vecka)
    - Mellan 1-14 tim/vecka
    - Inte alls

11. Vilken utbildning har Du?
    - Folkskola, enhetsskola, grundskola
    - Realskola, folkhögskola, 2-årigt gymnasium eller dylikt
    - Tre- eller fyraårigt gymnasium
    - Högskoleutbildning
    - Annan utbildning, vilken?
      ____________________________

12. Hur är Din familjesituation?
    - Ensamboende
    - Gift/sammanboende
    - Annat (särbo, bor hos föräldrar)
    - Ange vad ____________________
Förväntningar, kunskaper och tillfredställelse i samband med parodontal behandling
Förväntningar, kunskaper och tillfredsställelse i samband med parodontal behandling

I samband med att Du blev kallad till undersökning på specialistkliniken för tandlossningssjukdomar bad vi Dig delta i ett projekt genom att besvara en enkät om behandling av parodontit (tandlossningssjukdom). Vi tackar Dig för Ditt deltagande. Eftersom Du var så vänlig att svara på frågorna ber vi Dig nu besvara ytterligare en enkät som en uppföljning.

Bakgrund till undersökningen

Olika sjukdomstillstånd i munnen som t.ex. parodontit (tandlossning) behandlas av tandläkare och tandhygienister. Det är viktigt för oss inom tandvården att förstå vilka kunskaper om parodontit som patienter har och vilka förväntningar och uppfattningar som finns i samband med behandling av denna sjukdom. Sådan kunskap ger oss ett bättre underlag för en individanpassad behandling och därmed möjlighet till att också ge en bättre behandling.

Syfte

Syftet med studien är således att undersöka patienters kunskap om parodontit, förväntningar inför och upplevelse av behandling mot denna sjukdom.

Vi är säkra på att vi genom Din hjälp kan få en bättre uppfattning om hur vi i samverkan med våra patienter ska kunna skapa ett gott behandlingsresultat.

Vi ber Dig gå igenom frågorna i enkäten och besvara dem så fullständigt som möjligt.

Tystnadsplikt

Svaren på enkäten skyddas av sekretnesslagen, 9kap §4 och sekretessförordningen §3 samt personuppgiftslagen (PUL &26). Inga uppgifter kommer därför att utges till för studien utomstående personer och inte heller till tandvårdspersonal som behandlar Dig. På enkäten kommer att finnas ett kodnummer. bara vi som arbetar med studien kan koppla koden till ett namn. Kodlistan kommer att förstöras efter studiens avslutande. Då studien publiceras kommer enskilda patienter, kliniker, tandläkare eller tandhygienister inte att kunna identifieras.

Upplysningar

Vill Du ha mer upplysningar om undersökningsen eller om Du har frågor vänligen ring tandhygienist, Carina Mårtensson 044-20 40 74

Med Vänliga Hälsningar

Högskolan Kristianstad
Sektionen för Hälsa och Samhälle
Pia Andersson
leg. tandhygienist dr, odont. vet
Carina Mårtensson
leg. tandhygienist, odont. lic

Malmö Högskola
Avd för samhällsodontologi
Björn Söderfeldt, professor
Björn Axtelius, docent
1. Man kan märka på olika sätt att man har en tandsjukdom, som karies eller parodontit. Känner Du till vilka av följande besvär eller symtom som kan vara tecken på att man har karies eller parodontit?

Markera med ett kryss i den ruta som Du anser passar bäst.

<table>
<thead>
<tr>
<th>Besvär/symtom</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svarta/bruna beläggningar på tänderna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Blödning från tandkött</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ilningar i tänderna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Tandvärm</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Rörliga tänder</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dålig andedräkt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Sveda i munnen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Beläggningar på tungan</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ökade mellanrum mellan tänderna</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
2. Tandsjukdomar kan behandlas på många olika sätt. Det finns också många olika undersökningar som utförs i tandvården. Känner Du till vilka av följande behandlingar och undersökningar som gäller för karies eller parodontit?

Markera med ett kryss i den ruta som Du anser passar bäst.

<table>
<thead>
<tr>
<th>Behandling/undersökning</th>
<th>Karies</th>
<th>Parodontit</th>
<th>Både karies och parodontit</th>
<th>Varken karies eller parodontit</th>
<th>Vet ej</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skrapning av tandsten nere i tandköttsfickorna</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Operation av tandköttet</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Noggrann munhygien</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Rengöring mellan tänderna</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Mätning av tandköttsfickor</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Undersökning av käkbenet med röntgen</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Fyllning av hål</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Putsning av missfärgade tänder</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Lackning med fluor</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
<tr>
<td>Fluortabletter</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
</tbody>
</table>

Vilken uppfattning har Du som helhet av den information och behandling Du fått hos tandläkaren eller tandhygienisten?

<table>
<thead>
<tr>
<th>Instämmer inte alls</th>
<th>Instämmer delvis inte</th>
<th>Osäker</th>
<th>Instämmer delvis</th>
<th>Instämmer helt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min tandläkare/tandhygienist intresserade sig för mig som person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Även om jag hade små problem brydde sig min tandläkare/tandhygienist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag har haft förtroende för min tandläkare/tandhygienists beslut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min tandläkare/tandhygienist respekterade mina uppfattningar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag har kunnat tala med min tandläkare/tandhygienist om något har besvärat mig</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min tandläkare/tandhygienist har intresserat sig för mitt liv</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min tandläkare/tandhygienist har varit lätt att tala med</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min tandläkare/tandhygienist verkar ha förstått hur det kännts när jag berättat om ett problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vilken uppfattning har du av de besök som Du gjort på specialistkliniken?

<table>
<thead>
<tr>
<th>Stämmer inte alls</th>
<th>Stämmer ganska dåligt</th>
<th>Osäker</th>
<th>Stämmer ganska bra</th>
<th>Stämmer helt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

När jag pratade med tandläkaren/tandhygienisten fick jag en god bild av vilket skick mina tänder är i

När jag pratat med min tandläkare/tandhygienist har jag fått en god uppfattning om vilka förändringar som skett med min tandhälsa och vad jag kunnat förvänta mig

Tandläkaren/tandhygienisten har berättat allt jag velat veta om mitt/mina tandproblem

Jag har känt att min tandläkare/tandhygienist har förstått mig

Tandläkaren/tandhygienisten har varit noggrann under behandlingsbesöken

Jag är nöjd med den behandling som tandläkaren/tandhygienisten utfört

Tandläkaren/tandhygienisten har verkat veta vad han/hon gjorde under mina besöker
5. Hur man uppfattar tandvårdssituationen kan vara beroende av hur man uppfattar relationen till sin tandläkare och tandhygienist.

Nedan följer några påståenden om de besök Du gjort på specialistkliniken.

<table>
<thead>
<tr>
<th>Jag har litat helt på min tandläkare/tandhygienist</th>
<th>Stämmer inte alls</th>
<th>Stämmer ganska dåligt</th>
<th>Osäker</th>
<th>Stämmer ganska bra</th>
<th>Stämmer helt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag har respekterat tandläkarens/tandhygienistens syn på mina tandproblem</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag har tyckt om tandläkaren/tandhygienisten som person</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Det har uppstått en bra relation mellan mig och min tandläkare/tandhygienist</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Tandläkaren/tandhygienisten och jag har haft givande meningsutbyten</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

6. Vad tyckte Du var påfrestande med behandlingen? (tag ställning till samtliga påståenden)

<table>
<thead>
<tr>
<th>Behandlingen tog lång tid</th>
<th>Instämmer absolut</th>
<th>Instämmer delvis</th>
<th>Instämmer inte</th>
<th>Instämmer absolut inte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag oroade mig inför besöken</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Det gjorde ofta ont</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag mådde dåligt efter behandlingen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Det var svårt att komma från arbetet</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Här följer några frågor om besöken på Specialistkliniken.

7. Hur många gånger har Du besökt specialistkliniken för undersökning och behandling?  
   □ en gång  
   □ två gånger  
   □ tre gånger  
   □ fyra gånger  
   □ mer än fyra gånger

8. Hur många gånger träffande Du tandhygienist?  
   □ en gång  
   □ två gånger  
   □ tre gånger  
   □ fyra gånger  
   □ mer än fyra gånger

9. Hur många gånger träffade Du specialisttandläkare?  
   □ en gång  
   □ två gånger  
   □ tre gånger  
   □ fyra gånger  
   □ mer än fyra gånger

Till sist en fråga om hur ofta Du går på regelbunden undersökning och behandling hos allmäntandvården, din vanliga tandläkare/tandhygienist

10. Hur ofta går du på regelbunden undersökning till:

   **Tandläkare**
   □ Mer än en gång i halvåret  
   □ En gång i halvåret  
   □ En gång om året  
   □ En gång vartannat år  
   □ Jag går ej regelbundet

   **Tandhygienist**
   □ Mer än en gång i halvåret  
   □ En gång i halvåret  
   □ En gång om året  
   □ En gång vartannat år  
   □ Jag går ej regelbundet
CARINA MÅRTENSSON
PROMOTING ORAL HEALTH
Knowledge of Periodontal Disease and Satisfaction with Dental Care

ISBN/ISSN 978-91-7104-429-7

MALMÖ UNIVERSITY
205 06 MALMÖ, SWEDEN
WWW.MAH.SE