

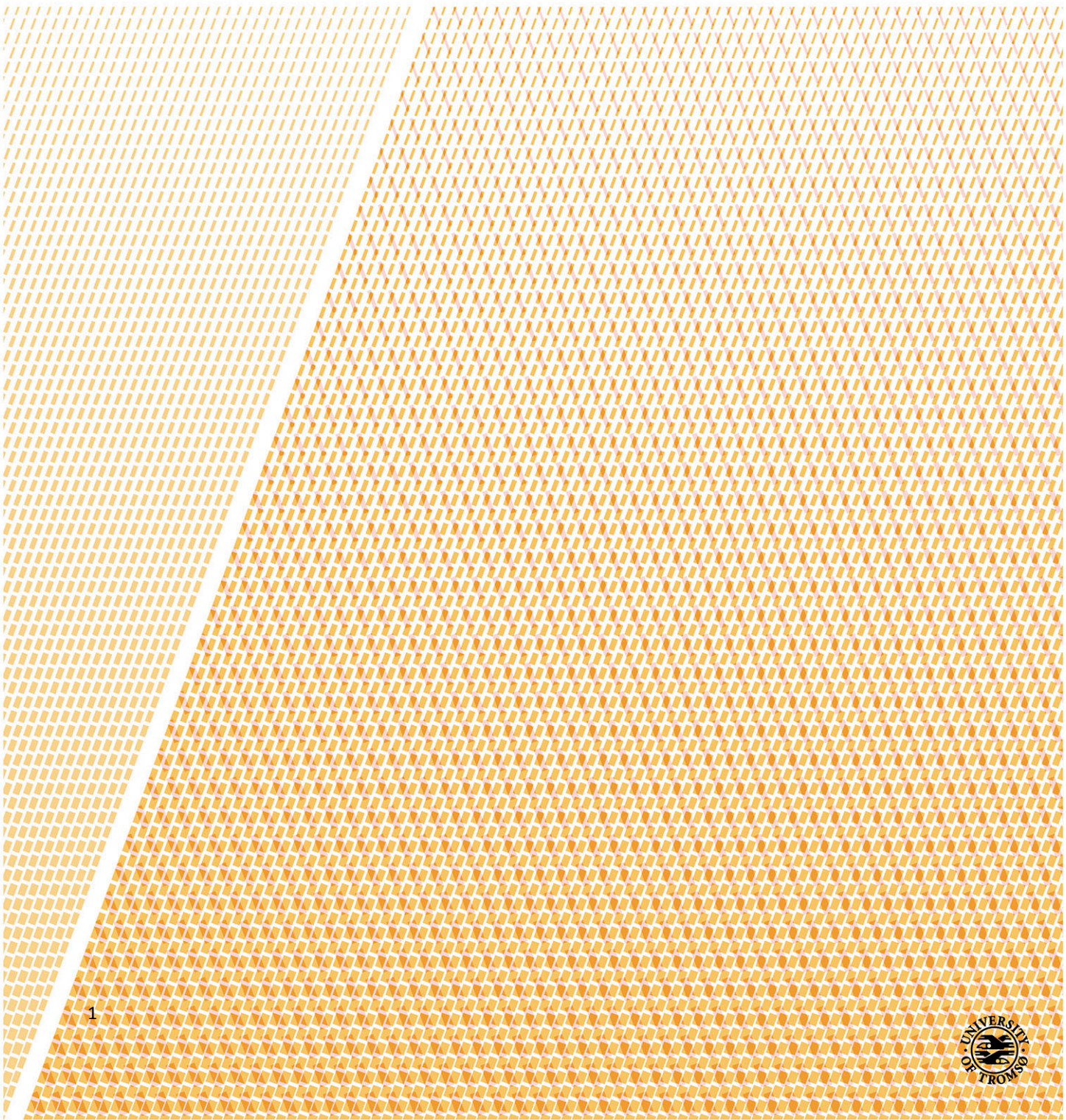
Faculty of Health Sciences, Department of Clinical Dentistry

Oral health literacy in adult dental patients

- *A clinical study*

—
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A dissertation for the degree of Philosophiae Doctor – May 2015



This thesis is dedicated to my beloved parents, Asbjørg and Odd Svendsen

“In order to help a fellow human being, you have to understand more than him – but first of all understand what he understands. If you don’t, your additional comprehension will not benefit him all.” Søren Kierkegaard, 1813-1855

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ACKNOWLEDGEMENTS

The present work was carried out at the Department of Clinical Dentistry and the Public Dental Service Competence Centre of Northern Norway. Am I grateful for the financial support from the Department of Clinical Dentistry. I wish to thank former leader of the department, Professor Harald Eriksen, and former head of administration, Keth Wøhni, for their positive attitude and welcoming atmosphere when I considered applying for a position. I am grateful to the former and present head of the Public Dental Service Competence Centre of Northern Norway, Professor Ivar Espelid and Dr. Elisabeth Camling, for providing office space, dental equipment, and a research assistant during the data collection period. I also thank former head of the University Dental Clinic, Ivar Parman, for providing the waiting list of patients from which the study participants were recruited from.

I wish to express my special appreciation and admiration to my supervisor Professor Jan Bergdahl, who has never failed to show me support, giving me inspiration and expecting me to perform at my best. He has shared his knowledge as a researcher, dentist and psychologist, and contributed to expand my view on clinical dentistry and human behavior. I have learned a lot having him as my mentor, and I am certain that I will aim at living up to his standards as a supervisor in a future academic career. I sincerely thank my co-supervisor Professor Maud Bergdahl for her involvement and support from the beginning to the end of the PhD process. Her knowledge and experience as a clinician and researcher has been valuable. I also thank my other co-supervisor, Dr. Kjell Sverre Pettersen from Oslo and Akershus University College. I am grateful that he introduced me to the field of health literacy during my master education, and for joining the research project after it had started. His knowledge has been a valuable contribution to the research project.

I sincerely thank Hilde Nyborg for her contribution as a research assistant performing all clinical examinations at baseline and follow-up. Her involvement made it possible to conduct a RCT and gave me the opportunity to be involved in a more exiting research project. I would also like to thank Therese Thoresen for administrative help in the data collection period, Madhu Wagle for collaboration in the planning phase of the project, and Dr. Catarina Wallman for sharing her knowledge regarding bacteria samples and interpretation of results.

Special thanks go to all my wonderful colleagues at the department of Clinical Dentistry for support, and for contributing to an inspiring and friendly work environment. In particular, I thank research consultant Laila Berg Nilsen for information and help regarding the submission process of the thesis. I sincerely thank former and present PhD students; Dr. Natalia Kuposova, Anette Haseid, Roberto Belloti, Ioanna Jacobsen, Hege Nermo, Bo Wold Nilsen, Lars Martin Berg, Aksel Wikant and Lina Stangvaltaite for interesting discussions, as well as sharing and caring during the ups and downs of PhD education.

The support of my friends and family has been much appreciated. I especially thank mother in-law Birgit Stein for babysitting, and sister and former colleague Ann-Helén Svendsen for keeping me updated on life in clinical dental practice. I sincerely thank my parents, Asbjørg and Odd Svendsen for always believing in me, showing enthusiasm and pride, and supporting me during challenging situations. Last, but not least, I am grateful to my husband Jonas and daughter Beatrice for being there for me, letting me work extra hours when needed, and serving lovely dinner, hugs and kisses at the end of a long day.

LIST OF ABBREVIATIONS

AHLID - Adult Health Literacy Instrument for Dentistry

ALL - Adult Literacy and Life skills survey

ANCOVA - Analysis of covariance

DMFT - Decayed, Missing and Filled Teeth

HLS-EU - Health Literacy Survey in the European Union

IALS - International Adult Literacy Survey

NAAL - National Assessment of Adult Literacy survey

OECD - Organization for Economic Co-operation and Development

PIAAC - Programme for the International Assessment of Adult Competencies

RCT - Randomized Controlled Trial

TAS-20 - Toronto Alexithymia Scale- 20 items

WHO - World Health Organization

ABSTRACT

Oral health literacy encompasses individuals' capacity to obtain, process, and understand basic oral health information and services needed to make appropriate health decisions. Evidence suggests that limited oral health literacy inhibit patients from getting necessary oral health information, and that communication with dental professionals may be problematic. Various personality traits are also regarded as challenges to successful communication, and are together with oral health literacy considered as risk factors for poorer oral health outcomes. Health literacy models have proposed that knowing the health literacy level of the patients makes it possible to tailor communication, which in turn might lead to better comprehension and enhanced health outcomes.

The aim of the thesis was to develop and validate the Adult Health Literacy Instrument for Dentistry (AHLID), an instrument to assess oral health literacy in Norwegian adult dental patients. Further, the aim was to investigate if oral health literacy was associated with the personality trait alexithymia, and test the effect of communication at the dental clinic sensitive to patients' oral health literacy. The AHLID was found to be a reliable tool for measuring oral health literacy, and we discovered that limited oral health literacy was associated with Lactobacillus count in saliva and reduced knowledge of risk factors for oral health diseases. One out of three participants scored on an oral health literacy level considered less than minimum for understanding important oral health information. An association between oral health literacy and alexithymia was revealed, indicating that alexithymia may be an important factor for limited oral health literacy. The combination of limited oral health literacy and alexithymia may lead to communication challenges for dental professionals when providing information to patients and teaching them skills for self-management of oral diseases. In a RCT, the effect of communication sensitive to patients' oral health literacy was

tested. The result indicated that providing information regarding patients' oral health using oral health literacy sensitive communication techniques may enhance patients' oral hygiene and gingival status compared to a control group.

When communicating with patients regarding their oral health, dental professionals need to take oral health literacy into account to reduce the barriers of limited oral health literacy and enhance patients' ability to process and understand oral health information. Knowledge regarding oral health literacy and psychological factors is essential for dental professionals, and communication skills are also needed to treat different patients properly.

PREFACE

In clinical dental practice, one can wonder why some patients do not follow the given recommendations regarding their own or their child's oral health. How come they did not start utilizing the interdental brushes? Why did they not complete the prescribed antibiotic treatment? Sometimes it may seem like information goes in one ear and right out the other. However, the problem can be that the information failed to go in the first ear at all. A great amount of information is often relayed to patients, but providers seldom evaluate patient comprehension in any way. Perhaps the patient did not have the capacity to understand the information as presented by the dental professional? As such, individuals' oral health literacy may be a barrier to achieving or maintaining good oral health for patients and their families.

LIST OF PAPERS

The thesis is based on the following papers, which will be referred to by their Roman numerals:

Paper I

Stein L, Pettersen KS, Bergdahl M, Bergdahl J. Development and validation of an instrument to assess oral health literacy in Norwegian adult dental patients. *Acta Odontol Scand* 2015 Feb 5:1-9. [Epub ahead of print]. PubMed. PMID: 25652174.

Paper II

Stein L, Bergdahl M, Pettersen KS, Bergdahl J. The association between oral health literacy and alexithymia: Implications for patient-clinician communication. Submitted.

Paper III

Stein L, Bergdahl M, Pettersen KS, Bergdahl J. Effects of communication sensitive to oral health literacy: A randomized controlled trial of adult patients. In manuscript.

INTRODUCTION

Shifts in health care

The biopsychosocial model of health was proposed by Engel in 1977 as a holistic alternative to the prevailing biomedical model, which mainly focused on the physical mechanisms of disease (1). Engel argued that the biomedical model left no room within its framework for the social, psychological and behavioral dimensions of illness. Gradually the biopsychosocial model has been implemented, but health care is still influenced by the biomedical model as well. Historically, dental professionals have applied the biomedical model, dental services were driven by paternalism, and the practice of dentistry was based on patients putting their confidence in the dental professionals (2,3). However, an ongoing shift in the patient-clinician relationship is seen in Western countries, where patients have become more involved with their own care and more interested in health issues (4). Health care is becoming increasingly patient-centered and individualized, with the patient becoming an active subject rather than a mere object of care (5). As the management of many oral health conditions highly depends on patients' daily self-care behavior and compliance to both preventive and curative measures, patients need oral health knowledge and skills to be able to take this responsibility for their own oral health. In today's society, our patients acquire health information from a variety of competing and sometimes contradictory sources of information, which can be frustrating (6). As a consequence, health professionals in different disciplines compete with many sources when it comes to providing information to the patient. The encounter between dental professionals and patients at the dental clinic is therefore an opportunity for patients to receive evidence-based oral health information, communicate with dental professionals, and learn skills for self-management. However, individuals have various abilities to understand, interpret and use information.

Literacy

The skills required to fully participating in and benefiting from our hyper-connected societies and increasingly knowledge-based economies have changed profoundly (7). The term “literacy” is used to encapsulate a broader concept of knowledge and skills, and is defined as *the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts* (8). Furthermore, literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate in their community and wider society. Poor literacy skills among adults are common worldwide, and large proportions of adults have limited literacy skills even in the most economically advanced countries (9). As part of Programme for the International Assessment of Adult Competencies (PIAAC), the Organization for Economic Co-operation and Development (OECD) has collected and analyzed data that assist governments in assessing, monitoring and analyzing the level and distribution of literacy skills among their adult populations as well as the utilization of skills in different contexts (7). Twenty-two OECD member countries including Norway participated in the 2013 PIAAC survey. The main findings were that individuals with lower proficiency in literacy in all countries were more likely than those with better literacy skills to report poor health, not participating in associative or volunteer activities, and to believe that they have little impact on political processes. In most countries, they were also less likely to trust others. The literacy levels were ranged from 1 to 5, reflecting cognitive processes and strategies required to read, interpret and use information in texts with different levels of proficiency. The results indicate that the Norwegian adult population on average is proficient at literacy level 3. According to PIAAC, scoring on literacy level 3 implies that one can read different types of text that are often dense and lengthy (7). Also, one can identify, interpret or evaluate

one or more pieces of information. In many cases, one will have to construct meaning across larger chunks of text, perform multi-step operations, or disregard irrelevant content. The Norwegian result is similar to that of Australia and Sweden, but lower than the Netherlands, Finland and Japan (10). In some countries, social background had a major impact on literacy skills, and the children of parents with low levels of education had significantly lower literacy proficiency than those whose parents had higher levels of education, even after taking other factors into account. However, in Japan, Australia, the Netherlands, Sweden and Norway, the data showed no relationship between a country's average literacy skills and the impact of social background on those skills, suggesting that high average literacy proficiency does not need to come at the expense of social inequities. As in most countries, the oldest and youngest Norwegian participants had the lowest literacy scores. However, the literacy proficiency among Norwegian youth (age 16-24) was significantly below the OECD average. Compared to the previous international literacy surveys Adult Literacy and Life skills survey (ALL) (11) and International Adult Literacy Survey (IALS) (9), scores of Norwegians were similar except for in the youngest age group where the scores were lower. This indicates that the literacy proficiency of young Norwegian adult has decreased (10). Although many Norwegians have adequate literacy, findings from IALS (9), ALL (11) and PIAAC (7) showed that 30-40 % of Norwegian adults scored on literacy level 1 or 2. This implies that many individuals struggle to understand different kinds of information necessary to cope with the demands of modern society. The field of literacy is complex, and different "literacies" have been recognized in recent years emphasizing that literacy is both content and context specific (12, 13, 14). This underscores that individuals with higher levels of general literacy may not be able to consistently apply their knowledge and skills in situations requiring specific content

knowledge, and also in unfamiliar contexts; such as in relation to health information and the health care environment (15).

Health literacy

The term “health literacy” was introduced in the US in 1974 to emphasize the importance of health education as social policy (16), but it did not get widespread attention until the 1990s when American studies linked literacy to health, finding an association between limited literacy and decreased medication adherence, knowledge of disease, and self-care management skills (17). In Europe, however, most health literacy research has been published after 2005, but the issue of health literacy is increasingly recognized in European health policies. Health literacy was explicitly mentioned as an area of priority in the European Commission’s Health Strategy 2008-2013 (5). Today there are numerous definitions of health literacy, and there has been called attention to a lack of a commonly accepted definition (18). Nevertheless, a shared characteristic of these definitions is their focus on individual skills to obtain, process and understand health information and services necessary to make appropriate health decisions (19). A shift is currently ongoing in the field of health literacy. Earlier, the ability of individuals to handle words and numbers in a medical context was emphasized, while a broadening of the concept is seen today, involving the simultaneous use of a more complex and interconnected set of abilities; such as reading and acting upon written health information, communicating needs with health professionals, and understanding health instructions (20). Based on the previous definitions of individual health literacy, the working group from the Health Literacy Survey in the European Union (HLS-EU) proposed an “all inclusive definition”, which encompasses the public health perspective (19):

Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course.

The prevalence of limited health literacy has been investigated at the population level in US and Europe. In the US, the National Assessment of Adult Literacy survey (NAAL) indicated that 43 % of the adult population had limited health literacy skills (21). In Europe, the recent survey HLS-EU reported that 47 % of the respondents had limited health literacy (22). The scores varied profoundly among countries; 29 % had limited health literacy in the Netherlands, while the result was 61 % for Bulgaria. No Scandinavian countries participated in the survey. However, respondents from Norway participated in assessment of health literacy in HLS-EU in 2014, but the results are not published yet.

Systematic reviews regarding health literacy and health outcomes have found that limited health literacy is associated with several diseases and conditions (23), poorer health related knowledge and comprehension, increased hospitalization and use of emergency care, decreased health preventive behavior, greater difficulty participating in shared decision-making, and poorer self-management of disease (23, 24). It has also been proposed that effects of limited health literacy can be mitigated by improving both the quality of health communication, as well as greater sensitivity among health professionals to the potential impact of limited health literacy on individuals (25). Further, it has been argued that the barriers of limited health literacy in a clinical context may be as much a problem of insufficient competence of clinicians to reduce unnecessary complexity and improve their communication skills, as it is a problem of limited health literacy skills in patients (24). The

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burden of limited health literacy in different health contexts is considered enormous, and a potential to reduce poor outcomes with intervention has been emphasized (26). As patients' health literacy appears to play an important role in overall clinical outcomes, subgroups of health literacy have now appeared in different health care fields, such as diabetes health literacy (27), HIV health literacy (28), and oral health literacy (29).

Oral health literacy

Even though medical research highlights the importance of health literacy for patients' health knowledge and positive health outcomes, health literacy has received little attention in dentistry until the last decade. In line with the acknowledgement of literacy as content and context specific, oral health literacy is now emerging as a research field in dentistry. It is a general agreement that oral health information is rather specialized information. In addition, the dental clinic is probably a quite unfamiliar context to most people. Furthermore, some patients experience dental anxiety; hence the dental clinic may represent a challenging context. While the definitions of health literacy are many, it seems to be consensus on the definition of oral health literacy proposed by the US Department of Health and Human Services/National Institutes of Dental and Craniofacial Research (30):

Oral health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic oral health information and services needed to make appropriate health decisions.

Oral health literacy includes skills like for instance the ability to understand instructions on prescription drug bottles, appointment slips, medical education brochures, dental

professional's directions and consent forms, and the ability to negotiate complex health care systems.

Evidence suggests that adults' limited oral health literacy is associated with poorer oral health knowledge (29, 31, 32) fewer dental care visits (29), failing to show for dental appointments (33), worse oral health-related quality of life (34), more severe periodontal disease (35), and worse self-reported oral health status (36, 37). Further, self-efficacy is proposed to mediate the effect of literacy on oral health status (37).

The interest in oral health literacy is internationally driven by oral health disparities, particularly among disadvantaged groups of the population (38), with conditions such as dental caries and periodontal disease contributing substantially to the global burden of disease (39, 40). In US, a national plan to improve oral health literacy has been published, emphasizing that limited oral health literacy is a potential barrier to effective prevention, diagnosis and treatment (41). In Norway, however, no oral health literacy research or agendas have been published. The importance to reach out to those who need it the most and prevent inequities in oral health has been emphasized in a white paper from 2007 concerning the future of Norwegian Oral Health Services (42), but oral health literacy was not even mentioned. In many counties, there is an increasing focus on measuring oral health literacy to be able to make decisions about instigating interventions at policy and practice level to improve both individual and population level oral health (40). Most published research on oral health literacy is conducted in English-speaking countries, and until recently, only English instruments to measure oral health literacy have been available. By the end of 2014, numerous oral health literacy instruments had been published in several languages, but not in Norwegian (Table I). However, the majority of these instruments have been criticized for

being heavily biased towards word recognition, numeracy and reading skills (34, 38). Also, the need to develop instruments for specific populations tested to ensure acceptability and cultural competence is emphasized in a scoping review of existing oral health literacy instruments (38). Due to the criticism of existing instruments as well as the differences between countries in language, culture, and health care systems, the need of country-specific instruments is obvious.

Table I. Chronological overview of published instruments to assess oral health literacy.

Abbreviation	Year	Authors	Language	Type of instrument
REALD-99	2007	Richman et al. ⁴³	English	99 item word recognition
REALD-30	2007	Lee et al. ³⁴	English	30 item word recognition
ToFHLiD	2007	Gong et al. ⁴⁴	English	68 item reading comprehension, 12 item numeracy
OHLI	2009	Sabbahi et al. ⁴⁵	English	Reading comprehension and numeracy
TS-REALD	2011	Stucky et al. ⁴⁶	English	Routing test, stage two test
REALM-D	2010	Atchinson et al. ⁴⁷	English	84 item word recognition
HKREALD-30	2012	Wong et al. ⁴⁸	Chinese	Adaption of REALD-99 and Shortening to REALD-30
OHLA-S	2013	Lee et al. ⁴⁹	Spanish	30 item word recognition
REALMD-20	2013	Girona et al. ⁵⁰	English	20 item word recognition
HKOHLAT-P	2013	Wong et al. ⁵¹	Chinese	Literacy and numeracy tasks for use in pediatric dentistry
OHL-AQ	2013	Sistani et al. ⁵²	English	Reading comprehension, numeracy, and decision making. Questionnaire for use in public health dentistry
HeLD	2013	Jones et al. ⁵³	English	Questionnaire with 29 items rated on a Lickert scale with respect to self- reported difficulty
HeLD-14	2014	Jones et al. ⁵⁴	English	14 item questionnaire shortened from HeLD
R-OHLI	2014	Blizniuk et al. ⁵⁵	Russian	Translation of OHLI into Russian
IREALD	2014	Pakpour et al. ⁵⁶	Persian	Translation of REALD-99

Personality

Well established communication researchers have emphasized the role of health literacy in the patient-clinician relationship (57). Also, leading researchers in the oral health literacy field have recently advocated for the consideration of personality traits along with oral health

literacy as risk factors for poorer oral health outcomes (37). To live in this complex and changing world, people must make decisions which require cognitive skills to organize and utilize information. These skills are dependent on various factors, including literacy and personality. The personality of a person is considered to be a result of continuous complex interaction of genetic and psychosocial factors, and is defined as complex characteristic patterns of cognitions, emotions and behaviors unique for each individual, which remains fairly stable throughout life (58).

Alexithymia is a personality trait defined as a multifaceted construct encompassing difficulty identifying subjective emotional feelings and distinguishing between feelings and the bodily sensations of emotional arousal, difficulty describing feelings to other people, an impoverished fantasy life, and a stimulus-bound, externally-oriented cognitive style (59). In the general population, alexithymia has been found in 11-13 % of adults (60, 61). Clinically, alexithymic patients have shown communication problems, as well as poorer treatment compliance and treatment outcomes (62). An inability to find appropriate words to describe their emotions has been demonstrated (63), and they seem to have difficulty picking up on non-verbal communication cues given by the clinician (64). Further, alexithymic patients show little insight into their feelings, symptoms and motivation, and may experience confusion, give vague answers, and report physical states when asked about their feelings. Alexithymia may contribute to poor health by prompting unhealthy behaviors, e.g. poor nutrition and hygiene may be impeded by the failure to experience or recognize potentially adaptive feelings such as fear, guilt, or even self-pride (65). In addition, alexithymia has been reported to be a risk factor for a variety of medical and psychiatric disorders like somatization, anxiety, depression, and substance use disorders (66), and is also associated with a history of childhood maltreatment and subsequent self-injurious behavior (67), which

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adds to the complexity of treating these patients. As with limited health literacy, alexithymia is considered a barrier to successful patient-clinician communication (65). Therefore, it seems possible that alexithymia may be associated with limited health literacy. However, there seems to be no evidence of this in the literature.

OBJECTIVES

Main objectives

The main objectives of this thesis were to develop an instrument to assess oral health literacy in Norwegian adult dental patients, use this instrument to investigate if oral health literacy is associated with the personality trait alexithymia, as well as to test if communication sensitive to oral health literacy may contribute to enhanced oral health outcomes.

Specific objectives

Paper I: Due to the lack of a Norwegian oral health literacy instrument at the time of investigation, the aim was to develop and validate an interview instrument to assess oral health literacy in Norwegian adult dental patients.

Paper II: Previous research has proposed alexithymia and limited health literacy separately are barriers to successful communication, but the association of the two concepts has not been studied. Therefore, we hypothesized that limited oral health literacy is associated with alexithymia. The aim was to assess oral health literacy and alexithymia in adult dental patients and test the hypothesis.

Paper III: Since conceptual models of health literacy have been presented in the literature without proper empirical validation, we wanted to adapt the *Conceptual model of health literacy as a risk* to a clinical oral health setting to test the following hypothesis: Participants receiving communication sensitive to oral health literacy will improve their gingival status and oral hygiene compared to participants receiving standard oral health information not sensitive to oral health literacy.

MATERIALS AND METHODS

Recruitment and characteristics of study participants

Paper I, II and III: Participants were recruited from a list of adults who had volunteered to be enrolled as patients at the University Dental Clinic, Tromsø, Norway, but had not yet started treatment. To be eligible for inclusion, participants had to be older than 20 years, have no severe visual impairment, and master the Norwegian language. Eligible participants received written information and invitation to participate in the study by mail, and individuals who returned signed consent forms were called to the Public Dental Service Competence Centre of Northern Norway, Tromsø, Norway for study participation.

All papers included the same participants, however with small changes with regard to number of participants. In *Paper I*, 130 participants were included, in *Paper II* the number was 127, while 133 participants were included in *Paper III*. The difference in number of participants in each study was due to lack of completing the key questions in the questionnaires. Taken together, the mean age was approximately 48 ranging from 21 to 80 years. Some 56 % of the participants were women. Mean completed years of education was 13, ranging from 7 to 20 years. There were no significant differences between men and women regarding age and years of education.

Study design

Paper I was designed as a cross-sectional study with focus on instrument development and validation of the Adult Health Literacy Instrument for Dentistry (AHLID). Some patients were called back to the dental clinic to participate in the retest validation of the instrument one to two weeks after the initial measurement. No other data than the AHLID measurement was conducted at the day of retest.

Paper II was designed as a cross-sectional study with focus on testing the hypothesis that oral health literacy and alexithymia is associated. The study had a descriptive nature.

Paper III was designed as a randomized, examiner- and participant-blinded, controlled clinical trial. Measurements were conducted pre-intervention (n = 133) and 6 months post-intervention (n = 127). The participants were allocated to experimental group and control group before the data collection started. Two different interventions were performed after oral health literacy was assessed and a clinical examination performed.

Communication sensitive to oral health literacy (Experimental group)

For participants in the experimental group, communication regarding their gingival status and oral hygiene was carried out according to Nutbeam's *Conceptual model of health literacy as a risk* (25) and therefore regarded as sensitive to oral health literacy (Figure I). Communication techniques utilized included speaking in plain, non-medical language, encourage questions using an open-ended approach to avoid yes/no answers, and confirming understanding using the "teach-back" or "show me" approach by having patients repeating information back in their own words or showing how to operate dental devices (68, 69, 70). In addition, radiographs, pictures and models of teeth and jaws were used as visual supplements to the oral conversations when considered necessary for comprehension. Because the effect of printed or written health information materials is greater when the information is personalized (71), participants in the experimental group were provided with an individualized short summary in steps to bring home for repetition of oral hygiene practices with focus on what to do and why they were recommended to do so. Participants were also provided with

recommended oral hygiene devices free of charge. The same person who conducted all AHLID interviews performed the intervention, which lasted from 10-20 minutes.

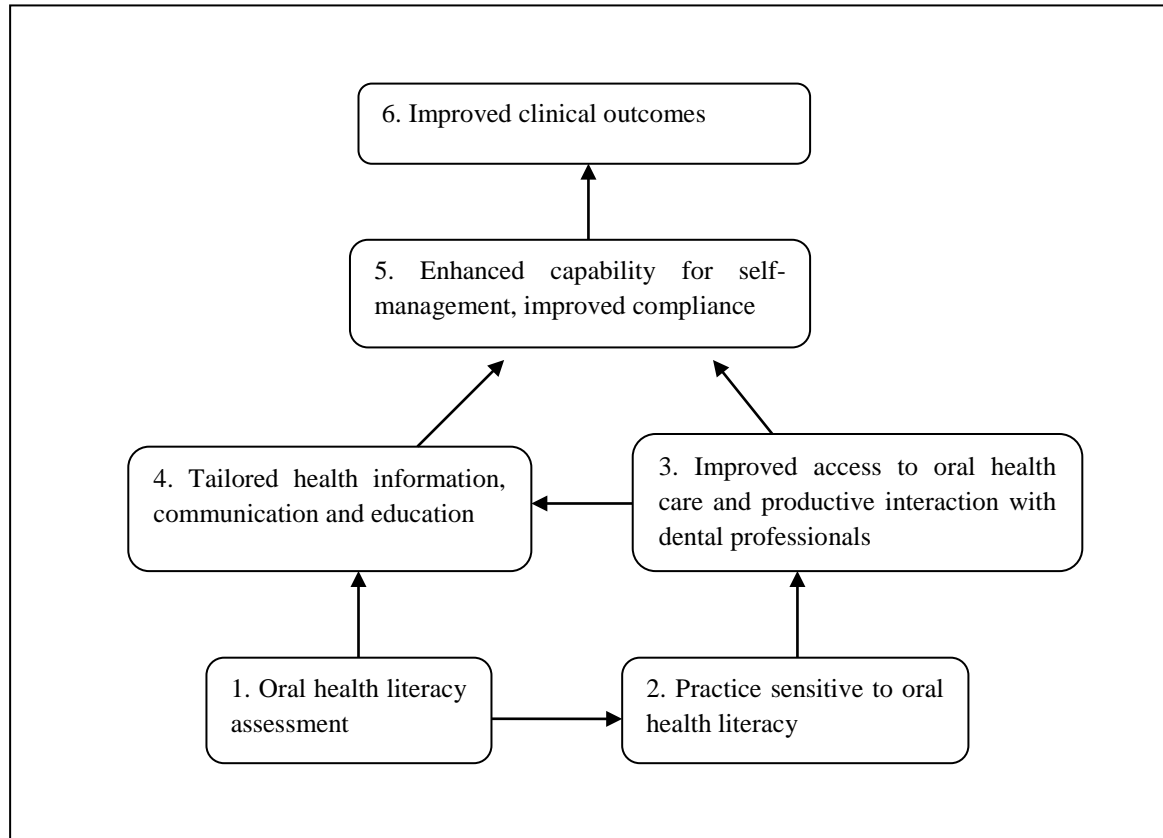


Figure I. Conceptual model of health literacy as a risk (25), adapted to oral health.

General information (Control group)

Participants in the control group received information regarding their gingival status and oral hygiene according to standard practice in general dentistry. Brief information was given orally, no written information was provided. The communication was not sensitive to oral health literacy. The same person who conducted all AHLID interviews performed the intervention, which lasted about 2-3 minutes.

Instrument development

Paper I: AHLID was adapted from an instrument used to assess general literacy by OECD (72). In a structured interview utilizing an interview guide (Appendix 1), participants were asked to read a selection of printed texts (Appendix 2) one by one, followed by a question from each of the texts. While the OECD instrument consists of printed texts selected for inclusion based on a broad range of context and content, AHLID consisted of printed oral health information texts frequently used for the benefit of adult dental patients to complement communication with dental professionals. The difficulty of the texts and accompanying questions ranged from level 1 (lowest) to 5 (highest). The levels refer to the cognitive processes and strategies required to read, interpret and use information in texts with different levels of proficiency, described in Table II.

Table II. Description of the different literacy levels.

Level 1	Reading a short text to locate a single piece of information which is identical or synonymous to the information given in the question.
Level 2	Reading and locating a single piece of information in a relatively short text with plausible, but incorrect distracting information, or to integrate two or more pieces of information from the text.
Level 3	Reading and making matches that require low-level inferences. Distracting information is present in the text, but is not located near the correct information.
Level 4	Reading and performing multiple-feature matches as well as to integrate information from complex or lengthy passages.
Level 5	Reading and searching for information in dense text which contains a number of plausible distractors. Participants may have to perform high level inferences in order to provide a correct answer to the question.

Measurements

Paper I: Oral health literacy was assessed utilizing the AHLID interview guide (Appendix 1) and printed texts (Appendix 2). Stimulated salivary flow rate was measured as mg/min collecting saliva after chewing a paraffin tablet for 1 minute. Dentition status was examined utilizing the World Health Organization (WHO) criteria (73) whereby the number of Decayed, Missing and Filled Teeth (DMFT) are accounted for. Streptococcus mutans and lactobacillus in saliva were examined utilizing the Dentocult® SM strip mutans and the Dentocult® LB (74, 75) (Orion Diagnostica, Espoo, Finland). Oral health knowledge and demographic variables were collected using a self-administered questionnaire (Appendix 3).

Paper II: Oral health literacy was assessed by AHLID (Paper I). Alexithymia was assessed by the validated Toronto Alexithymia Scale-20 items (TAS-20) (76, 77) (Appendix 4). The 20 items in TAS-20 are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), thus the total score range from 20 to 100. Scores from 20 to 51 represent a non-alexithymic level, 52 to 60 a borderline-alexithymic level, and 61 to 100 an alexithymic level. Three TAS-20 factors reflect distinct dimensions of alexithymia. Factor 1 assesses difficulty in identifying feelings. Factor 2 assesses difficulty describing feelings to others. Factor 3 assesses externally-oriented thinking. Demographic variables were collected using a self-administered questionnaire (Appendix 3).

Paper III: Oral health literacy was assessed by AHLID (Paper I). Clinical measurements included DMFT (73), Löe & Silness plaque index (78), and Silness & Löe gingival index (79). The plaque and gingival indices were obtained by registering four tooth surfaces: distal, buccal, mesial and lingual/palatal on all present teeth, except third molars. Demographic variables were collected utilizing a self-administered questionnaire (Appendix 3). Smoking

status and information regarding chronic disease(s) were collected by status praesens (Appendix 5).

Statistical analyses

Statistical analyses were chosen based on the type of research questions we wanted to answer as well as the nature of the data. Statistics books and papers were utilized to make sure no assumptions were violated. The statistical analyses performed are described in Table III.

Table III. Statistical analyses utilized in Paper I, II and III.

	Paper I	Paper II	Paper III
Independent sample t-test		+	+
Paired samples t-test			+
Chi-square test		+	+
Pearson's correlation	+	+	+
Spearman's correlation	+		+
Linear multiple regression	+	+	
Analysis of covariance (ANCOVA)			+
Cronbach's α	+		
Cohen's d			+

P-values lower than 0.05 were considered statistical significant. Most statistical analyses were performed using IBM SPSS Statistics software for Windows (version 19.0 or 21.0, IBM SPSS Inc., Chicago IL, USA). In addition to SPSS, additional statistical analyses were performed by software or by hand in *Paper III*. This included a power calculation conducted with the software G*Power 3 (80). Further, within-group effect sizes (Cohen's d) were calculated by

Becker's Effect size calculator (81). Between-group effect sizes (adjusted Cohen's d) were calculated separately for primary and secondary outcome variables by the adjusted mean difference of experimental group or control group divided by the estimated pooled standard deviation obtained from the square root of the mean square error of the ANCOVA model.

Ethical considerations

Paper I, II and III: The research project was conducted in accordance with the World Medical Association Declaration of Helsinki (82), and approved by the Regional Ethical Committee before the recruitment of participants started. Information regarding study participation was repeated orally at the day of investigation, and efforts were done making sure the participants understood both advantages and disadvantages, that participation was voluntary, and that their decision would not affect their future care at the University Dental Clinic. Status praesens of diseases, allergies and medication use was collected from each patient to ensure proper care (Appendix 5). In *Paper III*, participants allocated to control group received oral health literacy sensitive communication (same as experimental group at baseline) after the post-intervention measurements.

MAIN RESULTS

Paper I

AHLID demonstrated good reliability with Cronbach's alpha values of 0.98 for internal consistency reliability ($p < 0.01$), and 0.81 for test-retest reliability ($p < 0.05$). Content validity was satisfactory as only printed texts utilized in dental clinics nationwide or in the county at the time of investigation were included in AHLID.

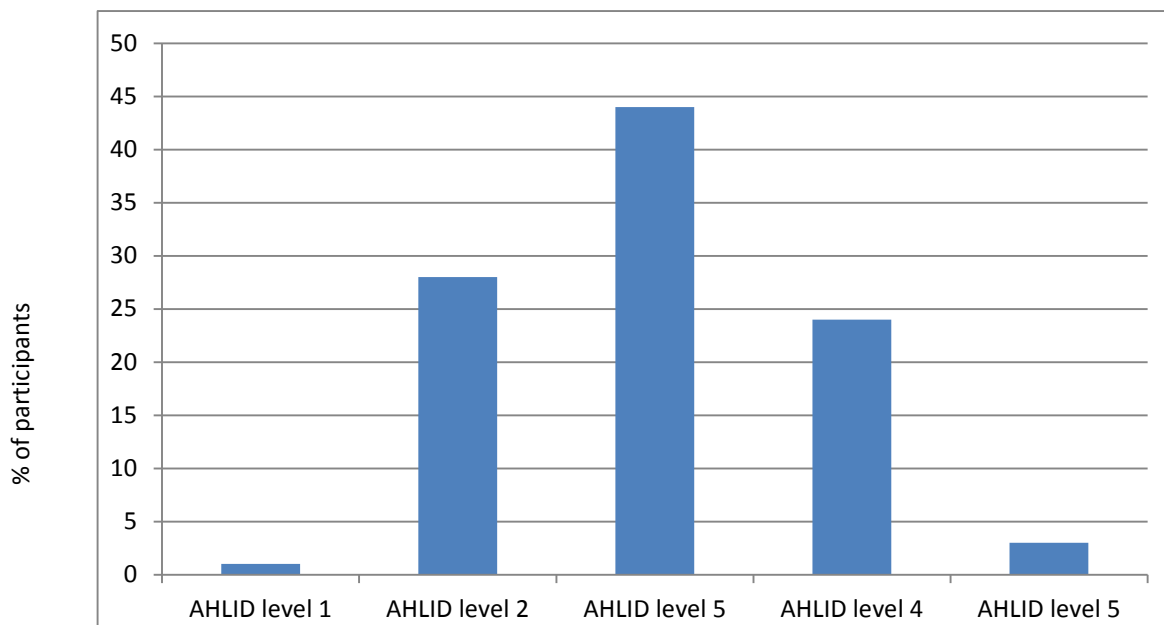


Figure II. Distributions of patients on the different AHLID levels

The AHLID testing showed that almost half of the sample scored on oral health literacy level 3, few participants scored on levels 1 and 5, while the rest was almost equally distributed on levels 2 and 4. In a linear multiple regression analyses, lactobacillus in saliva ($\beta = -0.218$, SE = 0.064, $p = 0.016$), knowledge of bacteria as a risk factor for periodontitis ($\beta = 0.218$, SE = 0.280, $p = 0.023$) and knowledge of frequent meals as a risk factor for caries ($\beta = 0.320$, SE =

0.152, $p = 0.001$), were found to be predictor variables of AHLID score, controlling for DMFT, gender, age and years of education.

Paper II

Bivariate correlation analyses showed a significant negative correlation between AHLID score and TAS-20 factor 2 – difficulty describing feelings to others ($r = -0.187$, $p = 0.035$), TAS-20 factor 3 – externally-oriented thinking ($r = -0.235$, $p = 0.008$) and TAS-20 total score ($r = -0.201$, $p = 0.023$). Multiple regression analysis with AHLID score and TAS-20 factors 1-3 showed that TAS-20 factor 3, externally-oriented thinking, was a predictor of AHLID score ($\beta = -0.21$, $SE = 0.02$, $p = 0.017$), when controlled for gender, age and years of education. Further, the subsequent multiple regression analysis showed that TAS-20 total score was a predictor of AHLID score ($\beta = -0.18$, $SE = 0.01$, $p = 0.036$). The distribution of AHLID levels was similar to that of *Paper I*, which is presented in Figure II. The distribution of TAS-20 scores is presented in Table IV.

Table IV. Distribution of TAS-20 scores

	Min	Max	Mean (SD)
TAS-20 factor 1 ^a	7	27	14.5 (± 5.0)
TAS-20 factor 2 ^b	5	19	12.1 (± 3.6)
TAS-20 factor 3 ^c	10	29	19.9 (± 4.1)
TAS-20 total score ^d	22	70	46.5 (± 9.6)

^a Difficulty identifying feelings

^b Difficulty describing feelings to others

^c Externally-oriented thinking

^d Possible range 20-100

Paper III

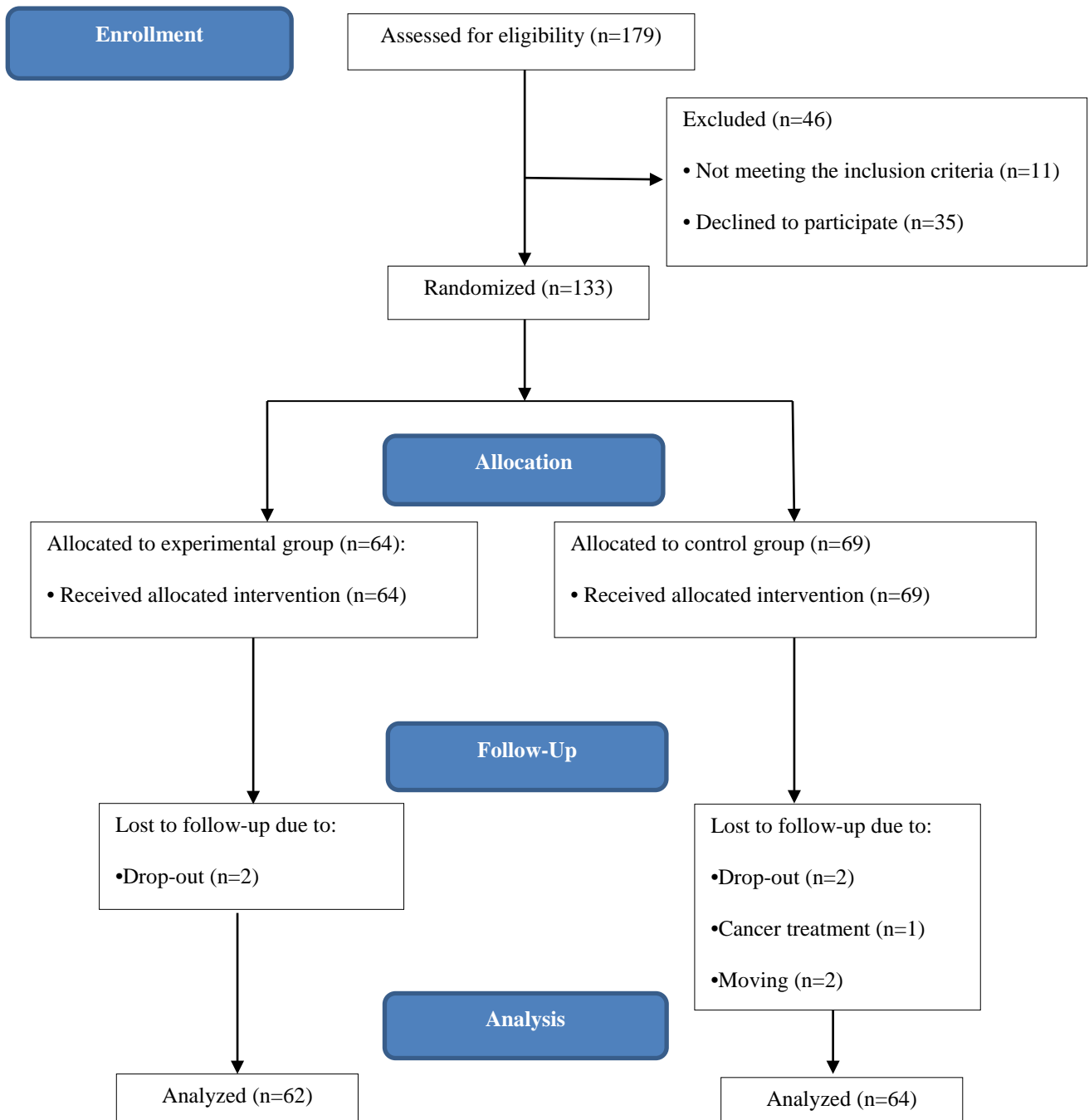


Figure III. Flow chart of study participants

Follow-up measurements were conducted on 62 patients in the experimental group, and 64 in the control group (Figure III). Paired-sample t-tests performed separately for the two groups showed that mean plaque index score decreased significantly in the experimental group ($p < 0.000$) as well as in the control group ($p < 0.000$). Regarding the mean gingival index, the score decreased significantly from the pre-intervention to the post-intervention measurement in the experimental group ($p < 0.000$), but not in the control group ($p = 0.480$). Plaque index effect size was large in the experimental group (Cohen's $d = -1.663$), and small in the control group (Cohen's $d = -0.394$). Gingival index effect size was large in the experimental group (Cohen's $d = -1.775$), while no effect was found in the control group (Cohen's $d = -0.098$). The ANCOVA showed significant between-group effect finding that the experimental group reduced the post-intervention mean plaque index ($p = 0.000$) as well as the mean gingival index ($p = 0.000$) significantly more than the control group when controlled for baseline index scores. In favor of the experimental group, the between-group effect size was large for both plaque index (Adjusted Cohen's $d = -1.33$) and gingival index (Adjusted Cohen's $d = -0.98$).

GENERAL DISCUSSION

The focus of the thesis was oral health literacy in adult dental patients: developing and validating an instrument to assess oral health literacy (*Paper I*), investigating if oral health literacy is associated with personality (*Paper II*), and testing the effect of communication at the dental clinic sensitive to patients' oral health literacy (*Paper III*).

Considerations of some methodological aspects

The study sample was a convenience sample of persons seeking care at a university dental clinic, and cannot be considered representative for the general population. Compared to the general population, these individuals may be more interested in oral health and more motivated to participate in a study, which might have influenced the result. In addition, the participants were well educated compared to the general population. Further, the inclusion criteria only allowed Norwegian-speakers self-evaluated to master the language to participate, which might have inhibited certain immigrants and some Sami people from participation.

We collected some of the data using self-reported questionnaires; TAS-20 (*Paper II*) and a questionnaire regarding demographic variables (all papers). Self-reported data will always be a limitation with regard to reliability. Although we encouraged the participants to answer as correct as possible and ensured anonymity, it cannot be ruled out that some participants may have answered what they thought would put them in a better light, rather than the correct answer. As to the magnitude of the results, conclusions regarding causality cannot be drawn in *Paper I* and *II* due to the cross-sectional design. In *Paper III*, our results should be seen as a first step to provide evidence since it probably is one of the first studies investigating the effect of oral health literacy-sensitive communication on outcomes such as gingival status and oral hygiene.

The Randomized Controlled Trial (RCT) is widely considered to be the gold standard for evaluating health care interventions (83). However, oral health researchers have been criticized for frequently overlooking some key issues in the analysis of change in follow-up studies (84). Due to the criticism, certain considerations were made when analyzing the results of the RCT (*Paper III*). Differences between groups after intervention were measured using ANCOVA instead of paired-sample t-test to be able to control for baseline differences (85). As to intervention effect, adjusted Cohen's d was calculated to provide an effect size. This analysis was conducted because although a p-value can inform the reader whether an effect exists, it will not reveal the size of the effect (85). Further, the CONSORT check list which is intended to improve the design, conduction and reporting of RCTs (83) was followed. However, following the check list did of course not guarantee good quality of the RCT, but it has most likely reduced the methodological bias in the study.

Assessment of oral health literacy (Paper I)

The high Cronbach's alpha values obtained in the internal consistency and the test-retest analyses show that AHLID seems to be a reliable instrument. Regarding content validity, all printed texts included in AHLID were authentic oral health information materials utilized throughout Norway at time of investigation, and can therefore be considered sufficient. However, all printed texts utilized in AHLID were developed for Norwegians, and if the instrument will be utilized in other countries, printed materials from the country of interest must of course be used due to differences in language, culture and society. Even in Norway, the materials require constant evaluation to ensure content validity as available printed oral health information change over time. We do recognise that we were unable to validate

AHLID with other oral health literacy instruments because an appropriate comparison instrument was not available in Norwegian. We were however able to test if AHLID scores were associated with factors like clinical outcomes and health knowledge, that are well established as predictors of health literacy (23, 24). Our results showed that knowledge of caries and periodontitis risk factors and lactobacillus counts in saliva were associated with AHLID levels, which strengthen the validity.

It is important to emphasize the limitation of AHLID with regard to the definition of oral health literacy. AHLID measures individuals' ability to process and understand basic printed oral health information, however not their ability to obtain oral health information. Nevertheless, compared to reading recognition instruments, AHLID measures a broader concept of oral health literacy. Many of the previously published reading recognition instruments focuses solely on reading comprehension, and have been criticized because it makes it difficult to determine if a patient really knows the meaning of a word or is simply able to pronounce it without having any knowledge of its meaning (43). In addition, most oral health literacy instruments consist of self-reported data. AHLID, on the other hand, is an interview-based instrument where the oral health literacy level is measured objectively by the researcher, which is a strength.

When testing AHLID in our sample, we found that over one quarter of the participants scored on oral health literacy level 1 or 2, which showed that these individuals had severe problems understanding the authentic printed oral health information utilized in AHLID. In literacy research, this is regarded as less than the minimum level required to manage in today's information society (9). Our results indicate that printed oral health information utilized in Norway today may be too complex and difficult to understand for many adults.

Similar to our results, researchers have found that health information in general is written on a level too high for the majority of the population in the US (86). With this knowledge in mind one can of course discuss if it is helpful to provide printed information to bring home for the patients. However, research has shown that providing such information have a beneficial effect on knowledge and understanding of their condition for many patients (87). For patients with limited oral health literacy, the standardized printed information will probably be too difficult to comprehend. While individuals having adequate oral health literacy will benefit from the information and have an opportunity to enhance their oral health, individuals having limited health literacy will not have this advantage. This might actually result in larger inequalities in oral health, which is the opposite of what is desired. Therefore, it might be reasonable to conduct a critical review of the existing printed oral health information utilized in Norway today, and consider differentiating the information according to different oral health literacy levels and cultures.

Evidence does not support clinical screening of health literacy (88). In addition, the available oral health literacy instruments are perhaps too time-consuming as well as demanding for dental professionals to administer within the clinical context. In dentistry, assessment of oral health literacy has been performed in research only. However, findings from clinical research projects should indeed be taken into consideration when treating patients in dental practice. It is important that dental professionals who interact with patients; dental nurses, dental hygienists and dentists, have knowledge regarding oral health literacy which in turn enable them to recognize patients with limited oral health literacy and adapt the communication accordingly.

Oral health literacy and alexithymia (Paper II)

Our findings supported the hypothesis that limited oral health literacy is associated with the personality trait alexithymia. TAS-20 factor 3, externally-oriented thinking, and TAS-20 total score were identified as significant predictors of AHLID score. As individuals with an externally-oriented cognitive style prefer a rather superficial, unemotional perception, and seem to be especially focused on external circumstances rather than their own behavior (89), communicating with these patients may be demanding. The overall mean TAS-20 scores in our sample showed that 10 % were alexithymic. These findings are similar with results from two large population studies which reported alexithymia in 12.8 % of an adult Finnish population (60) and in 11.1 % of men and 8.9 % of women in a German population (61). Considering these results, it can be reasonable to expect that one out of ten patients may be alexithymic, or as many as three out of ten if borderline alexithymia is taken into account. In a clinical setting, alexithymic patients have shown communication problems and poorer treatment compliance and treatment outcomes (62). Patients with alexithymia are less skilled at recognising both verbal and nonverbal emotional cues from the clinician, and verbalised empathic response from health professionals have been suggested to be crucial for patients with alexithymia (64). Dental professionals should be aware that they will encounter patients with problems communicating their emotions and/or understanding oral health information. Communicating with patients with limited oral health literacy alone is a challenge, and if some of these patients in addition have alexithymia, the challenge is even greater. Nevertheless, dental professionals can meet these challenges by adapting their own communication to the individual patients' needs, and taking oral health literacy and a personality trait such as alexithymia into consideration. However, it is likely that communicating with these patients in some cases still will be demanding, even though

clinicians aim at individualized communication. Some individuals will unfortunately have impaired abilities to communicate due to their personality, whether they are patients or dental professionals. In turn, impaired abilities to communicate are likely to affect the quality of care. Being the first study reporting associations between alexithymia and oral health literacy, our results should be seen as a first step to provide evidence of the association and hopefully encourage other researchers to study other personality traits. Obviously, more research is needed on this topic.

Communication sensitive to oral health literacy (Paper III)

The hypothesis that patients receiving communication sensitive to oral health literacy will improve their gingival status and oral hygiene compared to patients receiving standard oral health information was supported by our findings. A significant post-intervention reduction in gingival index was seen in the experimental group, but not in the control group. This implies that the experimental group benefited from the oral health literacy-sensitive communication as proposed by the *Conceptual model of health literacy as a risk* (25). The experimental group had a longer intervention session than the control group. We cannot rule out that this might have influenced the participants in the experimental group and perhaps enhanced their motivation to change oral hygiene behavior. We also aimed to have the same approach and attitude towards both groups, but we could not control if both groups felt equally well taken care of. However, the drop-out was the same in both groups, which may be interpreted that no group was disadvantaged. The participants did not know that there were two different intervention groups, but the researcher who performed the interventions had of course this knowledge. This fact could have influenced the result in favour of the experimental group. However, the clinical examiner was blinded to group allocation, which strengthens the study.

Another strength is that both groups received the intervention from the same researcher, which resulted in that the interpersonal interaction was more constant. This may have reduced unwanted effects of the intervention. On the other hand, we do not know to what extent the results might have been influenced by the personality and attitude of the researcher performing the intervention.

Previous research has demonstrated that interventions designed to mitigate the effect of limited health literacy that changed distal outcomes had the common features of a solid theory basis, emphasis on skill building, and were delivered by a health professional (90). Also, experts recommend a “universal-precautions” approach that utilizes communication techniques to clarify information, since most patients benefit from information presented in a clearer and easier manner (91). These techniques include speaking in a plain non-medical language, encouraging questions using an open ended approach to avoid yes/no answers, and confirming understanding using teach-back by having patients repeat in their own words or showing how they plan to perform a task (68, 69, 70, 91). Our study included these features and communication techniques, and hence supports the design of previous health literacy studies that changed distal outcomes in other fields of health than dentistry.

Patient-practitioner communication

A common topic in the discussions in *Paper I, II and III* is oral health literacy and its influence on communication between dental professionals and their patients. Findings from other studies suggest that patients more communicatively involved in their consultation with clinicians having a more patient-centred focus show better outcomes across a number of biomedical and psychological domains (92). However, how well patients can communicate

might depend on many factors, including personality and health literacy. Recently, it has been emphasized that a key strategy to reduce the impact of limited health literacy is through improved patient-practitioner communication (93), and we advocate for individualized communication adapted to oral health literacy and personality of patients. The primary aim of the general dental practitioner is to improve and maintain the oral health of their patients, and the patient-practitioner relationship is crucial to make this possible (94). To succeed, the relationship between patients and dental professionals must be based on trust, respect and mutual understanding (90, 95). Both clinicians and patients need communication skills. However, dental professionals do neither have the responsibility nor the competence to directly enhance patients' oral health literacy levels, and changing patients' personalities is obviously not an option. In our opinion, the solution should therefore be that dental professionals adapt to each patients' abilities when communicating. Two-way communication has to take place to avoid the paternalistic biomedical focus in the clinical encounter. Dental professionals must provide information regarding the patients' oral health, and the patient must provide information regarding values, wishes, preferences and economy. The dental professional also needs to get informed about the patients' previous knowledge regarding the treatment or self-management required to address the oral health issue(s) in question. If the patient doesn't provide information needed, the clinician must ask. Despite the increased availability of health related information external to the health care setting, such as on the Internet, the patient-practitioner interaction still represents a critical juncture for the exchange of health information (96). Further, the Internet provides an enormous amount of information with varying quality, and a great number of the hits patients get when searching online do probably not contain scientifically accurate information (6). A great demand is put on individuals to critically analyze the information, which is unfortunate since patients with

limited health literacy often experience problems interpreting and reflecting on health information (97). It is therefore crucial that dental professionals communicate with their patients, provide evidence-based information, and guide them if confused by information online. Dealing with the consequences of the incredible amount of information available online is a quite new challenge for dental professionals. Nevertheless, it is an important issue to address today and in the future.

Patient-centred care

All papers included in the thesis highlights elements from patient-centred care, which we consider crucial for being sensitive to oral health literacy and taking patients' personality into consideration at the dental clinic. Patient-centred care is recognized as a key dimension of quality within health care, but a lack of understanding of patient-centred care in dentistry was recently revealed (98). A patient-centred approach requires dental professionals to move beyond the biomedical view of patients to a biopsychosocial view, where the autonomy and integrity of the patient is acknowledged, and the dental professional is sensitive to individual patient preferences, needs, and values that should guide all clinical decisions (99). Dental professionals must be able to communicate effectively with patients from a variety of backgrounds and with different challenges. Loignon and colleagues (100) found that dentists with experience of overcoming barriers in communication with people living in poverty had a socio-humanistic approach that involved understanding patients' social context, taking time and showing empathy, avoiding moralistic attitudes, overcoming social distances, and favoring direct contact with patients. In a study among patients with dental phobia, Kulich and colleagues (101) identified a holistic perception and understanding of the patient as a core category. Furthermore, empathy, equality, dignity, emotional understanding, respect and

engagement were the most important aspects of care from the patients' perspective. It is important to underscore that a treatment considered the best option by the dental professional might not be the best option from the patients' view. The biopsychosocial model emphasizes the importance of being sensitive to patient preferences, needs, and values. In Norway and other countries where adults pay most of their dental expenses themselves, economical cost is also of importance to the patient when a treatment decision shall be made.

Research suggest that patient-centred care leads to enhanced patient satisfaction (102), and it is also claimed that it can result in greater work satisfaction for health professionals and reduced level of litigation (103). Involving patients in treatment related decision-making is in line with the patient-centred approach. Also, patients have an increased responsibility to control their own care which include understanding and acting on health information i.e. health literacy, and working together with health professionals to select appropriate treatments or management options i.e. shared decision-making (104). In addition, in several countries including Norway, patients have the legal right to take part in the decision-making process between available and reliable methods of examination and treatment (105). Further, the patient rights act states that patients' involvement should be adapted by the health professional to the patients' ability to give and receive information. Such involvement requires both health literate patients and dental professionals with knowledge and skills in health literacy. However, current laws do not address the problem of patients with limited literacy (86), which is a paradox. An individual's health literacy is tied to the complexity of the information presented, the cultural overlay of health beliefs, and the quality of health communication. Dentists rarely present treatment options to the patient, but evidence suggest that the majority of patients actually value an active collaborative participation in decision-making regarding their own oral health (106). As such, it seems to be a miss-match between

what is desired by the governments and the competence of health professionals and their patients. Shared decision-making and patient empowerment require dedicated clinicians who manage all patients, regardless of factors like personality traits and oral health literacy level. Also, health literacy level appears to be an important determinant of patients' participation in communication regarding their own health. In a study on patient participation in medical encounters, patients with limited health literacy were significantly less likely to ask questions, request additional services or seek new information (107). Another complicating issue is that shame may inhibit patients with limited health literacy from admitting they have trouble understanding, cause them to delay seeking help when they do not comprehend, and prevent them from asking questions that may have made them understand the information (108). Systematic reviews regarding health literacy concluded that patients with limited health literacy have greater difficulty participating in shared decision-making, and in general poorer self-management of disease (23, 24). Without appropriate precautions made by the dental professional, an individuals' limited oral health literacy and personality trait may compromise his/hers ability to engage fully in health care interactions, and shared decision-making will be difficult to obtain. Therefore, it seems to be lack of accordance between the patients' rights and the demands on dental professionals in terms of the skills needed to provide proper care to include the patients in decisions regarding their own oral health.

CONCLUDING REMARKS

Clinical implications

When communicating with patients, dental professionals need to take into account the oral health literacy and personality of each individual patient. Dental professionals must adapt to the patients' preferences, needs and values. The process of involving patients in decision-making regarding their own oral health is in line with the increasing patient-centred focus in dentistry, and is also required by law. An oral health literacy-friendly dental practice is critical to achieve this, which in turn requires dental professionals educated and skilled in communication techniques. Knowledge regarding oral health literacy and psychological factors such as personality is essential, and should therefore be included in dental curriculums.

Future directions for research

In the past decade, oral health literacy research has focused on instrument development and assessment of oral health literacy levels among patients. In the future, focus should be on how dental professionals may contribute to better care and ultimately better oral health outcomes for patients with limited oral health literacy. Mediating factors of oral health literacy, such as personality and probably a range of other factors, should be included in oral health research to gain a better understanding of the evolving concept of health literacy.

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APPENDIX

1. Oral health literacy interview guide.
2. Texts utilized in the assessment of oral health literacy.
3. Questionnaire.
4. Toronto Alexithymia Scale (TAS-20).
5. Status praesens (Helseskjema) of diseases, allergies and medication use.

Appendix 1

Oral health literacy interview guide

Kode

Dato:



Forskningsprosjektet Oral helse hos voksne

Intervjuguide Oral health literacy

OHL NIVÅ:

Si til deltakeren:

Det som skal skje nå er at jeg skal gi deg ark med ulik informasjon i skriftlig form. Denne informasjonen kan det hende du har opplevd å få, eller kanskje i fremtiden vil oppleve å få i forbindelse med et besøk på tannklinikken eller ved visse typer tannbehandling.

Jeg vil at du skal lese gjennom hvert av arkene jeg deler ut til deg. Jeg kommer til å stille deg et spørsmål som du kan finne svar på i den skrevne informasjonen. Du kan se på arket på nytt etter jeg har stilt spørsmålet. Det er ikke hukommelsen din vi skal teste.

Spørsmålene vil variere i vanskelighetsgrad, så det er ikke forventet at man skal kunne svare på alle spørsmålene. Vi er like interessert i å vite hvilken informasjon som er skrevet på for vanskelig nivå, som den informasjonen du forstår. Det kan være flere svar på hvert spørsmål. Dersom du ikke har noe svar så sier du bare pass.

Gi deltakeren resepten *Fungizone*

Be deltakeren lese resepten.

På bakgrunn av det du har lest nå:

1. Hvor mange ganger i døgnet skal man ta dette medikamentet?

Registrer svar.

Svar spm.1

- 4 ganger i døgnet.

Nivå 1:

- Teksten har en enkelt opplysning som er synonym med den det spørres om.

Gi deltakeren brosjyren *Friskere munn og tenner uten tobakk*.

Be deltakeren lese avsnittet som omhandler snus.

På bakgrunn av det du har lest nå:

2. Hvorfor er snus avhengighetsskapende?

Registrer svar.

Svar spm.2

- Snus inneholder nikotin (som er sterkt avhengighetsskapende).

Nivå 1:

- Det spørres om en enkelt opplysning.
- Opplysning om at røykfri tobakk kan føre til røyking kan virke som distraktor, men står ikke i nærheten av korrekt svar.

Gi deltakeren skrivet *Veiledning for pasienter som har gjennomgått operasjon eller tannuttrekking i lokalbedøvelse.*

Be deltakeren lese gjennom skrivet.

På bakgrunn av det du har lest nå:

3. Hvor lenge skal man vente med tannpuss i området der det er operert?

Registrer svar.

Svar spm.3

- To – tre dager.

Nivå 2:

- Det skal finnes frem til en enkelt opplysning som er synonym med de som etterspørres.
- Det er flere opplysninger om dager som fungerer som distraktorer, men disse gjelder noe annet enn tannpuss.

Gi deltakeren skrivet *Informasjon etter et kirurgisk inngrep i munnhulen.*

Be deltakeren lese gjennom skrivet.

På bakgrunn av det du har lest nå:

4. Hvordan skal man rengjøre i området der det er operert den første uken etter operasjonen?

Registrer svar.

Svar spm.4

- Skulle med klorheksidin (Hibitane, Corsodyl).
- Tørke med en q-tips dyppet i klorheksidin (Hibitane, Corsodyl).

Nivå 2:

- Må finne frem til flere opplysninger – i dette tilfellet to.
- Distraktor er i stede i form av opplysninger om medikamenter.

Gi deltakeren skrivet *Bruksanvisning på din bittskinne*.

Be deltakeren lese gjennom skrivet.

På bakgrunn av det du har lest nå:

5. Hvilke forandringer kan man merke med selve tennene den første tiden man bruker en bittskinne?

Registrer svar.

Svar spm.5

- Noen tenner kan føles ømme.
- Man kan oppleve at bittet har endret seg (når bittskinnen tas ut om morgenen).

Nivå 3:

- Må finne frem til rett informasjon på grunnlag av logiske slutninger angående tenner og forandringer i bittet.
- Informasjonen må hentes fra flere deler av teksten (står ikke etter hverandre).

Gi deltakeren brosjyren *Tannkjøttssykdommer*.

Be deltakeren lese kolonnen i midten (om tannkjøttsbetennelse).

På bakgrunn av det du har lest nå:

6. Hva kan skje dersom bakteriebelegget langs tannkjøttskanten ikke fjernes på en stund?

Registrer svar.

Svar spm.6

- Man kan utvikle gingivitt/betennelse i tannkjøttet/tannkjøttet kan bli rødt og hovent
- Bakteriebelegget forkalkes og kan bli til tannstein.

Nivå 3:

- Man må benytte informasjon fra flere deler av teksten.
- Logiske slutninger må trekkes ved hjelp av teksten (her bør man ikke si at man kan få hull, for det står det ingenting om selv om det er mulig).

Gi deltakeren brosjyren *Karies*.

Be deltakeren lese avsnittet om hvordan stoppe et kariesangrep.

På bakgrunn av det du har lest nå:

7. Hva kan man selv gjøre eller ta initiativ til for å forhindre videreutvikling av et begynnende hull?

Registrer svar.

Svar spm.7

- Bruke Fluor.
- Ha gode vaner for renhold.
- Ha gode kost- og spisevaner.
- Regelmessige kontroller av tennene hos tannpleier eller tannlege.

Nivå 4:

- De etterspurte opplysningene kan bare identifiseres gjennom logiske slutninger. I dette tilfellet ved å bruke teksten om forebyggende tiltak for å tolke hva man selv kan gjøre.
- Teksten inneholder distraktorer i form av informasjon om fluorpensling + info om behandling (ikke forebyggende tiltak).

Gi deltakeren brosjyren *Erosjoner – syreskader på tennene*.

Be deltakeren lese gjennom brosjyren.

På bakgrunn av det du har lest nå:

8. Hva kan man selv gjøre for å forebygge erosjoner?

Registrer svar.

Svar spm.8

- (Unngå tannpuss rett etter sure oppstøt og oppkast).
- Skulle munnen med vann eller fluorskylling.
- Drikke vann (i stedet for sure drikker).
- Unngå drikking av sure drikker mellom måltidene.

Nivå 4:

- Man må lete frem til flere opplysninger.
- Relativt lang tekst.
- Opplysningene står spredt.
- Det kreves logiske slutninger, for eksempel om smådrikking.

Gi deltakeren skrivet *Samtykke vedrørende tannbehandling i narkose.*

Be deltakeren lese gjennom skrivet.

På bakgrunn av det du har lest nå:

9. Hvem skal ikke skrive under på dette skjemaet, eller i hvilke tilfeller skal man ikke skrive under?

Registrer svar.

Svar spm.9

- Dersom man er for ung (under 16 år).
- Dersom man ikke er i stand til å forstå hva man samtykker til/ er dement, psykisk utviklingshemmet eller har psykiske eller fysiske forstyrrelser.
- Dersom man ikke vil ha (ikke samtykker til) tannbehandling i narkose.
- Dersom man ikke gir tillatelse til tanntrekking dersom tannlegen vurderer dette som nødvendig under narkosebehandlingen.

Nivå 5:

- Leseren må lete etter opplysninger i en fortettet tekst.
- Teksten inneholder fagspråk (for eksempel samtykkekompetanse).
- Det forutsettes logiske slutninger på høyt nivå, for eksempel må man tolke det dit hen at man ikke skal skrive under dersom man ikke forstår.

Gi deltakeren brosjyren *Rotbehandling ("Rotfylling")*.

Be deltakeren lese gjennom den venstre kolonnen (når en tann må rotbehandles).

På bakgrunn av det du har lest nå:

10. Hvilke årsaker kan kreve at en tann må rotbehandles/rotfylles?

Registrer svar.

Svar spm.10

- Når pulpa/nerven er hardt skadet eller død.
- Når et kariesangrep (hull) har kommet inn til nerven.
- For å fjerne smerter fra svært følsomme tenner/tenner med sprekkdannelse.
- Hvis tannen har vært utsatt for et kraftig slag.

Nivå 5:

- Leseren må lete etter flere opplysninger i en relativt lang tekst.
- Opplysningene er spredt i teksten.
- Teksten inneholder flere distraktorer som er plausible, men avledende opplysninger. For eksempel informasjon om symptomer, betennelse i rotspiss, kjeveben, tannbyll og rotcyste.
- Forutsetter logiske slutninger på til dels høyt nivå.
- Noe fagspråk benyttes, for eksempel *pulpa*.

Appendix 2

Texts utilized in the assessment of oral health literacy



Universitetsklinikken i Tromsø
Hansine Hansens vei 86
9271 TROMSØ
Tlf: 77789030
Org.nr.: 864 870 732

Resept-ID: 9125329

Resept

Dato: 02.03.2010
Pasientnr: 6190052
Fødselsnr: 101067-23333

Test Hansten
Rundvannet 1
9018 TROMSØ

#

RP

Fungizone sugetabl. 10mg no 60

Dssn

1 sugetabl. smeltes i munnen 4 ganger daglig i 6 uker. Tabletten skal ikke tygges. Mot soppinfeksjon i munhule. Ta ut proteser før bruk.

Tannlege Andreas Schmalfluss

Hvorfor skal tannlegen bry seg?

Tannleger og tannpleiere vet at de som røyker og snuser, har større risiko for å få sykdommer i munnen enn andre. De er utdannet til å oppdage forandringer i munnhulen – og er spesielt oppmerksomme på forandringer som kan bety risiko for kreft.

Men det er du som kan endre tobakkvanene dine, og forutsetningen er at du selv bestemmer deg for det. I så fall kan tannlege/tannpleier hjelpe deg.

Hva gjør røyking med munn og tenner?

- Røyking misfarger tenner og tyllinger
- Røyking kan gi dårlig ånde og nedsett smakssans
- Røyking kan gi periodontitt (tannløsningssykdom)
- Røyking forsinker sårtilheling etter tannuttrekking og operasjoner
- Røyking øker risikoen for mislykket implantatbehandling
- Røyking kan gi soppinfeksjoner
- Røyking kan føre til kreft i munnhulen

Misfarging og dårlig ånde

Friske og pene tenner betyr mye for vårt velvære og for det inntrykk vi gjør på andre. Røyking misfarger hvite plasttyllinger, slik at de blir mer synlige. Noe av misfargingen er overflatisk og kan fjernes ved tannrens. Men hvis fargestoffene trenger lenger inn i emaljen, må de fjernes med mer omfattende behandling som bleking, skallfasetter eller kroner.

Røyking gir også dårlig ånde. Venner og familie som ikke røyker, kan fortelle deg om du har et slikt problem.

Røyking og tannløsningssykdom

Nye undersøkelser har vist at det er klar sammenheng mellom røyking og periodontitt (tannløsningssykdom). Symptomer på periodontitt kan være:

- Rødt, ømt og hovent tannkjøtt som ofte blir når du pusser tennene
- Dype tannkjøsttommer rundt tennene
- Løse tenner fordi kjevebenet rundt tennene brytes ned
- Betennelse mellom tåttene, som også kan gi vond smak i munnen

Hvis du røyker, er det imidlertid vanskeligere å oppdage at du har periodontitt fordi røykingen hemmer bløddningene som ofte er det første faresignalet. Røykere har tre til seks ganger så stor risiko for å få periodontitt som ikke-røykere. Er skaden først skjedd, er sjansen for en vellykket behandling større hvis du slutter å røyke.



Det er klar sammenheng mellom røyking og tannløsningssykdom.



Munnslimhinnen blir skadet ved snusbruk.

Røyking og kreft i munnen

Når røyken passerer gjennom munnhulen, blir tenner og slimhinner påvirket, ikke bare når du puster inn, men også når du puster ut igjen. Tobakksrøyk påvirker og skader tenner, tannkjøtt og slimhinner. Jo mer du røyker, jo større skadevirkning.

Hvis du røyker, har du fire ganger større risiko for å få munnhulekreft enn en ikke-røyker.

Kreft kan oppstå mange steder i munnhulen, men finnes ofte på tungen, i munngulvet eller på leppene. Røyking anses som den viktigste årsak til munnhulekreft.

Hva gjør snus med munn og tenner?

- Snus kan gi skader i munnslimhinnen (tannkjøttet) der snusen plasseres. Skaden går som regel tilbake hvis du slutter å bruke snus
- Bruk av snus øker risikoen for dødelig hjerteinfarkt
- Snus kan gi mulige forstadier til munnhulekreft
- Snus gir misfargede tenner

Snus inneholder mer enn 2 500 kjemiske stoffer, og flere av disse er kreftremkallende. I tillegg inneholder snus nikotin som er svært avhengighetsskapende. Verdens helseorganisasjon har klassifisert snus som kreftremkallende. Bukspyttkjertelen er det mest utsatte organet.

På grunn av manglende dokumentasjon er det ikke mulig å trekke noen sikre konklusjoner om virkningen av røykfri tobakk (snus) som et hjelpemiddel til røykeavvenning er bedre enn allerede etablerte behandlingsmåter. Det er dessuten noen data fra USA som tyder på at bruk av røykfri tobakk kan føre til røyking senere. Svenske data støtter imidlertid ikke hypotesen om at snus er en inngangsport til senere røyking.



Tannhelsetjenestens kompetansesenter for Nord-Norge

Veiledning for pasienter som har gjennomgått operasjon eller tannuttrekking i lokalbedøvelse.

- Rett etter operasjonen: bit sammen på gastampong i 30 minutter.
- Ikke skyl munnen før neste dag. Ikke spise, ikke drikke, ikke røyke på to timer. Foreskrevne tabletter bør likevel tas med ½ glass vann.
- Bløt kost på operasjonsdagen,- deretter vanlig kost.
- Ikke børst tennene i operasjonsområdet de første 2-3 dagene. Bruk Klorheksidin munnskyllevæske som fås kjøpt på apoteket.
- Sting skal fjernes hos tannlege etter 7-10 dager.
- Unngå fysisk anstrengelse da nærmeste dagene
- Hevelse, stivhet, ømhet og smerter er normalt de første 3-4 døgn etterpå.

Man kan redusere hevelse og smerter i de første døgn ved å legge ispose på kinnet. Denne holdes på plass i 10 minutter av hver ½ time de første 6-8 timer.

Etterblødning

Dersom det senere skulle begynne å blø fra såret, eller ved langvarig blødning etter operasjonen: Legg gastampong eller sammenrullet rent lommetørkle over såret og bit sammen på dette omtrent 30 min. Hvis fortsatt blødning etter dette, kontakt tannlege eller evt. lege.



Informasjon etter et kirurgisk inngrep i munnhulen.

Etter en operasjon i munnen, kan det bli ømt og hovent i noen dager, man kan også bli litt gul, grønn eller blå på kinn og lepper.

For å unngå smerter dagene etter operasjon, anbefaler vi Ibux eller Paraseth hver 4 time, samme dag som behandlingen er gjort. Etter det, kan man ta smertestillende tabl når man trenger det.

Skyll eller tørk med en Q-tips dyppet i klorheksidin, for eksempel Corsodyl eller Hibitane (fåes kjøpt på apoteket) i en uke, eller til det går bra å børste tennene med tannbørste.

Eventuelle sting absorberes bort av seg selv, hvis de blir plagsomme, kan vi ta de vekk.

Vi vil gjerne ha en time til etterkontroll, vi avtaler tid.

Vi anbefaler pasienten å slappe av og ikke ha noen form for fysisk aktivitet de første dagene etterpå.

Hvis noe er uklart eller lurer på noe, er det bare å ringe oss på : 77 78 90 00, eller direkte vårt kontor: 77 78 91 12

Med vennligst hilsen

Pedodonti teamet v/ Pedodontist Eva Edblad.

Bruksanvisning på din bittskinne.

Bittskinnen er et viktig hjelpemiddel ved behandling av kjeveledd – og tyggemuskel problem.

Skinnen gir stabilitet til bittet, slik at kjeveleddsvevene avlastes og tyggemusklene hviler. Det forhindrer også hurtig slitasje av tennene ved tanngnissing.

Skinnen skal brukes under en tidsbegrenset periode. Perioden kan variere fra et par uker opp til flere år, grunnen er årsaken til problemet.

I første omgang skal skinnen brukes om natten.

I den første tiden kan det kjønes litt ubehaglig.

Et par uker etter at du har fått din bittskinne skal den kontrolleres av tannlegen for eventuelle justeringer. Tross i et omsorgsfullt arbeid ved framstilling kan skinnen gi noe ubehag i starten. Den kan kjønes stor og klumpete ut de første døgnene. Du kanskje opplever følelsen av kvelning og at mengden av spytt øker. Noen tenner kan bli ømme, spesielt på morgenen. Kinnbiting og sår kan også forekomme.

Disse problemene bruker å gå over når du har brukt skinnen en tid. Skulle problemene ikke forsvinne bør du kontakte din tannlege, slik at skinnen kan justeres.

Når skinnen taes ut av munnen på morgenen kan du oppleve at bittet har endret seg. Dette er ikke unaturlig, men en følge av den avslappingen som er startet i tyggemusklene. I blant blir behandlingen med bittskinne fulgt opp av små korrigeringer av bittet til bedre stabilitet, eksempel gjennom bittslipning.

Nå er det enda viktigere med god munnhygiene.

Før du setter skinnen i munnen skal du ha børstet tennene grundig.

Tross i at skinnene ikke brukes under måltidene kommer alltid en del av bakterie belegget til å feste seg på den. Derfor skal skinnen rengjøres daglig med tannbørste og mild tannkrem. Når den ikke brukes er det smart å oppbevare den i friskt vann.

Friske tenner

En tann består av krone og rot. Kronen utgjør den synlige delen, mens roten normalt ikke er synlig.

Roten er dekket av rotsement og festet til kjevebenet med fibre (rotfibre). Tannkjøttet dekker kjevebenet og ligger tett inn til tannen. Mellom tannkjøtt og tann finnes en spalte, tannkjøttssømmen, som normalt er et par mm dyp. Overflaten av friskt tannkjøtt er rosa og svakt stiplet.



Friskt tannkjøtt er rosa og sitter stramt rundt tannene.



Hvordan forebygge sykdommer i tannkjøttet?

For å hindre at det oppstår sykdom som kan gi varige skader i tannkjøttet og tennenes feste, må du fjerne bakteriebelegget (plakk) som dannes på tennene, hver dag. Vanlig tannpuss er en selvbjørge for de fleste, men tannbørsten kommer ikke til mellom tennene. Derfor må du bruke tanntråd, tannstikkere eller en mellomromsbørste. Husk: Det er ikke nok å fjerne matrester; det er bakteriene på tann- og rotoverflaten som må bort. Tannleggetannpleier gir deg nødvendig instruksjon.

Tannkjøttssykdom gir vanligvis ikke smerte, så det er vanskelig å oppdage sykdommen på egenhånd. Derfor bør du gå regelmessig til tannleggetannpleier for kontroll.

1

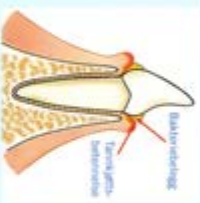
Tannkjøttbetennelse (gingivitt)

Hvis du ikke klarer å gjøre tennene rene hver dag, vil bakteriebelegget (plakk) langs tannkjøttskanten, føre til at det utvikler seg en gingivitt. Tannkjøttet blir rødt og hovent, og det blir lett når du pusser tennene. Blødning er et sikkert tegn på gingivitt.

Hvis plakk får ligge i ro noen dager, kan det forkalkes og bli til tannsten. Fordi tannsten har en ru overflate, virker det som et «trekkospir» for nye bakterier. På den måten samler det seg mer plakk, som i neste omgang kan forkalkes og danne mer tannsten. Ny tannsten er lys gul, men misfarges lett av kaffe te etc.



Gingivitt (tannkjøttbetennelse). Tannkjøttet er rødt og hovent og sitter løst rundt tennene.



Behandling av gingivitt

Dersom plakk og tannsten blir fjernet regelmessig, går betennelsen tilbake, og tannkjøttet blir friskt igjen. Det meste plakk og tannkjøttskanten kan du fjerne selv, men tannsten må tannleggetannpleier fjerne med egne instrumenter.

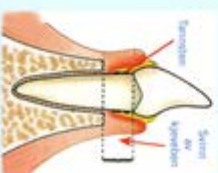
Noen har lettere for å få tannsten enn andre og kan derfor ha behov for å gå oftere til tannleggetannpleier.

2

Tannløsningssykdom (periodontitt)

Periodontitt begynner med en gingivitt som utvikler seg i dybden og fører til at tennenes feste og kjevebenet angripes. Tannkjøttssømmen kan på grunn av denne utviklingen bli gradvis dyper. I de aller fleste tilfelle foregår denne prosessen uten at du merker det selv. Hvis tennene dine kjennes løse, kan det være et symptom på at prosessen allerede er kommet langt.

Da har bakterier og tannsten trengt så langt ned langs tannroten at du selv ikke har mulighet til å fjerne den, verken med tannbørste eller tannstikkere.



Tannleggetannpleieren måler. Her er tannkjøttssømmen dykket av tannkjøttssømmen 5 mm dyp, med et målestreumant.



Behandling av periodontitt

Behandling av periodontitt tar først og fremst sikte på å stoppe utviklingen. Generelt vil det festet som er tapt, ikke kunne gjenvinnes.

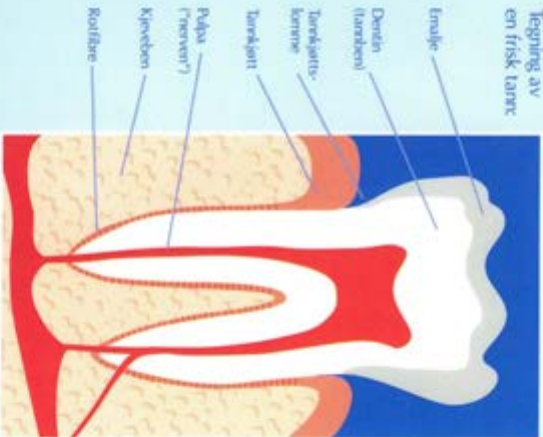
Tannleggetannpleier gir deg først instruksjon i hvordan du selv skal foreta det daglige renholdet av tennene. Deretter foretar de (ofte med bedøvelse) en grundig rensing under tannkjøttet rundt alle angrepne tenner.

3

Vi ønsker oss alle friske tenner hele livet. Og det er fullt mulig, men det krever litt innsats hver dag og at du går regelmessig til tannlege/tannpleier.

Noe av det tannlegen/tannpleieren ser etter, er om du har karies (tannåte) i tennene. Karies er den mest vanlige tannsykdommen. Hvis tenner som er angrepet av karies ikke blir behandlet, vil de etterhvert bli så ødelagt at det kan bli nødvendig å trekke dem.

Tegning av en frisk tann.



Hvorfor får du karies?

Det er alltid bakterier i munnhulen og på tennene. Hvis bakteriene får ligge i fred og får nok næring, vil de formere seg og utvikle seg til et saurrennetgende, tykt bakteriebelegg som kalles plakk.

Når du spiser eller drikker noe som inneholder sukker, danner bakteriene syre. Er det få bakterier og lite sukker, kan spyttet nøytralisere syren. Er det for mange bakterier og for mye sukker i munnhulen, vil syren angripe emaljen på tennene.

Hvis bakteriebelegget blir liggende på tennene og du spiser og drikker søtt og syrlig mange ganger om dagen, må du regne med å få karies.

Hvordan utvikler karies seg?



Et begynnende kariesangrep kan ses som en hvitaktig flekk på tannen.

Karies er vanligvis en sykdom som utvikler seg langsomt, og i begynnelsen kan du ikke se kariesangrepet med det blotte øye. Etter en tid vil du se en hvitaktig flekk på tannen. Det betyr at emaljen begynner å løses opp, og skaden er synlig både på tannen og på røntgenbilder.

Hvis ikke kariesangrepet blir stoppet på dette stadiet, vil det etterhvert utvikle seg til et hull.

Hvis kariesangrepet utvikler seg til et hull.



I første omgang kan du heller ikke kjeme at et kariesangrep er i gang fordi det ikke er noen nerver i emaljen. Hvis det får utvikle seg videre, når det inn til dentinet (tannbenet), Dentin er ikke så hardt som emalje, og derfor vil hullet utvikle seg raskere når det er kommet inn i dentinet.

Midt inne i tannen ligger pulpa, populært kalt "nerver". Pulpa inneholder blodåre med blodkar og nerver. Hvis et hull blir så stort at det røkker helt inn til pulpa, må tannen som regel rotfylles.

Hvordan stoppe et kariesangrep?

Hensikten med tannlegens behandling er å stoppe kariesangrepet, slik at det ikke fortsetter innover i tannen. Det kan gjøres på flere måter, avhengig av hvor stort det er.

Hvis tannlegen/tannpleieren har funnet et kariesangrep i et tidlig stadium, blir behandlingen forebyggende. De gir råd om bruk av fluor, renthold og kost- og spisevaner. Som regel vil de også preskriber kariesangrepet med fluor og deretter kontrollere det regelmessig for å se om man på denne måten klarer å stanse kariesutviklingen.

Hvis angrepet likevel går videre, eller det allerede er for stort når det blir oppdaget, må tannlegen bore for å fjerne det syke tannvevet. Hullet blir så fylt for at tannen skal få igjen sin opprinnelige form, slik at du kan holde den ren og fri for bakteriebelegg.

Stadig flere barn og unge kommer til tannhelsekontroll med syreskader (erosjoner) som er noe annet enn hull i tennene. Tannemaljen viser tegn på at den går i oppløsning; den rett og slett tæres bort. Disse skadene gjør at tennene blir små og flisete, og de kan ise. Store og dyre reparasjoner må ofte til for å bote på skadene.

Sure drikker

Hovedårsaken til erosjoner er trolig den kraftige økningen i forbruket av brus, juice og sportsdrikker, som alle er svært sure. Surhetsgrad i en væske måles i pH-verdien. Helt nøytrale væsker har pH 7 mens lavere verdier viser at drikken er sur. Rent vann har pH 6 og er tannvennlig. Drikk med lavere pH-verdi enn 4,5 regnes som spesielt skadelige fordi tannemaljen da lett løses opp. I denne sammenheng er lettbrus like skadelig som brus med sukker.

Norge på brustoppen

Nordmenn er faktisk europamestere i forbruk av leskedrikker. I gjennomsnitt drikker vi mer enn 100 liter brus i året, og det er ikke uvanlig at ungdom drikker rundt en liter per dag. Men det er først og fremst hvor ofte du drikker som betyr noe for tennene. Før skrukorken kom, drakk man gjerne opp alt innholdet med én gang, men nå kan en åpent flaske vare i mange timer. Hvis du smådrikker hele tiden, får du konstant lav pH-verdi i munnen, noe som fører til rask oppløsning av emaljen.

Sure oppstøt

Sure oppstøt som skyldes lekkasje av saltsyre fra magen til munnhulen, kan også føre til erosjoner. Heldigvis finnes det effektive legemidler mot dette. Gravide som er plaget av morgenkvalme og personer med spiseforstyrrelser, kan også være utsatt.

Bulimikere som kaster opp flere ganger i løpet av døgnet, får et svært surt miljø i munnhulen, og mange anorektikere baserer ofte sitt sparsomme kosthold på vesentlig sure produkter.

Et godt råd er å skylle munnen med vann eller fluor skyllevæske – og å unngå tannpuss rett etter sure oppstøt eller oppkast.

Spyttet beskytter

Spyttet beskytter mot erosjoner fordi det kan nøytralisere både sure drikker og sure oppstøt. Hvis du er tørr i munnen, for eksempel på grunn av medikamentbruk, kan du derfor være ekstra utsatt for erosjoner. En ser også ofte erosjoner hos mennesker som trener mye fordi svette og stort væsketap gir mindre spyttproduksjon. Hvis du samtidig slukker tørsten med sure leske- eller sportsdrikker, er risikoen for tannskader ekstra stor.

Drikk vann

Det beste rådet for å unngå erosjoner er enkelt, greit og billig: Drikk vann!

Behandling

I de fleste tilfeller blir erosjoner oppdaget så tidlig at du kan stoppe prosessen hvis du følger de råd du får fra tannlege/tannpleier. Hvis du har fått så store skader at mye av emaljen er borte, kan det bli behov for omfattende behandling med kroner og lignende.

SAMTYKKE VEDRØRENDE TANNBEHANDLING I NARKOSE

I følge Lov om pasientrettigheter skal helsehjelp normalt bare gis med pasientens samtykke. For at samtykket skal være gyldig må pasienten ha fått nødvendig informasjon om sin helsetilstand og innholdet i helsehjelpen. Dette innebærer at pasienten må ha fått fyllestgjørende underretning om formål, metoder, ventede fordeler og mulige farer i forbindelse med tiltaket. Spesielt viktig er dette i forhold til irreversible inngrep som trekking av tenner.

Samtykkekompetanse har myndige personer. Personer etter fylte 16 år har også samtykkekompetanse, noe avhengig av tiltakets art. Samtykkekompetansen kan bortfalle helt eller delvis dersom pasienten på grunn av fysiske eller psykiske forstyrrelser, senil demens eller psykisk utviklingshemming ikke er i stand til å forstå hva samtykket omfatter. Helsepersonellet skal legge til rette for at pasienten selv kan samtykke, men helsepersonellet kan avgjøre om pasienten mangler kompetanse til å samtykke.

For barn har foreldrene samtykkekompetanse. Andre avgjørelser om manglende samtykkekompetanse og oppnevning av person med samtykkekompetanse skal legges fram for pasienten og dennes nærmeste pårørende evt hjelpeverge/verge eller annen representant.

Dersom pasienten ikke har samtykkekompetanse, skal det nedtegnes i journal hvem som samtykker på vegne av pasienten (Journalforskrifter §8).

Ved tannbehandling i narkose må det foreligge skriftlig samtykke til å trekke tenner hvis dette blir nødvendig ut fra tannlegens faglige vurdering eller person med samtykkekompetanse må være tilstede/tilgjengelig under hele behandlingen.

ERKLÆRING

Jeg er informert om og aksepterer at henvises til tannbehandling i narkose. Jeg gir tillatelse til at det blir trukket tenner dersom det er nødvendig ut fra en faglig vurdering av tannlegen som foretar behandlingen i narkose.

.....
Underskrift

DATO:

Når må en tann rotbehandles?

Når pulpa (nerven) er sterkt skadet eller død, er det nødvendig å foreta rotbehandling for å bevare tannen.

De fleste rotbehandlinger skyldes kariesangrep (hull) som er kommet helt inn til pulpa. Da vil bakterier trenge inn og føre til permanent skade. Men også annen tannsykdom kan skade pulpa. I sjeldne tilfeller kan det være nødvendig å gjøre en rotbehandling for å fjerne smerter fra svært følsomme tenner eller tenner med sprekkdannelser.



Figur 1: Dødt Pulpa

Snitt gjennom to tæster med karies. På tannen til venstre går angrepet gjennom emaljen og inn i dentinet (tannbeinet). På tannen til høyre er kariesangrepet kommet helt inn til pulpa (nerven), og det er en betennelse på rotsposen.

Rotbehandling kan ellers være nødvendig hvis tannen har vært utsatt for et kraftig slag. Da kan pulpa bli ødelagt og senere "invadert" av bakterier. Resultatet blir utvikling av betennelse i kjernebeinet rundt tannroten. Slike betennelser ved rotsposen kan etter en tid ses som en mørk skygge på røntgenbildet fordi kjernebeinet blir oppløst. Betennelsene kan utvikle seg til tannbyll eller i sjeldne tilfeller til en rotcyste.

Symptomer

Hvis du har en betennelse inne i tannen, eller i kjeiven utenfor roten, kan du få tannpine. Siden mennesker opplever smerter forskjellig, er det ofte vanskelig for tannlegen å bestemme hvilken tann smerten skriver seg fra. Noe som også gjør det vanskelig, er at du kan førekle tannpine i én tann med smerter i andre tenner, i bithulene, i øret eller med hodpine.

1

Noen ganger gjør det slett ikke vondt i slike tenner, og betennelsen blir oppdaget fordi tannen er blitt øm å trykke på eller har skrinnet farge. Andre ganger ser tannlegen betennelsen på et røntgenbilde.

Behandling

Hvis pulpa er borte men levende, får du lokalbedøvelse før behandlingen starter, og du vil i de aller fleste tilfeller ikke kjerne noe. Er pulpa død, er det unødvendig med bedøvelse.

For at behandlingen skal foregå under hygieniske forhold, må tannlegen sette på såkalt koferdam, se illustrasjon.



Bildet viser en tann med koferdam og to rotkanal-instrumenter plassert i rotkanalene. Instrumentene i naturlige stilling.



Tannlegen borer så gjennom tannkronen til pulpa og renser rotkanalene grundig, slik at alt vev blir fjernet. Utrengingen gjøres ved hjelp av spesialinstrumenter tilpasset bredden og lengden på kanalene. Dagens instrumenter er i nikkel-titan, et superelastisk materiale som følger kanalens form nesten helt perfekt.

Når tannlegen er ferdig med rensingen, blir rotkanalene(ene) desinfisert og fylt med et rotfyltingsmateriale. Det er viktig at kanalene(ene) blir helt tett lukket. Noen ganger kan rensing og rotfylling av

2

tannen skje i løpet av ett besøk hos tannlegen. Andre ganger må du komme tilbake for å få avsluttet behandlingen.



Bildet til venstre viser en jukse(med betennelse (mørk skygge) rundt begge røttene. På bildet til høyre er tannen rotbehandlet. Rotkanalene er fylt med rotfyltingsmateriale, og betennelsen er i hend med å bli tilhulet.

I visse tilfeller kan ikke tannlegen utføre en tilfredsstillende rotbehandling. Det kan bl.a. skyldes at rotkanalene er bøyde eller forkalket, slik at det er vanskelig å komme til og få rensed den godt nok. I slike tilfeller blir det gjerne nødvendig med en liten operasjon for å fjerne betennelsen, en såkalt rotsposamputasjon.

Bildet til venstre viser en tann med stiftkone og en mislykket rotfylling som har gitt betennelse rundt rotsposen. På bildet til høyre er det nettopp foretatt en rotsposamputasjon. En slik tann må følges opp med røntgenkontroll for å se om det skjer en tilheling.



Etter rotbehandling

Etter rotbehandlingen kan du et par dager ofte oppleve lette, forbigående smerter eller føle at tannen murrer litt – den er "annerledes". Disse symptomene

3

Appendix 3

Questionnaire

Kode

Dato:

SPØRRESKJEMA

Informasjon om spørreskjemaet:

Spørreskjemaet inneholder spørsmål om personalia og spørsmål tannhelsekunnskap.

Vi ber deg om å svare på alle spørsmålene så fullstendig som mulig. Vi er ute etter *dine* meninger, så vennligst prøv å svare så ærlig som mulig. Din deltakelse er frivillig og besvarelsen vil bli behandlet konfidensielt.

Tusen takk for ditt bidrag!

Utfylling av spørreskjemaet:

Spørreskjemaet fylles ut ved at du setter kryss i ruten ved det svaralternativet som passer best eller skriver inn riktig svar på linjen. Se eksempler under.

1. Kjønn?

- Mann
 Kvinne

2. Alder? (Antall hele år)

__35__

PERSONALIA

Først vil vi stille noen bakgrunnsspørsmål som er vanlige å ha med undersøkelser.

1. Kjønn?

Mann

Kvinne

2. Alder? (Antall hele år)

3. Hva er din høyeste avsluttede utdanning? (Kun ett svar)

7-årig folkeskole

9-årig grunnskole

Gymnas

Yrkesskole

Teknisk fagskole

Videregående skole

Høgskole/universitet inntil tre år

Høgskole/universitet tre til fem år

Høgskole/universitet mer enn fem år

TANNHELSEKUNNSKAP

Her er noen spørsmål vi vil stille for å få et inntrykk av din kunnskap tannhelse

4. Vurderer du følgende som risikofaktorer for hull i tennene (karies)?

	Ja	Nei	Vet ikke
Høyt sukkerinntak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hyppige måltider	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bakterier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Vurderer du følgende som risikofaktorer for tannløsnings sykdom (pyrea/periodontitt):

	Ja	Nei	Vet ikke
Røyking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mangelfull oral hygiene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bakterier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 4

Toronto Alexithymia Scale – 20 items

TAS-20

Kode

Dette spørreskjemaet omhandler følelser. Angi i hvilken grad du er enig i følgende påstander ved å sette kryss i en av rutene. NB! Kun ett kryss for hver påstand.

	Helt feil	Ganske feil	Hverken eller	Ganske riktig	Helt riktig
1. Jeg er ofte usikker på mine egne følelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Det er vanskelig for meg å finne de riktige ordene for mine følelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Jeg har kroppslige plager som selv ikke leger skjønner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Jeg har lett for å beskrive mine følelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Jeg foretrekker å analysere et problem fremfor for å beskrive det	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Når jeg er opprørt vet jeg ikke om jeg er bedrøvet, redd eller sint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Jeg er ofte forvirret over hvordan det føles i kroppen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Jeg lar situasjoner skje i stedet for å forstå <u>hvorfor</u> de hender	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Jeg har følelser som jeg ikke kan sette navn på	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Det er viktig å ha kontakt med sine følelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Jeg har vanskelig for å beskrive hva jeg synes om andre mennesker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Andre ber meg ofte om å beskrive mine følelser bedre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Helt feil	Ganske feil	Hverken eller	Ganske riktig	Helt riktig
13. Jeg vet ikke hva som skjer inne i meg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Jeg vet ofte ikke hvorfor jeg er sint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Jeg prater heller med andre om deres hverdagsaktiviteter enn om deres følelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Jeg foretrekker lett underholding framfor psykologiske dramaer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Det er vanskelig for meg å avsløre mine innerste følelser for nære venner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Jeg kan kjenne meg nær et annet menneske selv om vi ikke snakker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Jeg synes det er til hjelp å se nærmere på mine følelser når jeg skal løse personlige problemer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Å søke etter en dypere mening i en film eller teaterstykke ødelegger fornøyelsen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 5

Status praesens (Helseskjema)

HELSESKJEMA

Dato:

Generelle opplysninger

- | | | | |
|-----------------------------------|--------------------------|--------------------|--------------------------|
| Hjerte/karsykdom | <input type="checkbox"/> | Røyker | <input type="checkbox"/> |
| Høyt blodtrykk | <input type="checkbox"/> | Astma | <input type="checkbox"/> |
| Diabetes | <input type="checkbox"/> | Blødersykdom | <input type="checkbox"/> |
| Epilepsi | <input type="checkbox"/> | Spiseforstyrrelser | <input type="checkbox"/> |
| Immunitetssykdommer | <input type="checkbox"/> | HIV/AIDS | <input type="checkbox"/> |
| Hepatitt | <input type="checkbox"/> | Lungesykdom | <input type="checkbox"/> |
| Giktfeber | <input type="checkbox"/> | Hjerneblødning | <input type="checkbox"/> |
| Problemer med bihulene | <input type="checkbox"/> | Parkinsons | <input type="checkbox"/> |
| Psykiske problemer | <input type="checkbox"/> | Kreft | <input type="checkbox"/> |
| Strålebehandling hode/hals | <input type="checkbox"/> | Reumatisk sykdom | <input type="checkbox"/> |
| Kosthold/diett | <input type="checkbox"/> | Annet | |
| Komplikasjon etter tannbehandling | <input type="checkbox"/> | | |
| Nedsatt syn | <input type="checkbox"/> | Nedsatt taleevne | <input type="checkbox"/> |
| Nedsatt hørsel | <input type="checkbox"/> | Nedsatt førlighet | <input type="checkbox"/> |

Allergi/overømfintlighet

- | | | | |
|----------------|--------------------------|--------|--------------------------|
| Penicillin | <input type="checkbox"/> | Nikkel | <input type="checkbox"/> |
| Lokalbedøvelse | <input type="checkbox"/> | Latex | <input type="checkbox"/> |
| Pollen | <input type="checkbox"/> | Annet | <input type="checkbox"/> |
| Matvarer | <input type="checkbox"/> | | |

Munn/tenner

Blødning i tannkjøttet	<input type="checkbox"/>	Tanngnissing	<input type="checkbox"/>
Dårlig ånde	<input type="checkbox"/>	Ømme tyggemuskler	<input type="checkbox"/>
Ofte sår i munnen	<input type="checkbox"/>	Munnpuster	<input type="checkbox"/>
Munntørrhet	<input type="checkbox"/>	Annet	<input type="checkbox"/>

Annet/nærmere opplysninger:**Medikamentbruk – preparat og dose:****Lege:**

Legebehandling siste 2 år

Gravid, termin:

PAPERS I-III