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Dental patient education: a survey from the perspective of dental hygienists

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Rantanen M, Johansson K, Honkala E, Leino-Kilpi H, Saarinen M, Salanterä S. Dental patient education: A survey from the perspective of dental hygienists.

Abstract: *Objectives:* The aim of this study was to describe the current patient education practices of dental hygienists by exploring their views concerning their skills and knowledge related to patient education and by determining the implementation of patient education in their work, with regard to both method and content. *Methods:* The target group consisted of 416 dental hygienists (n = 222, 53%) The research strategy used was a survey. The material was gathered using questionnaire. *Results:* According to the dental hygienists, their skills and knowledge about patient education were good. However, the implementation of education was not in line with these assessments. The content of the education given focused mostly on the functional dimension. Little use was made of various educational methods, and the dental hygienists felt that they were not in good enough command of the methods. The patient's expectations and learning were not assessed systematically. The education provided and the assessment of the need for education often focused on the professional him/herself and the standpoint of the patient empowerment was disregarded. *Conclusions:* These results lay the foundation for additional research aimed at developing the patient education given by these professionals and making it support the empowerment of each patient.

Key words: dental hygienist; empowerment; patient education

Introduction

Oral diseases (caries and periodontal diseases) are the most common health problems among people in industrialized societies;

the majority of adults and 60–90% of children have caries (1). For example, in Finland oral health has improved for the past 30 years; but recent studies have indicated that the positive development of oral health has come to an end. Of the12-year old children in Finland, 62% have at least one decay, missing, filled (DMF index) surface (2) and 64% of Finnish adults have gingival problems (3). Severe periodontal disease, which may result in tooth loss, is found in 5–20% of middle-aged adults, the rate varying across geographical regions (1). A link has been shown between oral diseases and general health. Inflammations in oral tissues are an integral part of heart and vascular diseases (4, 5). In addition, some results even suggest that aggressive forms of periodontitis attributed to *Actinobacillus actinomycetemcomitans* and *Porphyromonas gingivalis* are associated with incidence of stroke (6).

The causes of oral diseases are known; two major factors are poor hygiene and sugar consumption (7). In industrialized countries, studies show that smoking is a key risk factor for periodontal disease (1). Oral diseases are largely regarded as being dependent on lifestyle and therefore individual adoption of health habits plays an important role in their prevention. Almost all dental diseases could be prevented or treated with proper self-care, which includes healthy food habits and regular toothbrushing using fluoride toothpaste (7).

Proper self-care should also be fostered because traditional curative dental care is a significant economic burden for many high-income countries, where 5–10% of public health expenditure is related to oral health (1). Therefore good oral health is cost saving both for individuals and for the society.

The main task of the dental hygienist is to promote oral health and to prevent oral diseases (8). According to earlier studies dental hygienists provide more patient education than other oral health care professionals do (9–11). In addition, patients consider that of all the oral health care professionals, dental hygienists are the ones who should implement patient education (9). In view of these studies, it can be seen that dental hygienists have the primary responsibility for educating patients and promoting their oral health. However, in recent years many structural and functional changes have taken place in the Finnish system of public oral health care (2). The development and consolidation needs of oral health care systems have required prioritization and allocation of the existing limited resources (12). These changes may have affected the work of oral health care professionals so that they have less time for patient education.

In Finland, the content of patient education is, in part, governed by legislation: patients have the right to know their health status and goals, alternatives and effects of their treatment as well as issues concerning their care (13). Patient education is also part of the ethical code for dental hygienists: information about oral health, alternatives for treatment and expenses should be explained to the patient in such a way that he/she understands them (14).

There are a variety of benefits from patient education, ranging from reduced anxiety (15) and pain (16), increased motivation and knowledge about care (15) as well as improved ability to cope with health problems and to participate in self-care (17). When the objective is empowerment of the patient, patient education can be perceived as a method that emphasizes the patient's ability to manage his/her health problems (18).

The structure of patient education and the educational solutions used generally vary from personal to group counselling and from planned programmes of education to random question-and-answer sessions (e.g. 19, 20). Patient education can be seen as consisting of planning (assessing the patient's knowledge expectations and preferences, setting learning objectives), implementation (methods, timing) and evaluation of outcomes (18). In empowering patient education, the educational structure and methods are based on a patient-centred approach and patient participation is considered important (21). Current studies, however, show that the frequency and content of oral health education (e.g. 22, 23) do not provide evidence of the actual and interactive processes of patient education (24). Unfortunately, existent patient education in oral health care is more often professional-centred than patient-centred (24, 25).

In view of these considerations, effective patient education is particularly important, and research and further development in this area are needed. The aim of this study was to study current practices in patient education from the perspective of dental hygienists. In addition, we were interested in exploring the relationship between demographic factors pertaining to dental hygienists and patient education practices.

Research questions

1. How do dental hygienists assess their own educational skills and knowledge about common oral health problems?

2. How do dental hygienists perceive the content, structure and educational solutions (including assessment of knowledge expectations, preferences, setting of learning objectives, use of educational methods and evaluation of learning outcomes) in current patient education?

3. Is there a relationship between demographic factors for dental hygienists and the content, structure and educational solutions of patient education?

Methods

Sample and data collection

The subjects who participated in this descriptive study were dental hygienists who are members of the Finnish Dental Hygiene Association (n = 832). A systematic sample was taken so every second dental hygienist was included (n = 416). The data were collected using a previously developed and tested, mainly structured, questionnaire (26) which was modified for this study. The questionnaire was mailed to the dental hygienists; they were asked to complete the questionnaire and return it to the researcher in a stamped envelope. The response rate was 53% (n = 222). As the anonymity of the participants was protected, no reminders could be sent.

Ethical issues

Participation in this study was voluntary; those who returned their questionnaires were considered to have given voluntary consent. The basic principles of research ethics were followed at all stages of the study and the data were confidential (27).

Instrument

The questionnaire included demographic variables (12 items) and questions concerning the content (20 items, e.g. I provide education on symptoms related to the patient's illness, I provide education on costs and benefits, I provide education on how to recognize feelings concerning to illness), structure and educational solutions of patient education (a total of 23 items, e.g. I provide education by showing, I provide education by using computer, I assess patients educational needs by using a questionnaire). In addition, the questionnaire included questions about patient education skills (six items, e.g. communication skills, mastering the content and skills in assessing patients educational needs) and knowledge of basic oral health care (15 items, e.g. knowledge of caries, malocclusion and halitosis) The items were rated by the respondent on a four-point scale (1 good – 4 poor, 1 all patients – 4 none of the patients) (Table 1).

Validity and reliability of the instrument

The reliability in terms of the scale internal consistency was estimated by Cronbach's α coefficient, which was 0.74–0.89 for the subscales, thus showing good reliability (28). The α coefficient was 0.76 for educational skills, 0.79 for knowledge about common oral health problems (basic 0.79, generic health 0.89, lifestyle 0.74) and 0.80 for the sum variables related to education content (bio-physiological 0.83, cognitive 0.89, experiential 0.74 and ethical 0.77).

Data analysis

The data were analysed using SPSS for Windows (13.0) software (SPSS Inc., Chicago, IL, USA). Descriptive statistics (frequencies, percentages, means, standard deviations and range) were used to summarize the demographic data and Fishers exact test was used to examine demographic data and sum variables. The sum variables related to content of patient education were formed based on the theoretical framework of empowering knowledge of Leino-Kilpi *et al.* (18). According to this theoretical framework, patient education is viewed from six different dimensions. The sum variables were bio-physiological (identification of the

Table 1. **The questionnaire (26)**

Question about	Items	Scale 1–4
Demographic factors	12 items (age, work experience, working environment)	
Content of patient education	20 items formed into 6 sum variables: bio-physiological, functional, cognitive, experiential, ethical, financial	The area considered with every patient– none of the patients
Knowledge about oral care	15 items formed into 3 sum variables: basic, generic health and way of life related knowledge	The area considered good – poor
Patient education skills	6 items (assessment, objectives, content, methods, evaluation and communication)	Good – poor
Based on patient education skills and practice	4 items (skills based on) and 6 items (practice based on)	Very much – not at all
Assessing knowledge expectations and preferences	5 items (how to assess patient's knowledge expectationss and preferences)	Every patient– none of the patients
Setting of learning objectives	5 items (how to set objectives) and 4 items (what objectives)	Every patient – none of the patients
Use of educational methods	23 items	Every patient – none of the patients
Evaluation of learning outcomes	8 items (ways of confirming)	Every patient – none of the patients

symptoms and signs), functional (activities of daily living), cognitive (receiving enough knowledge and the ability to use it), experiential (emotions and earlier experiences), ethical (feeling of appreciation as an autonomous individual) and financial (costs and benefits) (18). Sum variables related to basic dental care and the dental hygienists' assessments of their educational skills were calculated. The differences between the demographic factors concerning sum variables and single items were analysed using non-parametric tests. By convention, 0.05 was the accepted level of significance (28).

Results

Demographic data

The mean age of the dental hygienists was 43 years (range 23–64, SD 10.2). After graduating as dental hygienists, they had worked an average of 14.1 years (range 1–34, SD 9.3) and at the same workplace 10.7 years (range 1–37, SD 9.3). Most of them (82%) had a permanent job and over half (64%) worked in public dental health care. Most of them (93%) give education to all patients. Of all dental hygienist, 89% assessed patient education as very important and 11% as important. A majority of the dental hygienists experience their work as physically (78%) and mentally (62%) very stressful and 70% reported that the need for speed interferes with their work.

Dental hygienist assessment of their educational skills

The dental hygienists were asked to assess their own skills in assessing patient's knowledge expectations, setting learning objectives, mastering the content of patient education, using different educational methods, evaluating learning outcomes and mastering the interaction with the patient. All dental hygienists assessed their skills on the whole as fairly good (median for the items 1.7, inter quartile range 1.3–2.0, scale 1 good – 4 poor). The highest ratings were for competence in the content (99%) and in communication skills (99%). The lowest rating was given for use of different educational methods (88%).

The educational skills of these hygienists were based mainly on experience (98%), slightly less often on independent study (85%), pre-registration training (82%) or additional post-registration courses (75%). Patient education practices were also found to be based most often on work experience (99%) and on professional publications (93%), while databases (24%) and data from international scientific journals (20%) played no role.

Dental hygienists assessment of their knowledge on common oral health problems

The knowledge of the dental hygienists concerning common problems in oral health was perceived as quite good (medians of the sum variable 1.3–2.0, scale 1 good – 4 poor). The highest rated section of knowledge was basic knowledge, i.e. how to prevent and care for caries (100%) and periodontal diseases (100%) or knowledge about self-care instruments and products (99%). The lowest rated knowledge was about cessation of smoking (65%) and oral piercing (45%). Dental hygienists who treated mainly children assessed their level of knowledge as good (100%); where as only 44% of those who treated mainly adults assessed their level of knowledge as good ($P < 0.001$).

Dental hygienists' perceptions of the content of patient education

Questions concerning the content of patient education were asked. Here the dental hygienists were asked to indicate how large a portion of patients they counsel in each area (one all patients – four none of the patients). Dental hygienists revealed that the education they gave consisted of mainly issues concerning functional matters, for example, toothbrushing and flossing, followed by the cognitive aspects, such as knowledge about oral illness and care (Table 2).

Dental hygienists' perception of the structure and educational solutions of patient education

The main areas of structural and educational solutions that were identified were: knowledge expectations and preferences, setting of learning objectives, use of different educational methods and evaluation of learning outcomes. Almost all of the dental hygienists (99%) reported that they assessed all or many of the knowledge expectations of the patients. The assessments were most commonly made during the informal

Table 2. **The content of patient education. The rank order of dealing with content by areas (medians)**

Area	q_1	md	q_2
Functional	1.00	1.00	2.00
Cognitive	1.44	1.67	2.00
Bio-physiological	1.33	2.00	2.00
Ethical	2.00	2.00	2.50
Experiential	1.75	2.25	2.50
Financial	2.00	3.00	3.00

md, median; q_1, lower quartile; q_2, upper quartile.
Scale, every patient (1) – none of the patients (4).

interviews (95%) and less often according to a plan prepared in advance (35%).

Dental hygienists indicated that they set learning objectives for all or many of their patients (87%). In most cases (89%) the objectives were set in discussions with the patients. Almost as often (87%) the objectives were set primarily by the dental hygienists, who then explained these objectives to their patients.

Questions concerning the use of different educational methods were also included. The dental hygienists used mostly personal education sessions (99%); group sessions were used rarely (16%). Talking (99%), demonstrating (98%) and advising (97%) were commonly used rather than computers (17%) and videos (4%), both of which were used rarely. Patient education was usually given at the same time as treatment (93%). A majority (82%) of the dental hygienists used less than half of their working time for education. One patient education session usually lasted 5–10 min or less (58%).

According to most of the dental hygienists (91%) learning outcomes were assessed in informal interviews. In addition, 80% of the dental hygienists checked the outcome by asking the patient to show how to do something or by asking the patient to self-evaluate his or her learning outcomes (67%).

Relationship between demographic factors and the content of patient education

Relationships between the demographic factors for the dental hygienist and issues concerning patient education were studied. The demographic factors were dental hygienist's age, work experience, working environment, employment status and age distribution of patients (children, adults or both). Issues concerning the patient education were the content of patient education, the structure and educational solutions of the patient education.

The employment status of the dental hygienists was associated with the content of patient education: dental hygienists who worked in private practice more often implemented education about bio-physiological ($P = 0.003$) and economical ($P = 0.028$) issues than other dental hygienists did. Those who worked mainly with children implemented education more often on bio-physiological ($P = 0.021$), ethical ($P = 0.047$) and economical ($P = 0.019$) issues than did dental hygienists who worked mainly with adults or with both adults and children.

Age and years of working as a dental hygienist were associated with the content of patient education. Younger (<36 years old) dental hygienists implemented less education on recognition of emotions ($P = 0.007$), symptoms ($P = 0.024$), different treatments ($P = 0.028$), costs and benefits ($P = 0.030$) and dealing with emotions ($P = 0.042$) than did older dental hygienists.

Associations between demographic factors for dental hygienists and structure and the educational solutions of patient education

Some of the associations between the demographic factors of the dental hygienists and the structure and the educational solutions of patient education were significant. The dental hygienists who were 37–45 years old based their patient education on data from international scientific journals more often than the other age groups did ($P = 0.019$). Those dental hygienists who had worked for the longest period of time in the same workplace based their education on the results of the domestic studies more often than the other dental hygienists did ($P = 0.038$).

Dental hygienists who worked in public dental care implemented group counselling more often than those who worked in private practice ($P = 0.006$). In addition, those who treated mainly children preferred patient education in groups more often than other dental hygienists did ($P = 0.001$). The same relationship was found between the use of computer in education and demographic factors: computers were used more often in public dental health care ($P = 0.001$) and with children ($P = 0.001$).

Discussion

The main new outcome of this study is that the dental hygienists' assessment of their skills, knowledge and functions are not in line with how the skills are implemented in practice. The dental hygienists assessed their own educational skills in assessing patient's knowledge expectations, setting learning objectives, evaluating learning outcomes, mastering the content of patient education, using different educational methods and mastering the interaction with the patient as fairly good. However, the results of our study indicate that although patients' knowledge expectations and preferences were assessed with almost all patients, the assessments were usually made during the informal interviews. Therefore some relevant information may have been missed. A structured, well-planned framework for the interviews could be useful for assessing knowledge expectations. It has been shown that patients can evaluate their own knowledge expectations and anticipate what information they require (26) and that valuable information should be taken into consideration when patient education is planned.

The perception of dental hygienists concerning learning objectives was that they set learning objectives for the majority

of their patients, but in most cases these objectives were set by the dental hygienist alone. In addition, the learning outcomes were usually assessed by the dental hygienists, although self-evaluation by the patient might be more empowering to the patient. An earlier study (24) also shows that one-way communication was common even when the transtheoretical model was explained to the dental hygienists beforehand.

Dental hygienists reported that they mastered the educational content. However, it seems that dental hygienists should have a more holistic view of their patients. The perceptions of the dental hygienists concerning the content of patient education showed that the functional and cognitive areas had been dealt with most adequately. The dental hygienists set great store by these areas, including, e.g. knowledge about self-care or where to search for more information. This is not surprising in view of the need for oral health self-care, which requires considerable commitment from the patient. The areas that received least attention were the ethical, experiential and financial areas. However, it would be important to provide more information about treatment effects and potential problems and to take into consideration ethical considerations, such as patients' rights, financial matters and patients' experiences and expectations related to their care, all of which are important issues in patient education.

As assessed by the dental hygienists, there was room for improvement in the use of different educational methods. The educational methods most commonly used were personal discussion, demonstration and instructions. However, in many cases dental hygienists provided this kind of education while they were treating the patient. For the patient, it is hard to participate in conversation or put a question to the dental hygienist at the same time as treatment. Of the various educational methods, computers and videos were used least. New methods should be included in patient education because today people are familiar with PC's, the internet and other information technology. These methods would allow education to continue in places other than the treatment room. For example, patient education material on the internet can be used before and after the dental visit whenever patients would feel a need for it.

The educational skills and patient education practices of the dental hygienists were based mainly on experience but rarely on research evidence from scientific journals or databases. Dental hygienists must be encouraged to make use of research data and to put evidence-based oral health care into practice. This should be noted in education of the dental hygienists. In addition, to update dental hygienists on these matters, continuing education courses should be required.

Dental hygienists seem to have the knowledge and skills for patient education in theory, but some improvements should be made so that patient education could become more effective, more patient-centred and more empowering. It is important for dental hygienists to note that merely providing information for the patient does not produce long-term changes in behaviour (29), but when individual's ability to learn is known, it is possible to place emphasis on patient empowerment. Viewed from the perspective of empowerment, patients can be seen as collaborators in their care (17, 21). Their expectations, knowledge, experiences, motivation, perceptions, preferences and participation should therefore be taken into consideration more because these affect the patients learning.

Efforts were made to ensure the validity and reliability of this study, however, there are limitations to this study. The response rate was 53%. Despite that, response rate was considered satisfactory and it was calculated to be representative. We have no information of the reasons for non-participation, because a drop-out analysis was not performed. However, the dental hygienists who participated in the study might have been more interested in patient education than those who did not. Furthermore, the contact information for dental hygienists was taken from the membership list of the Finnish Dental Hygienist Association and it is possible that not all information was correct and that perhaps not everyone in the target group received the questionnaire.

The main purpose of this study was to clarify the current state of patient education in a dental hygiene setting in Finland. The results of the study are based on the perceptions of the dental hygienists themselves. This study provides a limited perspective on the current state of patient education by dental hygienists. The perspective of the patients should also be analysed, and in that way the picture of current patient education would be complemented. A study from different standpoints and with different research methods is needed to complete the picture of current practices and development needs. A study of new educational methods and the effectiveness of those methods should also be conducted. Overall patient education in oral health care should be studied to reveal the main challenges of and solutions for patient education and to develop it in a direction that is more empowering for patients. However, the present results will allow further development of patient education in a dental hygiene setting.

References

1 WHO's Certified [Database on the Internet] World Health Organization. Fact sheet no. 318 2007. Available at: http://www.who.int/mediacentre/factsheets/fs318/en/ (accessed 3 December 2008).

2 Nordblad A, Suominen-Taipale L, Rasilainen J *et al. Oral Health Care at Health Centers from the 1970s to the year 2000*. Helsinki, National Research and Development Centre for Welfare and Health (STAKES), 2004. Report 278. (In Finnish, summary in English).

3 Suominen-Taipale L, Nordblad A, Vehkalahti M *et al.* (edit.) *Oral Health of the Finnish adults – Health 2000 Survey*. Helsinki, Publications of the National Public Health Institute B16/2004, 2004. (In Finnish, English summary).

4 Beck J, Offenbacher S. Systemics effects of periodontitis: epidemiology of periodontal disease and cardiovascular disease. *J Periodontol* 2005; **76:** 2089–2100.

5 Mattila K, Pussinen P, Paju S. Dental infections and cardiovascular diseases: a review. *J Periodontol* 2005; **76:** 2085–2088.

6 Pussinen P, Alfthan G, Rissanen H *et al.* Antibodies to periodontal pathogens and stroke risk. *Stroke* 2004; **35:** 2020–2035.

7 Petersen PE, Lennon MA. Effective use of fluorides for the prevention of dental caries in the 21st century: the WHO approach. *Community Dent Oral Epidemiol* 2004; **32:** 319–321.

8 Johnson PM. International profiles of dental hygiene 1987 to 2001: a 19-nation comparative study. *Int Dent J* 2003; **53:** 299–313.

9 McConaughy FL, Toevs SE, Lukken KM. Adult clients recall of oral health education services received in private practice. *J Dent Hyg* 1995; **69:** 202–211.

10 Lund M, Lund KE, Rise J. Preventing tobacco use in Norwegian dental practice. *Community Dent Oral Epidemiol* 2004; **32:** 385–394.

11 Helgason AR, Lund KE, Adolfsson J *et al.* Tobacco prevention in Swedish dental care. *Community Dent Oral Epidemiol* 2003; **31:** 378–385.

12 Widsrtöm E, Luoma A, Isokangas P *et al. Dental Caries Decreased – Causes and Consequences*. Helsinki, National Research and Development Centre for Welfare and Health (STAKES), 1997. 209. (In Finnish, English summary).

13 FINLEX. *Act on Status and Rights of Patients 785/1992 [on the Internet]*. Finland, Ministry of Social Affairs and Health, Available at: http://www.finlex.fi/en/laki/kaannokset/1992/en19920785 (accessed 5 December 2008).

14 *Stal.fi. Code for Ethics. [on the Internet]*. Finland, The Finnish Federation of Oral Health Care Professionals, [updated 2006 March 7]. Available at: http://www.stal.fi/lehdet_kirjat_ammatilliset_julka/eettiset_ohjeet/suuhygienisti/ (accessed 6 May 2007).

15 Humphris GM, Field EA. An oral cancer information leaflet for smokers in primary care: results from two randomised controlled trials. *Community Dent Oral Epidemiol* 2004; **32:** 143–149.

16 van Wijk AJ, Duyx MPMA, Hoogstraten J. The effect of written information on pain experience during periodontal probing. *J Clin Periodontol* 2004; **31:** 282–285.

17 Pellino T, Tluczek A, Collins M *et al.* Increasing self-efficacy through empowerment: preoperative education for orthopaedic patients. *Orthop Nurs* 1998; **17:** 48–51, 54–59.

18 Leino-Kilpi H, Luoto E, Katajisto J. Elements of empowerment and MS patients. *J Neurosci Nurs* 1998; **18:** 116–123.

19 Weinstein P, Harrison R, Benton T. Motivating parents to prevent caries in their young children: one-year findings. *J Am Dent Assoc* 2004; **135:** 731–738.

20 Vanobbergen J, Decklerck D, Mwalili S *et al.* The effectiveness of a 6-year health education programme for primary schoolchildren. *Community Dent Oral Epidemiol* 2004; **32:** 173–182.

21 Poskiparta M, Liimatainen L, Kettunen T *et al.* From nurse-centered health counseling to empowermental health counseling. *Patient Educ Couns* 2001; **45:** 69–79.

22 Honkala S, Honkala E, Rimpelä A *et al.* Oral hygiene instructions and dietary sugar advice received by adolescents in 1989 and 1997. *Community Dent Oral Epidemiol* 2002; **30:** 124–132.

23 Rogers C, Hector M. Oral hygiene advice given to families with young children. *Community Pract* 2003; **76:** 14–17.

24 Kasila K. *Schoolchildren's Oral Health Counseling Within the Organizational Context of Public Oral Health Care. Applying and Developing Theoretical and Empirical Perspectives*. Doctoral Thesis. Studies in Sport, Physical Education and Health. 124. University of Jyväskylä, 2007.

25 Östberg A. Adolescents' views of oral health education. A qualitative study. *Acta Odontol Scand* 2005; **63:** 300–330.

26 Johansson K, Salanterä S, Katajisto J *et al.* Patient education in orthopaedic nursing. *J Orthop Nurs* 2002; **6:** 220–226.

27 National Advisory Board on Research Ethics. *Good Scientific Practice and Procedures for Handling Misconduct and Fraud in Science*. Finland, National Advisory Board on Research Ethics, 2002.

28 Burns N, Grove S. *The Practice of Nursing Research. Conduct, Critique & Utilization*, 5th edn. Philadelphia, W.B. Saunders Company, 2005.

29 Watt R, Fuller S, Harnett R *et al.* Oral health promotion evaluation – time for development. *Community Dent Oral Epidemiol* 2001; **29:** 161–166.