Professional Guidance on and Self-assessed Knowledge of Oral Self-care as Reported by Dentate Elderly Patients in Lithuania

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Purpose: To investigate the sources of information on oral self-care and the content of professional guidance received on it as reported by dentate elderly patients in Lithuania, and to relate such guidance to their self-assessed knowledge of oral self-care.

Materials and Methods: A cross-sectional questionnaire study was carried out at two public dental offices, among dentate patients aged ≥60. In total, 174 dentate elderly responded; mean age was 69.2 years (SD = 6.6). The self-administered questionnaire covered sources of information on and self-assessed knowledge of oral self-care, and the content of professional guidance received. Age, gender, education, and number of teeth served as background information. Statistical evaluation was by Chi-square test, correlation analysis, ANOVA, and logistic regression.

Results: Most of the elderly (82%) named the dentist as the source of information. For the professional dental guidance received, 53% of our elderly reported being told how to brush, and 31% how to floss their teeth. Furthermore, 44% assessed their knowledge of oral self-care as poor, 22% as moderate, and 34% as good. At least a moderate level of knowledge of oral self-care was associated with a greater extent of professional guidance (OR 1.3; 95% CI 1.2–1.5; $p < 0.001$), a better dental state (OR 1.9; 95% CI 1.1–3.2; $p = 0.03$), and a higher level of education (OR 1.9; 95% CI 1.0–3.5; $p = 0.04$) in the logistic regression model, controlling for background information.

Conclusions: To increase the awareness of oral self-care among the elderly, dentists play an important role as providers of versatile and regular professional guidance.

Key words: dentate elderly, knowledge of oral self-care, Lithuania, oral health education

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Oral health professionals possess knowledge of the risk factors of oral diseases, and of the actions required to prevent such diseases and to maintain good oral health. Consequently, the dental profession has an ethical obligation to pass to the population such knowledge (Kay and Locker, 1996), which should be incorporated into general health education as the Ottawa Charter (1986) suggests.

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Recommendations on oral self-care advise people to carry out preventive practices as part of their daily routines. Regarding dental health, the proper maintenance and adequate outcome of oral self-care require subjects to be aware of the risks that threaten their oral health and of the measures of self-management (Widström, 2004). Everyday dental health maintenance thus takes place outside dentists' offices (Gooch et al, 2005), but is nevertheless mainly based on direct or indirect oral health education by professionals.

According to the few reports available, dental professionals seem to ignore the important field of oral health education, since people seldom report receiving it. In the UK, 44% of those 65 to 74 years of age have reported receiving guidance on toothbrushing,

and 33% on flossing (Kelly et al, 2000), but in Finland only 6% report guidance on toothbrushing (Suominen-Taipale et al, 2004). On the other hand, dentists themselves report much broader coverage for their preventive activities (Leake et al, 1996; Eklund, 1999; Brennan and Spencer, 2002).

For solutions to problems with their oral health, the majority of Lithuanian elderly rely on dental professionals (Petersen et al, 2000). However, although 58% to 69% report a need for oral hygiene instruction (Aleksejuniene et al, 2000; Petersen et al, 2000), only 15% say that they have received such guidance during their last visit (Petersen et al, 2000).

The present study investigated the sources of information on oral self-care and the content of professional guidance received as reported by dentate elderly patients in Lithuania, and related such guidance to their self-assessed knowledge of oral self-care. We hypothesised that their level of self-assessed knowledge is related to the extent of professional guidance they received.

MATERIALS AND METHODS

The present study began in 1999 as part of a cooperative Finnish Lithuanian project, after receiving the approval of the Ethics Committee of The Institute of Dentistry, University of Helsinki. All information about the subjects was entered into the database with no other identification besides a numerical code; all data were treated anonymously.

The target population for this cross-sectional survey consisted of dentate elderly receiving care at two public dental clinics. Data were collected in Kėdainiai, a medium-sized city in Lithuania, with about 65,000 inhabitants in the city and surrounding countryside. In Lithuania, oral health services for adults and elderly are available in both private and public clinics, the latter serving more than half of the adult population. Recalls are rare; as a rule patients book their appointments according to their individual needs. Treatments in public dental care facilities are free of charge except for the cost of the filling materials.

Between autumn 1999 and winter 2001, dentate patients aged 60 years and older visiting these two public dental clinics were asked to give their consent to participate in the study (Vyšniauskaitė and Vehkalahti, 2006). Those who agreed were asked to complete a questionnaire while waiting for their appointment or to take it home to complete and return later. Respondents requiring further instructions were assisted immediately upon request. All respondents were told that their participation was on a voluntary basis. Data collection was carried out only on days with lighter appointment schedules to provide respondents all the assistance they needed. On average, 3 to 4 such days per month were available. On those days all dentate patients were consecutively enrolled with the aim of attaining a study group of around 200 subjects. For the 15 to 20 patients who refused, citing reasons such as being too old or too tired, unwilling or uninterested in the research, no data were collected. A total of 174 patients were enrolled in the study, with a mean age of 69.2 years (SD 6.6; median 68.6; maximum 84.6).

The questionnaire

The two-page questionnaire was originally written in Finnish, then discussed within the research group, and finally translated into Lithuanian. The questionnaire requested the sources from which the respondents received information on oral self-care, their self-assessment of their knowledge of oral self-care, the content of professional guidance on oral self-care received when visiting a dentist, and their personal background data.

Sources of information on oral self-care

To name the sources of information, we offered a list of 16 alternatives: newspapers, friends, dentists, oral hygienists, magazines, relatives, physicians, nurses, printed adverts, books, domestic help, shopkeepers, television, radio, clubs, and other. Respondents were to tick every alternative from which they had received such information.

Knowledge of oral self-care

This was investigated by the question, 'How would you assess your knowledge on oral self-care?' Answers were chosen from six alternatives ranging from 'no knowledge' to 'excellent', which were later categorised into three levels of knowledge: poor, moderate and good.

Content of professional guidance on oral self-care

The questions covered the following six aspects of oral self-care: toothbrushing, interdental cleaning, the use

Table 1 Professional dental guidance received during their dental visits, as reported by dentate elderly patients (n = 174) in Lithuania

Aspects of professional guidance inquired Each question began: 'Did your dentist ...'	Reported as received Recently %	 Earlier %	 Never %
Tooth brushing			
Dentist told how to brush	16	37	47
Dentist showed how to brush	5	10	85
Dentist gave a toothbrush	2	1	97
Dentist recommended the use of a particular toothpaste	9	5	86
Interdental cleaning			
Dentist told how to clean interdental spaces	12	19	69
Dentist showed how to clean interdental spaces	6	6	88
Dentist gave a device for interdental cleaning	2	3	95
Use of fluorides			
Dentist recommended the use of fluoride pills	2	0	98
Dentist recommended the use of fluoride rinse	2	3	95
Dietary advice			
Dentist recommended the use of xylitol chewing gum	6	13	81
Dentist gave dietary advice	4	5	91
Advice on further visiting			
Dentist suggested a recall for dental check-up	14	2	84
Dentist suggested a recall for professional tooth cleaning	10	1	89
Visual information			
Dentist gave a brochure on oral self-care	5	2	93
Dentist showed pictures of oral diseases	5	6	89
Dentist showed pictures of treatment options	5	5	90
Dentist showed radiographs of patient's own teeth	14	15	71

of fluorides, dietary advice, recommendations for further visiting, and visual information on oral conditions or treatments. Table 1 shows the details of these inquiries. Every question began: 'Did your dentist ...' and for each, the answer was to be chosen from the following alternatives: 'yes, recently', 'yes, earlier', and 'never'. For further analyses, each answer was given a score: 2 (recently), 1 (earlier), and 0 (never). The overall sum of the scores and the sums within each of the six aspects described the extent of the professional guidance received.

Background information

Background information was requested on respondents' age, gender, level of education, number of teeth and wearing of dentures. Three categories were formed according to subjects' dental state: good (≥ 21 teeth and no dentures), moderate (fewer than 21 teeth and no dentures), and poor (fewer than 21 teeth and wearing dentures); mean numbers of teeth in these categories were 23.2, 15.9, and 11.5 respectively. The question about the respondent's education offered four alternatives for answering, later categorised into low (up to 4 years), medium (totalling up to 11 years), and high (totalling up to 16 years).

Statistical evaluation

The basic statistical procedures applied were the Chi-square test and ANOVA. The correlation coefficient was determined to show the relationships between the extent of professional guidance received and the level of self-assessed knowledge of oral self-care. In addition, a logistic regression model, controlling for the background factors, was applied to analyse the factors related to respondents' rating of their knowledge of oral self-care as at least moderate. The estimates of the model were used to calculate the corresponding odds ratios and their 95% confidence intervals (95% CI).

RESULTS

As their source of information on oral self-care (Fig 1), 82% of the dentate elderly subjects named dentists, and more than half named friends, relatives, and tele-

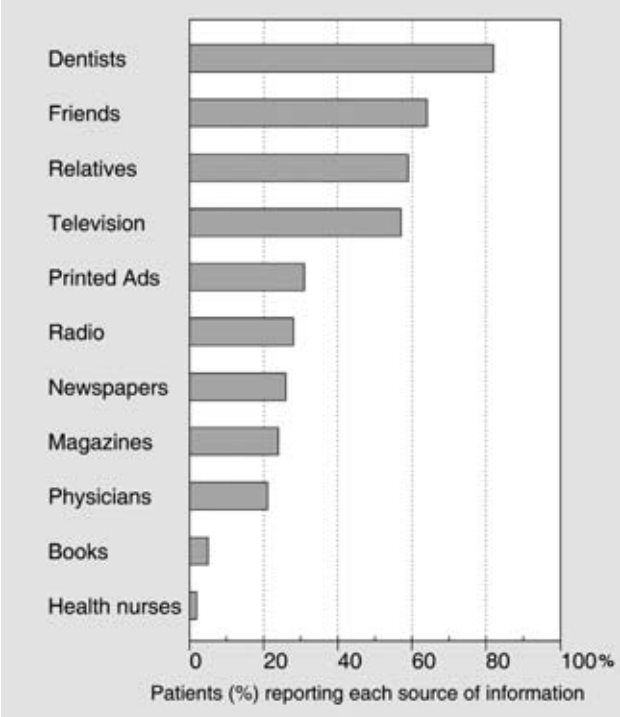

Fig 1 Sources of oral home-care information reported by dentate elderly patients (n = 174) in Lithuania.

vision; one in four respondents named radio, newspapers, and magazines, and one in five named physicians. The only gender-difference was for magazines, named by 32% of women and 17% of men (p = 0.03). Those elderly with a higher level of education more frequently reported newspapers (p = 0.002) and magazines (p = 0.02) as their source of information. The higher the level of education, the greater the proportion of respondents who named dentists as their source of information on oral self-care: 92% of those with a high level of education, 82% of those with a medium level of education, and 74% of those with a low level of education (p = 0.07).

Table 1 shows percentages of the respondents who reported receiving the six aspects of professional dental guidance during dental visits. The most frequently received guidance was for toothbrushing: 53% said that their dentist had told them how to brush, 16% had received this information during their most recent visit, 37% at earlier visits. One in three reported that their dentist had told them how to clean interdental spaces, and had shown radiographs of the respondent's teeth. For the rest of the aspects inquired, 81% to 98% reported that their dentist never offered such advice. No gender-differences appeared in reporting about the professional guidance received.

The overall sum of the scores describing dentists' reported activities in giving professional dental guidance ranged from 0 to 28; 29% of respondents scored 0, 58% scored between 1 and 9, and 13% scored 10 or more. The mean was 3.7 (SD = 5.6), and the figures showed no gender-differences. Table 2 shows mean scores for the six aspects of professional guidance according to the respondents' dental state and level of education. The better the dental state and the higher the level of education, the greater the mean scores for dentists' reported activities in guidance of these patients.

The respondents assessed their knowledge on oral self-care as poor (44%), moderate (22%) and good (34%), with no gender-differences. The higher the rating, the greater the sum of the scores describing professional dental guidance received (r = 0.52). Table 3 shows that the mean scores for the six aspects of professional guidance had strong relationships with the respondents' self-assessed level of knowledge, the greater mean scores being for higher levels of knowledge.

Table 4 shows the roles of respondents' gender, age, education, dental state, and overall score for professional dental guidance received in their rating of their knowledge of oral self-care as at least moderate. For at least a moderate level of knowledge, the logistic regression model revealed a strong relationship with a greater extent of professional guidance (OR = 1.3; p < 0.001), a better dental state (OR = 1.9; p = 0.03), and a higher level of education (OR = 1.9; p = 0.04). The model fitted well.

DISCUSSION

Our findings indicate that the level of knowledge of oral self-care among the dentate elderly reflects the extent of dentists' professional guidance these elderly subjects reported as received. These findings are in line with the reviews that conclude that educational interventions increase knowledge of adults (Kay and Locker, 1996, 1998; Watt, 2005), and, according to a recent report, of the elderly (Mariño et al, 2004).

In two previous studies from Lithuania, 94% of the edentulous and 89% of the dentate lay population's elderly report that they possess adequate dental knowledge (Aleksejuniene et al, 2000), and from 81% to 91% report that they understand beneficial effects of toothbrushing and harm caused by sweets to their teeth; 79% report that dentists explain all the dental problems (Petersen et al, 2000). Among the present elderly studied, however, only one in three assessed

Table 2 Content of dental professional guidance reported as received during dental visits of dentate elderly patients (n = 174) in Lithuania, in relation to their dental state and level of education. The scores describe dentists' reported activities in providing information, with each type scored as 2 for recent, 1 for earlier, and 0 for no information

Aspects of dental professional guidance (no. of types within and theoretical maximum score for each aspect)	Dental state, according to no. of teeth (< 21 or ≥ 21), and whether wearing dentures (P+)				Level of education			
	Poor < 21, P+ (n = 55)	Moderate < 21 (n = 77)	Good ≥ 21 (n = 42)	p-value	Low (n = 53)	Medium (n = 82)	High (n = 39)	p-value
Toothbrushing (4 types; max = 8)	0.8	0.8	2.3	<0.001	0.6	1.2	1.8	0.003
Interdental cleaning (3 types; max = 6)	0.3	0.6	1.3	<0.001	0.3	0.8	0.9	0.03
Use of fluorides (2 types; max = 4)	0.1	0.1	0.1	0.91	<0.1	0.1	0.3	0.03
Dietary advice (2 types; max = 4)	0.3	0.3	0.7	0.02	0.3	0.3	0.6	0.33
Advice on further visiting (2 types; max = 4)	0.1	0.4	1.3	<0.001	0.2	0.6	0.9	0.02
Visual information (4 types; max = 8)	0.5	0.7	1.5	0.01	0.8	0.8	1.1	0.68
Sum of all scores	2.1	3.0	7.2	<0.001	2.2	3.8	5.5	0.02

Statistical evaluation by ANOVA for differences according to dental state and level of education

Table 3 Associations between content of dental professional guidance reported as received during dental visits of dentate elderly patients (n=174) in Lithuania and their self-assessed knowledge on oral self-care. The scores describe dentists' reported activities in providing information, with each type scored 2 for recent, 1 for earlier, and 0 for no information

Aspects of dental professional guidance received (no. of types within and theoretical maximum score for each aspect)	Level of self-assessed knowledge of oral self-care			
	Poor (n = 76)	Moderate (n = 38)	Good (n = 60)	p-value
Toothbrushing (4 types; max = 8)	0.5	0.8	2.3	<0.001
Interdental cleaning (3 types; max = 6)	0.2	0.5	1.4	<0.001
Use of fluorides (2 types; max = 4)	<0.1	<0.1	0.3	0.01
Dietary advice (2 types; max = 4)	0.1	0.3	0.8	<0.001
Advice on further visiting (2 types; max = 4)	0.1	0.2	1.2	<0.001
Visual information (4 types; max = 8)	0.4	0.6	1.7	<0.001
Sum of all scores	1.3	2.4	7.6	<0.001

Statistical evaluation by ANOVA for differences according to levels of self-assessed knowledge

their knowledge of oral self-care as good or excellent, which may be an underestimation of their actual knowledge. On the other hand, such elderly are probably more critical of their own knowledge and expect more individual guidance in oral self-care after becoming familiar with their oral health situation at the dentist's.

In accordance with a recent population study in Finland (Suominen-Taipale et al, 2004), most of the present elderly reported that they received no guidance during their most recent visit. Unfortunately, the majority said that they had received no guidance during earlier visits either. Most of the dentists' guidance on oral self-care, as reported by our elderly respondents, focused on brushing and flossing. This again is in agreement with population findings in the UK, where 44% of the elderly reported that they had received a demonstration on brushing, and 33% advice on gum care (Kelly et al, 2000). A positive finding among the present dentate elderly subjects was that their den-

Table 4 Odds ratios for having at least moderate level of self-assessed knowledge of oral self-care, explained by the extent of professional dental guidance received during dental visits of dentate elderly patients (n=174) in Lithuania, by means of a logistic regression model, controlling for subjects' background information and dental state

Factors and their categories	Estimate of strength		Odds ratio (OR) and its 95% confidence interval		
	Estimate	SE	OR	95% CI	p-value
Gender: 1=male, 2=female	0.51	0.40	1.7	0.8–3.6	0.20
Age in years	0.02	0.04	1.0	0.9–1.1	0.60
Level of education	0.63	0.31	1.9	1.0–3.5	0.04
Dental state: 1=poor, 3=good	0.62	0.28	1.9	1.1–3.2	0.03
Scored professional guidance	0.27	0.07	1.3	1.2–1.5	<0.001
Constant term	-6.70	3.19			
Deviance 159.0; df=168					

tists' guidance on toothbrushing, either during the respondents' most recent dental visit or earlier, covered half of the respondents, and on flossing, nearly one-third. This indicates dentists' understanding and attempts to support oral self-care among their elderly patients. The remaining important aspects in guiding our elderly on oral self-care seemed, however, to remain ignored. Similar findings emerge from a recent population study in Finland (Suominen-Taipale et al, 2004).

In clinical settings, the role of dental hygienists in the dental team and as health educators has become increasingly important, particularly in developed countries (Öhrn, 2004). In Lithuania, however, the availability of auxiliary personnel is still extremely low, with only about 7 hygienists and 33 chair-side assistants per 100 dentists (Widström and Eaton, 2004; GDS International, 2004); this leaves the dentists as the main educators for oral health and oral self-care. Consequently, four in five of our elderly respondents considered their dentists as the main source of knowledge for oral self-care. Television as a source of information was named by three in five of the elderly which may indicate that in the future media and the internet may play a successful role in providing guidance in oral health for the public including elderly as studies showed (Mårtensson et al, 2004).

The present findings suggest that those elderly with a higher level of education and a better dental state may glean more from the message that dentists deliver to them. This emphasises the importance of tailoring the dentists' messages to match the individual needs and dental status of each patient. This should also be applied to the elderly, most of whom have adequate memory and learning skills to adopt such new information (Earles et al, 2004; Pearman and Storandt, 2004; Rendell et al, 2005; Beier and Ackerman, 2005; Rodrigue et al, 2005).

Oral hygiene instructions alone, or integrated into a complex preventive treatment, have attained positive results (Persson et al, 1998; Löe, 2000; Axelsson et al, 2004; Needleman et al, 2005; van der Weijden and Hioe, 2005). Similarly, recent interventions on oral health and oral self-care education among the elderly have resulted in positive changes in their oral health behaviour. A population study from the UK has demonstrated analogous impacts on toothbrushing and flossing for adults who reported having received from their dentist a demonstration or advice on dental hygiene (Kelly et al, 2000). Despite criticism of the effectiveness of chair-side education (Kay and Locker, 1998; Sheiham, 2002), dentists should nevertheless be encouraged to provide it by integrating it into their professional guidance, as part of everyday dental care. The small extent of professional guidance reported by our elderly respondents indicates dentists' ignorance of seeking positive outcomes in patients' oral health behaviour.

Our target population comprised dentate elderly patients visiting two public dental clinics in one medium-sized Lithuanian city, which may limit the generalisation of the present findings. In Lithuania, however, most of the elderly visit public oral health care facilities because they provide free-of-charge dental care. We can, therefore, consider that the present results provide a reasonable picture of the professional guidance received among the elderly.

In conclusion, to increase the awareness of oral self-care among the elderly, dentists play an important role as providers of versatile and regular professional guidance. Such guidance and support should, therefore, be taken as essential part of dental health care maintenance, especially in countries with few preventive practices.

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