Oral health behavior and attitudes of adults in Lithuania

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In Lithuania, the oral health system is currently in transition and systematic data are needed for public oral health care planning. The objectives of this study were (i) to describe the self-assessment of oral health status in Lithuanian adults, the oral hygiene practices, and dental visiting habits; (ii) to assess the attitudes towards teeth and oral health, dental care and oral health services; (iii) to determine whether oral health attitudes and behavior are affected by socio-economic factors; and (iv) to analyse the association between self-care practices and use of oral health services. The study comprised random samples of 35–44-year-olds ($n = 381$) and 65–74-year-olds ($n = 302$). Data were collected during 1997–98 by means of self-administered questionnaires and the response rate was 53%. Nearly all persons of ages 35–44 had natural teeth, whereas 14% of 65–74-year-olds were edentulous. Among the dentate persons, 45% of the young adults against 36% of the elderly claimed having poor teeth, and 66% and 55%, respectively, had experience of pain from teeth or mouth during the past year. At ages 35–44, 33% of participants reported toothbrushing at least twice a day and this was the case for 21% of 65–74-year-olds. Dental visits within the past year were indicated by 60% of young adults and 43% of the elderly; 83% of all participants reported that their last visit to the dentist was due to acute oral symptoms. In general, the participants had positive dental knowledge and attitudes; however, 56% were unaware of any effect of fluoride. The bivariate analyses showed that perceived oral health status and oral self-care practices were related to use of dental services. The multivariate analyses of dental visiting habits revealed the effects of gender, urbanization, presence of natural teeth, experience of dental problems, attitudes to dental care and dentists, and education. In conclusion, preventive dental services should be introduced and the establishment of community-based oral health promotion programs is urgently needed for Lithuania. □ *Adults; dental visits; Lithuania; oral hygiene practices; self-assessment of oral health; socio-economic factors*

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Over the past two decades, evidence has accumulated in several Western industrialized countries on reductions in prevalence rates and severity of oral disease conditions. In children, the trend first of all has been documented by the changing patterns of dental caries (1–3), while in adults more individuals now preserve their natural teeth and maintain functional dentitions (4–7). The reasons for such developments are complex, but may involve a more sensible approach to sugar consumption, improved oral hygiene habits with use of fluoridated toothpastes, establishment of community-based preventive programs, and effective use of oral health services (8, 9). In general, the prevalence of dental caries is still relatively high for eastern European countries (1, 10) and this is particularly the case for the Baltic States (11–13). Because of the economic and political changes, oral health systems are now in transition, but in east European countries, where oral preventive programs for schoolchildren have been established, a decline in dental caries experience has been observed as well (14).

In Lithuania, one of the three Baltic States, two previous studies of 12-year-olds showed that the vast majority of children were affected by dental caries, and the mean caries experience varied from 3.3 DMFT (15) to 4.9 DMFT (16). Limited information is available on the oral health situation of Lithuanian adults. In 1997/1998, a comprehensive oral health survey was carried out and the study included oral epidemiological and sociological data (17, 18). The mean caries experience was at 16.5 DMFT in 35–44-year-olds and 23.3 DMFT at ages 65–74 years (17, 18), and in both age groups the D-and M-components of the caries index were most prominent. Moreover, the periodontal recordings revealed that half of the younger adults and three-fourths of the old-age persons had deep pockets of 6 mm or more (CPI score 4).

The oral health system in Lithuania is currently in transition as well. Until 1990, under regulations acting in the former Soviet Union, healthcare was almost exclusively the responsibility of the state. Citizens were eligible to free dental care at public clinics, except for prosthodontic treatment being free of charge for pensioners and schoolchildren only. Regular dental check-ups twice a year were performed for schoolchildren; however, the public health service put little emphasis on prevention of oral

disease and topical fluorides were not administered. During recent years, important changes in the delivery of oral healthcare have taken place. This is not only due to the establishment of private dental services next to the existing public dental care system but also because of increased access to modern dental equipment, materials and oral hygiene devices. A financial reform of the healthcare system is now coming into force due to the Law on Health Insurance and whereby fees for services are regulated. Currently, population oriented health promotion programs have not been established.

In Lithuania, systematic information on the oral health behavior profile of the adult population is urgently needed in order to support the planning and evaluation of oral health services and health promotion programs for the public. Thus, the objectives of the present study were (i) to describe the self-assessment of oral health status in Lithuanian adults and the oral hygiene practices and dental visiting habits; (ii) to assess the attitudes towards teeth and oral health, dental care and oral health services; (iii) to determine whether oral health attitudes and behavior are affected by socio-economic factors; and (iv) to analyse the association between self-care practices and use of oral health services.

Study population and methods

Lithuania is one of the three Baltic States situated to the north-east of Europe and bordering the Baltic Sea. The total population is about 3.8 million people, of whom 68% are living in urban and 32% in rural areas. The main ethnic groups in the country are Lithuanian (80%), Russian (9%), Polish (8%), and Belarussian (1.5%). The standard of living in Lithuania is remarkably low (GDP is USD 3400 per capita) compared with most western European countries. In 1996, the state expenditures on healthcare were approximately 4% of GDP. The Ministry of Health and the regional municipalities are responsible for the planning and administration of healthcare, including oral health services. At present, oral healthcare is provided by the 2026 dentists, i.e. 1875 inhabitants per dentist. However, in rural areas access to services is limited owing to the lower number of dentists.

The present study is part of a comprehensive oral health survey conducted in 1997/1998. The design and principles of sampling have been detailed in previous reports (17, 18). In summary, the participants of age groups 35–44 and 65–74 were selected by random sampling stratified by urbanization and natural water fluoride levels. In most of Lithuania the fluoride content of drinking water is low (<0.5 ppm F), but in the western part of the country the amount of natural fluoride in water is high and varies from 1.5 to 5 ppm. Among the 5 urban and 5 rural areas selected for the study, 2 urban and 1 rural area were from regions with high levels of fluoride in drinking water. The subjects for the study were chosen at random by the National Statistical Department and the final sample thereby comprised 767 persons aged 35–44 and 544 persons aged 65–74. The data collection included a clinical examination and a self-administered questionnaire. The response rates in the survey were 50% ($n = 381$) and 55% ($n = 302$) among the 35–44 and 65–74-year olds, respectively. For the non-participants, several attempts were made to invite them for the study, i.e. additional letters, home visits and telephone calls. In order to evaluate possible bias due to low response rates, one-third of the non-respondents of each age group were contacted by telephone or home visits. Their indicated reasons for non-participation were lack of time, lack of interest, health problems, or no teeth left. Comparisons of the main socio-demographic characteristics of participants and non-participants revealed only minor differences by urbanization and education (18).

The structured questionnaire used for collection of sociological data was designed by the WHO Collaborating Centre for Community Oral Health Programs and Research, University of Copenhagen, and included the following variables: (i) self-reported dental status and evaluation of teeth and gums; (ii) attitudes towards dental health, dental care, and dentists; (iii) frequency of dental visits and services received at last visit; (iv) satisfaction with oral health services; (v) oral hygiene habits; (vi) sex and urbanization, and (vii) education and occupation. The questionnaire was originally formulated in English and then translated into Lithuanian. The questions included have been pretested in previous studies conducted by the WHO CC and the actual questionnaire was validated prior to the survey.

The data were processed and analyzed by means of the Statistical Package for the Social Sciences (SPSS-PC). Frequency distributions were computed for univariate and bivariate analyses, and the chi-square test was applied for the statistical evaluation of proportions. To obtain valid measures of dental attitudes, a number of additive index variables were constructed: (i) attitude to dental health (scores 2–14), (ii) attitude to dental care (scores 2–24), and (iii) attitude to dentists (scores 1–16). The scales were developed to fit the Guttman scale model (19). Based on the empirical distributions, the index variables were subsequently categorized into three levels (low, moderate, high). The variables constructed on dental attitudes and socio-demographic characteristics were introduced as independent dummy variables in regression analyses of frequency of dental visits and frequency of toothbrushing. The *t*-test was used for the statistical evaluation of regression coefficients (20).

Results

Self-assessment of oral health

Table 1 summarizes the findings on self-assessment of oral health status. At ages 65–74, 29% of the participants wore a partial denture, 20% had full denture in the upper

Table 1. The percentages of Lithuanian adults who reported certain oral health conditions in relation to age group

	35–44 years	65–74 years
All respondents	(*n* = 381)	(*n* = 302)
Dentate persons	99	86
Edentulous persons	1	14
Denture wearers	6	43
Dentate persons	(*n* = 377)	(*n* = 259)
Teeth are good	10	15
Average	45	49
Poor	45	36
Teeth or mouth caused pain during the last 12 months	66	55
Avoid smiling because of bad teeth	20	10
Avoid conversation because of bad teeth	16	12
Cannot chew hard food	8	35
Dissatisfied by appearance of teeth	73	43

jaw, whereas 19% had full denture in the lower jaw. For both age groups, various symptoms of poor functioning of the dentures were indicated, i.e. 86% of the denture wearers had difficulties in pronouncing clearly, 57% claimed poor retention of their denture, 51% had difficulties in eating, 26% were dissatisfied by the appearance of their denture, and 31% reported that dentures hurt.

For the dentate persons, nearly half of the young adults and one-third of the elderly reported having poor teeth. In addition, the perceived need for treatment was high, i.e. 41% of respondents claimed the need for crown or bridgework, 37% needed tooth extraction, 27% removable denture, and 58% answered that they needed instruction in proper oral hygiene.

Self-care practices in oral health

As shown in Table 2, one-third of the 35–44-year-olds and one-fifth of the 65–74-year-olds brushed their teeth at least twice a day. Young adults more often had preventive behavior in terms of use of fluoride toothpaste, toothpicks or dental floss. Table 3 documents that oral hygiene habits were significantly more common in women, and for persons of urban areas and high education.

Table 2. The percentages of Lithuanian adults who reported certain oral hygiene practices in relation to age group (dentate persons)

	35–44 years (*n* = 377)	65–74 years (*n* = 259)
Toothbrushing		
Less than once a day	22	33
Once a day	45	45
At least twice a day	33	21
Use of fluoride toothpaste	82	63
Use of wooden toothpicks	57	26
Use of plastic toothpicks	14	4
Use of dental floss	23	6

Dental visits

Sixty percent of the 35–44-year-olds against 42% of 65–74-year-olds had seen a dentist within the past year (Table 4). Those persons who had not seen a dentist within the past 2 years were asked about the reason for non-attendance. No serious problems with teeth or gums were reported by 53%, 10% answered that they could not afford treatment, 20% were too busy, while 10% indicated that they had bad memories from previous dental visits. Concerning the reason for the last dental visit, 83% of the participants said that this was due to oral symptoms or acute problems, 11% mentioned regular check-up, whereas 6% answered that the dental visit was part of a treatment course. Table 4 also describes the services received at the last visit to the dentist. Furthermore, Table 5 illustrates that self-reported oral health status and oral self-care practices were associated with dental visiting habits.

Dental attitudes and social factors in oral health practices

The percentages of adults who agreed on certain statements concerning dental health and care are given in Table 6. In addition, it was worth noting that 56% of the participants answered that they did not know about any effect of fluoride. Table 7 highlights the results from bivariate analyses of the experience of a dental visit within the past year. Dental visits were significantly more often found for women and people from urban areas and of high education. Visits to the dentist also tended to be more frequent for participants with positive attitudes towards dental health, dental care, and dentists.

Table 3. The percentages of Lithuanian adults of ages 33–44 (*n* = 377) and 65–74 (*n* = 259) who reported certain oral hygiene practices in relation to gender, urbanization, and education (dentate persons)

	Toothbrushing at least twice a day	Use of fluoride toothpaste	Use of dental floss
35–44 years			
Males	16	76	12
Females	46***	87*	32**
Urban	39***	86*	29***
Rural	18	73	8
Education			
Low	25	67	8
Moderate	19	68	9
High	30	86	27
Very high	50***	90***	31**
65–74 years			
Males	20	58	2
Females	24	66*	12**
Urban	28***	67	9
Rural	12	56	4
Education			
Low	20	54	7
Moderate	17	64	6
High	26	78	9
Very high	36*	80*	4

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 4. The percentages of Lithuanian adults distributed by time since their last visit to the dentist in relation to age group and percentages of adults who reported having received certain treatments at their last dental visit

	35–44 years ($n = 381$)	65–74 years ($n = 302$)
Less than 6 months	36	23
6–12 months	24	19
1–2 years	16	13
2–5 years	14	22
More than 5 years	9	23
Examination	46	43
X-ray	14	11
Cleaning of teeth	23	11
Oral hygiene instruction	18	15
Fluoride application	3	1
Periodontal treatment	5	4
Fillings/inlay	72	32
Crown/bridgework	15	25
Root canal treatment	18	9
Tooth extraction	26	44
Removable denture	2	33

Finally, Table 8 presents the findings of the multivariate analyses of oral health practices whereby confounding factors are controlled for. Dental visiting frequency and frequency of toothbrushing, both measured originally on ordinal scales, were introduced as dependent variables. Other factors being equal, visits to the dentist were significantly more frequent for women, among persons with natural teeth left and who experienced problems by teeth, and for persons with positive dental attitudes. Moreover, dental visits were less frequently found for persons of low education and those living in rural areas. Concerning toothbrushing habits, significant effects were observed for gender, urbanization, attitude to dental care, and education.

Discussion

Lithuania inherited a typical former Soviet Union model of healthcare provision. This was centralized and paid little attention to primary health and social care; on the other hand, the financial barriers to health services were low. The healthcare reforms in Lithuania were motivated by a desire to deal with problems such as efficiency, consumer choice and quality of care. First of all, the economic reforms have resulted in reduced public spending on health care, privatization, and decentralization. In general, health status of the population has been negatively affected by the recession and the sharp fall in standards of living (20). The findings of the actual survey suggest that such negative development has taken place for dental status and oral healthcare of adults as well.

The stratified random sampling technique was applied in the present study to ensure that a representative sample would be obtained. From a socio-epidemiological point of view, urbanization and level of fluoride in drinking water were the criteria considered essential for identification of important subpopulation groups (18). Several attempts were made to encourage participation in the study; however, the response rate was moderate. Low response rates do not necessarily compromise the results of population surveys unless systematic differences between participants and non-participants are observed (21, 22). In agreement with similar oral health surveys (23–26), it was observed that edentulous persons were more frequent among non-respondents. In light of the findings of the study, this would imply that regular oral health behavior and positive dental attitudes may be overestimated. As regards the method of data collection, the questionnaire was based on a highly structured design, a design that tends to control reliability; the questions for the present study were validated in Lithuania. However, the data collection method may have certain limitations; for example, that acceptable behavior is reported rather than factual behavior. Thus, overreporting

Table 5. The percentages of Lithuanian adults who reported certain oral health conditions and oral hygiene practices in relation to dental visit habits

	Dental visits within the last 12 months		
	Yes ($n = 358$)	No ($n = 325$)	Total ($n = 683$)
Edentulous persons	3	11***	7
Denture wearers			
Partial denture	15	16	15
Full upper denture	4	15***	9
Full low denture	5	14***	9
Teeth are poor/very poor	41	41	41
Teeth/mouth caused pain during the last 12 months	75***	46	62
Toothbrushing performed . . .			
less often than once a day	19	36	27
once a day	49	40	45
at least twice a day	32***	24	28
Use of fluoride toothpaste	87***	71	80
Use of dental floss	21***	11	16

*** $P < 0.001$.

Table 6. Percentages of Lithuanian adults who agree on statements on dental care and dental health attitudes by age group

	35–44 years ($n = 381$)	65–74 years ($n = 302$)
Poor teeth are detrimental to appearance	66	56
Sweet products are bad for teeth	87	81
Tobacco is bad for teeth and mouth	89	83
Brushing one's teeth prevents tooth decay	91	91
Brushing one's teeth makes for healthy gums	88	84
Fluoridated drinking water protects your teeth	53	29
Using fluoride is a harmless way of preventing tooth decay	43	24
Going to the dentist will solve the problems I have with my teeth, gums, and dentures	86	89
Dentists explain all the dental problems a patient has	67	79
Dentists devote enough attention to their patients	59	80
Dentists examine their patients very carefully	46	75
Dentists prefer to treat the teeth rather than explain how to prevent problems	74	13

would be considered with respect to the answers on oral hygiene habits and frequency of dental visits. Moreover, recall bias may have induced underreporting on services received at the previous dental visit.

Despite the potential limitations mentioned, the present study provides an overview of the oral health behavior situation of the adult population in Lithuania. So far such a study has not been conducted in the country, and for the planning of adult oral healthcare programs several important observations were made. The level of knowledge and attitudes in relation to oral hygiene and personal dental care was relatively high, and most respondents also knew about the negative effect of sugar consumption. However, the awareness of the role of fluoride in the prevention of dental caries was surprisingly low, in particular among the elderly. In a general perspective, the tradition of regular self-care practices was weak; less than one-third of the respondents brushed their teeth at least twice a day and another one-third claimed toothbrushing less often than once a day. In concordance with studies carried out in Scandinavia (27) and Latvia (13), the oral hygiene habits of Lithuanian adults were highly influenced by gender, urbanization, and education. The multivariate analysis also demonstrated that toothbrushing habits were more regular for persons with highly positive attitudes towards personal dental care.

Impaired life-quality and poor functioning of dentures were reported by a significant number of the participants and for both age groups. Consistent to the findings from the clinical examinations (17, 18), large proportions of the

Table 7. The percentages of Lithuanian adults of ages 33–44 and 65–74 who reported having seen the dentist within the last 12 months in relation to gender, urbanization, education, and dental attitudes

	35–44 years ($n = 381$)	65–74 years ($n = 302$)
Males	54	33
Females	66*	49***
Urban	66**	49***
Rural	44	29
Education		
Low	31	38
Moderate	55	43
High	58	46
Very high	71**	64*
Attitudes to dental health		
Low	51	38
Moderate	68*	51
High	60	41
Attitudes to personal dental care		
Low	53	34
Moderate	67	45
High	61	56**
Attitudes to dentists		
Low	60	38
Moderate	54	41
High	66	59*

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 8. Multiple dummy-regression analysis of dependent variables dental visit habits and toothbrushing frequency of Lithuanian adults (b = regression coefficient)

	Dental visit habits (b) ($n = 683$)	Toothbrushing frequency (b) ($n = 636$)
Gender		
Female	0.34***	0.93***
Male	—	—
Urbanization		
Rural	−0.50***	−0.60***
Urban	—	—
Teeth left		
Yes	0.71***	0.02
No	—	—
Experience of problems during the past year		
Yes	0.72***	0.11
No	—	—
Age group		
65–74	−0.12	
35–44	—	
Attitude to dental health		
High	0.11	−0.02
Moderate	0.20	−0.04
Low	—	—
Attitude to personal dental care		
High	0.26*	0.47***
Moderate	0.25*	0.06
Low	—	—
Attitude to dentists		
High	0.24*	0.08
Moderate	0.11	−0.04
Low	—	—
Education		
Low	−0.62***	−0.87***
Moderate	−0.42**	−0.75***
High	−0.29*	−0.37*
Very high	—	—
R^2	0.23	0.21
Intercept	3.40	5.14

adults also declared that their teeth were poor and that they suffered from acute symptoms or pain from teeth or mouth. It is therefore not surprising that dental visits apparently were prompted by the experience of problems rather than oriented towards prevention of disease. In both age groups, radical treatments were often offered at the last dental visit, including tooth extractions, and one-third of the elderly had received a removable denture. In parallel, the attitudes towards the dentists were fairly negative, e.g. in 35–44-year-olds, three-fourths of the respondents indicated that dentists prefer to treat problems rather than inform the patient how to prevent oral disease. It is worth noting that self-care practices in oral health tended to be more frequent in dental attenders than non-attenders; however, relatively few participants answered that they had oral hygiene instruction at their last visit to the dentist. The present analyses confirm previous observations (9) of higher utilization of dental health services among women, persons living in urban areas, having natural teeth and positive dental attitudes. In addition, the level of education was a most powerful determinant of dental visits and oral hygiene habits, indicating that such health behavior is highly regulated by social norms and values (9, 27).

Recently, the use of professional dental services and oral self-care practices was studied among adults in several European countries (28). In a European perspective, Lithuanian adults have low scores on utilization of dental services and oral hygiene habits. As for other east European countries, such as Romania (29), radical treatment types with tooth extractions are most frequent in adult dental care and therefore reorientation of the oral health system is badly needed. In order that increased use of oral health services may better contribute to improved oral health of adults in Lithuania, the introduction of preventive services would be needed. Moreover, systematic oral health education programs should be implemented at community level to support the development of regular oral self-care practices. The present results may serve as a baseline for the future evaluation of such oral health programs.

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