

Attitudes toward Dental Appearance in 50- and 60-Year-Old Subjects Living in Sweden

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ABSTRACT

Background: Attitudes toward the importance of general appearance have varied much, not only over time but also among groups of individuals of different age and other characteristics.

Whether the situation is similar regarding dental appearance does not seem to have been studied.

Purpose: The aim was to study the differences in attitudes toward dental appearance between two large samples of 50- and 60-year-old subjects.

Materials and Methods: Identical questionnaires were sent to all subjects born in 1942 and 1952 living in two Swedish counties in 2002 ($N = 17,444$; $N_{50} = 8,881$, $N_{60} = 8,563$). The final response rate was 72.2% ($N = 12,599$). In this study, responses to four statements on the importance of dental appearance have been analyzed with respect to gender and age.

Results: Many of the responses to the four statements differed with gender and age. To the first statement (“To have beautiful and perfect teeth is very important for how you are treated by other people”), 73% agreed at age 60 compared with 64% at age 50 ($p < 0.001$). Approximately 90% of the subjects agreed with the second statement (“Minor esthetic imperfections of the teeth have no importance, only they function well”). Logistic regression indicated that several variables were significantly associated with the statements. Besides age and gender, education and self-assessed dental problems were most important.

Conclusion: Attitudes toward the importance of dental appearance differed both between genders and age groups in these population samples living in Sweden.

CLINICAL SIGNIFICANCE

The varying attitudes toward dental appearance in the population must be acknowledged in treatment decisions.

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INTRODUCTION

Attitudes toward the importance of our general appearance have shown rapid changes over the past decades. Differences have been found not only over time but also with respect to age, gender, and various groups of individuals.¹⁻³ Whether the situation is similar regarding dental appearance does not seem to have been studied, even though interest in dental esthetics has increased rapidly during the last few decades among both patients and dentists. To create a natural facial and dental appearance has become an important task in prosthodontics and in restorative dentistry. New materials and clinical methods have given dentists a potential for improving the dental appearance of their patients.⁴ Numerous articles and books have appeared on the dental market to correspond to the demand, but there are conflicting opinions on the treatment alternatives.^{5,6} Even if the development of new esthetic restorations is of great value for clinical dentistry and patients, it also has a “dark side,” and overtreatment and other ethical complications have been discussed.⁷⁻¹⁰

Studies have indicated associations between dental appearance and quality of life and general well-being.^{11,12} It has also been suggested that judgments concerning the personal characteristics of others are influenced by dental appearance.¹³ However, there is

often a discrepancy between the dentist's and the patient's perception of treatment need and opinions on dental esthetics.¹⁴⁻¹⁷ In a study first performed in one country and then extended to six countries, it was demonstrated that assessment of the significance of dental appearance varied widely among dentists, dental technicians, and laymen/patients between, as well as within, countries.^{18,19}

Opinions on the attractiveness of attributes such as style of clothes, hairdressing, and makeup show rapid changes with time as well as between different age groups.²⁰ Whether there are similar changes in opinion on dental appearance does not seem to have been studied. The purpose of this study was to compare opinions on dental appearance in two population samples of 50- and 60-year-old subjects. It was hypothesized that (1) the younger subjects (50-year-olds) would emphasize the importance of dental appearance more than the older ones (60-year-olds), and (2) women would emphasize the importance of dental appearance more than men do.

MATERIALS AND METHODS

Population and Response Rate

In 2002, a questionnaire was mailed to all 50- and 60-year-old subjects in two Swedish counties, Örebro and Östergötland ($N = 17,444$; $N_{50} = 8,881$, $N_{60} = 8,563$). Individuals not responding within 2 weeks were given a reminder by letter. If they still did not answer, a new questionnaire was sent. The final response rate was 72.2% ($N = 12,599$), with some age (50-year-olds = 70.2%, 60-year-olds = 75.5%) and gender variation (Table 1).

There was some variation in the response rate for the four statements on dental appearance analyzed in this study (Table 2).

Analysis of Nonresponse

The nonresponse has been analyzed previously in a part of the sample. For the total group born in 1942 and 1952, only the gender, age, and county of the nonresponders could be analyzed. There was no significant difference between the nonresponders with regard to county. In the total population, there were 50.6% men and 49.4% women.

TABLE 1. AGE AND GENDER DISTRIBUTION (%) OF THE ORIGINAL SAMPLE AND THE PARTICIPANTS IN THE STUDY.

Sample	Women	Men	50-Year-Old	60-Year-Old
Original sample*	8,539 (49.3%)	8,774 (50.7%)	8,836	8,502
Participants	6,573 (52.4%)	5,961 (47.6%)	6,160	6,374

* $N = 17,444$; some data were lost during transfer from the official register to our data set: 131 regarding gender, 106 regarding birth year; this explains the small discrepancies between numbers in the text and this table.

TABLE 2. STATEMENTS, NUMBER OF RESPONDERS (N), AND RESPONSE RATE (%) TO EACH STATEMENT.

Statement	Women (50 and 60 Years Old)	Men (50 and 60 Years Old)
1. To have beautiful and perfect teeth is very important for how you are treated by other people.	6,417 (75.8%)	5,809 (67.0%)
2. Minor esthetic imperfections of the teeth have no importance, only they function well.	6,187 (73.1%)	5,806 (67.0%)
3. A tooth loss that is visible is something to be ashamed of.	6,374 (75.3%)	5,797 (66.8%)
4. It does not matter how you look, only that you can chew what you like.	6,400 (75.6%)	5,786 (66.7%)

However, there was an overrepresentation of women who answered the questionnaire—that is, 46.2% men and 53.8% women ($p < 0.001$). The response rate for those born in 1942 (60-year-olds) was significantly higher than those born in 1952 (50-year-olds) ($p < 0.01$). Previous analyses of nonresponse performed on those born in 1942 demonstrated some minor deviation from a random distribution, for example, an overrepresentation of women and individuals with low education and fewer teeth.^{21,22} Thus, some caution is advisable in interpreting the data.

Questionnaire

The questionnaire comprised 53 questions, with altogether 123 items. The questions were divided into socioeconomic conditions (e.g., age, gender, occupation), general health (e.g., physician visits, tobacco habits, drug consumption),

and oral conditions (e.g., satisfaction with teeth and dental appearance, oral problems, oral hygiene habits, number of teeth). This study has focused on answers to four statements on the importance of dental appearance (Table 2). All of these statements should be answered by marking one of four alternatives: “agree completely,” “agree to a large extent,” “do not fully agree,” or “do absolutely not agree.” In some of the analyses, the responses have been dichotomized by combining the first two to “agree” and the last two to “do not agree.”

The complete questionnaire design, originally used in a study of 50-year-old subjects in 1992, has previously been described.²³ Descriptions of the 10-year follow-up examinations of these subjects in 2002 have also been published.^{22,24}

Statistical Methods

All statistical analyses were performed using the Statistical Package for Social Sciences (Release 14, SPSS, Inc., Chicago, IL, USA) on an IBM personal computer (Dell Corp. Ltd., Bracknell, Berks, UK). The Chi-squared test was used for assessing the differences between ages 50 and 60 and between men and women. For logistic regression, the forward conditional method was adopted. Each of the four statements was, after dichotomization, used as a dependent variable in the logistic regression model. The statements were all dichotomized with “agree completely” and “agree to a large extent,” set as 1, and “do not fully agree” and “do absolutely not agree,” set as 2. All 26 variables listed in Table 3 were entered as independent variables in each of the four models. The results of these analyses were given as odds ratios (OR) with 95% confidence intervals (CI) and adjusted p values. With respect to the large samples analyzed, which entails that even very small differences and weak associations can reach statistical significance, the significance level was set to 1% ($p < 0.01$).

RESULTS

Responses to the four statements related to dental appearance exhibited relatively small, but mainly statistically significant, differences between the 50- and 60-year-old subjects (Figures 1–4). For three of

TABLE 3. DICHOTOMIZATION OF INDEPENDENT VARIABLES (DESCRIPTIONS 1 AND 2) USED IN THE STEPWISE LOGISTIC REGRESSION MODELS.

Variable Number	Variable	Description 1	Description 2
1	Gender	Man	Woman
2	Birth year	1942	1952
3	Social group	Worker	All others
4	Place of birth	Nordic countries	Outside Nordic countries
5	Place of living	Densely populated area	Countryside
6	Social contacts/week	1–5 contacts	>5 contacts
7	Working hours	Full-time	Less than full-time
8	Education	Elementary/lower school	High school/university
9	Healthy	Yes/on the whole	No/absolutely not
10	Refrain from dental care	Yes, cannot afford	Never refrained
11	Dentist type	Private	Public dental health
12	Dental fear in childhood	Yes	No
13	Tooth grinding/clenching	No or some problems	Rather great/great problems
14	Color of teeth	No or some problems	Rather great/great problems
15	Form of teeth	No or some problems	Rather great/great problems
16	Overbite/overjet	No or some problems	Rather great/great problems
17	Crowding of teeth	No or some problems	Rather great/great problems
18	Spacing of teeth	No or some problems	Rather great/great problems
19	Pain in TMJ region	No or some problems	Rather great/great problems
20	Smoking	Daily	Not daily
21	Smokeless tobacco	Daily	Not daily
22	Alcohol	Use alcohol	Never use alcohol
23	Dry mouth at night	Yes often and sometimes	Seldom or never
24	Oral hygiene habits	Brush teeth ≤ 2 times/day	Brush teeth > 2 times/day
25	Number of teeth	All or almost all remaining	Many missing and no teeth
26	Removable denture	No	Yes

the four statements (1, 3, 4), there were statistically significant differences between the opinions of women and men in both age groups.

The 60-year-old subjects agreed more with the first statement (“To have beautiful and perfect teeth is very important for how you are treated by other people”) than the 50-year-old subjects, similar in both genders ($p < 0.001$). In the total sample, 73% agreed at age 60

compared with 64% at age 50 (Figure 1). Women disagreed more often with the statement than the men did, both at age 50 ($p < 0.01$) and 60 ($p < 0.001$).

Approximately 90% of both women and men agreed with the second statement (“Minor esthetic imperfections of the teeth have no importance, only they function well”). There were small, but significant ($p < 0.001$), differences in attitudes between the 50- and

60-year-old subjects (Figure 2).

The men were slightly more critical to the statement than the women, but the difference decreased with increasing age (at age 50, $p < 0.05$ and at age 60, nonsignificant).

The response to the third statement (“A tooth loss that is visible is something to be ashamed of”) demonstrated evident differences between the age groups (Figure 3). The proportion of those who

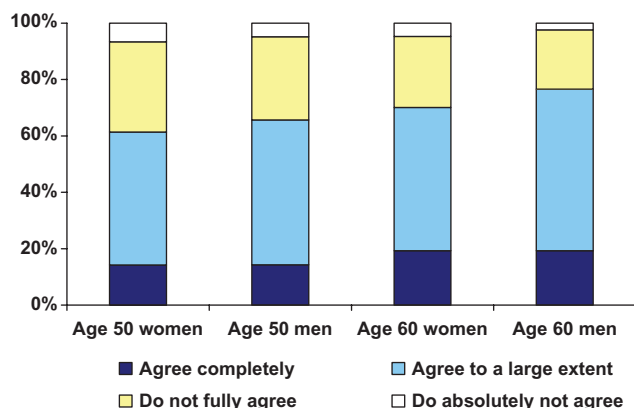


Figure 1. Distribution (%) of the responses to the statement "To have beautiful and perfect teeth is very important for how you are treated by other people" among 50-year-old (women, $N = 3,246$; men, $N = 2,780$) and 60-year-old subjects (women, $N = 3,171$; men, $N = 3,029$) examined in 2002 ($N = 6,200$).

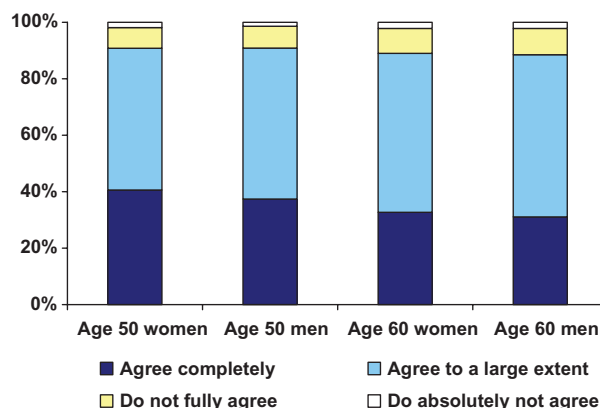


Figure 2. Distribution (%) of the responses to the statement "Minor esthetic imperfections of the teeth have no importance, only they function well" among 50-year-old (women, $N = 3,252$; men, $N = 2,780$) and 60-year-old subjects (women, $N = 3,161$; men, $N = 3,026$) examined in 2002.

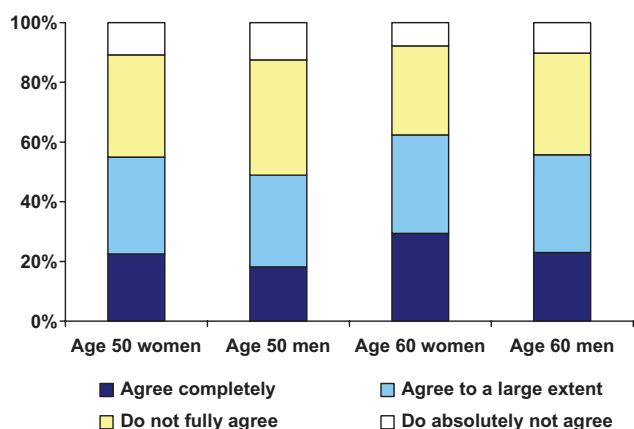


Figure 3. Distribution (%) of the responses to the statement "A tooth loss that is visible is something to be ashamed of" among 50-year-old (women, $N = 3,223$; men, $N = 2,774$) and 60-year-old subjects (women, $N = 3,151$; men, $N = 3,023$) examined in 2002.

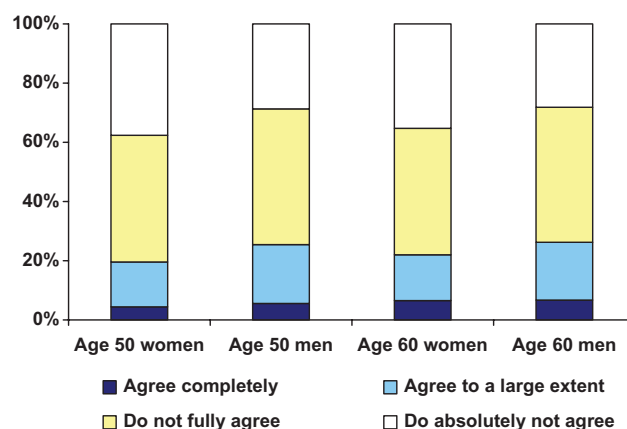


Figure 4. Distribution (%) of the responses to the statement "It does not matter how you look, only that you can chew what you like" among 50-year-old (women, $N = 3,235$; men, $N = 2,771$) and 60-year-old subjects (women, $N = 3,147$; men, $N = 3,015$) examined in 2002 ($N = 6,162$).

agreed with the statement was greater in both genders at age 60 than at age 50, and at both occasions women agreed more often than men did ($p < 0.001$ for all comparisons). This indicated that the older subjects were more

sensitive to a visible tooth loss than the younger ones, and women more so than men.

The great majority did not agree, and there were only small differences between the 50- and 60-year-

old subjects, with the fourth statement ("It does not matter how you look, only that you can chew what you like") (Figure 4). The disagreement with the statement was more frequent among the women than among the men ($p < 0.001$ both at

TABLE 4. RESULTS ($p < 0.01$) OF LOGISTIC REGRESSION (FORWARD CONDITIONAL METHOD) FOR THE FIRST STATEMENT ("TO HAVE BEAUTIFUL AND PERFECT TEETH IS VERY IMPORTANT FOR HOW YOU ARE TREATED BY OTHER PEOPLE") AS DEPENDENT VARIABLE AND THE 26 VARIABLES LISTED IN TABLE 3 AS INDEPENDENT VARIABLES ($N = 8,138$).

Independent Variable	OR	95% CI for OR	p
Male	1.32	1.20–1.46	<0.001
60 years old	1.44	1.30–1.59	<0.001
Born outside the Nordic countries	2.04	1.39–2.97	<0.001
High school/university education	1.30	1.17–1.43	<0.001
Refrained from dental care	1.64	1.37–1.96	<0.001
Problems with color of teeth	1.92	1.43–2.57	<0.001
Problems with spacing of teeth	2.63	1.37–4.95	<0.01

OR = odds ratio; CI = confidence interval.
OR denotes those who agreed with the statement.

TABLE 5. RESULTS ($p < 0.01$) OF LOGISTIC REGRESSION (FORWARD CONDITIONAL METHOD) FOR THE SECOND STATEMENT ("MINOR ESTHETIC IMPERFECTIONS OF THE TEETH HAVE NO IMPORTANCE, ONLY THEY FUNCTION WELL") AS DEPENDENT VARIABLE AND THE 26 VARIABLES LISTED IN TABLE 3 AS INDEPENDENT VARIABLES ($N = 8,380$).

Independent Variable	OR	95% CI for OR	p
50 years old	1.30	1.10–1.52	<0.01
No problems with the form of the teeth	2.14	1.38–3.31	<0.01
Brush teeth ≤ 2 times/day	1.35	1.10–1.66	<0.01

OR = odds ratio; CI = confidence interval.
OR denotes those who agreed with the statement.

ages 50 and 60). However, the difference between women and men was slightly greater at age 50 (81 and 75%, respectively) than at age 60 (78 and 74%, respectively).

Logistic Regression

Several variables were significantly associated with the statements (Tables 4–7; in the tables, only associations with a significance level of $p < 0.01$ or better have been listed). In the first model, with the statement "To have beautiful and perfect teeth is very important for how you are treated by other

people" as dependent variable, the differences between men and women and between the two age groups were verified (Table 4). The highest OR was for spacing of teeth (2.6). There was a significantly greater chance that a person reporting rather great or great problems regarding spacing of teeth agreed with the first statement in comparison with those without this problem. Similarly, there were greater chances for individuals born outside, rather than within the Nordic countries, and those with, compared with those without, problems

regarding the color of their teeth, respectively, to agree with the statement. Subjects with higher education and those who had to refrain from dental care because of economic reasons were more inclined to agree with the statement than those with lower education and those who never had refrained from dental care, respectively.

In the second model, only three independent variables reached the significance level of $p < 0.01$ (Table 5). For example, there was a significantly greater chance that those who reported no or only small problems with the form of their teeth, compared with those with rather great or great such problems, agreed with the statement "Minor esthetic imperfections of the teeth have no importance, only they function well."

There were significant associations between several independent variables and the third statement, but OR was, in general, low (Table 6). The highest OR (1.5) was for the variable "refrain from dental care."

There was a greater chance (OR = 1.9) for subjects who reported no or only some problems with the color of their teeth, in comparison with those with such problems, to agree with the statement "It does not matter how you look, only that you can chew what you like" (Table 7). A cross-table

TABLE 6. RESULTS ($p < 0.01$) OF LOGISTIC REGRESSION (FORWARD CONDITIONAL METHOD) FOR THE THIRD STATEMENT ("A TOOTH LOSS THAT IS VISIBLE IS SOMETHING TO BE ASHAMED OF") AS DEPENDENT VARIABLE AND THE 26 VARIABLES LISTED IN TABLE 3 AS INDEPENDENT VARIABLES ($N = 7,460$).

Independent Variable	OR	95% CI for OR	<i>p</i>
Female	1.28	1.17–1.41	<0.001
60 years old	1.31	1.19–1.44	<0.001
Elementary/lower school	1.25	1.14–1.38	<0.001
Refrained from dental care	1.49	1.27–1.75	<0.001
Problems with tooth grinding/clenching	1.41	1.14–1.77	<0.01
Not a daily smoker	1.22	1.08–1.39	<0.01
Alcohol users	1.29	1.12–1.48	<0.001

OR = odds ratio; CI = confidence interval.
OR denotes those who agreed with the statement.

TABLE 7. RESULTS ($p < 0.01$) OF LOGISTIC REGRESSION (FORWARD CONDITIONAL METHOD) FOR THE FOURTH STATEMENT ("IT DOES NOT MATTER HOW YOU LOOK, ONLY THAT YOU CAN CHEW WHAT YOU LIKE") AS DEPENDENT VARIABLE AND THE 26 VARIABLES LISTED IN TABLE 3 AS INDEPENDENT VARIABLES ($N = 5,711$).

Independent Variable	OR	95% CI for OR	<i>p</i>
≤5 social contacts/week	1.33	1.10–1.61	<0.01
Elementary/lower school	1.34	1.18–1.52	<0.001
Not healthy	1.30	1.12–1.51	<0.01
No problems with color of teeth	1.94	1.38–2.72	<0.001
Brush teeth ≤2 times/day	1.31	1.11–1.55	<0.01

OR = odds ratio; CI = confidence interval.
OR denotes those who agreed with the statement.

TABLE 8. DISTRIBUTION (%) OF ANSWERS FROM 8,073 SUBJECTS TO THE FOURTH STATEMENT ("IT DOES NOT MATTER HOW YOU LOOK, ONLY THAT YOU CAN CHEW WHAT YOU LIKE").

Color of Teeth	Agree	Disagree
No/small problems	34.6	65.4
Rather great/great problems	28.3	71.7

demonstrates the distribution of answers to the fourth statement (Table 8).

DISCUSSION

The first hypothesis of the study was based on the rapidly increasing interest in dental esthetics, and it was thought that the younger

subjects would be more sensitive to statements on the importance of dental appearance than the older ones. In contrast to this hypothesis, the 60-year-olds emphasized the importance of dental appearance more than the 50-year-olds for the first three statements. For the fourth statement, there was no age

difference among the men, whereas the 50-year-old women considered dental appearance more important than the 60-year-old women, in accordance with the hypothesis. It is possible that the attitudes would have differed more if the age difference had been greater, for example, between 20- and 60-year-old subjects. This would be of interest to investigate.

The 60-year-old subjects were born in 1942, during the World War II, which stretched the economy of the country. During the childhood of these subjects, dental health was, in general, poor, and their parents usually had lost teeth replaced by removable dentures. Both country and family economy improved rapidly after the war, and the situation was quite different already in 1952, when the 50-year-olds were born. Not only the different age, but also the varying experiences from childhood and adolescence to adulthood for these two birth cohorts, might partly explain the differences in attitudes toward dental appearance found between 50- and 60-year-olds.

The second hypothesis was based on the common belief that women are more interested in their appearance than men are, and that this would also apply to dental appearance. However, this hypothesis had to be rejected for the first two statements because the men emphasized

the importance of dental appearance more than the women. For the last two statements, the women were more sensitive to deficiencies in dental appearance, consistent with the hypothesis.

The great majority of those who answered the questions agreed that beautiful and perfect teeth are very important in how you are treated by other people. This supports the findings of an experimental study using computer-aided manipulation of images to ascertain the influence of visible dental decay on the subjective ratings of personal characteristics. In comparisons between individuals with and without dental decay, the participants judged those without decay to be more socially competent, show greater intellectual achievement, and have better psychological adjustment.¹³ There seems to be universal agreement on the importance of dental appearance. In a study performed in six countries, approximately 95% of the participants answered "very important" or "important" to the question "How important is the appearance of your teeth to you?"¹⁹

There was wide variation in the answers to the statement "A tooth loss that is visible is something to be ashamed of" (Figure 3). It might be of interest to compare these results with those regarding the need and demand of replacement of

lost teeth. A study of the attitudes of male Saudi patients toward replacement of lost teeth demonstrated that subjective perceptions of esthetic and functional treatment needs were highly variable.¹⁶ Several studies have shown relatively low levels of agreement between the patients' perceived need and the dentists' recommendation of treatment.^{14-17,25,26} The varying attitudes found in the present study are thus consistent with previous findings.

Statements 2 and 4 tried to explore opinions on the relative importance of esthetics versus function. The results were seemingly divergent. However, it should be noted that the wording of the statements was quite different. Approximately 90% agreed that minor esthetic imperfections of the teeth have no importance; they only have to function well. On the other hand, less than 25% agreed with the statement that it does not matter how you look; only that you can chew what you like. Most people obviously consider that there are limitations of esthetic imperfections that can be accepted. Women were more critical to the statement than the men were, which is consistent with a study assessing the preference between appearance and function: more women (30%) than men (18%) preferred beautiful to functional teeth.¹⁸

In this context it would be appropriate to discuss whether the results

of the present study of individuals living in Sweden would apply to similar aged populations in other countries. As demonstrated in this study, many background factors are important for the attitudes toward dental appearance. For example, differences in culture, education, economy, traditions, and dental care systems between various countries might result in still greater variation in attitudes. Related issues were investigated in an international study, and both similarities and differences were found.¹⁹ Three quarters of participating dentists, dental technicians, and patients in that study judged good function of teeth as more important than beautiful teeth. However, there were differences between the professional groups and the patients as well as between countries and between centers in the same country. Also in the present study, the country of birth was associated with the attitude toward the importance of dental appearance (Table 4). After extensive immigration during the last decades, approximately 20% of people living in Sweden today were born in other countries. It would be of interest to conduct a similar study in other countries.

Even if the attitude differences between the 50- and 60-year-old subjects as well as between women and men were relatively small, practically all of them were statistically significant. The sample size

has a great influence on the analyses, and since given that these samples are large, the statistical *p* level was set as high as 1%.

The logistic regression analyses indicated significant associations between several variables and the answers to the four statements, although most of them exhibited low OR. Besides the age and gender differences described above, people with low education agreed more with two of the four statements than those with higher education (Tables 6 and 7). Self-assessment of dental problems was associated with attitudes toward all four statements. Not surprisingly, people who reported problems with spacing and color of their teeth assessed dental appearance as more important than those without these dental problems (Table 4). It was striking that those without such dental problems agreed more with the statements that function was more important than appearance than those who had such dental problems (Tables 5 and 7). Those who reported that they had to refrain from dental care because of economic problems agreed more with the statements regarding the importance of dental appearance than those without this problem (Tables 4 and 6). These findings suggest that attitudes toward the importance of dental appearance show great individual variation and are related to many different background variables including self-assessed

dental problems. This should be considered in clinical decision-making.

CONCLUSIONS

There were several significant differences between women and men as well as between 50- and 60-year-old subjects regarding attitudes toward the importance of dental appearance. However, the great majority of the responders agreed that beautiful and perfect teeth are very important for how you are treated by other people. Regarding the relative importance of esthetics and function, approximately 90% considered that minor esthetic imperfections of the teeth have no importance, only they function well. Logistic regression indicated that several background factors could influence attitudes toward the importance of dental appearance. Besides age and gender, education and self-assessed dental problems were most important. The study was performed on subjects living in Sweden five years ago, and it remains to be investigated how well the results apply to current populations in other countries.

DISCLOSURE

The authors do not have any financial interest in the companies whose products are included in this article.

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