Attitudes to dental health and care among 20 to 25-year-old Swedes: results from a questionnaire

Per Stenberg, Jan Håkansson and Sigvard Åkerman

Department of Oral Diagnosis, Faculty of Odontology, Malmö University, Sweden and National Social Insurance Board of Sweden, Stockholm, Sweden

Stenberg P, Håkansson J, Åkerman S. Attitudes to dental health and care among 20 to 25-year-old Swedes: results from a questionnaire. Acta Odontol Scand 2000;58:102–106. Oslo. ISSN 0001-6357.

During the last 3 decades, large resources have been allocated through the organized dental care system for the improvement of dental health among children and teenagers in Sweden. The aim of this study was to describe attitudes related to dental health and dental care among 20 to 25-year-old Swedes. A random sample of 650 individuals was drawn from the database of the National Social Insurance Board of Sweden. A postal questionnaire comprising 70 questions was delivered to the subjects and the response rate was 78%. A high proportion of the respondents considered themselves to have a high need for dental care. They had a strong conception of being able to influence their own dental health. Quite a few were concerned about their dental health. A high proportion indicated that they were satisfied with their dental function, but fewer individuals were satisfied with the appearance of their teeth. The respondents also reported good reception by their dentists, although opinions differed between the sexes. Women reported a significantly higher degree of discomfort and unease than men. Most respondents had adopted good oral hygiene habits but dental floss was rarely used. The majority of subjects indicated that they attended dental examinations on an annual basis. There is a need for further investigation into patients' attitudes to dental health and dental care. It is important to understand the significance patients attach to different concepts in the dental treatment. This would enhance our understanding of how the concept of felt need is expressed and transformed into demand for care. □ *Attitudes; dental health; oral hygiene; social psychology; young adults*

Per Stenberg, Department of Oral Diagnosis, Faculty of Odontology, Malmö University, Carl Gustafs väg 34, SE-214 21 Malmö, Sweden. E-mail. Per.Stenberg@OD.mah.se

During the last 3 decades, large resources have been allocated through the organized dental care system for improvement of dental health among children and teenagers in Sweden. The objective of these services can be described as equal distribution and economic efficiency (1). Equity is provided through the county authorities, who are responsible for the provision of dental care free of charge to patients up to the age of 20. Today, approximately 1.7 million children and adolescents throughout the country are examined and treated every year in the public dental care system.

Clinical dental examinations also include information about dental health and training in preventive procedures, thus influencing attitudes and behavior among young people. Socially and economically, the early years of adulthood form a period of transition from dependence on parents to independence as grown-ups, a period of life which can be crucial to dental health. Such an event as leaving home, accompanied by social instability and an unsecured economy, may be a reason for postponing dental examinations which could jeopardize oral health. Jälevik et al. (2) have shown that adolescents not attending examinations or making late cancellations had below average dental health. They conclude that non-attendance seemed to be a further risk factor for caries. Attendance for clinical examination might also be influenced by attitudes to dental health and dental care. Despite the resources invested, little information is available about attitudes to dental care among patients in the years following the organized free dental care. A person's attitudes are defined by cognitive, affective, and behavioral components. The cognitive component represents the person's beliefs and knowledge, the affective component the strength of their beliefs, and the behavioral component their readiness to act to a certain object or situation (3). Thus, attitudes to dental care could be defined, for example, by self-assessment of one's dental health (cognitive), concerns about one's dental health (affective) and the inclination to attend for regular dental examination (behavioral).

The aim of this study was to describe cognitive, affective, and behavioral components related to dental health and dental care among 20 to 25-year-old Swedes.

Material and methods

A random sample of 650 individuals aged between 20 and 25 years and registered as living in Sweden during 1995 was drawn from the database of the National Social Insurance Board of Sweden, which comprises the whole Swedish population aged 16 and older. Background variables such as age, sex, place of residence, and income were obtained from the database.

Table 1. Age, mean income, response rate in relation to population density, employment, study, and educational level for respondents (20–25 years) compared to the total population (20–24 years). 1 = the three main cities of Sweden, 2 = other large communities, and 3 = rural. I = comprehensive school, II = upper secondary school, and III = third-level education. Information on national statistics was collected from the Statistical Yearbook of Sweden and Statistics Sweden

	Respondents	Total population in Sweden	*P*	
Number	476	579 466		
Age group	20–25	20–24		
Mean age	23	23		
Mean income	63 258	65 633	0.459	n.s.
Response rate in relation to population density	1: 76%			
	2: 78%			
	3: 79%			
Employment	51%	49%	0.322	n.s.
Study > part-time	35%	33%	0.335	n.s.
Educational level	I: 7%	13%		
	II: 61%	67%		
	III: 32%	19%	<0.001	***

Of the original sample, 11 individuals who were living abroad and 28 who could not be reached due to an unknown address were excluded, thus leaving 611 individuals who make up the final sample. A questionnaire was delivered by mail in June 1996 and reminders were sent out in August and October of the same year. Individuals not responding to the questionnaire were contacted by telephone and asked to reply. The questionnaire was returned by 470 individuals. Six respondents (1 woman and 5 men) answered 7 of the questions in the telephone interview. This brought the total numbers of respondents to 476, i.e. a response rate of 78%, comprising 246 women (52%) and 230 men (48%). Non-respondents comprised 135 individuals (22%); 57 women (42%) and 78 men (58%).

Age, mean income, employment, study, and educational level for respondents and the total population are presented in Table 1. The distribution of response rate in relation to population density is also presented. Mean income in 1995 was SEK 63 300 for respondents in our study and SEK 61 600 for non-respondents, which may be compared to SEK 65 633, which is the mean income for individuals in Sweden aged 20–24 years (4).

The questionnaire contained 70 questions and it was subjected to repeated scrutiny by other colleagues at the faculty. Eighteen of the 70 questions concerned background variables, e.g. country of birth, education, employment, household, general and dental health and some life-style items such as consumption of tobacco and alcohol. The other questions were connected with attitudes to dental health care. Questions considered in this paper are given in Table 2. Cognitive and behavioral factors were assessed using Likert-type scales with 3–7 response alternatives. Visual analog scales (VAS, 100 mm in length) with anchors (5) were used for questions reflecting the affective factors of attitudes. Statistical calculations were performed with using the Statistical Package for the Social Sciences (SPSS). Comparisons between men and women were made by chi-squared tests at a significance level of 5%.

Results

Cognitive components were related to the self-assessment of dental health, such as how many teeth were treated with fillings and how the subjects assessed their dental treatment need at present. There was a positive correlation between increasing number of teeth with fillings and increasing self-estimated need for dental treatment (chi-squared test, $P < 0.001$, Table 3).

Fifty-five percent of the respondents thought it possible to influence their dental treatment to a large extent. The proportion that considered it very important to be able to influence the treatment was larger, 75%. Four-hundred-and-forty-four subjects (95%) considered it possible for everyone or almost everyone to influence their own dental health and thereby avoid further tooth decay.

Table 2. Example of questions from the questionnaire

Cognitive:
How do you rate your dental treatment need today?
How many of your teeth have fillings?
Do you think you can influence the content of your own dental treatment?
Do you consider it important to be able to influence the content of your own dental treatment?
Is it possible to influence one's own dental health, thereby avoiding further decay of teeth?
Affective:
Are you satisfied with the function of your teeth?
Are you satisfied with the appearance of your teeth ?
Are you concerned about your dental health?
How did you experience your latest visit to the dentist?
Behavioral:
How often do you brush your teeth?
Do you use fluoridated toothpaste?
Do you use fluoride tablets or solutions?
How often do you floss your teeth?
Do you use toothpicks?
How often do you consider you ought to see a dentist?
When was your latest visit to a dentist?

Table 3. Respondents' assessment of need for dental treatment, dichotomized into high and low need, in relation to how many filled teeth they estimated they had. Percentages given within parentheses

	How do you rate your dental treatment need today?		
How many of your teeth have fillings?	High	Low	Total
None	5 (11)	39 (89)	44
1–4	36 (27)	99 (73)	135
5–	75 (47)	85 (53)	160
Some, but I do not know how many	26 (28)	68 (72)	94
Total	142 (33)	291 (67)	433

Chi-squared test, $P < 0.001$.

Affective components here relate to the strength of values and experiences for the individuals. There was a difference in how respondents perceived the function and appearance of their teeth in that they reported a greater sense of satisfaction with the function (88%, VAS = 0–33) than with the appearance (59%, VAS = 0–33) of their teeth. Quite a few (24%) also reported considerable concern (VAS = 0–33) about their dental health.

Results concerning experiences from the respondents' latest visit to the dentist, such as experience of pain, discomfort, unease, reception at the clinic and time given for the visit, are listed in Table 4. There was a significantly higher degree of discomfort ($P < 0.001$) and unease ($P < 0.001$) at the latest visit to the dentist among women than among men.

Behavioral components relate to habits that promote dental health. Almost everyone used fluoridated toothpaste (95%), while dental floss was used every day by 7% and sometimes by 54%. Toothpicks were used every day by 4% and sometimes by 41%. Fluoride lozenges were used every day by 6% and every week or month by 29%. Three-hundred-and-ninety-three respondents (85%) reported brushing their teeth once or twice a day and 60 (13%) subjects brushed more than twice a day. Twelve respondents (3%) stated that they brushed their teeth a few times a week or not at all.

Most respondents considered they should attend dental examinations once a year (80%) or every other year (11%), while others (8%) considered they should attend less frequently or did not know how often they ought to attend. The respondents were asked to report the year of their latest visit to the dentist. The age of the individuals at the time of answering the questionnaire was correlated to their age at the latest appointment with their dentist (Table 5).

Discussion

The questions in this survey were constructed by the authors based on clinical experience and knowledge gained from working among young adults. In test and re-test studies of questionnaires, the highest stability for a

Table 4. Distribution for respondents by sex to 6 different alternatives to the question on experiences of latest visit to the dentist. Visual analog scale (VAS). Percentages given within parentheses

VAS	Women			Men			*P*	
How did you experience your latest visit to the dentist?	0–33	34–66	67–100	0–33	34–66	67–100		
Painless – extreme pain	162 (68)	55 (23)	23 (10)	165 (75)	41 (19)	15 (7)	0.226	n.s.
No discomfort – much discomfort	139 (59)	50 (21)	48 (20)	158 (72)	45 (21)	17 (8)	<0.001	***
No unease – great unease	149 (63)	50 (21)	38 (16)	178 (81)	35 (16)	8 (4)	<0.001	***
Good reception – bad reception	197 (84)	31 (13)	8 (3)	182 (83)	30 (14)	9 (4)	0.915	n.s.
Enough time – not enough time	175 (74)	46 (19)	16 (7)	155 (71)	53 (24)	9 (4)	0.248	n.s.

Table 5. Respondent's age in relation to age at latest appointment. Number of respondents. Shaded squares show the figures for the respondent's visit to a dentist within a 2-year period. Percentages given within parentheses

Age at latest visit:	15	16	17	18	19	20	21	22	23	24	25	Total	Visit in 1995 and 1996
Age													
20		1 (1)		3 (3)	54 (61)	31 (35)						89 (19)	85 (96)
21	1 (2)				14 (21)	29 (43)	24 (35)					68 (15)	53 (78)
22			1 (1)		5 (7)	11 (15)	23 (31)	35 (47)				75 (16)	58 (78)
23		1 (1)		3 (4)	2 (3)	5 (7)	9 (12)	29 (38)	28 (36)			77 (17)	57 (74)
24			2 (2)	1 (1)	1 (1)	2 (2)	3 (4)	7 (8)	29 (35)	37 (45)	1 (1)	83 (18)	66 (80)
25		1 (1)				2 (3)		4 (5)	5 (6)	29 (36)	39 (49)	80 (17)	68 (85)
Total	1 (0)	3 (1)	3 (1)	7 (1)	76 (16)	80 (17)	59 (13)	75 (16)	62 (13)	66 (14)	40 (8)	472 (100)	

given answer has been found for questions about facts where a true value could always be found. The same applied to questions that are associated with conditions related to respondents. Low stability was found for questions involving a judgement or the respondent's past experiences. Low stability has also been found for questions with an unspecified time perspective (6). In the present study, respondents had to judge their own oral health and personal experiences of dental care. Such factors can be changed by, for instance, traumatic events. However, the questions in this inquiry were directed to the respondents themselves and were related to experiences from a long period in life and based on annual visits in a stable context (the dental clinic) and may thus be considered reliable.

Background variables for respondents in our study and for the total Swedish population aged 20–24 years have been compared (Table 1). For technical reasons, it has not been possible to compare exactly the same age groups. For four items, respondents do not differ from the background population (mean age, mean income, employment, and study). However, significant differences can be seen for educational level.

In 1995, 33% of the whole Swedish population aged 20–24 years were studying (Table 1). This figure includes upper-secondary and third-level education (e.g. university, adult education college). The percentage of respondents in our study who were engaged in education was equal to the figure for the total population. However, respondents in this study reported a higher educational level compared to the total background population. A tentative explanation would be that people with higher education and low unemployment would be more motivated to answer the questions.

In our study, a fairly high proportion of young people considered themselves to have a great need for dental care, particularly individuals with the highest number of fillings. This is bewildering compared to Swedish epidemiological data, which, on average, indicate a low prevalence of caries and marginal periodontal disease in younger generations. The concept of "felt need" (7) might be relative and dependent among other things on social and psychological factors. Locker and Miller (8) found that young people (18–29 years) reported dental health problems at the same levels, except for ability to chew, as middle-aged and elderly. Matthias et al. (9) report that the DMF score among elderly patients was not as strongly related to self-rated oral health as the single measure of missing teeth and that major predictors of self-rated oral health were "worry about teeth" and "appearance of teeth". Unell et al. (10) found good correspondence between subjective self-reports and clinical findings in 50-year-olds, especially for conditions that are relatively easy for the patient to observe. These results seem to indicate, on the one hand, that felt need must be understood from values of health related to the complex social context and, on the other hand, what is possible for the individual to conceive about his or her own health. In our study, felt need was dependent on the accumulated experience of restorative dental treatment. It would be of interest to understand conceptions of health among younger subjects, since they represent generations that have gained much more than other generations from the social welfare system.

The results in our study indicate that the respondents consider it possible to influence their own dental treatment. However, a high proportion do not think they have such influence. According to our results, most respondents consider it to be important to be able to influence their dental treatment. These results may reflect a paternalistic attitude in the relationship between dentist and patient, where the patient is seen as an object for fulfilment of clinical skills. It is emphasized that all treatment should be given under the concept of "informed consent".

Respondents reported a strong conception of being able to influence their own dental health. In reply to a question similar to ours, 61% of 20-year-old adults stated that they knew how caries started and how it can be prevented (11). Reifel et al. (12) found that strong oral health beliefs among adults aged 35–44 years influenced patient satisfaction.

One reason for a high proportion of respondents indicating satisfaction with the function of their teeth could be a very low frequency of tooth extractions due to dental decay in the permanent dentition (11). Another reason could be the outcome of orthodontic treatment given in the public dental service to all children in need of it in Sweden.

A lower proportion of individuals were satisfied with the appearance of their teeth. This could be related to discolored but also to anomalous teeth. Neither of these factors was specified in detail, but they would probably be more sensitive to external influences such as values prevalent in society or among relatives and friends. It could be an unstable factor over time but of interest if related to the demand for and cost of further treatment.

The respondents' answers indicate good reception by their dentists but there was a gender difference for two items. Hakeberg et al. (13) found that females were significantly more likely to report high dental anxiety than males. Holtzman et al. (14) found that increased fear and anxiety were most apparent among females aged 20–30 years and 40–50 years as compared with older females (60 and older). Liddell and Locker (15) found that women showed more anxiety about pain than men. They argue that gender differences in dental anxiety are likely to be due to differences in the perception and meaning of the painful experiences. In public dental services, large resources are invested in preparing patients for dental examination and treatment from early childhood, but more attention ought to be directed from behavioral towards phenomenological aspects of dental fear.

Much attention in dental care in Sweden has been directed towards establishing good health behavior among patients. As a whole, our study indicates that almost every

respondent had adopted good oral hygiene habits. Hugoson et al. (11) reported values similar to ours for the use of fluoridated toothpaste and toothbrushing as well as using dental floss and toothpicks among 20-year-olds.

The majority of respondents considered they ought to attend dental examinations once or twice a year, which corresponds to what they have been taught in the public dental service. Most respondents in this study had also made their latest visit within 2 years. Hugoson et al. (11) found a high attendance for 20-year-old subjects (93%) and lower attendance (63%) for subjects aged 30. The high attendance rate at 20, also found in the present study, could be explained by the dental care being free of charge, but the fluctuation in early adulthood might be due to a changing life situation, e.g. studies and leaving the parental home. It could also be related to a period of unemployment. These years could for many reasons be crucial for individuals at risk. Prospective studies should place emphasis on dental health behavior and dental status among young adults.

One important finding in this study is the homogeneity in the way respondents express their attitudes. We would point out, however, that a higher proportion consider their dental treatment need to be high or very high. This study reflects that there is a need for further investigation of patients' attitudes to dental health and care. It is important to understand the significance patients attach to different concepts in the dental treatment. This would enhance our understanding of how the concept of need is expressed and transformed into demand for care.

Acknowledgements.—This study has been supported financially by a grant from the Swedish Council for Social Research.

References

1. Holst D, Schuller A, Grytten J. Future treatment needs in children, adults and the elderly. Community Dent Oral Epidemiol 1997;25:113–8.
2. Jälevik B, Sjöström O, Norén JG. Evaluation of three years of dental care of adolescents in the Public Dental Service in west Sweden. Swed Dent J 1999;23:141–8.
3. Myers DG. Social psychology, 6th ed. Boston: McGraw-Hill College; 1999.
4. Statistical Yearbook of Sweden 1999. Stockholm: Statistics Sweden; 1999.
5. Gift AG. Visual analogue scales: measurement of subjective phenomena. Nurs Res 1989;38:286–8.
6. Wikman A, Wärneryd B. Measurement errors in survey questions: explaining response variability. Soc Indicators Res 1990;22:199–212.
7. Sheiham A, Maizels JE, Cushing AM. The concept of need in dental care. Int Dent J 1982;32:265–70.
8. Locker D, Miller Y. Subjectively reported oral health status in an adult population. Community Dent Oral Epidemiol 1994; 22:425–30.
9. Matthias RE, Atchison KA, Lubben JE, De Jong F, Schweitzer SO. Factors affecting self-ratings of oral health. J Public Health Dent 1995;55:197–204.
10. Unell L, Söderfeldt B, Halling A, Paulander J, Birkhed D. Oral disease, impairment, and illness: congruence between clinical and questionnaire findings. Acta Odontol Scand 1997;55:127–32.
11. Hugoson A, Koch G, Bergendal T, Hallonsten AL, Slotte C, Thorstensson B, et al. Oral health of individuals aged 3–80 years in Jonkoping, Sweden in 1973, 1983 and 1993. I. Review of findings on dental care habits and knowledge of oral health. Swed Dent J 1995;19:225–41.
12. Reifel NM, Rana H, Marcus M. Consumer satisfaction. Adv Dent Res 1997;11:289–90.
13. Hakeberg M, Berggren U, Carlsson SG. Prevalence of dental anxiety in an adult population in a major urban area in Sweden. Community Dent Oral Epidemiol 1992;20:97–101.
14. Holtzman JM, Berg RG, Mann J, Berkey DB. The relationship of age and gender to fear and anxiety in response to dental care. Spec Care Dentist 1997;17:82–7.
15. Liddell A, Locker D. Gender and age differences in attitudes to dental pain and dental control. Community Dent Oral Epidemiol 1997;25:314–8.

Received for publication 5 July 1999
Accepted 10 April 2000