Attitudes and lifestyle factors in relation to oral health and dental care in Sweden: a cross-sectional study

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ABSTRACT

Objective: The aim of the present study was to investigate attitudes to and perceptions of dental treatment and costs, self-assessed personal oral health status and dental self-care in an adult Swedish population, with special reference to potential associations between these factors and periodontal status.

Material and methods: The study population comprised 1577 subjects who had undergone radiographic dental examination. The subjects were grouped by severity of periodontitis, based on extent of bone loss, as none, mild/moderate or severe. Subjects answered a questionnaire about socioeconomic factors, oral care habits and attitudes to dental treatment. Other questions covered medical history, smoking and other lifestyle factors. Associations were tested using the Chi-squared test and a logistic regression model.

Results: Compared to subjects with no periodontitis, those with mild/moderate or severe periodontitis were less likely to afford (p < .001), more often refrained from treatment due to costs (p < .001) and in the past year had experienced dental problems for which they had not sought treatment (p < .001). They also reported more anxiety in relation to dental appointments (p = .001). Regarding caries prevention, the severe periodontitis group used least fluoride products (p = .002).

Conclusions: Swedish adults regard their oral health as important, those with periodontitis have a more negative perception of their oral health and are less prone to seek help. These discouraging findings suggest the need for targeted measures, which focus on improving the care of this group of patients.

Introduction

During the last 45 years, surveys on dental health and attitudes to dental health in Sweden have focussed primarily on dental status, such as edentulousness, caries and periodontal disease [e.g.1–4] and more seldom on, perception, dental care cost, consumption, and attitudes [5]. Over time, oral health has improved in all age groups and is now considered to have reached a good level [4,6,7].

Several of these surveys have used validated self-reported questionnaires to study epidemiology, oral health status, risk patterns of disease and attitudes to dental and general health, producing results which are reflective of the oral conditions of the respondents [8–10]. In addition to showing the possible association between oral health and general health in individuals, the surveys indicated that poor oral health and dental neglect could also have implications for the community, such as absence from work due to pain and discomfort [11–13].

In 1974, Sweden introduced a national dental insurance system which entitled every citizen to subsidized dental care, including prevention, a feature unique to Sweden at this time. Under this system, dental care became affordable for most of the adult population [14]. However, dental insurance cover in Sweden has since been reduced and in 1999, it was replaced with a subsidized national dental support system. This system has later been altered in favour of more support for younger and older adults [15]. However, as a result of inflation and price increases, the subsidized dental care system has been eroded. This may discourage the adult population from seeking advanced dental care: in particular, those in lower socioeconomic groups might refrain from dental treatment even though they may need it [16,17]. In the long run, failure to maintain oral health may also have a negative effect on cardiovascular health, diabetes mellitus and respiratory diseases revealed in several studies [18–22]. In fact, in spite of the subsidized dental care system provided in Sweden, the differences...
regarding dental health have remained relatively stable between different groups in the society [23]. Especially those who are higher and better educated choose more expensive dental care compared to others [24].

The aim of the present study was to investigate attitudes to and perceptions of dental treatment and costs, self-assessed personal oral health status and dental self-care in an adult Swedish population, with special reference to potential associations between these factors and periodontal status.

Methods

Study design

This cross-sectional analysis is based on data collected in the case-control study Periodontitis and Its Relation to Coronary Artery Disease (PAROKRANK) [18]. Study participants were recruited from May 2010 to February 2014 at 17 Swedish hospitals. A detailed description of the study design has been published previously [18]; aspects of particular relevance to this study are described below.

Study population

The study participants, were recruited from the PAROKRANK study, both patients and controls. Patients were <75 years old and diagnosed, in accordance with international diagnostic guidelines [25,26], as having suffered a first myocardial infarction (MI). Exclusion criteria were previous heart valve replacement, any conditions limiting the subject’s ability to participate in the study, or unwillingness to participate. Controls were age, gender and geographically matched to the patients. To be considered eligible, the controls were required to be free from prior MI or heart valve replacement and willing to participate in the investigation. Patients were recruited during their hospital stay or soon after discharge. Appointments at the local cardiology outpatient clinic and the dental clinic were scheduled within 6–10 weeks of hospital discharge. Controls, matched for gender, age and geographical area, were selected from the national population registry and their appointments at the department of cardiology and the dental clinic were scheduled in close proximity to those of the matched patients.

Data collection

Data were collected from physical examination at the cardiology out-patient clinic, from oral examination at the dental clinic and by means of an extensive questionnaire.

The National quality registry SWEDEHEART [27], modified to comply with the study demands, was used to collect the patients’ medical information at time of hospitalization. Corresponding information, collected for the control population, were entered into a separate database.

Analogue or digital panoramic radiographs were taken from both dentate and edentulous subjects at the local centres. All images were analysed at the Department of Dental Medicine, Karolinska Institutet Huddinge, by means of a computer programme, ImageJ (Image Tool 3.0 software programme, Department of Dental Diagnostics Science, University of Texas Health Science Center, Austin, Texas, USA) in a darkened room and with a high-resolution computer monitor. The central evaluation was undertaken by three dentists trained in the use of the equipment and blinded as to whether the radiographs were from a patient or a control subject.

Measurements were made from the marginal bone crest to the tooth apex (representing total bone height) and from the cemento-enamel junction to the tooth apex (representing total root length) on the mesial and distal of each tooth [18]. Each tooth was measured at the site with the most pronounced bone loss according to a standardized protocol. For each patient, the arithmetic mean was calculated from the total root length and bone height, which was used as a measure of the proportion of remaining bone height supporting each tooth. Measurements were made of all teeth with visible cemento-enamel junctions and visible apices. Dental implants were excluded.

All study participants filled out a questionnaire which included detailed questions about oral health, such as dental care habits, frequency of and reason for visits to the dentist, their ability to pay for dental care, awareness of personal oral health and their understanding of the importance of oral health [18]. The questionnaire also covered family history of cardiovascular disease, current and earlier medical history, diet, smoking habits, socioeconomic factors and levels of physical activity at work and at leisure. The questionnaires were administered at the visit at the cardiology outpatient clinic and the dental care unit, 6–10 weeks after hospital discharge for the patients and at the time of examination of the controls.

Variables and statistics

The main exposure variable was periodontitis, graded according to severity on a three-point scale: healthy (≥80% remaining bone); mild to moderate periodontitis (79–66%); and severe periodontitis (<66%). For inter-individual calibration purposes, 42 randomly selected panoramic radiographs were examined and graded by three dentists, i.e. 126 separate observations. The correlation between dentist 1 and 2 was 0.95, between 1 and 3 0.90 and between 2 and 3 0.90 (Kappa value 0.82).

Outcomes on perceptions and attitudes were based on questions categorised into four different themes (dental health care, dental costs, personal oral health and dental self-care). Questions where the study participants had stated how important they found certain aspects of interest, ‘somewhat important’ or ‘very important’ have both been categorised into ‘important’ for analyses. Proportional differences between exposure groups in all themes were analysed using the Chi-squared test. Analyses of attitudes to dental health care and personal oral health also included a logistic regression model to control for potential confounding factors. The model included the question as a dichotomous dependent variable. If the question had more than two
potential answers, each was used to construct a dichotomous dummy variable for each analysis. In the unadjusted analyses, the model also included the periodontitis groups modelled as dichotomous dummy variables. The adjusted model also included sex, age (≤ 65 or > 65 years), myocardial infarction (case or control in the initial study), educational level (college/university education or not) and smoking (before the MI for patients) (current, previous or never, modelled as dichotomous dummy variables).

A two-sided p-value < .05 was considered to be statistically significant, as well as Odds Ratios with corresponding 95% confidence intervals not including 1. All statistical analyses were performed using Stata 12 SE (StataCorp LLC, College Station, Texas, USA).

**Ethical approval**

The PAROKRANK study was approved by the Regional Ethics Committee at Stockholm (Dnr:2008/152-31/2) before the study, and all patients provided written informed consent. PAROKRANK was conducted according to the principles outlined in the Helsinki Declaration.

**Results**

Of the 1610 subjects included in the study, 1577 had a radiographic diagnosis of the degree of periodontitis; 988 (63%) were diagnosed with no periodontitis, 492 (31%) had mild/moderate and 97 (6%) severe periodontitis. The age of the subjects ranged between 28 and 75 years and the study sample included 1283 (81%) men. Table 1 presents the clinical characteristics of the study population for whom the degree of periodontitis was determined. Of those subjects for whom information about the severity of periodontal disease was unavailable, 16 were edentulous and 17 had not completed the radiographic examination. All included subjects had completed the questionnaire.

**Perceptions of dental health care**

Perceptions of dental healthcare are presented as proportional differences in Table 2 and in a regression analysis in Figure 1. Most subjects, 1492 (97%) had visited a dentist or dental hygienist within the last 3 years. With respect to frequency of dental appointments, there were no differences among the periodontitis groups. Those with severe periodontitis visited the dentist most frequently, 31% (n = 321) and 14% (n = 135) respectively (p < .001) for the mild/moderate and no periodontitis groups. Experiencing discomfort in association with a dental appointment was almost twice as common in the severe periodontitis group as in the other groups.

A majority, 1223 (78%) considered it important to have continuity of treatment by the same dentist and those with mild/moderate periodontitis were most likely to find it important. However, the significant difference did not persist in a multivariate analysis (p = .054). Attendance at public dental clinics was most common in the severe periodontitis group (50%, n = 48) compared to the other groups (no periodontitis 33%, n = 321) and mild/moderate (29%, n = 142).

An appointment with a dental hygienist due to tooth or gum problems or to improve the appearance of the teeth (cosmetic dentistry) was most common in the severe

| Table 1. Study population characteristics. | No periodontitis n = 988 | Mild/moderate periodontitis n = 492 | Severe periodontitis n = 97 | p-Value |
|------------------------------------------|--------------------------|-----------------------------------|-----------------------------|---------|
| Age (years) | 62 (55–67) | 66 (62–69) | 64 (60–67) | < .01 |
| < 65 years | 680 (69) | 224 (46) | 61 (63) | < .01 |
| Male gender | 825 (84) | 388 (79) | 70 (72) | < .01 |
| Myocardial infarction | 458 (46) | 261 (53) | 66 (68) | < .01 |
| Body mass index (kg/m²) | 26 (24–29) | 27 (24–29) | 27 (23–31) | < .01 |
| Number of teeth | 28 teeth | 287 (58) | 19 (20) | .01 |
| ≥ 24 teeth | 859 (87) | 278 (56) | 19 (20) | < .01 |
| 12–23 teeth | 118 (12) | 177 (36) | 54 (56) | < .01 |
| < 12 teeth | 11 (1) | 28 (6) | 24 (25) | < .01 |
| Cavities | 157 (16) | 93 (19) | 29 (30) | < .01 |
| Education | 1–12 years | 595 (60) | 330 (68) | 76 (79) | < .01 |
| University | 390 (40) | 159 (33) | 20 (21) | < .01 |
| Occupation | Work | 589 (60) | 177 (36) | 38 (40) | < .01 |
| Retired | 348 (35) | 277 (56) | 40 (42) | < .01 |
| Other | 51 (5) | 38 (8) | 18 (19) | < .01 |
| Marital status | Married/partner | 783 (79) | 373 (76) | 64 (67) | .01 |
| Single | 101 (10) | 46 (9) | 16 (17) | .01 |
| Separated/Widowed | 103 (10) | 73 (15) | 16 (17) | < .01 |
| Smoking | Never | 475 (48) | 145 (30) | 7 (7) | < .01 |
| Former | 443 (45) | 285 (59) | 56 (58) | < .01 |
| Current | 67 (7) | 55 (11) | 33 (34) | < .01 |
| Alcohol consumption | ≤ 2 times/week | 792 (80) | 404 (82) | 80 (82) | .65 |
| > 3 times/week | 193 (20) | 87 (18) | 17 (18) | .65 |
| Physically active | 780 (79) | 383 (78) | 72 (74) | .51 |

Data presented as median (1st-3rd quartile) or number (%).
periodontitis group. There were no intergroup differences with respect to reasons for visiting a dentist.

Attitudes towards costs of dental care

Participants with severe periodontitis reported that they, even in the presence of dental problems, had to refrain from dental care to a higher degree than those in the other groups (Figure 2). Only 53% (n = 51) of those with severe periodontitis said they could afford complete dental care including an oral examination, dental hygiene treatment and restoration with a dental crown, compared with 82% (n = 808) in participants with no periodontitis and 76% (n = 371) with mild/moderate periodontitis.

| Table 2. Perceptions of dental health care. |
|-------------------------------------------|
|                                           |
| **No periodontitis** (n = 988)            |
| **Mild/moderate periodontitis** (n = 492) |
| **Severe periodontitis** (n = 97)         |
|                                           |
| Had a dentist appointment in the last 3 years | 921 (96) | 450 (96) | 83 (98) | 0.70 |
| Had a dental hygienist appointment in the last 3 years | 665 (92) | 342 (92) | 63 (93) | 0.96 |
| Find it uncomfortable to visit the dental office | 209 (22) | 101 (21) | 37 (38) | <0.01 |
| It is important to                        |
| Always visit the same dentist             | 740 (75) | 410 (84) | 73 (75) | <0.01 |
| Always visit the same physician           | 765 (77) | 420 (86) | 88 (91) | <0.01 |
| Visit the hairdresser regularly           | 549 (56) | 302 (62) | 52 (54) | 0.05  |
| Reason for last appointment with a dentist |
| Was summoned                              | 728 (82) | 362 (83) | 67 (80) | 0.74  |
| Routine check-up                          | 725 (82) | 360 (81) | 59 (77) | 0.53  |
| Tooth ache                                | 75 (10)  | 46 (12)  | 14 (18) | 0.05  |
| Problem to chew                           | 49 (6)   | 31 (8)   | 7 (9)   | 0.39  |
| Other tooth problems                      | 172 (21) | 90 (23)  | 24 (30) | 0.18  |
| Improve appearance of teeth               | 56 (7)   | 34 (9)   | 8 (11)  | 0.40  |
| Reason for last appointment with a dental hygienist |
| Was summoned                              | 637 (83) | 313 (81) | 67 (84) | 0.55  |
| Routine check-up                          | 542 (78) | 273 (77) | 46 (68) | 0.16  |
| Problems with teeth/gums                  | 79 (12)  | 60 (18)  | 25 (35) | <0.01 |
| Improve appearance of teeth               | 31 (5)   | 24 (8)   | 9 (14)  | 0.01  |
| Type of dental office visited             |
| Public dental care                        | 321 (33) | 142 (29) | 48 (50) | <0.01 |
| Private dental care                       | 626 (64) | 316 (64) | 39 (40) | <0.01 |
| Other                                     | 35 (3)   | 34 (7)   | 9 (10)  | <0.01 |

Data presented as numbers (%).
Perceptions of personal oral health

Perceptions of the study participants’ personal oral health are presented in Tables 3 and 4. The vast majority, 1533 (97%) stated that it was important to have a fixed dentition. However, those with severe periodontitis considered it less important than those in the other groups. The importance of being able to chew all types of food or not to have visible gaps between teeth did not differ between groups. Those with severe periodontitis were more likely to think that they had bad teeth and reported more sore and bleeding gums and problems chewing food than the other groups. A majority of participants considered their oral health to be comparable with that of their contemporaries with no intergroup differences.

The mild/moderate periodontitis group had somewhat more negative attitudes to or perceptions of their own oral health. Those with severe periodontitis had negative attitudes to or perceptions of most topics (Tables 3 and 4).

Habits and perceptions of dental self-care

Habits and perceptions of dental self-care are presented in Table 5. Most participants (98%, n = 1581) claimed that they brushed their teeth at least once daily, though those with severe periodontitis reported somewhat less frequent brushing. Those with any degree of periodontitis were more prone to use interproximal cleaning aids several times a week than those with no periodontitis. Fluoride toothpaste was used by most participants. The use of complementary fluoride products to prevent caries was however, less common in the severe periodontitis group.

Discussion

The main findings in this study were that: (1) Swedish adults regard their oral health as important and regularly attend dental health care services; (2) subjects with periodontitis had more negative perceptions of their oral health and dental health care; (3) there was a negative association between poor socioeconomic standards and poor oral health.

Independent of dental status a majority of subjects stated that it was important to be able to chew all food. Those with periodontitis, particularly if severe, reported more problems with chewing. Since periodontitis as well as tooth loss influences the chewing ability, this might have contributed to that subjects with periodontitis were less pleased with their oral health. The result remained after adjustment for socioeconomic factors making it unlikely to be coincidental. Taking the inability to pay for dental care into account, as reported by the subjects with periodontitis, it seems likely that the differences between participants with and without periodontitis would be less if the former were provided with improved economic possibilities to access dental care. A reasonable assumption is, that having poor socioeconomic status will have worse consequences if you have periodontitis but that the availability of subsidized dental care in Sweden, somewhat reduces those negative effects. It may then be seen as contradictory that participants in the severe periodontitis group were less prone to consider it important to have their teeth taken care of. That attitude might lead one to speculate that they, to some degree, have accepted their oral health state contributing to why the differences in self-reported oral health was not larger between groups. That patients with severe periodontitis had a worse economic situation fits well with the finding that more than a third of them had refrained from dental care in the last year and that...
have fixed teeth ref
Be able to chew all kinds of food
Have no visible gaps between tooth
Do you think you have good or bad teeth?
Good
Neither good nor bad
Bad
How do you consider your oral health compared to those in the same age as you?
Better
Neither better nor worse
Worse
Do you have sore and bleeding gums?
Yes
Yes, but only when brushing teeth
No
Can you chew hard food like an apple or crisp bread?
Yes, well
Yes, but poorly
No, avoid hard food
It is important to...

Table 3. Perception of personal oral health.

|                      | No periodontitis (n = 988) | Mild/moderate periodontitis (n = 492) | Severe periodontitis (n = 97) | p-Value |
|----------------------|----------------------------|--------------------------------------|------------------------------|---------|
| n        | %    | n        | %    | n        | %    |         |
| Have fixed teeth    | 969 (98) | 476 (97) | 88 (91) | <0.01  |
| Be able to chew all kinds of food | 980 (99) | 480 (98) | 95 (98) | 0.11 |
| Have no visible gaps between tooth | 831 (84) | 401 (82) | 74 (76) | 0.11 |
| Good                 | 457 (46) | 151 (31) | 10 (10) | <0.01  |
| Neither good nor bad | 430 (44) | 260 (53) | 46 (47) | <0.01  |
| Bad                  | 101 (10) | 81 (16) | 41 (42) | <0.01  |

Table 4. Personal oral health.

|                      | No periodontitis | Mild/moderate periodontitis | Severe periodontitis | OR 95% CI | OR 95% CI | OR 95% CI | p-Value |
|----------------------|------------------|-----------------------------|----------------------|----------|----------|----------|---------|
| Important to..        |                  |                             |                      |          |          |          |         |
| have fixed teeth     | ref              | 0.67 (0.33 1.34)            | 0.68 (0.32 1.42)     | 0.19*    | 0.08 0.44 0.29* | 0.12 0.71 |
| chew all food        | ref              | 0.39* (0.15 1.00)           | 0.34* (0.13 0.92)    | 0.39*    | 0.08 1.85 0.32 | 0.06 1.70 |
| have no visible tooth gaps | ref              | 0.87 (0.65 1.15)            | 0.76 (0.56 1.03)     | 0.60*    | 0.37 0.99 0.58 | 0.34 1.00 |
| Have good teeth..    |                  |                             |                      |          |          |          |         |
| Good                 | ref              | 0.51* (0.41 0.65)           | 0.56* (0.44 0.72)    | 0.13*    | 0.07 0.26 0.16* | 0.08 0.32 |
| Neither good or bad  | ref              | 1.45* (1.17 1.81)           | 1.32* (1.05 1.66)    | 1.17*    | 0.77 1.78 1.10 | 0.71 1.72 |
| Bad                  | ref              | 1.73* (1.26 2.37)           | 1.76* (1.26 2.45)    | 6.43*    | 4.09 10.11 5.30* | 3.24 8.67 |
| Your teeth compared to those of the same age |                  |                             |                      |          |          |          |         |
| Better               | ref              | 0.83 (0.65 1.05)            | 0.90 (0.69 1.17)     | 0.35*    | 0.18 0.67 0.52 | 0.26 1.01 |
| Neither better or worse | ref              | 0.96 (0.77 1.20)            | 0.87 (0.69 1.11)     | 1.31*    | 0.81 2.12 1.04 | 0.62 1.73 |
| Worse                | ref              | 1.79* (1.24 2.59)           | 1.86* (1.26 2.75)    | 2.98*    | 1.62 5.50 2.26* | 1.17 4.35 |
| Sore and bleeding gums |                  |                             |                      |          |          |          |         |
| Yes                  | ref              | 1.90* (1.21 2.98)           | 1.94* (1.20 3.12)    | 3.48*    | 1.80 6.74 3.36* | 1.64 6.88 |
| Yes, only when brushing teeth | ref              | 0.88 (0.69 1.13)            | 0.93 (0.72 1.20)     | 1.04*    | 0.66 1.64 0.94 | 0.58 1.53 |
| No                   | ref              | 0.96 (0.76 1.20)            | 0.90 (0.71 1.15)     | 0.65*    | 0.43 1.00 0.72 | 0.46 1.12 |
| Can chew hard food   |                  |                             |                      |          |          |          |         |
| Yes, well            | ref              | 0.36* (0.22 0.57)           | 0.38* (0.23 0.62)    | 0.07*    | 0.04 0.12 0.07* | 0.04 0.13 |
| Yes, poorly          | ref              | 2.70* (1.64 4.44)           | 2.49* (1.47 4.21)    | 13.41*   | 7.55 23.80 11.75* | 6.23 22.16 |
| No                   | ref              | 3.38 (0.80 14.21)           | 3.97 (0.89 17.75)    | 14.11*   | 3.11 63.99 21.12* | 3.75 119.09 |

Data presented as numbers (%).

Unadjusted and adjusted (adjusted for sex, age, myocardial infarction (case or control in the initial study), educational level and smoking) odds ratios with 95% confidence intervals. *Indicates significant associations.

a fifth had refrained due to economic reasons despite reporting dental problems. Unfortunately, these proportions are higher than those reported in a previous study, performed almost 15 years ago [28].

Patients with severe periodontitis were more likely to feel uneasy at the dental office. Dental fear is known to cause patients to abstain from dental appointments, adding to the unfavourable economic conditions [29]. In the sample of patients involved in the current study, reasons for dental fear or anxiety were not studied. However, after adjusting for relevant confounding factors, the difference was still apparent and could not be explained by socioeconomic differences. This finding is supported by a previous Swedish investigation that did not find any association between dental fear and socioeconomic status [30]. Presumably, previous traumatic experiences of dental care and fear of pain contribute. Whatever the reason is, this finding adds to an already suboptimal relation between severe periodontitis and dental care.

With regard to caries prevention, we found that patients with severe periodontitis avoided fluoride to a significantly higher extent than those with moderate or no periodontitis. This indicates that individuals that are the most affected, are less likely to follow instructions and prescriptions from dental health care personnel, further increasing the risk for other dental problems.
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Table 5. Habits and perceptions of dental self-care.

|                          | No periodontitis (n = 988) | Mild/moderate periodontitis (n = 492) | Severe periodontitis (n = 97) | p-Value |
|--------------------------|---------------------------|--------------------------------------|-------------------------------|---------|
| How often do you brush your teeth?  |                          |                                      |                               |         |
| Several times a day      | 805 (82)                  | 391 (79)                             | 64 (67)                       | <0.01   |
| Once a day               | 174 (18)                  | 90 (18)                              | 28 (29)                       | 0.02    |
| Every second day or less | 8 (1)                     | 11 (2)                               | 4 (4)                         | <0.01   |
| How often do you use interproximal cleaning aids? | |                                      |                               |         |
| Daily                    | 375 (38)                  | 271 (55)                             | 56 (58)                       | <0.01   |
| Every second day         | 196 (20)                  | 85 (17)                              | 9 (9)                         | 0.03    |
| Once a week or less      | 345 (35)                  | 110 (22)                             | 21 (22)                       | <0.01   |
| Never                    | 72 (7)                    | 26 (5)                               | 11 (11)                       | 0.07    |
| Describe your use of tooth paste |                          |                                      |                               |         |
| With fluoride            | 956 (97)                  | 475 (97)                             | 87 (90)                       | <0.01   |
| Without fluoride         | 28 (3)                    | 16 (3)                               | 9 (9)                         | <0.01   |
| Don’t use tooth paste    | 3 (0)                     | 1 (0)                                | 1 (1)                         | 0.41    |
| Do you use additional fluoride products? | 244 (25)                  | 135 (27)                             | 13 (14)                       | 0.02    |

Data presented as numbers (%).

Strengths and weaknesses

The strict and valid definition of periodontitis, based on clinical examination instead of self-reported data, is a strength in the present study. A British study [31] found a poor association between self-assessment and clinical examination, except for bleeding gums where they found some agreement. The generalizability of the current results to an adult Swedish population seems good as the study population was recruited from 17 different hospitals located all over Sweden. In addition, half of the study population was randomly sampled from the general population while the other half represented patients with a first myocardial infarction. The latter group might have introduced a potential selection bias, however, adjustment for control/patient group did not impact the results.

This study found associations between periodontitis and more negative attitudes towards personal oral health and dental health care. It is possible that these associations were influenced by confounding factors and this was, as far as possible, controlled for in the logistic regression model. Finally, the impact of multiple testing must be taken into account when assessing borderline significant results.

In conclusion, the present study demonstrates that Swedish adults regard their oral health as important, but those with periodontitis have a more negative perception of their oral health and are less prone to seek help than those without periodontitis. This paradoxical association is related to a combination of poor socioeconomic standards and a less well developed health awareness. These discouraging findings should open for targeted measures with a focus on improving the situation for those suffering.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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