

Published in final edited form as:

Eur J Oral Sci. 2014 February ; 122(1): 62–69. doi:10.1111/eos.12096.

A multi-country comparison of reasons for dental non-attendance

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Abstract

The purpose of this study was to describe cross-country differences with respect to the reasons for dental non-attendance by Europeans currently aged 50 yr and older. The analyses were based on retrospective life-history data from the Survey of Health, Ageing and Retirement in Europe and included information about various reasons why respondents from 13 European countries had never had regular dental visits in their lifetimes. A series of logistic regression models was estimated to identify reasons for dental non-attendance across different welfare state regimes. The highest percentage of respondents without any regular dental attendance throughout their lifetimes was found for the Southern welfare state regime, followed by the Eastern, the Bismarckian, and the Scandinavian welfare state regimes. Factors such as patients' perception that regular dental treatment is 'not necessary' or 'not usual' appear to be the predominant reason for non-attendance in all welfare state regimes. Within the Southern, Eastern, and Bismarckian welfare state regimes, the health system level factor 'no place to receive this type of care close to home' and the perception of regular dental treatment as 'not necessary' were more often referred to than in Scandinavia. This could be relevant information for health care decision makers in order to prioritize interventions towards increasing rates of regular dental attendance.

Keywords

dental non-attendance; affordability; health insurance; time constraints; oral health literacy; value of oral health

Regular dental attendance has a positive impact on oral health (1-6). However, access to oral health care, its utilization, and regular dental attendance have been shown to vary considerably within and between populations (7-13). Understanding why people do not seek regular dental attendance is an essential requirement for developing effective health policy interventions in order to optimize population oral health.

In the spirit of a conceptual framework established by ANDERSEN in 1968 (14), need, predisposing, enabling, and system level factors are important determinants of health care

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Conflict of interests

The authors declare that there is no conflict of interests.

use. Thereby, *need* comprises both perceived and objective need for health care services. *Predisposing factors* include immutable characteristics (such as age and sex) as well as potentially mutable characteristics such as health beliefs. For example, previous evidence suggests that attitudes and perceptions about oral health and health care influence dental attendance patterns (15-19). *Enabling factors* relate to individual characteristics that may support or constrain the individual to use health care. Specifically, such parameters include individuals' income (20-23) as well as access to and extent of dental insurance (24-29). *System level factors* relate to the way care delivery is organised in a population. One such important determinant is the geographic distribution of health care providers indicating regional availability of dental services (30-32).

Previous evidence has described the role of individuals' need perception, lack of access to dental services, costs of dental treatment, life experiences such as unemployment, and dental anxiety as determinants for not seeking regular dental attendance (9, 33-35). So far, however, only little is known about the relative importance of various reasons for dental non-attendance across different countries and associated welfare state regimes. A recent study suggests that Scandinavian welfare states, with more redistributive and universal welfare policies, had better population oral health than other welfare state regimes (36). One potential pathway linking welfare state regimes and population oral health is dental care provision. In general, distinction between different welfare state regimes provides the advantage of considering the broader institutional and political determinants of dental care provision rather than considering only specific health system characteristics such as health insurance coverage. Should a lower level of non-attendance be observed in Scandinavia than in the other welfare state regimes, health care decision makers may then be interested in learning more about the underlying reasons for non-attendance most frequently reported by those other welfare states.

The purpose of the present study was to describe variations across various European countries and welfare state regimes with respect to the reasons why individuals have not been seeking any regular dental attendance throughout their lifetimes and – by application of the ANDERSEN (14) model of health services use – to provide a framework for health care decision makers to better tailor programs for improving regular dental attendance within different welfare state regimes.

Material and methods

The present study is based on data from waves 2 and 3 of the Survey of Health, Ageing, and Retirement in Europe (SHARE). SHARE wave 3 (also called SHARELIFE) contains detailed retrospective life-history data of respondents currently aged 50 yr and older from 13 European countries (Denmark, Sweden, Austria, France, Germany, Switzerland, Belgium, the Netherlands, Spain, Italy, Greece, the Czech Republic, and Poland). These data were collected in 2008/2009. SHARE wave 2 was conducted in 2006/2007 and contains detailed information about health, socio-economic conditions, and family backgrounds of the elderly populations in several European countries. SHARE waves 2 and 3 data were collected using computer-assisted personal interviews and self-completed paper & pencil questionnaires. Eligible as participants in SHARE were all household members aged 50 yr and over. More details about the methodology of SHARE and SHARELIFE are available in the literature (37, 38) and on the SHARE Web site (www.share-project.org).

SHARELIFE provides retrospective information about the reasons why persons have not been seeking regular dental attendance throughout their lifetimes. 26,525 study participants currently aged 50+ responded to the question “Have you ever gone to a dentist regularly for check-ups or dental care?” Respondents who answered “no” (n = 8,551) were also asked the

question “What are the reasons [you have never gone / weren't going] to a dentist regularly for check-ups or dental care?” Respondents could reply as per the following answer categories (multiple answers possible), which can be classified as perceived need [N], predisposing factors [P], enabling factors [E], and system level factors [S] according to ANDERSEN's conceptual framework (14):

- Not affordable [E]
- Not covered by health insurance [E]
- Did not have health insurance [E]
- Time constraints [E]
- Not enough information about this type of care [P]
- Not usual to get this type of care [P]
- No place to receive this type of care close to home [S]
- Not considered to be necessary [N]
- Other reasons

For each of the categories [N], [P], [E], and [S], a binary measure was constructed which indicates whether or not respondents chose an answer from the respective category. A further binary measure was constructed for the answer category ‘other reasons’ because the latter cannot directly be classified according to ANDERSEN's framework (14). The aforementioned binary measures were used as dependent variables within multivariate logistic regression models in order to detect variations in the reasons for dental non-attendance according to different welfare state regimes. For this purpose, all regression models include controls for different welfare state regimes as dummy variables. Consistent with recent health policy research (36, 39-43) and for the purpose of this study we have aggregated countries into groups with similar social welfare characteristics. We distinguished between the following welfare state regimes: Scandinavian (Denmark, Sweden), Bismarckian (Austria, Belgium, France, Germany, Netherlands, Switzerland), Southern (Greece, Italy, Spain), and Eastern (Czech Republic, Poland). Note that the Scandinavian welfare state regime was used as omitted reference category in regression analysis. In order to adjust for demographic influences, all models additionally include control variables for respondents' age and sex. Socioeconomic status was controlled for by the following two variables:

- equivalized household income; 1st [lower], 2nd [middle], 3rd [upper] tertile within each country's distribution of current net monthly equivalized income according to the square root approach as applied by the OECD (44); note that observations for which income exceeded one million Euro were excluded from the study sample as statistical outliers
- educational attainment; three categories according to the International Standard Classification of Education (ISCED): (pre-)primary (ISCED scores 0 and 1), secondary (ISCED scores 2 and 3), and post-secondary & tertiary (ISCED scores 4 to 6); see (12) for a detailed description of ISCED

All data analyses were carried out with the software package STATA/SE 12.0 (StataCorp, College Station, TX, USA). The level of statistical significance was set at 5%.

Results

Table 1 shows descriptive statistics for samples comprising respondents with regular dental attendance and respondents without any regular dental attendance throughout their lifetimes. In comparison to the sample of attenders, a significantly higher percentage of men is found among non-attenders. According to income tertiles and ISCED scores, non-attenders rank significantly more often at the lower end of the socioeconomic scale than attenders.

Table 2 presents population percentage of dental non-attendance and of the associated reasons by respondents' country of residence. Non-attendance ranged from more than half of respondents in Greece Spain, and Italy to less than one in ten respondents in Denmark and Sweden. 'Non-necessity' as a reason for non-attendance ranged from about two thirds of respondents in Germany, Italy, Spain, and Poland to almost a quarter of respondents in Austria. 'Limited information' ranged from one third of respondents in Greece to three in one hundred respondents in Denmark. The percentage of 'unusualness' being named as a reason for non-attendance ranged from more than four in ten respondents in Austria, Belgium, and Greece to thirteen in one hundred respondents in Sweden. 'Non-affordability' as a reason for non-attendance ranged from more than a quarter of respondents in Switzerland and Spain to less than four in one hundred respondents in the Czech Republic. 'Limited insurance coverage' was most often reported in Spain (eight in one hundred respondents). 'Non-insurance' was only rarely named as a reason for non-attendance. 'Time constraints' as a reason for non-attendance ranged from ten in one hundred respondents in Austria to less than one in one hundred respondents in Switzerland and the Netherlands. 'Non-availability of a nearby provider' as a reason for non-attendance ranged from eighteen in one hundred respondents (Greece) to one in one hundred respondents (Switzerland, Sweden). The percentage of 'other reasons' named as a reason for non-attendance ranged from almost one quarter of respondents (Sweden) to four in one hundred respondents (Italy).

Table 3 shows percentage of dental non-attendance grouped by welfare state regimes and associated reasons categorized according to Andersen's framework (see methods section). Non-attendance ranged from more than one in two respondents in the Southern welfare state regime to less than one in ten respondents in the Scandinavian regime. With more than three in ten respondents, perceived need was the most often named reason of non-attendance in all welfare state regimes. The Eastern regime had the highest percentage of respondents reporting this factor (six in ten). Predisposing factors were reported by almost three in ten respondents from Scandinavia but only eleven in one hundred respondents from the Eastern regime. The percentage of respondents naming enabling factors as reason for non-attendance ranged from almost one in five in the Scandinavian regime to about eight in one hundred respondents for the Eastern regime. The health system level factor ('non-availability of a nearby provider') was reported by almost thirteen in one hundred respondents from the Eastern regime but only one in one hundred respondents from the Scandinavian regime. 'Other factors' were most often named by respondents associated with the Scandinavian regime.

Table 4 shows odds ratios for the influence of welfare state type, demographic and socioeconomic parameters, as well as educational attainment on the frequency of reporting self-perceived need, predisposing, enabling, system level, and other factors as reason for dental non-attendance. These findings are also graphically summarized in Fig. 1. Relative to the Scandinavian regime, lack of perceived need was significantly more often named as a reason for non-attendance in all other welfare state regimes. Men reported this reason significantly more often than women. Predisposing factors were significantly less often reported from the Southern and Eastern welfare state regimes than in Scandinavia. Older respondents were significantly more likely than younger respondents to refer to this

category. In addition, predisposing factors were more frequently reported within the highest category of educational attainment. Relative to the Scandinavian regime, enabling factors were significantly less often reported from the Bismarckian and Eastern regimes but non-significantly different for the Southern welfare state regime. Enabling factors were significantly more often reported by women and less often by those with higher socioeconomic status and educational attainment. The health system level factor was reported significantly more often by respondents from the Bismarckian, Southern and Eastern welfare state regimens in comparison to the Scandinavian regime. In contrast, 'other factors' were significantly less often named by respondents from the Bismarckian, Southern, and Eastern welfare state regimes in comparison to the Scandinavian regime. Such reasons were also significantly less often reported with increasing age.

Discussion

Based on life-history information from persons currently aged 50+ and living in 13 different European countries, the present study identified considerable cross-country differences as well as differences between various welfare state regimes with respect to the reporting frequency of reasons for never having sought regular dental attendance. The highest percentage of respondents without any regular dental attendance throughout their lifetimes was found for the Southern welfare state regime, followed by the Eastern regime, the Bismarckian regime, and the Scandinavian welfare state regime.

Within the Southern, Eastern, and Bismarckian welfare state regimes, the health system level factor 'no place to receive this type of care close to home' and the perception of regular dental treatment as 'not necessary' were more often referred to than in countries comprising the Scandinavian regime. For the Scandinavian welfare state regime, predisposing factors were more frequently referred to as cause of dental non-attendance than in countries belonging to the Southern and Eastern welfare regimes while enabling factors are named more often than in Bismarckian and Eastern welfare states. In comparison with other welfare state regimes, a higher percentage of Scandinavian respondents attributed their dental non-attendance to 'other reasons'.

The present study also provides evidence of demographic and socioeconomic influences. Non-attendance proved to be generally more prevalent among men and at the lower end of the socioeconomic scale. Among those without any regular dental attendance throughout their lifetimes, lack of perceived need was more prevalent among men. Predisposing factors were more frequently referred to with increasing age and higher educational attainment. Enabling factors were more frequently reported by women and individuals from the lower end of the socioeconomic scale.

The results of the present study suggest that perceived need and predisposing factors are generally a more frequent reason for dental non-attendance than enabling and health system level factors. In all countries except Austria, Denmark, and Greece, the most frequently named reason for dental non-attendance was that it is "not considered to be necessary". In Austria, Denmark, and Greece, the most frequently named reason for dental non-attendance was that it is "not usual to get this type of care". "Not enough information about this type of care" was a further – though less frequently reported – predisposing factor.

Previous evidence suggests that dental anxiety is also an important predictor for non-regular dental attendance (9). Although dental anxiety could not directly be examined in the present study, it can be considered as another predisposing factor. Given that some percentage within the response category 'other reasons' may be attributable to dental anxiety, this may further highlight the high relevance of predisposing factors for dental non-attendance.

The results of the present study emphasize that perceived need and predisposing factors are important reasons for dental non-attendance. Yet health care decision makers may be concerned about the extent to which such characteristics are actually mutable. For example, previous evidence suggests that - despite enormous efforts to reduce population levels of dental fear - these have not decreased significantly over the past decades (45). Although it is always possible to increase oral health promotional activities and to provide more information about the advantages of regular dental attendance this does not necessarily imply that all non-regularly attending patients will adapt a more regular pattern of seeking treatment.

Obviously, any classification system which groups countries together has its limitations. The present paper distinguished between Scandinavian, Bismarckian, Southern, and Eastern welfare state regimes. This framework was applied to provide a broader appreciation of the institutional and political determinants of dental care provision by welfare state status. However, a broad classification of country groups may not fully take account of all individual characteristics in each and every detail. Caution should thus be applied when transferring conclusions made for welfare state regimes to individual countries. Given considerable cross-country differences with respect to various reasons for non-attendance, optimizing attendance within populations ultimately needs to be guided by country-specific priority setting.

Further limitations of the present study should be mentioned. First, as with any life-history information which is based on a retrospective survey, our findings may be subject to the potential influences of recall bias. However, it has recently been shown that SHARE participants provide reliable information about earlier life years (46). Second, some may argue that differences in dental non-attendance may partly be the consequence of differences in oral health status. One limitation of SHARE indeed is that it currently does not provide information about the respondents' number of teeth or about complete edentulism. Note, however, that not controlling for oral health status does not negate the results of the present study because it examined why people have never sought dental attendance regularly throughout their entire lifetime. Even a person who is fully edentate at age 50+ could have gone to the dentist regularly sometime earlier in life, that is when dentition was still more complete. Third, an implementation of country-specific parameter estimates for demographic and socioeconomic influences was complicated by the limited number of observations within a subset of countries. Some caution should be applied when interpreting parameter estimates which aggregate across countries. Finally, our study could only compare a limited number of countries against each other. Future research will benefit from better availability of survey data which include more countries and greater variability of institutional settings and other economic, social, and cultural influences.

All in all, the present study is the first to compare levels of and reasons for dental non-attendance across several European countries and associated welfare state regimes. The highest percentage of respondents without any regular dental attendance throughout their lifetimes was found for the Southern welfare state regime, followed by the Eastern, the Bismarckian, and the Scandinavian welfare state regimes. Factors such as patients' perception that regular dental treatment is 'not necessary' or 'not usual' appear to be the predominant reasons for non-attendance in all welfare state regimes. Within the Southern, Eastern, and Bismarckian welfare state regimes, the health system level factor 'no place to receive this type of care close to home' and the perception of regular dental treatment as 'not necessary' were more often referred to than in Scandinavia. This could be relevant information for health care decision makers in order to comparatively prioritize interventions towards increasing rates of regular dental attendance and to develop programs that best meet the needs of their populace.

Acknowledgments

This investigation was supported by the National Institute of Dental and Craniofacial Research of the US National Institutes of Health (3R01DE021678-06S1). The present paper uses data from SHARELIFE release 1, as of November 24th 2010, and SHARE release 2.5.0, as of May 24th 2011. The SHARE data collection has been primarily funded by the European Commission through the 5th framework programme (project QLK6-CT-2001-00360 in the thematic programme Quality of Life), through the 6th framework programme (projects SHARE-I3, RII-CT- 2006-062193, COMPARE, CIT5-CT-2005-028857, and SHARELIFE, CIT4-CT-2006-028812) and through the 7th framework programme (SHARE-PREP, 211909 and SHARE-LEAP, 227822). Additional funding from the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, Y1-AG-4553-01 and OGHA 04-064, IAG BSR06-11, R21 AG025169) as well as from various national sources is gratefully acknowledged (see www.share-project.org for a full list of funding institutions).

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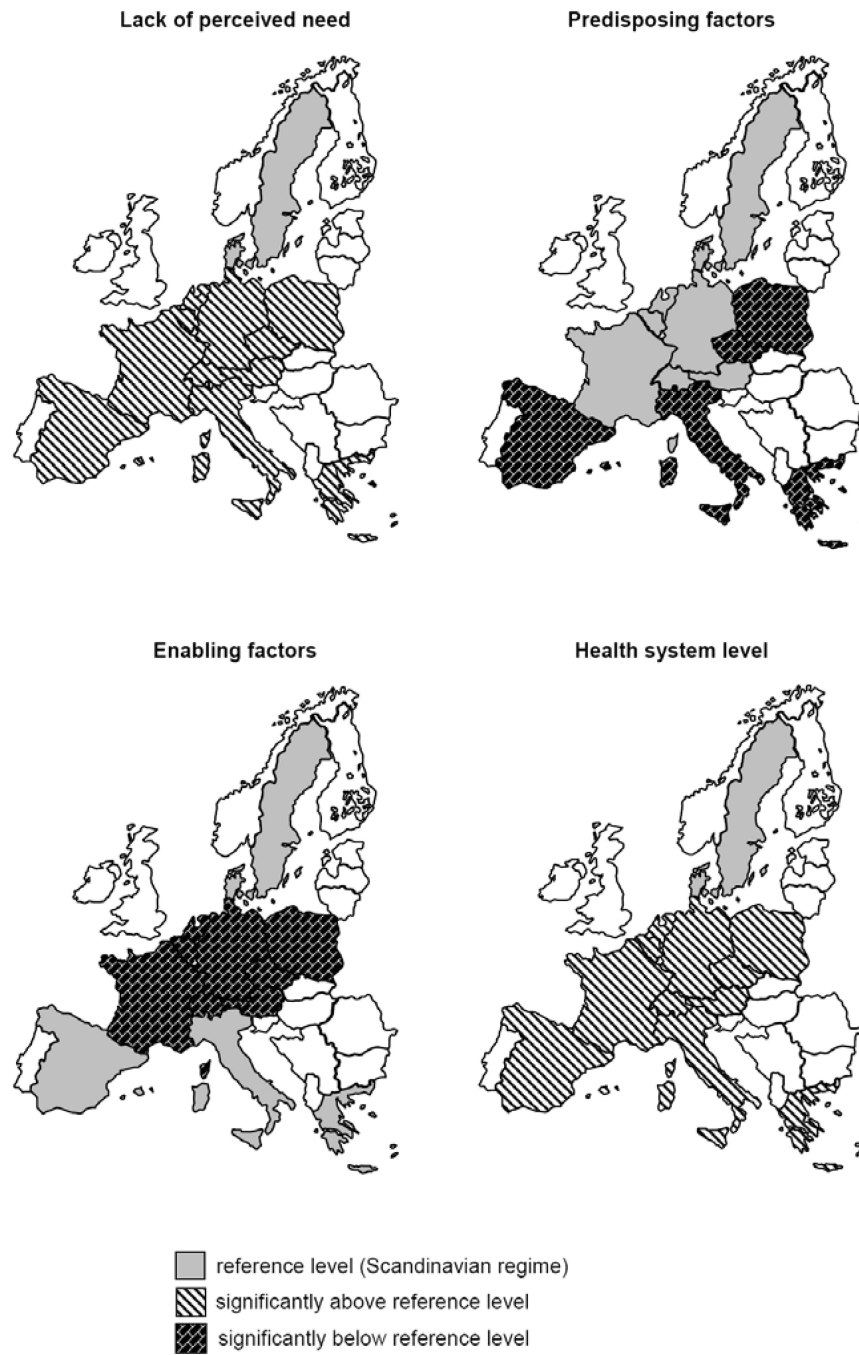


Figure 1.
Differences in the reporting frequency of reasons for dental non-attendance

Table 1

Percentage of respondents reporting regular dental attendance, and percentage of respondents not reporting regular dental attendance, throughout their lifetime by sex, household income and educational attainment

	Attenders (N = 17,974) % (SE)	Non-attenders (N = 8,551) % (SE)
Sex		
women	51.6 (0.4)	45.5 (0.6)
men	48.4 (0.4)	54.5 (0.5) ^a
Income		
lower income tertile	29.8 (0.4)	39.6 (0.6) ^a
middle income tertile	34.4 (0.4)	31.1 (0.6)
upper income tertile	35.9 (0.4)	29.4 (0.6)
Educational attainment		
ISCED scores 0-1	21.5 (0.3)	50.5 (0.6) ^a
ISCED scores 2-3	51.2 (0.4)	38.4 (0.5)
ISCED scores 4-6	27.4 (0.3)	11.1 (0.4)

Standard errors (SE) in parentheses

^a p<0.05; χ^2 -test for differences between attenders and non-attenders

Table 2

Percentage of respondents reporting dental non-attendance, and percentage of respondents who report measures of self-perceived need, predisposing, enabling, health system, and other factors as reasons for non-attendance, throughout their lifetime by country of residence

	Need		Predisposing		Enabling			System level		Other
	Non-attenders % (SE)	not necessary % (SE)	limited information% (SE)	unusual % (SE)	not affordable % (SE)	limited coverage % (SE)	not insured % (SE)	time constraints % (SE)	no provider nearby % (SE)	other % (SE)
Austria (N = 831)	25.2 (1.5)	23.1 (2.9)	6.7 (1.7)	43.3 (3.4)	11.1 (2.2)	1.4 [#] (0.8)	1.4 [#] (0.8)	10.1 (2.1)	5.8 (1.6)	17.8 (2.7)
Germany (N = 1,841)	19.8 (0.9)	66.5 (2.5)	4.1 (1.0)	13.7 (1.8)	4.4 (1.1)	0.8 [#] (0.5)	0.6 [#] (0.4)	5.2 (1.2)	4.4 (1.1)	15.9 (1.9)
Sweden (N = 1,880)	4.6 (0.5)	40.2 (5.3)	6.9 [#] (2.7)	12.6 (3.6)	18.4 (4.2)	2.3 [#] (1.6)	0.0 [#] (0.0)	3.5 [#] (2.0)	1.2 [#] (1.2)	24.1 (4.6)
Netherlands (N = 2,190)	15.0 (0.5)	43.6 (2.8)	3.4 (1.0)	30.4 (2.6)	6.8 (1.4)	0.6 [#] (0.4)	0.9 [#] (0.5)	0.0 [#] (0.0)	4.6 (1.2)	19.6 (2.2)
Spain (2,036)	56.9 (1.1)	62.8 (1.4)	6.9 (0.7)	19.3 (1.2)	27.7 (1.3)	8.1 (0.8)	1.5 (0.4)	3.2 (0.5)	3.3 (0.5)	10.0 (8.8)
Italy (N = 2,486)	52.5 (1.0)	64.1 (1.3)	4.4 (0.6)	19.6 (1.1)	18.4 (1.1)	0.5 [#] (0.2)	0.3 [#] (0.2)	2.4 (0.4)	1.9 (0.4)	4.4 (0.6)
France (N = 2,381)	28.9 (0.9)	51.7 (1.9)	4.7 (0.8)	24.4 (1.6)	18.5 (1.5)	3.1 (0.7)	0.9 [#] (0.4)	2.9 (0.6)	2.0 (0.5)	11.5 (1.2)
Denmark (N = 2,106)	9.5 (0.6)	31.0 (3.3)	3.0 [#] (1.2)	35.5 (3.4)	24.0 (3.0)	1.0 [#] (0.7)	0.0 [#] (0.0)	1.5 [#] (0.9)	1.5 [#] (0.9)	12.5 (2.3)
Greece (N = 2,932)	58.3 (0.9)	39.2 (1.2)	32.8 (1.1)	40.1 (1.2)	18.5 (0.9)	3.6 (0.5)	3.6 (0.5)	6.3 (0.6)	18.5 (0.9)	12.2 (0.8)
Switzerland (N = 1,281)	19.0 (1.1)	38.3 (3.1)	7.8 (1.7)	34.2 (3.1)	28.4 (2.9)	4.9 (1.4)	3.3 [#] (1.2)	0.4 [#] (0.4)	1.2 [#] (0.7)	7.4 (1.7)
Belgium (N = 2,805)	34.9 (0.9)	49.3 (1.6)	5.0 (0.7)	41.4 (1.6)	5.8 (0.8)	0.9 [#] (0.3)	0.5 [#] (0.2)	1.2 (0.4)	4.7 (0.7)	8.7 (0.9)
Czech Republic (N = 1,850)	11.2 (0.7)	45.2 (3.5)	7.3 (1.8)	34.0 (3.3)	3.9 [#] (1.4)	1.9 [#] (1.0)	1.9 [#] (1.0)	4.9 [#] (1.5)	6.3 (1.7)	7.3 (1.8)
Poland (N = 1,906)	56.2 (1.1)	62.6 (1.5)	7.9 (0.8)	14.6 (1.1)	10.7 (0.9)	1.9 (0.4)	2.6 (0.5)	6.6 (0.8)	13.7 (1.1)	13.6 (1.1)

SE: standard error

[#] relative standard error 30% (relative standard error = $s \frac{\tan^{-1} \frac{d_{std}}{d_{mean}}}{d_{mean}}$) – estimates with a relative standard error 30% are considered unreliable

Table 3

Percentage of respondents reporting dental non-attendance, and percentage of respondents who report self-perceived need, predisposing, enabling, health system, and other factors as reasons for non-attendance, throughout their lifetime by welfare state regime

	Non-attenders % (SE)	Need % (SE)	Predisposing % (SE)	Enabling % (SE)	System level % (SE)	Other % (SE)
Scandinavian (N = 3,986)	7.2 (0.4)	33.8 (2.8)	27.9 (2.7)	18.1 (2.3)	1.4 (0.7)	16.0 (2.2)
Bismarckian (N = 11,329)	24.8 (0.4)	48.5 (0.9)	25.5 (0.8)	9.2 (0.6)	3.8 (0.4)	12.2 (0.6)
Southern (N = 7,454)	56.0 (0.6)	53.6 (0.8)	17.8 (0.6)	13.2 (0.5)	9.1 (0.4)	9.2 (0.5)
Eastern (N = 3,756)	34.0 (0.8)	59.8 (1.4)	11.2 (0.9)	8.5 (0.8)	12.5 (0.9)	12.5 (0.9)

SE: standard error

odds ratios for the influence of welfare state type, demographic and socioeconomic parameters, as well as educational attainment on the frequency of reporting self-perceived need, predisposing, enabling, system level, and other factors as reason for dental non-attendance throughout respondents' lifetime

Table 4

	Need	Predisposing	Enabling	System level	Other
Welfare state regime	(reference)	(reference)	(reference)	(reference)	(reference)
Scandinavian	1.74* (1.30; 2.32)	0.98 (0.71; 1.34)	0.49* (0.33; 0.71)	3.39* (1.06; 10.81)	0.62* (0.42; 0.92)
Bismarckian	2.54* (1.90; 3.40)	0.56* (0.40; 0.77)	0.75 (0.52; 1.08)	6.77* (2.14; 21.41)	0.35* (0.23; 0.52)
Southern	2.95* (2.17; 4.01)	0.36* (0.25; 0.52)	0.44* (0.29; 0.67)	11.88* (3.74; 37.75)	0.55* (0.36; 0.83)
Eastern	1.00 (1.00; 1.01)	1.01* (1.00; 1.02)	1.01 (1.00; 1.01)	1.01 (1.00; 1.02)	0.96* (0.95; 0.97)
Age (in years)	(reference)	(reference)	(reference)	(reference)	(reference)
Sex	(reference)	(reference)	(reference)	(reference)	(reference)
men	0.83* (0.74; 0.92)	1.03 (0.90; 1.18)	1.24* (1.05; 1.47)	1.10 (0.90; 1.35)	1.03 (0.87; 1.23)
women	(reference)	(reference)	(reference)	(reference)	(reference)
Income	(reference)	(reference)	(reference)	(reference)	(reference)
lower income tertile	1.07 (0.94; 1.21)	0.99 (0.84; 1.16)	0.78* (0.64; 0.95)	0.99 (0.78; 1.26)	1.06 (0.86; 1.30)
middle income tertile	1.12 (0.98; 1.28)	0.90 (0.76; 1.07)	0.79* (0.65; 0.98)	0.82 (0.63; 1.06)	0.95 (0.76; 1.18)
upper income tertile	(reference)	(reference)	(reference)	(reference)	(reference)
Educational attainment	(reference)	(reference)	(reference)	(reference)	(reference)
(pre-)primary education (ISCED scores 0-1)	1.05 (0.93; 1.18)	1.07 (0.92; 1.26)	0.86 (0.71; 1.05)	0.85 (0.67; 1.09)	1.03 (0.84; 1.25)
secondary education (ISCED score 2-3)	0.89 (0.73; 1.07)	1.58* (1.26; 1.98)	0.69* (0.50; 0.96)	1.07 (0.74; 1.55)	1.00 (0.74; 1.34)
post-secondary and tertiary education (ISCED scores 4-6)					

* p<0.05; 95% confidence intervals in parentheses