

# Research · Science Forschung · Wissenschaft Recherche · Science

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### **Herausgeber Editeur**

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Gesellschaft SSO  
Société Suisse  
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# Dental visits, oral hygiene behaviour, and orthodontic treatment in Switzerland

<sup>1</sup> Clinic for Periodontology, Endodontology and Cariology, University Clinics for Dentistry, University of Basel, Switzerland

<sup>2</sup> Swiss Tropical Institute and Institute for Social and Preventive Medicine, University of Basel

<sup>3</sup> Preventive Dentistry and Oral Epidemiology, Center for Dentistry and Oral Medicine, University of Zürich

## Correspondence

Prof. Dr. Nicola U. Zitzmann, PhD  
Specialist SSO for Reconstructive Dentistry  
Clinic for Periodontology, Endodontology and Cariology, University of Basel  
Hebelstrasse 3,  
CH-4056 Basel, Switzerland  
Tel. +41-61-267 26 25 (Clinic)  
Fax +41-61-267 26 59

Schweiz Monatsschr Zahnmed 122: 104–111 (2012)

Accepted for publication:  
13 April 2011

Keywords: Swiss Health Survey, dental visits, oral hygiene, sociodemographic factors

**Summary** Since the first survey in 1992/93, the Swiss Health Survey (SHS) has been repeated every 5 years (1997, 2002 and 2007). In the present study, dental visits (dental care utilisation within the last 12 months), oral hygiene measures and the frequency of orthodontic treatments in the Swiss population in 2002 were examined and dental visits were compared with the years 1992/93, 1997 and 2007. Weighted data were analysed regarding different sociodemographic factors. From 1992 to 2002, dental visits among the 15–74-year-old declined continuously (1992/93: 70%, 1997: 66%, 2002: 63%), whereas in 2007 a slight increase (66%) was documented. In the

survey from 2002, a large proportion (74%) of the population stated to clean their teeth or prostheses several times a day, predominantly with a manual toothbrush, whereas 28% applied an electric toothbrush and almost half of the respondents also used dental floss or toothpicks. Fewer visits and less intensive oral hygiene measures were observed among the elderly, men, weak social strata, smokers, persons with more than 8 missing teeth and in the group with removable dentures. Almost a quarter of the population had orthodontic treatment with the highest proportion among the 15–24-year-old (56%).

## Introduction

Health surveys serve to document the health status of the population, evaluate possible influencing factors, and ascertain long-term changes. These data are thus an important instrument of health statistics and enable the adaptation of health-promoting strategies and prevention to existing needs. In the field of oral health, health surveys also facilitate determining the frequency of dental visits and the oral hygiene behaviour of the Swiss population. The analysis of correlations between these dental parameters and general factors such as age, sex, or social status indicates the extent to which new measures and strategies for optimizing health promotion should be planned.

The Swiss Health Survey (SHS), conducted by the Federal Office of Statistics at 5-year intervals – to date in 1992/93, 1997, 2002 and 2007 – enables a comprehensive and represen-

tative collection of data on the health status of the Swiss population. Previous studies have evaluated the SHS data from 1992/93, 1997 and 2002 in terms of oral health. The first study focussed on the dental status and prosthetic dental restorations in Switzerland in 1992/93 (ZITZMANN ET AL. 2001). Subsequently, changes in tooth loss and reconstructive care were analysed for a period of 10 years (1992/93 to 2002) (ZITZMANN ET AL. 2008) and gender-specific differences were documented (CODA BERTEA ET AL. 2007).

Based on the data from the Swiss Health Survey (SHS), the purpose of the present study was to analyze the extent to which dentists were consulted (dental visits), oral hygiene habits, and the frequency of orthodontic treatment in 2002 in Switzerland, and to examine the influence of various socio-demographic factors. In addition, changes in the consultation frequency in the population were documented over a period of 15 years (1992 to 2007).

## Materials and Methods

The Swiss Health Survey (SHS) has been conducted by the Federal Office of Statistics at 5-year intervals, so far in the years 1992/93, 1997, 2002, and 2007. This survey was based on a two-step stratified random sample of the population residing in Switzerland (Swiss nationals, resident foreigners  $\geq 15$  years of age) and living in a private household possessing a telephone. The random selection was made using Switzerland's electronic phonebook, with the first step consisting of taking a regional stratified sample of private households by canton. In the second step, a randomly selected target person in the respective private household was interviewed by telephone. Thereafter, all persons who had participated in the telephone interview and consented to further participation received a written questionnaire, which forms the basis of the present examination.

In the SHS of 1992/93, subjects over the age of 74 were included only in the telephone survey, but not in the written questionnaire. In the subsequent surveys in 1997, 2002, and 2007, however, also elderly subjects ( $\geq 75$  years) could participate in the written questionnaire, so that this age group is accounted for in the SHS data from 1997, 2002, and 2007 (CALMONTE ET AL. 2005). For a direct comparison with dental visits in 1992/93, the results of the follow-up surveys were also documented separately for the population up to the age of 74. Weighting in terms of age, gender, place of residence, and nationality was performed in order to obtain representative data for the sampled population of Swiss residents (VONLANTHEN 1997, 2000).

The written SHS questionnaire consists of a main module integrated into each survey; it serves to collect data on socio-demographic factors (age, sex, education, income, place of residence, nationality) and health status. In addition, the use of medical services in the preceding 12 months is registered here, including dental visits. The dental health module, which is one of the variable submodules and is included at 10-year intervals (1992/93 and 2002), was enlarged by several questions in the SHS 2002. In addition to the number of missing teeth and presence of prosthetic restorations (ZITZMANN ET AL. 2001, 2008), the participants were asked to select one of the listed reasons for their most recent visit to the dentist (personal motivation/volunteered for a check-up, recalled for a check-up, caries/filling/endodontic treatment, tooth extraction, crown/ fixed dental prosthesis [FDP]/removable dental prosthesis [RDP], periodontal complaints, orthodontic appliance, toothache). Further, subjects should indicate how often (less than once a day, once or more a day) and with which measures (manual toothbrush, electric toothbrush, dental floss/toothpick, other) the teeth or prostheses were cleaned; multiple answers were possible. Finally, the participants were asked whether they had ever worn an orthodontic appliance to correct the position of their teeth.

The data were classified by age group (10-year groups), gender (female/male), nationality (Swiss/non-Swiss), place of residence (urban or rural), level of education, and income. In categorizing the place of residence, an urban region was defined as a town with at least 10,000 inhabitants or a group of adjacent communities with at least 20,000 inhabitants. Three educational levels were distinguished: persons with a degree from a university or applied-sciences university (tertiary level), persons certified in a trade (secondary level), and persons who had completed just the 9 obligatory years of school (mandatory schooling). Participants who had not completed these

9 years of school or were still in mandatory schooling were assigned to a separate group termed "no education" or "undetermined". Income was categorized as low ( $< 2,750$  CHF), low-middle (2,750–3,700 CHF), middle (3,700–5,000 CHF) and high ( $> 5,000$  CHF) household-equivalence income per month. From the block of general questions, it was possible to obtain information on smoking status and body mass index (BMI) based on data on height and weight. Non-smokers were defined as those who had never smoked or only for a total of 6 months, ex-smokers had smoked longer than 6 months but had quit, and smokers were those who regularly consumed tobacco. The BMI was divided into the categories of underweight (BMI  $< 20$ ), normal weight (BMI 20–25), overweight (BMI 25–30), and obese (BMI  $> 30$ ).

## Results

In the SHS of 2002, the rate of participation in the telephone interview was 64%, and in 2007 it was 66% (gross sample size 2002: 30,829, 2007: 28,319 private households). For the written questionnaire, the response rate in 2002 was 86% and in 2007 80% (net sample size 2002: 18,759, 2007: 17,931 persons).

### Dental visits within the last 12 months (2002)

In the SHS of 2002, an average of 62.1% of the population reported having consulted a dentist at least once in the previous year. The analysis of sociodemographic factors showed that regular annual dental visits were made more frequently by women than men (Fig. 1), younger participants (15–24 years of age), Swiss than non-Swiss, persons with a higher educational level, those with higher household-equivalence incomes, non-smokers, the underweight, and persons residing in urban areas (Fig. 2). In the 75- to 84-year-old group, the frequency of dental visits dropped to 47.5% and fell even further to 32.6% among those  $\geq 85$  years old. In terms of dental status, it was found that persons with complete dentition, those with 1 to 2 or 3 to 8 missing teeth consulted a dentist with similar frequency (63.6–68.5%). In contrast, dental visits were much less frequent in the group with 9 to 27 missing teeth (58.3%), and only 23.1% of the edentulous subjects (complete dentures in the maxilla and mandible) had consulted a dentist in the previous 12 months. 71.7% of the population who had fixed dental prostheses had gone to the dentist during the past year, whereas only 48.3% of the population with removable dental prostheses had done so (Fig. 2).

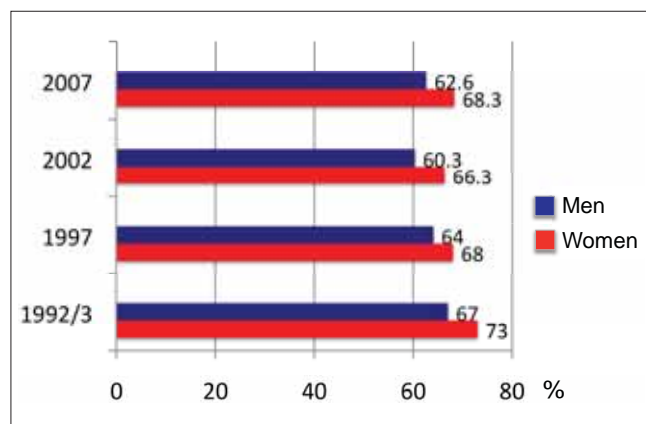


Fig. 1 Dental visits from 1992/93 to 2007 in the population aged 15–74 years (in %) by gender

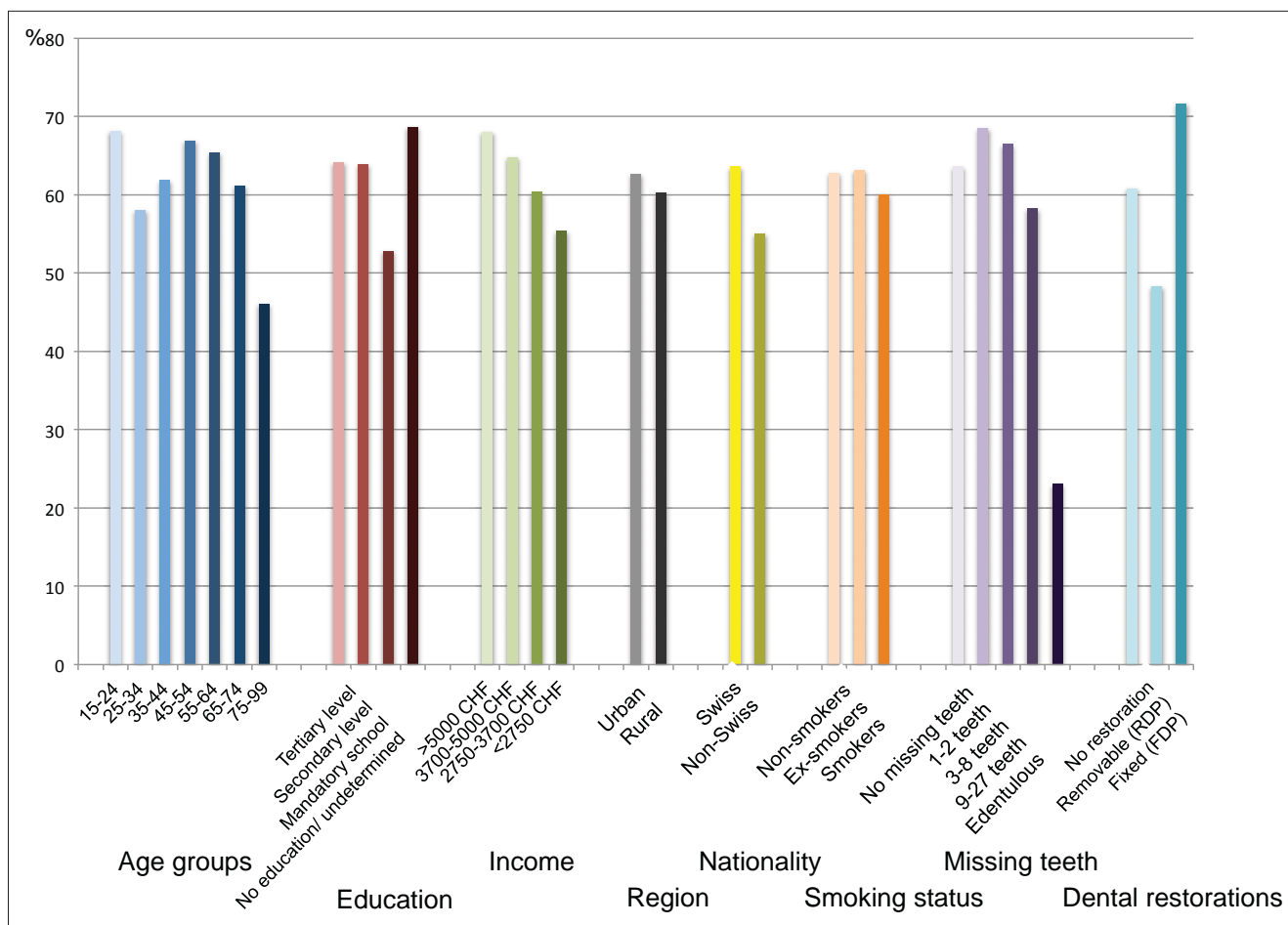


Fig. 2 Dental visits in the last 12 months during 2002 (in %)

### Changes in frequency of dental visits from 1992/93 to 2007

In the population up to the age of 74, a continuous reduction of dental visits was found between 1992 and 2002 (Fig. 1). In the SHS of 1992/93, an average of 70.2% of the population (<75 years old) had visited a dentist at least once in the previous 12 months, in 1997 66.1%, and in 2002 63.4% had consulted a dentist during the past year. In 2007, this proportion increased slightly (65.5%). Comparing the data for the over 75-year-old population from 1997 on, this older age group was found to have consulted a dentist less often: 64.8% in 1997, 62.1% in 2002, and 64.9% in 2007.

### Reason for the last dental appointment (2002)

The most frequent reason indicated for the most recent visit to the dentist was a voluntary check-up (36.6%). In the age group 45 to 54 years, a marked shift from restorative (operative) to reconstructive (prosthetic) treatment was observed, with the latter becoming dominant in the older age groups (Tab. Ia). These differences were also manifest in relation to the dental status: in completely dentate individuals and those with up to 8 missing teeth, the reasons given for the last dental visit dominated in the caries/filling/endodontic treatment category, but the category of crowns/FDP/RDP was predominant among subjects with at least 9 teeth missing (Tab. Ib). Similarly, restorative treatment was the main reason indicated by subjects without restorations or with fixed dental prosthe-

ses, whereas in individuals with removable prostheses, reconstructive/prosthetic treatment was the most frequent reason for dental visits. Tooth extraction was the reason more frequently given among individuals  $\geq 75$  years old, those who had only mandatory schooling, low income, non-Swiss, smokers and ex-smokers, as well as subjects with removable dental prostheses. Populations with mandatory-level education and those with low income generally consulted a dentist less frequently for check-ups and more often for toothaches or restorative and reconstructive treatment. Individuals with a reduced dentition (9–27 missing teeth), the edentulous, and those with removable dentures much less often indicated having visited the dentist for a check-up, while the frequency of prosthetic treatment and extractions increased.

The least frequently mentioned reasons were in the categories orthodontic appliance (2.6%) and periodontal complaints (1.4%) (Tab. Ia, b).

### Personal oral hygiene (2002)

74.0% of the population reported cleaning their teeth or removable dental prostheses a few times a day; 23.7% cleaned them just once a day, and 2.4% less than once per day. In terms of gender, women were more conscientious about oral hygiene than men (81.7% a few times and 17.3% once per day vs. 65.5% a few times and 30.5% once per day). With increasing age, the frequency of personal oral hygiene decreased continuously. Among the 15- to 24-year-olds, 77.5% cleaned their teeth a few times a day and 18.5% once, while in the  $\geq 75$ -year-

**Tab. la Reason for most recent dental visit in 2002 (in %) by demographic criteria**

	Check-up, voluntary	Check-up, recalled	Caries/filling/Endodontic treatment	Tooth extraction	Crown/FDP/prosthesis	Periodontal complaints	Orthodontic appliance	Toothache
<b>Sex</b>								
Female	38.7	30.5	8.8	4	8.5	1.6	2.9	5
Male	34.5	33.4	9.7	5	9.1	1.1	2.3	4.9
<b>Age groups</b>								
15–24	35	31.6	8.6	4.7	1.1	0.4	14.3	4.3
25–34	44.7	28.3	11.5	3.8	3.2	1.3	0.9	6.3
35–44	38.3	32.9	11.6	4.1	5.2	1.7	0.2	6
45–54	33.4	35.9	9.8	4.4	9.9	1.4	0.1	5.1
55–64	35.3	33	6.7	4.1	14.3	1.4	0.6	4.6
65–74	32.2	31.9	5.9	5.2	18.4	1.6	1.2	3.6
75–99	31.2	25.9	5.6	7	23.7	2.2	2.6	1.8
<b>Region</b>								
Urban	37.3	31.5	9.2	4.6	8.9	1.4	2.4	4.7
Rural	34.9	33	9.1	4.3	8.4	1.4	3.3	5.6
<b>Nationality</b>								
Swiss	34.8	35.5	8.5	4.1	8.3	1.2	2.7	4.9
Non-Swiss	45.2	15.9	12.3	6.4	10.9	1.9	2.2	5.2
<b>Education</b>								
Tertiary level	40.1	33.9	10	2.5	7.9	0.9	0.3	4.4
Secondary level	36.2	34.1	9.1	4.3	8.3	1.6	1.3	5.1
Mandatory schooling	34.6	23.8	9.7	7.2	12.8	1.1	5.6	5.2
No education/undetermined	38.2	26.4	6.4	3	3.3	1.5	16.7	4.5
<b>Household-equivalent income</b>								
>5,000 CHF	40.2	34.8	8.3	3.1	7.9	1.6	0.6	3.5
3,700–5,000 CHF	36.8	34.1	9.4	3.8	8.6	1.2	1.1	5
2,750–3,700 CHF	36.9	31.4	9	4.6	10.2	1.4	1.7	4.8
<2,750 CHF	33.9	29.3	10.6	6	9.4	1.6	2.3	6.9

old group, 69.3% brushed their teeth/prostheses a few times and 28.7% just once per day. The frequency of performing oral hygiene measures was higher among better-educated subjects than among individuals with only mandatory schooling (75.9% vs. 69.8% who brushed a few times a day), and in the populations with greater income, a larger percentage indicated cleaning their teeth/prostheses a few times a day than in the low-income populations (78.9% vs. 67.3%). There was a tendency towards more intensive oral hygiene in urban than in rural regions (75.6% and 69.5%, respectively, who brushed a few times per day). Differences in frequency of oral hygiene measures were also observed according to smoking status. 76.4% of non-smokers reported brushing their teeth/prostheses a few times per day, while ex-smokers and smokers did so 73.0% and 70.5%, respectively. Regarding body mass index, underweight subjects performed oral hygiene measures much more often (84.2% a few times a day) than did overweight and obese individuals (67.2% and 55.3%, respectively, a few times a day). Among the completely dentate, 77.1% reported cleaning their teeth a few times a day; however, with increasing numbers of missing teeth up to the edentulous state, this

proportion decreased steadily down to 66.1%. The frequency of oral hygiene measures was highest in the group with fixed dental prostheses (76.3% reported cleaning a few times a day), followed by the groups without restorations (74.3%) and with removable dental prostheses (69.2%); among those with complete dentures, only 64.9% indicated cleaning them a few times per day.

### Oral hygiene measures (2002)

84.8% of the population used a manual toothbrush, 27.6% an electric toothbrush, and 48.9% also indicated to use dental floss or toothpicks. Other, unidentified dental care methods were reported by 7.9% of the population. Women used both electric toothbrushes (29.4% vs. 25.7%) and dental floss or toothpicks (55.4% vs. 41.9%) more often than men. In the various age groups, manual toothbrushes were most frequently used by 15- to 24-year-olds (89.6%) and by ≥75-year-olds (91.2%). In contrast, electric toothbrushes were most popular among individuals aged 25 to 64 (29.5% to 32.8%); only 10.9% of those ≥75 years old used electric toothbrushes. Interproximal oral



Tab.1b Reason for most recent dental visit in 2002 (in %) according to dentition, prostheses and smoking status

	Check-up, voluntary	Check-up, recalled	Caries/filling/Endodontic treatment	Tooth extraction	Crown/FDP/prosthesis	Periodontal complaints	Orthodontic appliance	Toothache
<b>Number of missing teeth</b>								
None	41.5	35.2	9.7	2.7	1.7	1	3.3	4.9
1–2	36.1	33.4	10	4.8	6.9	1.4	2	5.4
3–8	34	29.2	10.9	7.2	9.1	1.9	2.1	5.6
9–27	28.5	25.2	6.2	6.3	26	1.8	1.3	4.7
Edentulous	19.2	10.8	0.3	8.8	49.8	2.4	5.4	3.3
<b>Prosthesis</b>								
None	40.8	32.3	10.6	4.7	0.8	1.1	4.3	5.4
Fixed	34.8	35.9	9.1	3.2	10.3	1.5	0.4	4.8
Removable	28.7	22	4.7	6.5	30.2	1.9	2.1	3.9
<b>Smoking status</b>								
Non-smoker	37.8	33	8.5	3.8	7.7	1.2	3.7	4.3
Ex-smoker	35.3	31.5	9.1	5	11.9	1.7	0.6	4.9
Smoker	35.7	30.2	10.6	5.3	8.6	1.4	2.1	6.1
<b>Total</b>	<b>36.6</b>	<b>31.9</b>	<b>9.2</b>	<b>4.5</b>	<b>8.8</b>	<b>1.4</b>	<b>2.6</b>	<b>5</b>

hygiene was most intensively performed by subjects between 25 and 64 years of age (51.2% to 57.3%); among 15- to 24-year-olds (35.3%) and persons  $\geq 75$  (32.3%), dental floss or toothpicks were less often used. Subjects with a higher level of education more often used both an electric toothbrush and dental floss or toothpicks (30.1% and 55.6%, resp.) than did the group with no more than mandatory schooling (20.1% and 35.1%, resp.). In the higher-income population groups, oral hygiene measures were more frequently performed with electric toothbrushes and dental floss or toothpicks (36.2% and 58.5%, resp.) than in groups with low income (20.1% and 42.8%, resp.). In the group with fixed dental prostheses, the use of electric toothbrushes and dental floss or toothpicks was much more widespread (33.4% and 61.9%, resp.) than in the group with removable dental prostheses (15.1% and 29.2%, resp.).

### Frequency of orthodontic treatment (2002)

On average, 23.0% of the population indicated that they had worn or were currently wearing an orthodontic appliance to correct the position of their teeth. The analysis of sociodemographic factors showed that women had more frequently undergone orthodontic treatment than men (25.0% vs. 20.8%). The frequency decreased with increasing age; among the 15- to 24-year-olds, 56.0% affirmed having worn an orthodontic appliance, and only 3.4% of those at least 75-year-old did so. Orthodontic treatment was sought more often by those with a higher level of education (17.3% with mandatory schooling vs. 26.6% with higher education) and higher income (17.8% with low income vs. 24.5% with high income). In urban areas, the proportion of orthodontic treatment was slightly larger than in rural areas (23.4% vs. 21.9%), and Swiss nationals wore orthodontic appliances more often than did non-Swiss (24.4% vs. 16.4%). Based on body mass index data, orthodontic treatment among the underweight was found to be much more frequent (40.7%) than among the overweight (13.4%) and obese (11.8%).

### Discussion

In the present study, data from the Swiss Health Survey (SHS) 2002 formed the basis for an analysis of dental visits, oral hygiene habits, and the frequency of orthodontic treatment in a representative population sample; the associated socio-demographic influencing factors were also analyzed. Comparing the results from 1992/93, 1997 and 2007, a slight drop in dental visits was documented over the 15-year period.

By including the population of  $\geq 75$ -year-olds since 1997, in which dental visits were considerably less frequent, the already reduced overall frequency in the general population was even further diminished. It should be borne in mind that the percentage of subjects  $\geq 75$  years old in the total population continuously increased during the observation period (1997: 6.4%, 2002: 7.3%, 2007: 7.9%), which reflects the general demographic aging of the population in Switzerland. All surveys were restricted to private households, so that the population of old people's or nursing homes was not included. However, in the latter population, more infrequent dental consultations and poorer oral hygiene behaviour can be assumed (BRUNNER ET AL. 1987, WIRZ ET AL. 1989, WIRZ & TSCHÄPPÄT 1989). Another reason for the general reduced frequency of dental visits may be diminished need, because an overall decline in caries as a result of systemic and topical fluoride application as well as improved oral hygiene measures have been observed (MARTHALER ET AL. 1989). For instance, a continuous drop in caries was documented among recruits of the Swiss army between 1970 and 2006 (MENGHINI ET AL. 2001, 2010). Furthermore, a marked caries decline in 20- to 49-year-old adults in Zurich was shown from 1992 to 1999 (MENGHINI ET AL. 2002). Because the present results show that financially more secure population strata (higher income and higher education) go to the dentist more often, it may be assumed that altered economic conditions in the observed period also influenced the consultation frequency. Even earlier studies reported that persons with a higher educational level more regularly consulted a dentist than did per-

sons from lower social classes (HUBER & RÖTHLISBERGER 1975, KUSTER ET AL. 2000). BRUNNER & BUSIN (1991) also found that only 20% of the older low-income patient group of the Zurich People's Clinic visited a dentist for a check-up at least once a year. Numerous other studies from Finland (SUOMINEN-TAIPALE ET AL. 2008), Sweden (HJERN ET AL. 2001), Norway (GRYTTEN & HOLST 2002), Denmark (PETERSEN ET AL. 2004) and Spain (PIZARRO ET AL. 2009) verify more frequent dental visits in higher socio-economic strata, i. e., among the better educated and the more prosperous.

Compared with other European countries, the data from 2002 show that the Swiss population somewhat less frequently (62%) consulted a dentist in the previous 12 months; only in Finland a lower percentage (52%) was observed (SUOMINEN-TAIPALE ET AL. 2008). In Germany in 2005, over 70% of almost all age groups visited the dentist at least once per year (MICHEELIS & SCHIFFNER 2006), while in England in 1998, 71% did so (WALKER & KELLY 1998). In 1990, 76% of the Danish population visited the dentist annually (SCHWARZ 1996), as did 77% in Norway (GRYTTEN ET AL. 1990). An even higher percentage was found in 2003 in Sweden, where over 80% of most age groups annually consulted a dentist (HUGOSON ET AL. 2005), but this was topped by the Netherlands in 1991 with 89% (VISSER ET AL. 1991). Here, it is important to remember that in Norway, Denmark, and Holland, dental treatment up to the age of 18 is completely covered by basic health insurance, while adults must bear the cost of dental treatment themselves. In contrast, dental treatment for children and teens up to the age of 19 is free of charge in Sweden, where the state subsidizes a large part of the costs for adults as well.

In terms of the different social strata, the present study clearly shows that subjects with a high income and those with more education more conscientiously performed oral hygiene measures than those with low income and just mandatory schooling. The latter performed oral hygiene measures decidedly less often and also used special aids such as electric toothbrushes, dental floss, or toothpicks much less frequently. These observations are confirmed by many national studies and surveys. For instance, HUBER & RÖTHLISBERGER (1975, 1978) found a significantly lower oral hygiene frequency in lower socioeconomic groups; CURILOVIC & HELFENSTEIN (1979) reported higher plaque indices and poorer periodontal health in army recruits with a lower level of education. In the Swiss Dental Association's public survey in 2000, subjects with a higher level of education exhibited better oral hygiene and used additional aids more often (PERRET ET AL. 1990, KUSTER ET AL. 2000).

The behavioural patterns in the lower social classes of the Swiss population described here, i. e., poorer oral hygiene behaviour and less frequent dental visits, have a considerable impact on the oral health in this segment of the population. It has already been demonstrated that regular visits to the dentist are associated with better oral health (RICHARDS & AMEEN 2002). SHEIHAM ET AL. (1985) also showed that among white-collar workers in northwest England, more frequent dental visits were correlated with lower rates of tooth loss and caries. Reciprocally, a direct correlation of low social status and/or low level of education to tooth loss has been found (HUBER & RÖTHLISBERGER 1978, ZITZMANN ET AL. 2001, MENGHINI ET AL. 2002).

What are the causes for these behavioural patterns in the lower social levels of the population? On the one hand, economic reasons might play a role for less frequent dental visits, but do not explain the lower oral hygiene frequency. More likely is a lower overall health consciousness and less knowledge about oral/dental diseases within this segment of the

society. This assumption is supported by a study by WILLIAMS ET AL. (2002), in which a significant association between educational level and dental knowledge and/or behaviour was demonstrated. In order to improve the conditions in the less well-situated population groups and change certain behavioural patterns, it is of primary importance to find new approaches to prophylaxis and the dissemination of information that will be effective at many social levels. Secondly, the question of whether the Swiss healthcare system ensures sufficient access to dental health for low-income groups must be critically addressed. The survey to be conducted next year (2012) will, for the first time, enable an analysis of changes in oral hygiene behaviour, including dental status, over an observation period of 10 years.

The present study disclosed markedly infrequent dental visits (48.3%) and relatively poor oral hygiene in the population group with removable dental prostheses. Among this group elderly subjects dominated, who generally consulted a dentist less often. The main reasons given for the most recent dental visit were reconstructive treatment (crowns/FDP/RDP) and tooth extractions, while check-ups were relatively rarely reported. This suggests that persons with removable dental prostheses often seek dental care only when an acute problem arises, although particularly this patient group, as a whole, has greater need of maintenance care (CARLSSON ET AL. 1965, BERGMAN ET AL. 1982). This problem is exacerbated by poorer oral hygiene in this subpopulation; the frequency of toothbrushing and interproximal oral hygiene was appreciably lower than the average. Here, there is apparently a great discrepancy between reality and the necessity of additional hygienic efforts in patients with removable dental prostheses (BRILL ET AL. 1977). The importance of oral hygiene motivation in this patient group should also be emphasized from the perspective that insufficient dental care can also negatively influence general health. For instance, the connection between poor oral hygiene and an increased risk of cardiovascular diseases has been confirmed by DE OLIVEIRA ET AL. (2010).

The present data clearly demonstrated that women visit the dentist more often, particularly voluntarily, and that they are more conscientious about oral hygiene, both in terms of toothbrushing frequency and interproximal oral hygiene. In addition, women seek orthodontic treatment more often, which – given the fact that tooth malalignment is equally distributed in both genders (TROTSMAN & ELSBACH 1996) – indicates a more pronounced dental awareness in women compared to men. In earlier publications on the SHS data from 2002, it was shown that women had more missing teeth (an average of 4.8) than men (4.0), and were significantly more often edentulous (5.8%) than men (4.2%) (ZITZMANN ET AL. 2008). A multivariate analysis revealed that despite more frequent dental visits and more intensive personal oral hygiene, the probability of women having a complete dentition did not increase (CODA BERTEA ET AL. 2007). This paradoxon between better care/more frequent check-ups and a larger number of missing teeth was also observed by MEISEL ET AL. (2008), who suggested an influence of hormonal and financial factors.

As the reason for the most recent visit to the dentist, periodontal complaints were mentioned least frequently – only 1.4% answered thus; this is in obvious contrast to the high prevalence of periodontal disease. In an examination of the periodontal status of the population of western Switzerland, KARSEGARD ET AL. (2001) found 41% of the participants to have gingivitis (over 40% of the sites with BoP+) and 47% to have periodontitis (attachment level loss > 6 mm). However, since

the participants in the current study could give only one answer to the question about the reason for the most recent dental visit, it is possible that a periodontal recall appointment was not considered as “periodontal complaints” but rather a “check-up”, which would underestimate the proportion of this category. Furthermore, as opposed to caries, pain from periodontal disease usually only appears at an advanced stage, if at all, and it is therefore rare that acute symptoms prompt a visit to the dentist. Nevertheless, it can be assumed that the public’s knowledge of periodontal disease is still inadequate even today. According to the Swiss Dental Association’s public survey, the percentage of the population that was informed about the prevention of periodontitis had in fact increased from 1980 (56%) to 2000 (63%) (KUSTER ET AL. 2000), but the high prevalence of gingivitis and periodontitis in the Swiss population (KARSEGARD ET AL. 2001) clearly reveals that patients’ information and periodontitis prophylaxis still have to be improved. The success of organized prophylaxis programs verifies the importance of this approach (MARTHALER 1976, CURILOVIC & HELFENSTEIN 1979, CURILOVIC ET AL. 1989), which, through systematic screening exams by physicians, can also be implemented for the early identification of periodontal risk patients.

In summary, the present data show that the influence of sociodemographic factors, tooth status, and the presence of prostheses on the frequency of dental visits in 2002 and 2007 agreed with the tendencies found in the previous surveys in 1992/93 and 1997. More frequent dental visits were documented among women, persons with a higher educational level or higher household-equivalent income, in urban areas, Swiss nationals, and non-smokers. In comparison to men, women performed oral hygiene measures more intensively and more often underwent orthodontic treatment. Fewer dental visits and poorer oral hygiene were observed among older individuals, in the socially precarious strata, the obese, subjects with more than

8 missing teeth, and in the group with removable dental prostheses. As a consequence of the findings described here, efforts in the areas of motivation, prophylaxis, and follow-up – especially among the lower social classes, the elderly, and patients with removable dental prostheses – should be intensified, as should be efforts to better inform the public about periodontal disease.

## Résumé

Depuis la première enquête en 1992/93, l’Enquête suisse sur la santé (ESS) a été répétée tous les 5 ans (1997, 2002 et 2007). Dans le présent travail, le nombre de consultations dentaires durant l’année précédente, les habitudes d’hygiène buccodentaire et la fréquence des traitements orthodontiques dans la population Suisse en 2002 ont été examinés, et le nombre de consultations comparé avec les années 1992/93, 1997 et 2007. Les données pondérées ont été analysées en considérant différents facteurs sociodémographiques. De 1992 à 2002, le nombre de visites dentaires de la population (15–74 ans) déclinait de façon continue (1992/93: 70%, 1997: 66%, 2002: 63%), alors qu’on pouvait afficher une faible augmentation à 66% en 2007. Dans l’enquête de 2002, une grande partie de la population (74%) affirmait nettoyer les dents respectivement les prothèses plusieurs fois par jour, en majorité à l’aide d’une brosse-à-dents manuelle, alors que 28% utilisaient une brosse-à-dents électrique, et presque la moitié des interviewés se servait en outre de fil dentaire ou des cure-dents. Un nombre de visites inférieur et une attitude moins intensive vis-à-vis de l’hygiène buccodentaire ont été observés parmi les personnes âgées, les hommes, les couches sociales défavorisées, les fumeurs, les personnes avec >8 dents manquantes et le groupe avec des prothèses amovibles. Presqu’un quart de la population avait eu recours à un traitement orthodontique, avec la proportion la plus élevée chez les jeunes de 15–24 ans (56%).

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