

### Popular initiatives in 2014-2016 call for the introduction of mandatory dental care insurance in Switzerland: The contrasting positions at stake

Di Bella, Enrico; Leporatti, Lucia; Montefiori, Marcello; Krejci, Ivo; Ardu, Stefano

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

#### Empfohlene Zitierung / Suggested Citation:

Di Bella, E., Leporatti, L., Montefiori, M., Krejci, I., & Ardu, S. (2017). Popular initiatives in 2014-2016 call for the introduction of mandatory dental care insurance in Switzerland: The contrasting positions at stake. *Health Policy*, 121(6), 575-581. <https://doi.org/10.1016/j.healthpol.2017.04.004>

#### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY-NC-ND Lizenz (Namensnennung-Nicht-kommerziell-Keine Bearbeitung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by-nc-nd/4.0/deed.de>

#### Terms of use:

This document is made available under a CC BY-NC-ND Licence (Attribution-Non Commercial-NoDerivatives). For more information see:

<https://creativecommons.org/licenses/by-nc-nd/4.0>



ELSEVIER

Contents lists available at ScienceDirect

## Health Policy

journal homepage: [www.elsevier.com/locate/healthpol](http://www.elsevier.com/locate/healthpol)

Health Reform Monitor

# Popular initiatives in 2014–2016 call for the introduction of mandatory dental care insurance in Switzerland: The contrasting positions at stake ☆,☆☆



Enrico di Bella<sup>a,\*</sup>, Lucia Leporatti<sup>b</sup>, Marcello Montefiori<sup>a</sup>, Ivo Krejci<sup>c</sup>, Stefano Ardu<sup>c</sup>

<sup>a</sup> Department of Economics and Business Studies, University of Genoa, Via Vivaldi 5, 16126, Genoa, Italy

<sup>b</sup> Department of Political Science, University of Genoa, Piazza Emanuele Brignole, 16125, Genoa, Italy

<sup>c</sup> Division of Cariology and Endodontology, University Clinic of Dental Medicine (CUMD), University of Geneva, Switzerland

## ARTICLE INFO

## Article history:

Received 19 February 2016

Received in revised form 17 February 2017

Accepted 4 April 2017

## JEL classification:

H51

I12

I13

I14

## Keywords:

Dental care

Dental care costs

Dental care system reforms

Mandatory dental insurance

Swiss healthcare system

Unmet dental needs

## ABSTRACT

Switzerland's mandatory health insurance system provides coverage for a standard benefits package for all residents. However, adult dental care is covered only in case of accidents and inevitable dental illnesses, while routine dental care is almost completely financed out-of-pocket. In general, unmet health needs in Switzerland are low, but unmet dental needs are significant, when compared with other countries in Europe. Recent popular initiatives in Switzerland have aimed to introduce a mandatory insurance model for dental care through a mandatory contribution of 1% of gross salaries toward dental care insurance. In three cantons, the proposals have collected the required number of signatures and a public referendum is expected to be held in 2017/2018. If implemented, the insurance system is expected to have a significant impact on the dental profession, dental care demand, and the provision of dental services. The contrasting positions of stakeholders for and against the reform reflect a rare situation in which dental care policy issues are being widely discussed at all levels. However, such a discussion is of crucial relevance not only for Switzerland, but also for the whole of Europe, which has significant levels of unmet needs for dental care, especially among vulnerable and deprived individuals, and new solutions to expand dental care coverage are required.

© 2017 The Author(s). Published by Elsevier Ireland Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

### 1.1. Background

Guaranteeing universal health coverage to all people and communities is a primary goal worldwide [1]. However, the increasing needs of ageing societies are making the goal particularly challenging, even in high-income countries, and despite the fact that dental care is barely taken into account in the reform of the healthcare system. The financial burden of out-of-pocket dental care expenditure has gained attention recently owing to its

☆ This article has been made Open Access through funding by the European Observatory on Health Systems and Policies as part of its Health Systems and Policy Monitor ([www.hsppm.org](http://www.hsppm.org)), an innovative platform that provides a detailed description of health systems and provides up to date information on reforms and changes that are particularly policy relevant.

☆☆ EUROB.

\* Corresponding author.

E-mail address: [edibella@unige.it](mailto:edibella@unige.it) (E. di Bella).

affordability and weight in household budgets. Irrespective of the national healthcare system (National Health Service, NHS, or Social Insurance Program, SI), dental care is covered by public insurance schemes in most OECD countries [2]. However, as dental care is often covered at lower levels than other healthcare services, vulnerable and deprived populations in many countries experience considerable access barriers to dental care. Previous studies show that these barriers often cause children [3–5], special needs individuals [6], elderly people [7], rural dwellers [8], the homeless [9], and low-income individuals [10] to be largely affected by oral diseases, such as dental cavities and periodontitis. In addition, racial and ethnic minorities tend to experience disparities in oral health status [11–13].

In this context, there has been heated debate in Switzerland in the past 2 years concerning a reform proposal to introduce compulsory dental care coverage. This debate is particularly relevant for four main reasons: i) according to the European Union Statistics on Income and Living Conditions (EU-SILC), unmet dental needs in Switzerland are higher than in several other European countries; ii) routine dental care, such as caries and periodontitis treatment, is almost completely excluded from health insurance in Switzerland and the expenditure for adult patients is almost totally out-of-pocket; iii) the proposal's financial plan is based on a novel tax plan for private service provision; and iv) the effects of the reform, if implemented, are not clearly identifiable *a priori*. This debate is a rare situation in which dental care policy is discussed at all levels and is of widespread interest for policymakers to find new solutions.

### 1.2. Unmet dental care needs across Europe

The EU-SILC data on the percentage of population self-reporting unmet needs for medical or dental examination or treatment across Europe support the fact that dental care is often exclusive: 7.8% and 6.9% of EU-28 residents suffered from unmet dental care and medical care needs, respectively, in 2013. Of these people, the proportion who declared suffering unmet needs due to cost barriers was 5.1% for dental care and 2.4% for medical care. A more detailed comparison is provided in Fig. 1, which compares the proportion of respondents with unmet healthcare (plots on the left) and dental care (plots on the right) needs of the EU-28 (box-plots) and Switzerland (black line) by age group and income quantile. NHS countries are represented as shaded boxes while SI countries are represented as white boxes, based on the Kravitz and Treasure [14] classification. If we consider medical examinations, SI countries experience a higher average level of unmet needs for low-income individuals (1st quintile) than do NHS countries while there are no relevant differences for people of the 2nd–5th income quintiles. If we consider unmet dental care needs, the biggest differences across countries are recorded for middle-income people (3rd quintile): the average level of unmet dental care needs indeed tends to be higher in NHS countries compared to SI countries. The proportion of people reporting unmet dental care needs is higher than the corresponding proportion reporting unmet medical examination needs, particularly for low-income individuals (1st

quintile). Switzerland represents an interesting case study: compared with global percentages, Swiss residents exhibited lower percentages for any age interval and income group. However, for dental care (plots on the right), the Swiss case is similar to other countries. Table 1 shows statistics for the occupational status split on unmet (medical and dental) needs for the 15 EU countries before the 2004 enlargement plus Iceland and Norway (UE-15+2). As Eurostat provides only the EU-28 and EU-27 averages, the average values of this set of countries were computed as means of each country's percentage of unmet needs weighted for its overall population and size of each category of residents (employed, unemployed, retired, and other inactive) using Eurostat data. Swiss reporting unmet dental needs represented 6.5% of total Swiss respondents, and of these, 4.6% attributed this to cost barriers. This value is in line with both the EU-15+2 and EU-28 averages, but is higher than that recorded in several European countries, such as Finland, the UK, Germany, Luxemburg, and Austria. In Switzerland, occupational status seems to be strongly correlated to the level of self-reported unmet dental needs: the level of unmet dental needs is equivalent to both EU-15+2 and EU-28 countries' averages for employed individuals, but is significantly higher for the unemployed. Around 21.2% of unemployed Swiss report unmet dental needs because of economic reasons, which is one of the highest in Europe.

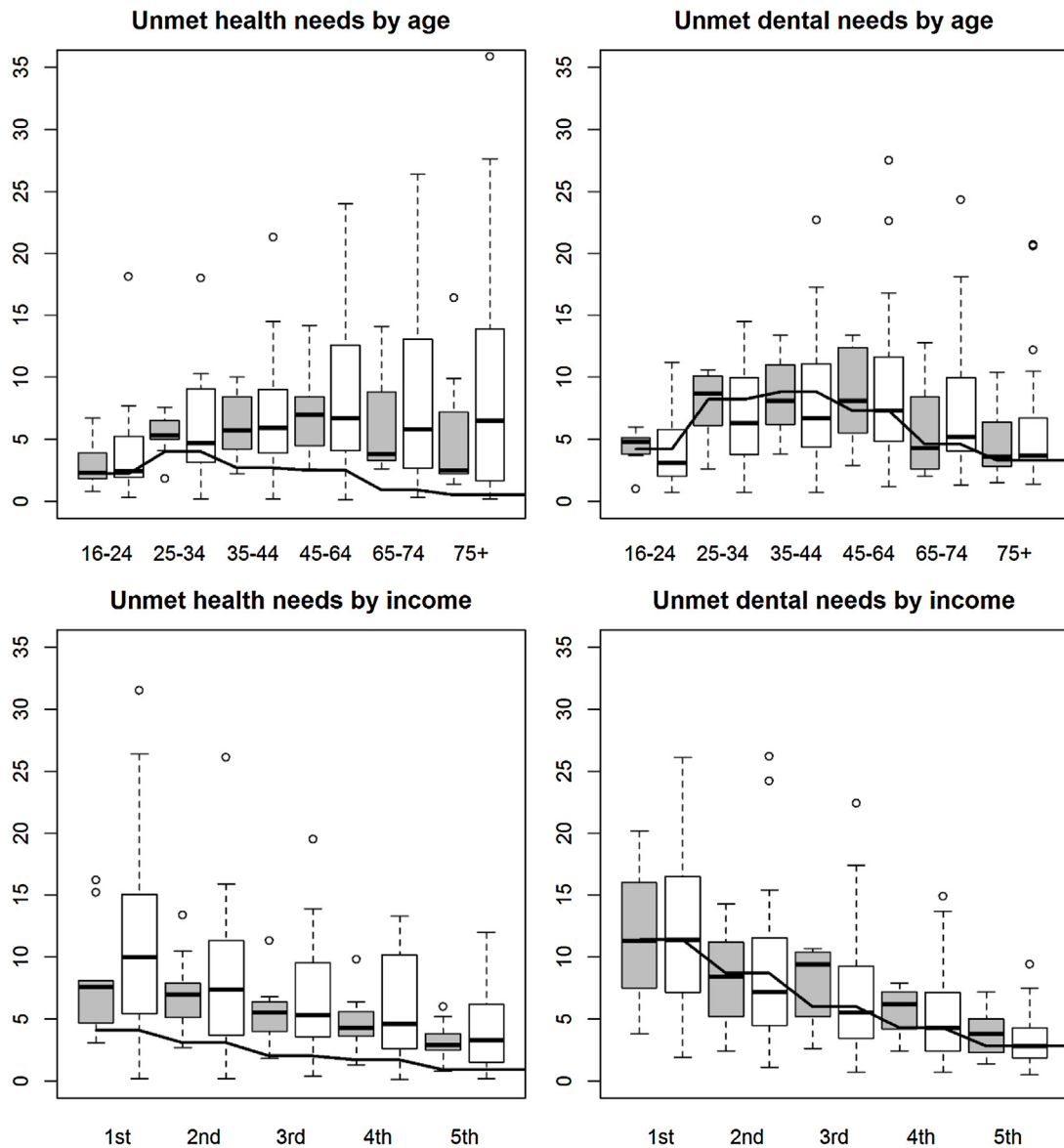
A cantonal split for the level of unmet dental needs in Switzerland allows us to evaluate different cantons and to highlight the national heterogeneity of perceived unmet dental needs. The overall percentage of households experiencing unmet dental needs was 4.21% in 2014, according to the Swiss Household Panel 2014 on 8532 households [15]. This percentage is the highest recorded over the past 16 years (it was 2.98% in 2007). However, there are several internal differences in the level of unmet needs across cantons. Italian- and French-speaking cantons, including those involved in referendum initiatives, are characterized by higher levels of unmet needs, with Genève recording the highest (6.44% in 2013 and around 11% in 2014), followed, in 2013, by Vaud (5.33%), Ticino (4%), and Valais (3.53%). Neuchâtel increased its level of unmet dental needs from 3.18% in 2013–7.14% in 2014. Two recent studies [5,7] analyze problematic access to oral care in French-speaking cantons. According to Guessous et al. [7], in Genève, the prevalence of unmet dental care is highly dependent on income level, and it is necessary to implement policies to reduce unmet dental care among socio-economically disadvantaged individuals. Conversely, German-speaking cantons seem to experience lower levels of unmet needs; in Zurich and Berne, the percentages of households declaring that they experience unmet needs are below 3%. These differences in the perceived level of unmet needs for dental care can be explained firstly by differences in economic conditions across Swiss cantons; indeed, German-speaking cantons tend to record higher average income. In addition, it noteworthy that in the Swiss healthcare system, decision-making powers are split among three levels of government (i.e., confederation, cantons, and municipalities) and cantons are responsible for setting eligibility rules for the receipt of subsidies covering insurance premi-

ums; consequently, economically vulnerable patients have different levels of protection depending on the canton in which they reside. Since unmet needs are a self-reported measure, tradition and perception can have a degree of influence on the recorded cantonal differences.

## 2. Swiss reform proposal

Over the past 2 years, interest in the Swiss healthcare system has increased owing to heated debate on possible reform of the current system. The Swiss healthcare system is particularly complex owing to sharing of decision-making powers among three different sets of

stakeholders: the three levels of government (i.e., confederation, cantons, and municipalities), corporatist bodies (including insurance companies and healthcare providers), and Swiss citizens who can pervasively influence health policy-making through veto and popular initiatives. On September 28, 2014, 62% of Swiss voters rejected a referendum to replace the current private Swiss healthcare system based on 61 private insurers and one managed by the central government. Nevertheless, the percentage of voters who voted “yes” in the referendum increased compared to previously (see [16] for a recent review). These results highlight the increasing perceived need for a change in the Swiss healthcare system, particularly in French-speaking



**Fig. 1.** Population reporting unmet needs for medical or dental examination or treatment by age class (16–24; 25–34; 35–44; 45–64; 65–74; 75+ years) and income quintile group (1st, 2nd, 3rd, 4th, and 5th), 2013 (% of population aged 16 years or over). Note: Shaded box-plots are for NHS countries; white box-plots are for SI countries; the line profiles represent values for Switzerland. Source: Eurostat—online data codes: hlth\_silc.08, hlth\_silc.09.

cantons, and this is relevant considering that Switzerland is traditionally characterized by liberal values and a low level of state intervention, and that Swiss are generally wealthy and healthy citizens satisfied with their convenient and efficient healthcare system [16].

Currently, adult routine dental treatment of caries and periodontitis is excluded from Swiss social insurance (except for costs generated by an accident or a serious and unavoidable disease of the masticatory system or by another serious illness or its aftermath), and private insurance for dental care is generally prohibitive and partial. Children's teeth are checked free of charge annually by school dentists and dental care is free for children in low-income families. Consequently, three citizens' initiatives led by the Swiss Socialist Party recently have been taken up in the cantons of Vaud (July 2014), Neuchâtel (August 2015), and Genève (July 2016) to vote for the introduction of mandatory dental insurance, presumably in 2017/2018. Similar initiatives are being prepared in other cantons.

A popular initiative is a form of direct democracy that allows suggesting laws at federal, cantonal, and municipal levels. Suggestions can be structured or generic, and they represent powerful instruments since, if a valid number of signatures is collected, the federal, cantonal, or municipal governments are forced to organize a vote or to propose a direct counter-proposal to the initiative (usually a more moderate proposal). If the initiative or the counter-proposal were to be approved, the legislation should be modified accordingly. Here, the promoters suggest financing the provision of compulsory dental insurance (which should also finance coverage for about 2.76 million people with no income, such as the unemployed, residents aged 14 years or less, and retired people) through a 1% income contribution, equally divided between an employer (0.5%)

and employee (0.5%). This scheme is similar to the *Assurance Vieillesse et Survivants*, which is compulsory insurance intended to cover the vital needs of an insured person in the event of retirement and to support the pensions of widows and widowers. However, there is no information on dental services included in the new system, and thus, the initiative must be intended as a proposal to provide universal dental care financed with the aforementioned 1% wage contributions. Therefore, there is growing debate on the economic sustainability of the reform and the ability to cover dental services (Fig. 2).

### 3. Positions at stake

According to proponents of reform, after years of improvement, the recent economic recession has worsened dental hygiene for low-income people. In the current system, dental care is dependent on financial capacity, which is a barrier to equitable access. Low-income individuals tend to be excluded from private care [7] and suffer more often from dental problems, disregarding dental care and regular check-ups because of poor oral health literacy and costs [7,11,17]. Proponents underline the redistributive effect of the reform, which, for instance, would cover dental care also for the unemployed, who suffer very high prevalence of unmet dental care needs in Switzerland. Furthermore, the choice of treatments and dentures is a function of financial situation. For example, the choice to have removable dentures is based on financial reasons and plays an immediate role in quality of life and overall health. Ignoring prevention may lead to more severe future problems, making it more expensive and complicated to intervene and leading to overuse of complicated, invasive, and expensive healthcare services. For example, delayed

**Table 1**

Population reporting unmet needs due to cost barriers for medical or dental examination or treatment by occupational status, 2013 (% of population aged 16 years or over).

Country	% of unmet needs due to barrier costs by occupational status									
	Medical examination or treatment					Dental examination or treatment				
	TOT	EMP	UNEMP	RET	OTH	TOT	EMP	UNEMP	RET	OTH
EU-28	2.4	1.5	5.2	2.9	3.0	5.0	4.2	12.2	4.4	5.5
EU-15+2	1.8	1.3	4.6	1.6	2.5	4.9	4.1	12.6	3.7	5.5
<b>Switzerland</b>	<b>0.9</b>	<b>1.1</b>	<b>3.4</b>	<b>0.4</b>	<b>1.1</b>	<b>4.6</b>	<b>4.5</b>	<b>21.2</b>	<b>2.7</b>	<b>5.5</b>
Austria	0.3	0.2	0.4	0.3	0.6	1.1	0.8	3.8	1.0	1.6
Belgium	1.8	1.1	7.2	0.9	3.0	2.8	1.8	9.9	1.4	4.7
Denmark	0.2	0.2	1.7	0.1	0.1	4.2	2.3	27.6	1.2	7.2
Finland	0.2	0.2	0.9	0.1	0.0	0.2	0.2	0.7	0.3	0.2
France	2.1	1.9	6.6	1.4	2.5	5.2	4.8	11.7	4.9	4.9
Germany	0.6	0.4	3.7	0.6	0.8	1.9	1.7	6.1	1.3	2.1
Greece	7.9	5.3	10.8	9.3	8.7	8.1	7.1	12.5	7.7	7.5
Ireland	2.3	2.6	3.5	0.6	1.9	5.5	6.3	9.1	2.0	4.5
Italy	6.0	4.6	10.0	5.8	7.0	9.6	8.9	15.4	8.9	9.5
Luxembourg	0.7	0.6	3.1	0.4	1.0	1.4	1.2	7.0	0.4	1.6
Netherlands	0.1	0.1	0.4	0.0	0.1	0.9	0.8	5.0	0.3	0.5
Portugal	2.4	2.1	4.7	1.8	2.7	14.2	11.5	26.1	13.2	14.7
Spain	0.6	0.4	1.5	0.3	0.3	7.4	5.6	16.1	4.3	6.7
Sweden	0.5	0.3	0.5	0.4	1.1	4.9	4.4	16.4	2.6	8.5
United Kingdom	0.1	0.1	0.3	0.0	0.2	2.3	2.5	4.3	1.0	2.4
Iceland	2.9	2.1	8.0	0.8	6.2	11.0	9.6	26.7	3.1	18.5
Norway	0.2	0.2	5.8	0.2	0.2	4.4	4.2	18.9	1.4	6.9

Source: Eurostat—online data codes: hlth\_silc\_13, hlth\_silc\_15

TOT = Total; EMP = Employed; UNEMP = Unemployed; RET = Retired; OTH = Other Inactive.

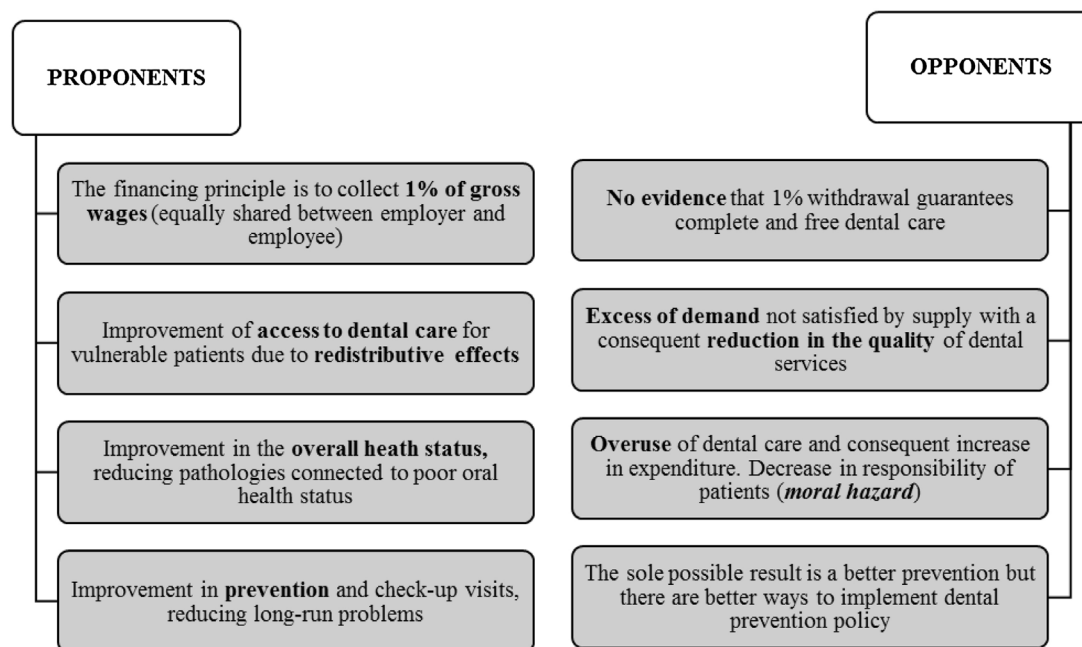


Fig. 2. Proponents and opponents.

Source: Our elaboration based on a review of newspapers websites (<http://www.lematin.ch>; <http://www.arcinfo.ch>; <https://www.migromagazine.ch>), the initiative promoters website (<http://initiative dentaire.ch>) and pamphlets of the Société Suisse des Médecins-Dentistes (<https://www.sso.ch>).

treatment of cavities tends to be associated with later use of emergency services [18–21]. In addition, poor dental health is associated with respiratory diseases, cardiovascular diseases, and diabetes [22–24]. Moreover, proponents argue that the inclusion of vulnerable patients, who are actually already mostly covered by cantonal social services, in an insurance system covering basic care could improve access, reduce medical prescriptions, and positively influence the early use of dental services, improving both overall health status and fairness of the healthcare system [7].

However, not all parties agree on the benefits of extending dental insurance: some [e.g., 25] believe that an overly generous healthcare system might lead to service overuse and a less efficient healthcare system. Dentists' associations and the *Société Suisse des Médecins-Dentistes* oppose the proposal, arguing that similar insurance would remove dental health responsibility from the majority of citizens, which is considered an inviolable principle in Switzerland. In addition, a mandatory dental health system might boost Swiss expenditure and administrative costs, raise bureaucracy, and increase inefficiencies, obliging patients to give up current high standards of Swiss dental care and leading to soaring overall costs of dental medicine. Moreover, a 1% contribution might not sufficiently finance the new scheme, and the decision to introduce additional wage contributions faces opposition from trade unions. Furthermore, the increasing demand for dental care will cause a shortage of dentists, which would probably lead to reduced time per patient and compromise service quality. This would be counterproductive from an economic perspective as using cheaper low-quality treatments might lead to relapses, more frequent need for re-interventions, and shorter treatment durability [26]. Swiss dentists value

the importance of being independent from public authority and believe that mandatory dental insurance would reduce citizen's independence. In addition, they claim that measures to encourage prevention and responsibility are already undertaken via a private scheme, offering, for example, check-ups to youngsters at moderate prices or for free. In addition, Swiss dentists insist that social institutions, such as school dental services and social dental clinics, are already in place, offering dental treatment for free or at an extremely reduced cost for children, special needs individuals, elderly people, the homeless, and low-income individuals.

#### 4. Discussion

The WHO, through the third Sustainable Development Goal (SDG), points to the importance of guaranteeing universal health coverage to all people and communities, ensuring healthy lives, and promoting wellbeing for all at all ages [1]. Whereas the healthcare system represents a key point for policymaking, oral healthcare issues rarely represent a priority for health policy agendas, as they are not life-threatening [27,28]. However, they represent a significant part of healthcare spending in Europe: current EU-27 spending on oral health is approximately EUR 79 billion and is expected to increase to EUR 93 billion by 2020 owing to demographic change [29]. According to the Swiss Federal Office of Statistics, the total cost of dental care in 2014 was CHF 4.1 billion or approximately CHF 490 per capita per month, representing around 20% of a Swiss household's health expenses [30]. Patients pay 90% of all dental care costs, the rest being covered by social and private insurance or other programs.



Oral health should indeed be considered an integral part of overall health as it is strongly connected to general health status: poor oral health might be responsible for other severe health problems (e.g., malnutrition, childhood speech problems, and infections) [28] and is linked to reduced daily activities [31] and quality of life. In addition, poor oral health is responsible for spillover effects, which affect the entire healthcare system in terms of costs. The extent of the Swiss reform is not predictable given the shortage of information on dental care services to be financed by the 1% contribution, how they would be provided, and how to avoid a moral hazard. Therefore, the main difference between proponents and opponents derives from a clear financing scheme for unspecified dental care services.

Data available on Switzerland are not adequate to formulate specific evidence-based policy suggestions; the information available is based on the aforementioned self-reported unmet dental care needs. It is noteworthy that it might be inappropriate to seek the introduction of mandatory dental insurance based on self-reported unmet dental needs only, because these might reflect subjective perceptions influenced by socio-economic characteristics of respondents and not by their objective dental health status. Nonetheless, unmet needs for dental examinations in Switzerland are much higher than those for medical examinations and, in turn, are similar to unmet needs for dental examinations in the majority of other European countries, regardless of the presence, absence, or type of dental insurance. Unmet needs for dental examinations and treatments in Switzerland seem to be quite focused on unemployed and low-income groups. This is in accordance with Guesous et al. [7]. However, mandatory insurance for oral care could cause a moral hazard for insured patients, who might be induced to neglect their self-responsibility and reduce their oral hygiene, thereby leading to increased costs for curative treatment, which, in general, tends to be much higher with respect to prevention and prophylaxis. In addition, excess demand by the insured might exceed, at least in the short term, the capacity of Swiss dentist supply, with an overall loss in care quality. These issues might be even more problematic if the extension of dental insurance starts to interest the most populated cantons (e.g., Zurich and Bern); in this case, the impact on demand and supply would be even higher. Nevertheless, the abovementioned effects of socio-demographic characteristics on dental needs suggest that the sole increase in prevention through periodic and maybe compulsory and free check-ups might not be sufficient to contain possible excess demand for advanced (and costly) dental care.

## 5. Conclusions

This debate on Swiss dental reform is important if we consider there is no similar international experience and that, according to EU-SILC data, almost 8% of Europeans report experiencing unmet dental care needs, but only a minority of countries have considered reforming their current systems to improve access to oral care (e.g., the UK in 2006 [32]). Generally, recent European initiatives have been addressed to promote prevention, especially

among children and adolescents. Personal responsibility and lifestyle are indeed key factors to improve people's oral health; risk factors for oral diseases include unhealthy diet, tobacco use, harmful alcohol use, and poor oral hygiene. Thus, prevention policies and informative campaigns can be sufficient to improve people's oral status significantly. For example, England is moving in this direction through the adoption of an evidence-based toolkit that guides dental teams in giving advice to their patients with the aim of ensuring the prevention of oral diseases [33].

Other European countries have followed the so-called non-operative caries treatment and prevention (NOCTP) method, often referred to as the Nexö method, in addressing prevention policies for children and adolescents under the age of 18 years and have found a positive long-term effect on caries prevention [34,35]. The NOCTP method is based on three pillars: education of parents, children, and adolescents for understanding dental caries as a localized disease; intensive training in home-based plaque control; and early professional non-operative intervention. Among others, the Dental Service School in Denmark currently screens 33,000 children while the Nexö program has significantly reduced carious lesions [36]. Consequently, we believe that reinforcement of prevention aimed at the non-appearance of the dental illness should be a preferred initiative over treatment of the illness itself. The costs of such action would be significantly lower than the dental insurance initiative, because this system specifically would target the at-risk group of patients and primarily would work with prophylaxis assistants. In addition, expanding the number of people with access to social insurance programs might be a viable and cheap way to guarantee preventive and prophylaxis treatment for a larger share of adults. The additional resources for this counter-proposal would be CHF 1.0–1.5 million per year and could be financed by a tax on soft drinks, fruit juices, and energy drinks as well as a small increase in taxes on tobacco.

The oral health status of individuals should be a priority for policymakers aiming to improve citizens' well-being and contain expenditure. Therefore, the current Swiss debate could become a starting point for a wider European debate focusing on the introduction of alternative dental care systems that could improve access without incentivizing the moral hazard of insured patients.

## Conflict of interest statement

The authors declare that they do not have any conflict of interest.

## Acknowledgments

The authors did not receive any funding to undertake this research.

## References

- [1] United Nations. Global sustainable development report; 2016. Available at: <https://sustainabledevelopment.un.org/globalsdreport>. Accessed February 01, 2017.

- [2] Paris V, Devaux M, Wei L. Health systems institutional characteristics: A survey of 29 OECD countries. *OECD Health Working Papers*; 2012, 50. OECD Publishing.; 2017.
- [3] Manski R, Edelstein B, Moeller J. The impact of insurance coverage on children's dental visits and expenditures, 1996. *J Am Dent Assoc* 2001;132(8):1137–45.
- [4] Dye B, Arevalo O, Vargas C. Trends in paediatric dental caries by poverty status in the United States, 1988–1994 and 1999–2004. *Int J Paediatr Dent* 2010;20(2):132–43.
- [5] Baggio S, Abarca M, Bodenmann P, Gehri M, Madrid C. Early childhood caries in Switzerland: a marker of social inequalities. *BMC Oral Health* 2015;15(1):1.
- [6] Owens P, Kerker B, Zigler E, Horwitz S. Vision and oral health needs of individuals with intellectual disability. *Ment Retard Dev Disabil Res Rev* 2006;12(1):28–40.
- [7] Guessous I, Theler JM, Izart CD, Stringhini S, Bodenmann P, Gaspoz JM, et al. Forgoing dental care for economic reasons in Switzerland: a six-year cross-sectional population-based study. *BMC Oral Health* 2014;14(1):1.
- [8] Skillman S, Doescher M, Mouradian W, Brunson D. The challenge to delivering oral health services in rural America. *J Public Health Dent* 2010;70:S49–57.
- [9] Conte M, Broder H, Jenkins G, Reed R, Janal M. Oral health, related behaviors and oral health impacts among homeless adults. *J Public Health Dent* 2006;66(4):276–8.
- [10] Vargas CM, Ronzio CR. Disparities in early childhood caries. *BMC Oral Health* 2006;6(Suppl. 1):S3–7.
- [11] Dye B, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans GP, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. Hyattsville, MD: National Center for Health Statistics; 2007.
- [12] Flores G, Tomany-Korman S. The language spoken at home and disparities in medical and dental health, access to care, and use of services in US children. *Pediatr* 2008;121(6):e1703–14.
- [13] Dietrich T, Culler C, Garcia RI, Henshaw MM. Racial and ethnic disparities in children's oral health. *Natl Surv Child Health J Am Dent Assoc* 2008;139(11):1507–17.
- [14] Kravitz AS, Treasure ET. *Manual of dental practice*. Brussels: Council of European Dentists; 2008.
- [15] Swiss Foundation for Research in Social Sciences – FORS. *Swiss Household Panel* 2014; 2014. Available from: <http://forscenter.ch/en/our-surveys/swiss-household-panel/>.
- [16] De Pietro C, Crivelli L. Swiss popular initiative for a single health insurer. . . once again! *Health Policy* 2015;119(7):851–5.
- [17] Haley J, Kenney G, Pelletier J. Access to affordable dental care: gaps for low income adults. Menlo Park, CA: Kaiser Commission on Medicaid and the Uninsured; 2008.
- [18] Cremonesi P, di Bella E, Montefiori M. Cost analysis of emergency department. *J Prev Med Hyg* 2010;51(4):157–63.
- [19] Davis E, Deinard A, Maïga E. Doctor, my tooth hurts: the costs of incomplete dental care in the emergency room. *J Public Health Dent* 2010;70(3):205–10.
- [20] Cohen L, Bonito A, Eicheldinger C, Manski R, Macek M, Edwards RR, et al. Comparison of patient visits to emergency departments, physician offices, and dental offices for dental problems and injuries. *J Public Health Dent* 2010;71(1):13–22.
- [21] Cremonesi P, di Bella E, Montefiori M, Persico L. The robustness and effectiveness of the triage system at times of overcrowding and the extra costs due to inappropriate use of emergency departments. *Appl Health Econ Health Policy* 2015;13(5):507–14.
- [22] Scannapieco F, Ho A. Potential associations between chronic respiratory disease and periodontal disease: analysis of national health and nutrition examination survey III. *J Periodontol* 2001;72(1):50–6.
- [23] Blaizot A, Vergnes JN, Nuwwareh S, Amar J, Sixou M. Periodontal diseases and cardiovascular events: meta-analysis of observational studies. *Int Dent J* 2009;59(4):197–209.
- [24] Teeuw W, Gerdes V, Loos B. Effect of periodontal treatment on glycemic control of diabetic patients: a systematic review and meta-analysis. *Diabetes Care* 2010;33(2):421–7.
- [25] Newhouse J. *The erosion of the medical marketplace*. Santa Monica, CA: Rand; 1977.
- [26] Krejci I, Dietschi D. Amalgam and adhesive restorations—some aspects on economy and quality of life. In: Novakova V. *Amalgam and health—new perspectives on risks*. Stockholm, Sweden: Swedish Council for Planning Coordination of Research; 1999. p. 217–23.
- [27] Manning W, Bailit H, Benjamin B, Newhouse J. The demand for dental care: evidence from a randomized trial in health insurance. *J Am Dent Assoc* 1985;110(6):895–902.
- [28] Committee on Oral Health Access to Services (US). *Improving access to oral health care for vulnerable and underserved populations*. National Academies Press; 2011.
- [29] Patel R.; 2012.
- [30] Confédération Suisse, Office Fédéral de la Statistique. *Coût du système de santé selon le fournisseur de biens et services et selon le régime de financement* 2014; 2014, online data code: T 14.05.01.05. Available from: <http://www.bfs.admin.ch/bfs/portal/fr/index/news/01/nip-detail.Document.154444.xls>.
- [31] Gift H, Reisine S, Larach D. The social impact of dental problems and visits. *Am J Public Health* 1992;82(12):1663–8.
- [32] Whittaker W, Birch S. Provider incentives and access to dental care: evaluating NHS reforms in England. *Soc Sci Med* 2012;75(12):2515–21.
- [33] Public Health England. *Delivering better oral health: an evidence-based toolkit for prevention*, third edition; 2017. PHE gateway number: 2014126.
- [34] Kuzmina I, Ekstrand KR. Outcomes 18 years after implementation of a nonoperative caries preventive program—the Nexo-method on children in Moscow, Russia. *Community Dent Oral Epidemiol* 2015;43(4):308–16.
- [35] Fleming E. There is a Positive Long-term Effect of the Nexo-method on Caries Prevention. *J Evid Based Dent Pract* 2016;16(1):67–9.
- [36] Thylstrup A, Vinther D, Christiansen J. Promoting changes in clinical practice: treatment time and outcome studies in a Danish public child dental health clinic. *Community Dent Oral Epidemiol* 1997;25(1):126–34.