Situation analysis and typology of oral health coverage and financing in Europe – Working paper

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Situation analysis and typology of oral health coverage and financing in Europe – Working paper

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Abstract

Background and objectives

In many countries oral health (OH) services are insufficiently covered by public insurances, which results in financial hardship and OH care being the second main driver of catastrophic health spending in Europe. To suggest feasible and suitable policies that promote the expansion of OH coverage and its integration into health systems, it is imperative to map the current situation of OH coverage and financing. This work aims to perform a situation analysis by mapping the current coverage situation and funding mechanisms of OH care in European countries. It will develop a typology for OH financing and identify market failures, as a baseline for policy recommendations.

Methods

This study uses qualitative, cross-country, and comparative analysis, based on document analysis. A template was developed based on two analytical frameworks to collect comprehensive and up-to-date data on the coverage and financing of OH services in selected European countries (Denmark, Estonia, France, Germany, Hungary, Ireland, Malta, the Netherlands and Portugal). Data was collected in collaboration with partners from the PRUDENT (Prioritization, incentives and Resource use for sUstainable DENTistry) consortium who consulted health authorities and experts (from e.g. ministries of health, payer agencies, and regulators), and reviewed policy documents from their respective countries. The results presented in this working paper are only preliminary, and include data from Germany, Hungary, Estonia and Denmark. Any interpretation should be made with caution, as this is a working paper.

Preliminary results

While children mostly receive broader coverage across countries, the degree of coverage varies more for adults. Albeit partially, all countries cover most preventive care and simple treatments such as fillings and extractions, while implants and dentures are either not or only partially covered. Some countries provide special coverage for specific population groups such as chronically ill people or other vulnerable groups such as low-income or disabled. Regarding funding, in many countries (e.g. Germany) there are no earmarked budgets specific for OH. Public OH is financed from the general health budgets, and funds flow through the same mechanisms as other health services: same funds collection methods and sources, same allocation mechanisms to payer agencies, and in many cases, similar methods of payment for providers.

Discussion

Countries should design OH coverage for populations and services based on their cultural values and priorities. Coverage should be accompanied by sufficient funds to translate in-theory legislation into in-practice availability. It will be important to shape funds collection as progressively as possible and to protect low-income and vulnerable populations from financial hardships. Health systems reforms in funding mechanisms, allocation strategies, and payment mechanisms for OH professionals are essential to mitigate financial barriers and ensure quality care provision.

Introduction

Worldwide, most countries cover oral health (OH) only partially within their public system compared to other health services. In OECD countries, public spending makes up only 32 % of total health spending for dental care, compared to 90 % for hospital care(OECD, 2023). Consequently, many OH services and population groups are insufficiently covered by their public insurance, which results in financial hardship for those in need and OH care being the second main driver of catastrophic health spending in Europe (World Health Organization and International Bank for Reconstruction and Development / The World Bank, 2021). Globally, catastrophic expenditure on OH is more prevalent among wealthier, urban and larger households and in higher-income countries. Yet, the negative effects of limited public spending on OH are underestimated, as lower-income and vulnerable households report higher rates of unmet needs, with negative consequences on individuals' health (Masood et al., 2015; Thomson et al., 2019; World Health Organization and International Bank for Reconstruction and Development / The World Bank, 2023). The threats in inadequate coverage of OH include not only financial hardship, but for those who forgo (adequate) care, the exacerbation of oral diseases can lead to high disease burdens, including infections, emergency hospital admissions, or even death (Bayetto et al., 2020; Williams et al., 2019).

The need to better cover OH and integrate it into public health systems has recently gained increased momentum in policy agendas (Benzian & Listl, 2021; Winkelmann et al., 2023). Since 2019, the WHO has been developing a global OH action plan that aims to integrate OH care into universal health coverage (UHC) (WHO SEVENTY-FOURTH WORLD HEALTH ASSEMBLY, 2021; World Health Organization, 2021). At the same time, the Lancet established a Commission for Oral health[1] to create evidence, support the improvement of access to OH globally and reduce inequities (The Lancet, n.d.). Yet these initiatives do not define what to cover and how to fund the covered care. Unlike other health services, public coverage of OH varies widely across countries (Henschke et al., 2023; Klingenberger et al., 2021). Many high-income countries in Europe and Canada commit to a minimum level of basic dental care that usually includes preventive care, such as routine oral exams, X-rays, fillings, management of gum diseases and tooth extractions (Allin et al., 2020; Henschke et al., 2023; Winkelmann, Gómez Rossi, Schwendicke, et al., 2022) - although for most population groups these still require co-payment from individuals.

To suggest feasible and suitable policies that promote the expansion of OH coverage and its integration into health systems, it is imperative to map the current situation of OH coverage and financing (Kutzin, 2001). It is particularly important to understand how much and what shares of funds are public, and thus more progressive (i.e. payment according to the capacity to pay and not to the need; with contributions increasing with the income), and whether these funds are enough to grant coverage and access to OH care. Mapping the sources and flow of funds enables us to understand to what extent funds are used in an efficient manner, both allocatively and technically (Cylus et al., 2016). Looking at whether allocative efficiency can be improved indeed means further understanding how the covered populations and services can better align with the Society's priorities or if funds are allocated among payer agencies in a fair, systematic, and transparent manner that ensures sufficient funds to cover the needs of the population under its responsibility. In technical efficiency, we can assess whether payment mechanisms create incentives for providers to deliver proper care, not too much, too little, or unsuitable care. And to what extent payment mechanisms mitigate market failures such as cream skimming, moral hazard or principal-agent failures. While there is extensive work describing the financing of health systems in general, there is scarce detailed

[1] http://oralhealthcommission.org/about-the-commission/

and up-to-date literature describing all functions of financing OH services in Europe in a systematic way (Blinkhorn et al., 2005; Winkelmann, Gómez Rossi, & van Ginneken, 2022).

Objectives

This work aims to fill this knowledge gap on the current coverage and funding situation of OH care in European countries. Specifically, this study will develop a typology for OH financing and identify market failures, as a baseline for policy recommendations. The results intend to shed light on blind spots of coverage and financing that undermine equity in access, financial protection, and health outcomes. In addition, this work will highlight potential mechanisms to improve the financing functions in each reviewed country and recommend policies to improve allocative and technical efficiency.

Materials and Methods

This study uses qualitative, cross-country, and comparative analysis, based on document analysis. A template was developed to collect comprehensive and up-to-date data on the coverage and financing of OH services in selected European countries. Countries were purposefully selected from the PRUDENT (Prioritization, incentives and Resource use for sUstainable DENTistry) consortium to ensure a rich and varied group of case studies based on criteria that may influence the typologies of coverage and financing of OH. The criteria for purposefully selecting the countries include a broad range of OH financing approaches diverse levels of expenditure on health per capita and as a percentage of the GDP, diverse public share of spending on health and in OH specifically, different organizations of health systems (national/ statutory health insurance or national health systems), and different geographic and population sizes.

Data collection tool: a template

Data was collected using a template developed based on two analytical frameworks: one for universal coverage and one for financing health systems. The template guides experts on how to collect standardized and comparable data about coverage and financing OH in European countries (see Appendix for the template). To assess 'coverage' the authors developed a table following the "Coverage cube" framework (Busse & Schlette, 2007), which identifies three dimensions of coverage: population, services, and costs. The populations and services listed in the table were compiled based on previous reviews (Allin et al., 2020; Henschke et al., 2023; Winkelmann, Gómez Rossi, & van Ginneken, 2022) and in consultation with dentists and specialists in OH policies. To assess 'financing' of oral health, we compiled questions based on three financing frameworks that describe the flow of funds, financing functions, and funding players (Busse et al., 2007; Kutzin, 2001; Mossialos et al., 2002; T. Rice et al., 2018). The template contained questions about sources of funds for OH, raising public funds, pooling and allocation to payer agencies, and payments to OH providers. The last section asked open questions about OH market failures such as selection, over- or under-treatment, efficiency, economic incentives, and possible innovative financing models. The template was designed to gather information in four main domains, i.e. (i) coverage, (ii) collecting funds, (iii) pooling and (re)allocating funds, and (iv) provider payment.

To validate the data collection tool, the template was pre-tested with data from Portugal and the UK between January and March 2024. After revising the template, it was then sent to the PRUDENT PIs (see below), the vectors of data collection, who then contacted experts on OH economics, health systems and policies, OH and public health in their respective countries.

Data collection

Documents and data were collected by the authors and in collaboration with partners from the PRUDENT consortium of institutions from nine European countries (i.e., Denmark, Estonia, France,

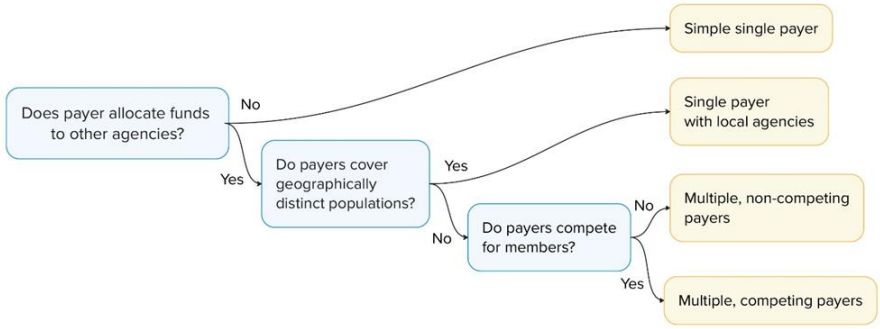
Germany, Hungary, Ireland, Malta, the Netherlands and Portugal). First, an academic and grey literature review was performed, including legal documents, policy papers, and web search to screen public coverage and financing of OH. Then, PRUDENT partners filled the template with the data extracted from the documents and literature review. They further collected data from informants by consulting health authorities and experts (from e.g. ministries of health, payer agencies, and regulators), and reviewed policy documents from their respective countries. Additionally, countries' experts were asked to assess market failures related to the OH financing and their underlying causes.

Data analysis and cross-validation

To increase robustness and validity, the coding and analysis of data from each country was conducted by at least two researchers independently. In cases of discrepancies, these were discussed and agreed on. We condensed the data into comparative tables and created figures to illustrate the sources and flow of funds. The analysis included creating typologies of coverage and financing and clustering the countries by typology. An example of typology is illustrated in Figure 1. We sent the results back to the countries' experts for validation or correction.

We identified 'best practices' that can be recommended to policymakers. For example, innovative purchasing and contracting methods that incentivize preventive OH care or stronger integration with primary care and public health services. The clustering of countries into the typologies was reviewed, cross-validated and approved by the national experts involved in this task.

Figure 1: An analytical framework for understanding typologies of payer agencies



Source: authors compilation based on (Kutzin, 2001)

Preliminary Results

Data are still being analysed, and the results presented here are preliminary and should be interpreted with caution. During the process of data collection, it has become evident that, unlike other domains within healthcare, accessing the data landscape concerning OH coverage and financing presents considerable challenges. Data is intransparent, unavailable, scattered or difficult to gather. Due to lighter regulatory oversight, there are less explicit coverage and service delivery guidelines, fee schedules, or financing frameworks in place. National experts encounter difficulty in providing definitive assessments of the current landscape, as there lacks a comprehensive database containing all relevant information.

Coverage

Information pertaining to the coverage of OH population groups, services or costs, if discernible at all, necessitates sourcing from diverse outlets and the involvement of multiple stakeholders. In the following, the preliminary results of the data analysis to date are presented which include data from Germany, Hungary, Estonia and Denmark.

Table 1 shows the results of coverage for OH services and levels of costs publicly covered for adults. Most countries differentiate coverage according to different age groups. However, these age groups can vary between countries. In Germany, for example, all individuals over the age of 18 are considered adults, whereas in other countries further, such as Denmark, distinctions are made between young adults and older people (Table 1).

Table 1: Public coverage of OH for adults, by type of service and level of cost coverage, 2024

	Population group: Adults						
	Germany	Hungary		Estonia		Denmark	
	≥18 years	19-62 years	> 62 years	19-62 years	> 62 years	18-25 years	>25 years
Emergency care	100%	100%	100%	100%	100%	N/A	N/A
Routine exams	100%	100%	100%	50%	87.5%	61.14%	24.12%
Routine x-rays	100%	N/A	N/A	50%	87.5%	0%	0%
Scaling	100%	100%	100%	50%	87.5%	34.11%	34.11%
Fluoride varnish	0%	N/A	N/A	N/A	N/A	N/A	N/A
Simple (direct) fillings	100%	100%	100%	50%	87.5%	19.48%	19.48%
Simple tooth extractions	N/A	N/A	N/A	N/A	N/A	26.88%	26.88%
Surgical tooth/root extractions	100%	N/A	N/A	50%	87.5%	100%	100%
Root canal (anterior)	100%	100%	100%	50%	87.5%	N/A	N/A
Root canal (posterior/ molar)	100%	100%	100%	50%	87.5%	N/A	N/A
Periodontal (gum) treatment	100%	100%	100%	50%	87.5%	100%	100%
Crowns and bridges	60-75%	N/A	N/A	50%	87.5%	N/A	N/A
Implants	60-75%	N/A	N/A	N/A	N/A	N/A	N/A
Dentures	60-75%	N/A	N/A	0%	≤100%	N/A	N/A
Esthetic	0%	N/A	N/A	N/A	N/A	N/A	N/A
Orthodontic treatments	0-100%	≤100%	≤100%	N/A	N/A	N/A	N/A

Sources: Data for Germany from GKV-Spitzenverband (https://www.gkv-spitzenverband.de/media/dokumente/krankenversicherung_1/zahnaerztliche_versorgung), Kassenzahnärztliche Bundesvereiningung (https://www.kzbv.de/gebuhrenverzeichnisse.334.de.html#), SGB V (https://www.sozialgesetzbuch-sgb.de/sgbv/1.html); Data for Hungary from Egészségvonal (https://egeszsegvonal.gov.hu/en/health-care-system/dental-care.html); Data for Estonia from Tervisekassa (https://www.tervisekassa.ee/en/people/dental-care); Data for Denmark from tandlaegeforeningen (https://www.tandlaegeforeningen.dk/media/18577/omsorg-okt-23.pdf); all accessed on 25.03.2024;

The degree of coverage varies across countries for adults. All countries fully cover emergencies but no aesthetic treatments. Albeit partially, all countries cover most preventive care and simple treatments such as fillings and extractions. Denmark does not cover advanced treatments for adults. Implants and dentures are either not covered or partially covered, reflecting a lower prioritization of these services. There is great variance in coverage of some services across the countries, such as root canals, that are fully covered in Germany and Hungary, partially covered in Estonia.

In addition, some countries provide special coverage for other population groups such as chronically ill patients or other vulnerable groups (not reported in the table). Germany, for instance, covers implants and crowns for patients with rare diseases (e. g., genetic defects), accidents, tumors and other illnesses that prevent the use of dentures. Estonia has very broad coverage for people with physical and mental special needs who are unable to take care of their own oral hygiene and people with certain oncological and hematological diagnoses.

Some countries also have restrictions regarding the annual number of reimbursable services. In HU, for example, routine exams are 100% covered, but only once a year; the same applies to simple fillings. There are also some special regulations that make the degree of coverage dependent on preventive measures: In Germany major services have a reimbursement rate fixed at 60% which is increasing for patients that regularly used prophylactic services.

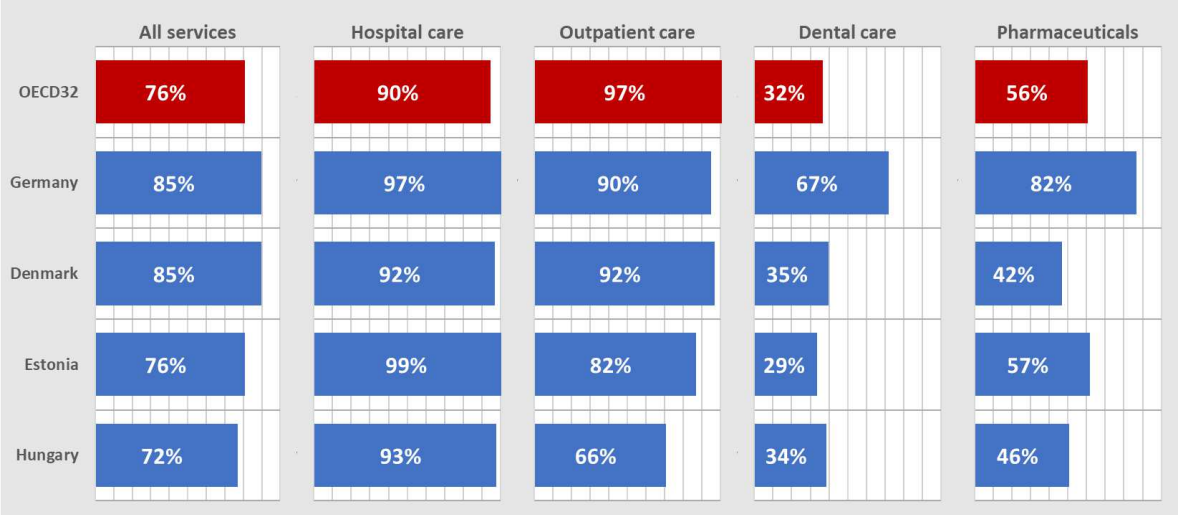
Importantly, there can be major differences in coverage with regard to the chosen material (e.g. for fillings). For example, the data shown is usually based on the "cheapest" standard material. However, dentists often make strong recommendations for more advanced but also more cost-intensive materials, and the additional costs are usually not covered by public coverage, or only to a small extent.

In summary, there are differences in public coverage between different population groups, such as children and adults, restrictions with regard to the annual number of services reimbursed, and differences with regard to the material selected. It is important to note that the data about coverage does not reflect the access to care. It is likely that in certain countries while services might be covered, access is low due to costs, waiting times, distance, or other reasons. It is important to differentiate formal coverage from access and utilization of service, as there might be important gaps between them.

Financing

Partial public coverage is often reflected in high private expenditure, either through out-of-pocket (OOP) payments or voluntary health insurance (VHI). In OH this is even more salient, as services are among the most costly in Europe, just behind diabetes and cardiovascular diseases (Winkelmann, Gómez Rossi, & van Ginneken, 2022). In European health systems, curative health services are typically widely covered. Public sources fund most spending on hospital and outpatient care, and in many countries, also most of the pharmaceutical expenditures. In contrast, public coverage of OH services is significantly less regulated, with a smaller fraction of a third on average of total expenditure covered by public sources (see Figure 2).

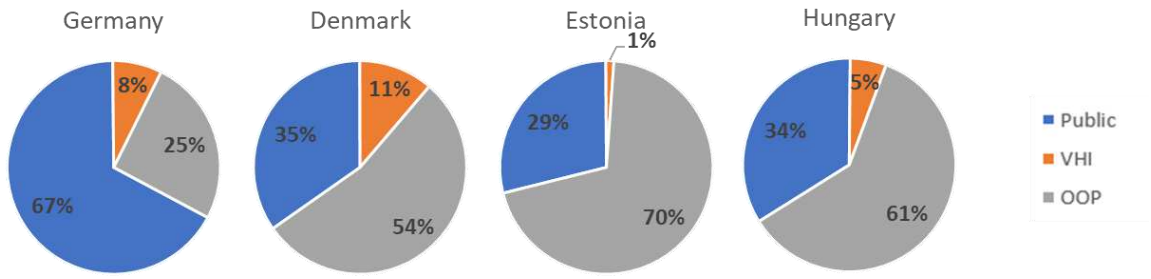
Figure 2: Share of public funding by type of care in selected countries, 2021 (or nearest year)
Government and compulsory insurance spending as proportion of total health spending by type of care



Source: (OECD, 2023)

Figure 3 shows expenditures on OH in 2021 by different sources of funds. Reflecting the wider coverage and possibly also better access and higher utilization of OH care in Germany, two-thirds (67%) of total spending on OH was financed by public sources. In contrast, only about one third of the spending on OH is financed by public source in Denmark, Estonia and Hungary. Figure 2 also shows that in Denmark, and to some extent in Germany, VHI play an important role in financing OH, and it pays 11% and 8% of OH spending, respectively. Figure 3 also reveals that despite the broad coverage of OH in Estonia, in practice, most of the expenditures (70%) are financed out-of-pocket, indicating a very low access to publicly covered services.

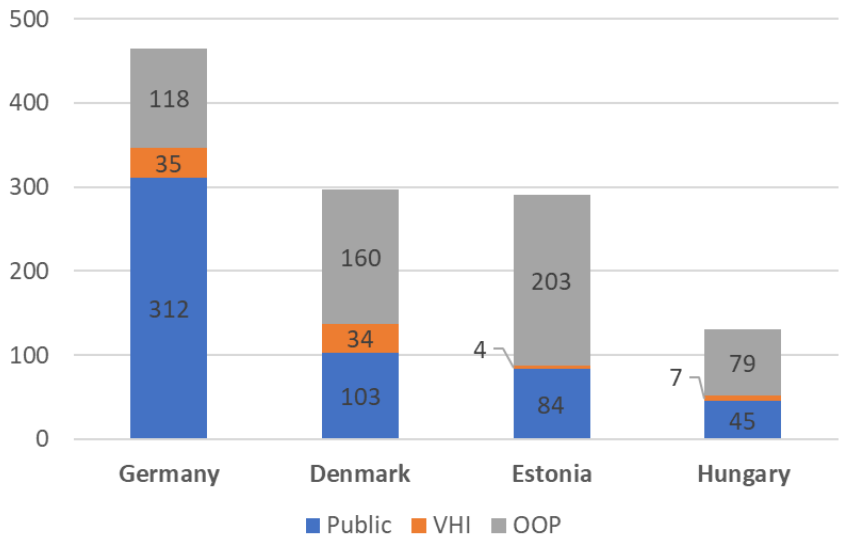
Figure 3: Expenditures on oral health as share of total health spending by sources of funds



Comments: Data from year 2021. Covers only oral outpatient curative care.
Sources: (OECD, 2023)

It is noteworthy in Figure 4 the difference in per-capita spending on OH in the four countries. While Table 1 showed a similar policy of coverage of OH among adults in Germany and Hungary, it is clear that Germans spend more per capita than all countries, particularly more than Hungary. This difference can be attributed both to lower prices and lower utilization in Hungary. Similarly, the coverage policy looked broader in Estonia than in Denmark, but per-capita spending is similar, indicating that prices and utilization might be lower in Estonia, particularly through the public system.

Figure 4: Per capita expenditures on oral health by sources of funds (USD, PPP)

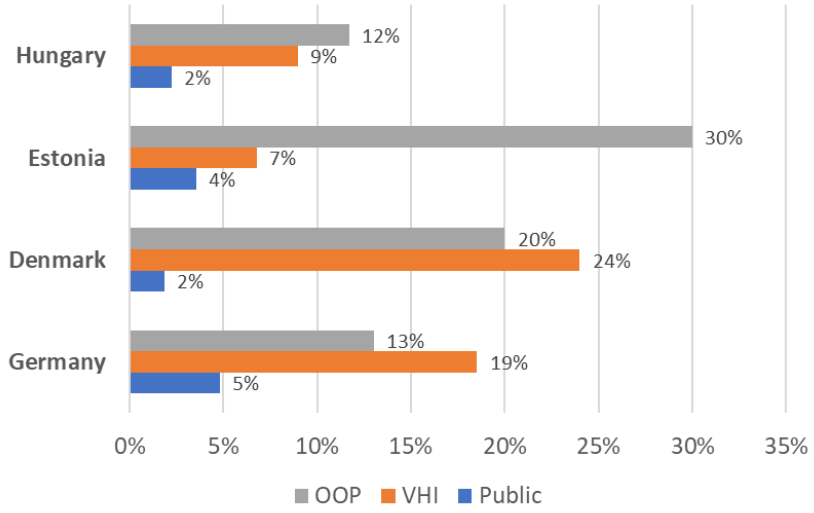


Comments: Data from year 2021. Covers only oral outpatient curative care.

Sources: (OECD, 2023)

Health systems' public spending in OH on our selected countries is very low compared to the total health expenditure (THE), and stands below 5% (Figure 5). A significantly larger proportion of private expenditure is accounted for by oral health. For example, in Estonia 30% of all OOP pays for OH, and around 7% of all VHI funding covers OH services.

Figure 5: Share of oral health spending in total health spending by sources of funds



Comments: Data from year 2021. Covers only oral outpatient curative care.
Sources: (OECD, 2023)

Flows of funds – the case of Germany

With limited public coverage and without earmarked budgets, OH in Germany is financed through the same mechanisms as other health services.

1. *Collection and sources of funds*

Within Germany's Statutory Health Insurance (SHI) which constitutes the public system, there is no dedicated collection of public funds solely for OH. In addition, there is no earmarked budget oral health. A total of 95 competing sickness funds are responsible for both OH and general health. All public spending on OH is financed by the SHI from a general budget for all covered services, meaning that it is a demand-driven budget allocation. We assume that the flow of OH funds is the same of that of general health, which is described here. Most public funds (84.7%) are collected through earmarked income-related SHI contributions. The remaining 15.3% of public funds are mainly collected through direct taxes, such as income tax, and indirect taxes, such as VAT. The collector of SHI contributions are the sickness funds, and the central government is the collector of direct and indirect taxes.

2. *Pooling and (re)allocation of funds*

In Germany there is no separate pooling or redistributions mechanism for oral health funds. Funds from SHI contributions and taxes are pooled in a central health fund managed by the Federal Office of Social Security (Bundesamt für Soziale Sicherung, BAS) and then reallocated to the sickness funds. Pooling and re-allocation is based on a risk-adjusted capitation formula, which accounts, inter alia, for morbidity based on all diseases and additional factors such as regional factors. Some of the risk

adjusters account for OH diagnoses, while others reflect risk factors for OH need, such as chronic diseases, particularly diabetes. It can be said that the capitation formula adjusts the reallocated funds based on some OH needs.

3. Provider Payment

German dentists are paid fee-for-service that is regulated based on the "Einheitlicher Bewertungsmaßstab" (included in "Bundesmantelvertrag-Zahnärzte"). Each OH service receives a severity score based on an OH severity index. The value of each score is re-calculated each year. The payment fees are set by negotiated contracts. Further, the dentists commonly employ personnel working in a dental practice, such as dental nurses, dental therapists and dental hygienists. These dental personnel are paid with fixed salaries (by the dentists) independent from the provided services.

4. Discussion

Unlike other health areas, OH services in Germany are exposed to less regulatory frameworks, allowing for greater flexibility in treatment approaches, service delivery and price setting. The absence of prospective payments such as Diagnosis-Related Groups (DRGs) is surprising in the German context, where prospective payments exist for many health services. A potential explanation is the comparatively low share of OH from total healthcare expenditure, which accounts for less than 5%. Meaning that the efforts to create prospective payments are usually channelled to other curative areas of health.

Preliminary discussion and potential policy implications

Financing is a fundamental aspect of a health system, notably through the generation and allocation of funds for healthcare. Financing health systems also involves ensuring that funds are accessible where required and creating suitable financial incentives for providers to deliver effective and accessible health services (Irene Papanicolas, Dheepa Rajan, Marina Karanikolos, Agnes Soucat, 2022). Evidence shows that there is a negative association between public coverage and expenditure on OH services and OH outcomes (Foote et al., 2023). As most OH financing comes from private sources, this association possibly does not account for the financial hardship created by incomplete coverage and public funding.

Despite the advocacy for increased political commitment to enhance OH systems, many European countries still have limited publicly funded OH coverage, which makes essential OH services financially inaccessible. Significant disparities exist between countries in terms of financing, coverage, and access to OH care. However, these factors are crucial for comprehending the potential for improvement in ensuring financial protection against OH costs and promoting equal access to services across each country (Winkelmann, Gómez Rossi, & van Ginneken, 2022).

Preliminary findings show several potential policy implications:

- In most countries, OH is not funded properly or fairly and therefore the private market is dominant. Coverage is usually broader for children and older adults (Allin et al., 2020; Henschke et al., 2023; Winkelmann, Gómez Rossi, & van Ginneken, 2022). Prevention and emergency care are usually covered, as are some simple common treatments. Our preliminary results shed light on OH coverage blind-spots such as adults and complex treatments that are often excluded or only partially covered.
- Countries should design OH coverage for populations and services based on their cultural values and priorities. Coverage should be accompanied by sufficient funds to translate in-theory

legislation into in-practice availability. Special attention should be dedicated to vulnerable groups such as low socio-economic status (SES) and the chronically ill.

- Health systems can raise more funds to cover OH care, by adding alternative sources of revenue collection such as earmarked sin taxes on sugar and tobacco. It will be important to shape funds collection as progressively as possible and to protect low-income and vulnerable populations from financial hardships. Progressivity could be achieved by linking payments to income, capping sin taxes, or providing discounts or exemptions to low SES populations (Thomson & Cylus, 2024; World Health Organization and International Bank for Reconstruction and Development / The World Bank, 2021)
- After raising additional funds for OH, health systems have to allocate them in a fair, systematic, and transparent way to payer agencies, as well as to ensure sufficient funds to purchase care on behalf of the populations under payers' responsibility. This can be achieved by reshaping or creating allocation formulae that take into consideration OH costs and risk factors (N. Rice & Smith, 2001; Smith, 2007; Smith et al., 2001; Van de ven & Ellis, 2000). It also means including OH as a cost group for calculating the average cost of the pool and adding OH-related risk adjusters to the allocation formula (Waitzberg et al., 2020).
- Once payer agencies have enough funds to purchase OH care for the population they are responsible for, payment mechanisms for OH professionals should be adapted to mitigate perverse incentives for over- or under-provision or provision of inadequate care. In healthcare markets, this is done through a combination of different payment mechanisms, with different characteristics such as the timing of payment (prospective or retrospective), a unit of payment (narrow, e.g. a service, or broad, such as a hospital), link or not to activity, and more (Ellis et al., 2015; Jegers et al., 2002; Newhouse, 1996; Quinn, 2015; Waitzberg et al., 2021). Other strategies of change in payment mechanisms to move away from fee-for-service include creating innovative payments that promote prevention care and integration between OH and general health. Examples are bundled payments, pay-for-coordination, and 'global capitation models' (Stokes et al., 2018; Struckmann et al., 2017; Thorpe & Ogden, 2017; Town et al., 2005)
- Finally, the literature on financing OH is still underexplored and further research is needed. We invite researchers to test how economic incentives are expressed in OH and whether they differ from general health, to assess how different sources of funds differ in capacity to raise revenues or contribute to progressive funding, and to test which variables adjust better for the future need of OH care, to name a few. In terms of coverage, research can test different approaches to priority setting and resource allocation in OH and can explore the perspectives of different stakeholders representing the dental profession, policy makers/commissioners of health care services, and patients.

Limitations

This work has some limitations. First, our sample was limited to nine European countries that are part of the PRUDENT project. This selection might be biased, as it does not include all European countries. However, this sample was purposefully selected to include countries with different characteristics, that can represent various European and other high-income countries. For example, countries with health systems organized as Statutory Health Insurance (e.g., the Netherlands and Germany) and National health systems (e.g., the UK and Portugal), countries with high and low shares of dentists (e.g. Portugal and Estonia with 1 practising dentist per 1000 population in 2020 and the UK with half of this share (OECD, 2022)), and countries with high and low numbers of dentist consultations (e.g. the Netherlands and Ireland with respectively 3 and 0.4 visits per person in 2019 (OECD, 2022)). We believe that this sampling strategy is representative enough to allow for the extrapolation of our findings to other European and high-income countries. In addition, this is an exploratory qualitative work, that does not seek perfect representativeness. We highlight a menu of

policies that promote coverage and funding OH. Future research could examine additional countries and compare the findings to ours, to assert representativeness.

Second, data were collected by a team of a few researchers from each country and were not always verified by national officials. This method of data collection might be biased, as experts have different levels of knowledge and expertise in different aspects of OH coverage and financing. Different experts might have searched different databases. In addition, sometimes detailed data were not available, for example, the exact allocation formulas. Public policy is not always transparent or done in a methodical manner. Yet, the participating researchers are specialists on this topic, they collected data from official sources and published academic and grey literature. Therefore, we can assume that data collection was trustworthy and data is reliable.

Third, we collected data at the country level and cannot estimate variations in coverage or financing within a country. In addition, we documented the current regulation on coverage and financing but did not assess gaps between regulation and implementation in practice, such as realized access to services. Yet, data on the implementation of the regulation in the different areas of countries would require an extensive survey of residents in each country, which is out of scope for this work. Finally, OH systems are complex and, in our attempt to create typologies of coverage and access, we could not analyse every detailed aspect of coverage and access. Yet, cross-country comparisons have the advantages of observing various countries' experiences, which outweigh the disadvantages of losing each country's particularities.

Interim conclusions

In conclusion, financing mechanisms play an essential role in shaping the accessibility and effectiveness of OH systems. The dominance of private funding sources often leads to disparities in coverage and access, particularly affecting vulnerable populations. Addressing these disparities requires not only increased political commitment but also tailored strategies that consider cultural values and prioritize equitable access. Moreover, reforms in funding mechanisms, allocation strategies, and payment mechanisms for OH professionals are essential to mitigate financial barriers and ensure quality care provision. However, further research is imperative to better understand the economic incentives in OH, evaluate funding sources' capacity for progressive financing, and refine approaches to prioritize OH care effectively. By addressing these gaps, we can advance towards more inclusive, efficient, and sustainable oral health systems globally.

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Appendix – data collection tool

PRUDENT WP2: Situational Analysis of financing oral health

Lukas Schöner and Ruth Waitzberg

Welcome to the task on "Situation Analysis and Typology of Oral Health Financing Mechanisms in Europe." This template is an integral part of the PRUDENT project and undertaken to develop a comprehensive typology for oral health financing across European countries.

The primary objective of this task is to map the various mechanisms used to raise and pool revenues for oral health. Additionally, the task aims to scrutinize the methods employed in purchasing oral health services and compensating healthcare providers. This template aims to gather detailed information from national experts in participating countries, including representatives from ministries of health, payer agencies, and regulators.

Experts will assess current performance issues in oral health financing and identify underlying causes in their respective countries. The examination will delve into experiences with different reallocation mechanisms and payment methods, assessing their impact on access, quality, equity, and efficiency of oral health care. Special attention will be given to (re)allocation methods, mechanisms of price setting, and purchasing of oral health services.

The overarching goal is to suggest new risk-adjusters, refine allocation formulae, and tailor them to oral health needs. The survey will explore innovative purchasing and contracting methods that incentivize preventive oral health care or promote collaboration with primary care and public health services. The findings will be used to construct a typology of financing and payment systems in oral health care. This typology will undergo rigorous review and approval by national experts actively engaged in this task.

The template is structured in 5 main blocks, i.e. (i) Coverage, (ii) Sources of funds, (iii) Pooling and (re)allocation of oral health funds, (iv) Provider payment mechanisms and (v) Further considerations.

Your insights and expertise in this questionnaire will contribute significantly to shaping a comprehensive understanding of oral health financing across Europe. Thank you for your valuable participation.

All following questions in this template refer to the public coverage, meaning the populations, services and levels of cost paid for by public funds.

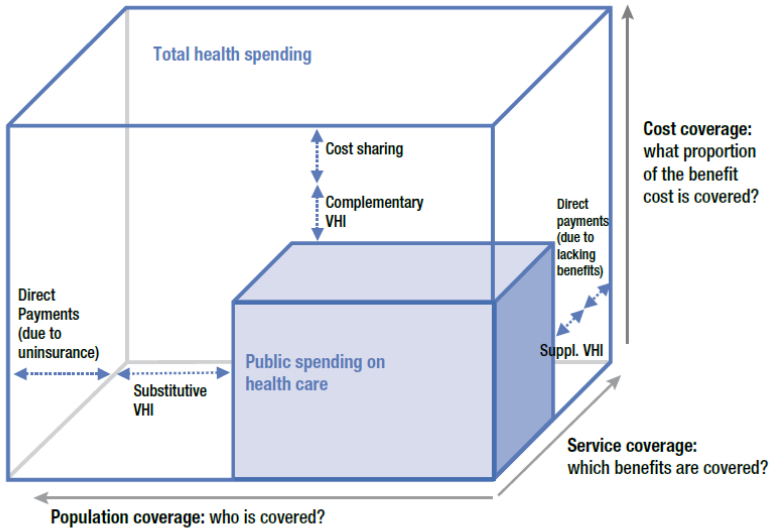
Please also provide the sources for all the information you provide (preferably legal documents).

Please give the Names of the persons filling the template:

1.

Block 1: Coverage

Health systems are funded by public and private sources of funds. Health insurance coverage is composed by three dimensions, namely the population covered, the services and levels of cost covered. Public funds pay for the public coverage, represented in Figure 1 by the blue box, while private funds fill the gaps (uncovered by public sources) and pay for the white part of the cube. Taxes and compulsory/ statutory insurance contributions or premia are considered public sources of funding, while voluntary health insurance (VHI) and out-of-pocket (OOP) payments are private sources of funds. All following questions in this template refer to the **public coverage of oral health care**, meaning the populations, services and levels of cost paid for by **public funds**.



Sources: based on Rice et al., 2018; Busse & Schlette, 2007

1. The table below depicts the three dimensions of public coverage. Please fill in the table indicating for each group of services, the proportion of costs covered for each population group. If a service is not covered for a certain population group, fill in 0%. If a service is only partially covered, meaning that there are cost-sharing such as copayments, coinsurance or deductibles, please state which part of the cost is covered by public funds. If a population group has a different coverage, but it is not stated here, please add to the last column.

   Please adjust or add to the population groups if necessary (e.g. age cut off). Specify the corresponding population groups accordingly. Additionally, indicate with asterisks (*) if a service coverage is restricted (e.g. once a year) or if only particular materials are covered and provide further information on this in the comments below the table.

Services covered	Proportion of costs covered per population group						
	Children (specify age cut-off)	adults (specify age cut-off)	older adults (specify age cut-off)	low-income	chronic dis. (specify which diseases)	vulnerable (specify which groups)	other (specify other potential groups)
Specify:							
Emergency/urgent care (relief of pain/swelling/bleeding)							
Routine exams							
Routine x-rays							
Scaling							
Fluoride varnish							
Simple (direct) fillings							
Simple tooth extractions							
Surgical tooth/root extractions							
Root canal (anterior)							
Root canal (posterior/ molar)							
Periodontal (gum) treatment							
Crowns and bridges							
Implants							
Dentures							
Esthetic							
Orthodontic treatments							

Comments:
Sources:

2. Are there access to care issues in your country? Which concerns and Why?

3. Please fill in the table below about expenditures on oral health by sources of funds:

Spending in oral health…	Public sources (general taxes, earmarked contributions, mandatory insurance)	Private sources	
		Voluntary health insurance	Out of pocket
As a share of current health spending in ORAL HEALTH*			
As a share of current total health spending			

As a share of GDP			
Per capita (in US$, PPP)			

* What proportion of spending in oral health comes from each source of funds
Abbreviations: GDP – Gross Domestic Product; PPP – Purchasing Power Parity

Comments:
Sources:

Block 2: Sources of funds

Health systems are public health insurances, that are primarily financed through public funds. Both taxes and compulsory/ statutory insurance contributions are considered public sources of funding, while voluntary health insurances and out-of-pocket payments are private sources. This section refers to the different sources of **public** funds to pay for oral health.

4. Is there a financing mechanism for oral health, separate from other health services?
   A:

5. How is the OH budget determined?
   A:

6. Is there a source or method of collection of funds earmarked/dedicated solely to oral health?
   A:

If yes, please fill in the following questions with information about **financing oral health only**. If there is not a specific source of fund to pay for oral health exclusively, please fill in the answers referring to the general health services.

7. How are public funds for oral health collected? Indicate the proportions of different collection sources/ methods

Collection methods (in %)	
Direct taxes (income tax, property tax)	
Indirect taxes (e.g. VAT, customs)	
Sugar, tobacco taxes	
Earmarked contributions (income related contributions, payroll taxes, mandatory insurance)	
Other (specify)	

Comments:
Source/Law:

8. What are the organizations that collect the public funds from each source? Please check the boxes especificar se é para a saúde exemplo IMI

Funds collecting organizations	Direct taxes	Indirect taxes	Sugar/ tobacco taxes	Earmarked contributions	Other
Central/National government					
Regional/Local government					
Social security agency					

Sickness funds/ mandatory insurance funds					
Other (specify)					

Comments:
Source/Law:

Block 3: Pooling and (re)allocation of oral health funds

Pooling refers to the accumulation of prepaid funds on behalf of a population. Pooling enables the redistribution of risks among insured or payer agencies, meaning that financial contributions from the pooled individuals can be used to cover the costs of those who need health care. The larger the size of the pool in terms of members and the fewer pools in the country, the greater the potential for (re)allocation of risks among insured and payer agencies. Pooling funds also allows an equitable allocation of resources among payer agencies if those are redistributed based on need (Smith et al., 2001). Funds are collected and pooled to be distributed to the payer agencies.

9. Please describe the pooling and (re)allocation of **public** funds for oral health:
   a. Is there separate pooling mechanism for oral and general health or are all public funds pooled together?
      A:

   b. Are the redistribution mechanisms for public oral health funds, different from general health?
      A:

   c. Are risk adjusters based on oral health indicators?
      A:

Note: if oral health services **do not have** an exclusive pooling and redistribution mechanism, separate from general health funds, please state the answers related to the general health funds.

10. What are the public payer agencies for oral health in your country? Please state the name in the relevant row in the table below. Please comment if the payer agency is the same for oral and general health

Payer agency	
Single payer	
Multiple payers, no choice (non-competing)	
Multiple payers, with choice (competing)	

Comments:
Source/Law:

11. Are public oral health funds pooled and redistributed to the payer agencies? (Funds are not redistributed when there is a single payer agency)

Funds are pooled	
Funds are not pooled	

Comments:
Source/Law:

12. If public oral health funds are pooled, what are the pooling agencies? Fill in the following table. Please also provide the name(s).

Pooling organizations	
Central/National government	
Regional/Local government	
Social security agency	
Sickness funds/ mandatory insurance funds	
Other (specify)	

Comments:
Source/Law:

13. If funds are pooled, how are they redistributed?

Redistribution mechanisms	Yes/ no
Past budget	
Automatic updates	
Allocation formula	
Other (specify) projected costs	

Comments:
Source/Law:

14. If there is an allocation formula, what are the risk adjusters used?

Risk adjusters	
Demographic data	e.g. age and gender
Socio-economic indicators	e.g. income and education, place of residence
Risk of future need of health care	
Morbidity and diagnosis indicators	HIV
Oral health related variables	
External factors	e.g. Indicator of consumers' price
Other (specify)	

Comments:
Source/Law:

15. If there is an allocation formula only for oral health, please state it. Otherwise, please provide the allocation formula for general health and the criteria for choosing risk adjusters.

16. If there is no separate allocation method for public oral health funds what are the cost categories used for calculating the base/average cost of the capitation payment? For example, inpatient care, outpatient, pharmaceuticals, oral health, mental health, rehab.

    Source/Law:

Block 4: Provider payment mechanisms

Provider payment mechanisms are key to the performance of any health system. Ideally, provider payment mechanisms motivate actors within the health system to be productive in terms of number of treated cases and provided services and avoid incentives that would lead to risk selection. Moreover, they should contribute to an overall efficient health system through expenditure control and technical efficiency. Five of the most common payment mechanisms in Europe include fee-for-service (FFS), capitation, case payments such as diagnostic-related group (DRG) based payments, global budgets, and salary.

Outpatient Care

15. How are oral health professionals paid in the outpatient sector? If possible provide proportions.

	Dentists	Dental nurses**	Dental therapists**	Dental hygienists	Dental technicians***
Capitation					
FFS					
Salary					
P4P					
Other*					

*including innovative payment mechanisms
Abbreviations: FFS – fee-for-service; P4P – Pay for performance;

Comments:
Source/Law:

16. In your opinion, which economic incentives are created by the current payment mechanism for outpatient care? Is this a concern in your country? Why?

    Comments:
    Source/Law:

17. How are prices (i.e. the payment from the payer to the provider) set? Please elaborate.

Payment-steering criteria	Dentists	Dental nurses	Dental therapists	Dental hygienists	Dental technicians
Negotiated contracts					
Patient-volume					
Size of population					
Consumer choice					
Fee schedule					

Patient choice of provider					
Other					

Comments:
Source/Law:

Specialist oral health care

18. How are oral health services paid for?

	Emergency care	Elective surgeries	Secondary care	Tertiary care
Per diem				
Global budget				
Case based				
DRGs				
FFS				
Other (e.g. value-based payments)				

Abbreviations: DRGs – Diagnosis related groups; FFS – fee-for-service;

Comments:
Source/Law:

19. In your opinion, which economic incentives (e.g. underprovison, cream-skimming, etc) are created by the current payment mechanism for inpatient care? Is this a concern in your country? Why?

    Comments:
    Source/Law:

Block 5: Further considerations

20. What are the problems in the oral health financing system in your country and what are the underlying causes of these issues?
21. which population groups face access barriers? Why?
22. Do you see a need for a new allocation formula or new risk-adjusters to refine the current allocation formula to reallocate funds for oral health? Why?87
23. How is coverage (in terms of patient groups and/or services provided) currently determined?
24. Are there innovative purchasing and contracting methods that could enhance preventive oral health care or collaboration with primary care and public health services?

Comments:
Source/Law: