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Pressing issues for oral care quality improvement: findings from the EU DELIVER project

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Abstract

Background While oral health often takes a backseat to other health domains, it silently affects nearly half of the Worldwide population. The DELIVER project, funded by the EU's Horizon Europe program, seeks to develop a blueprint model for improving the quality of oral health care for everyone.

Methods Applying the Nominal Group Technique (NGT), 17 stakeholders from various backgrounds participated in identifying pressing issues for oral care quality improvement across practice, community, and policy levels.

Results The results revealed significant differences at the different levels, with accessibility emerging as a prominent issue, encompassing affordability, availability, and acceptability of oral healthcare services.

Conclusions These findings emphasizes the need for policy reforms, increased investments, and a shift towards preventive and patient-centered dental care practices. It highlights the importance of collaborative efforts with multi-stakeholders and prioritizing pressing issues on a multi-level to drive positive change in improving oral care quality.

Keywords Quality improvement, Oral health, Health policy, Stakeholder participation, Citizen, Science, Pressing issues

Introduction

Despite oral health often receiving less attention than other health domains [1], untreated oral diseases silently impact nearly half of the world's population [2]. WHO's Global Oral Health Status Report 2022 indicates an increase of one billion cases of oral diseases over the last three decades, and these untreated conditions disproportionately affect marginalized communities, perpetuating social inequalities [2]. However, the main oral diseases and conditions are preventable. Accordingly, the World Health Organization endorsed a Resolution on Oral Health in 2021, further solidifying its role within the Non-Communicable Disease agenda and universal health coverage, by 2030 [3]. While there are successful policies and programs efficiently reducing the prevalence and severity of oral diseases with prevention and early

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intervention, there remain many populations experiencing issues in oral healthcare [2, 4, 5].

Despite the increasing recognition of urgent needs for oral care quality improvement, there is an almost ubiquitous absence of knowledge on concretely actionable operationalization and implementation of quality improvement at the practice, community, and policy-levels. In particular, there is an extreme lack of know-how to leverage deliberative dialogues for quality improvement. This includes: (i) lack of know-how on synergistic priority setting for policy and practice; (ii) lack of know-how on arbitrating across different stakeholder perspectives; (iii) lack of know-how on elicitation of decisions towards implementation of concrete actions [6, 7]. These barriers stem from an absence of a broadly adopted definition of what constitutes good quality oral healthcare and how its measurement can be operationalized. Therefore, among other projects [8, 9], DELIVER (DELiberative ImproVEment of oRal care quality) [7], an European Union (EU) project funded by the EU Horizon program, sets, as its primary goal, to enhance the quality of oral care through co-development and co-production of solutions together with citizens, patients, providers, and policymakers [7].

To improve oral healthcare quality, a transparent, evidence-informed, person-centered care system is needed [10], adhering to quality standards outlined in the early stages of the DELIVER project [7, 11]. Engaging multisector stakeholders, including patients, policymakers, healthcare providers, and researchers, is essential to create a roadmap for improvements [6, 10]. Shared understanding of pressing issues across multiple sectors and levels (practice, community, and policy levels) can drive positive changes, leading to intervention strategies with broader impact [12]. Evidence-based policies and strategies are necessary to bridge the gap between knowledge and action [6], and this paper aims to address the prioritization of pressing issues for oral care quality improvement within the framework of the EU's DELIVER project.

Methods and materials

Ethical approval for this study (n°19/2022) was obtained from the Ethics Committee for Health at the Faculty of Dental Medicine of the University of Porto (Faculdade de Medicina Dentária da Universidade do Porto). All participants were provided with a detailed explanation of the study's objectives and data protection policies, and informed consent was obtained from each participant prior to their participation.

To facilitate the identification of priority issues for oral healthcare quality improvement the Nominal Group Technique (NGT) was used. The NGT, is a structured technique to group brainstorming that encourages active participation from all members and accelerates consensus-building on important issues, difficulties, or potential solutions [13].

There were two stages to this process. The first stage was held at the Kick-off meeting of the DELIVER project / consortium (4th November 2022, Porto) with the purpose of generating a starting list of pressing issues at practice, community, and policy level, in order to support the next stage. The second and main stage was held online including additional stakeholder groups to consent on the pressing issues.

Drawing from the NGT, a list of pressing issues for oral care quality improvement was developed through the following steps (also see Fig. 1):

- Step 1 – Identification of a list of candidate items of pressing issues for oral care quality improvement in DELIVER kick-off meeting.
- Step 2 - Group discussion: The 17 participants were divided into three groups and were asked to complete the kick-off meeting list. Silent idea generation and round-robin recording was used.
- Step 3- Meeting online: the three updated lists were discussed, and suggestions were written down.
- Step 4- Group moderators shared the list that resulted on step 3 and participants discussed via email, then ranked issues using a Likert scale survey [14, 15].
- Step 5- Only 13 participants voted on all pressing issues via email. The prioritized list of pressing oral health care issues was generated based on the average ratings obtained.

In the first stage, 27 experts with various backgrounds participated in a 2-hours meeting during the Kick off conference of the DELIVER project, held on 4th November 2022 in Porto. The participants were grouped into three groups with nine individuals each. Each group was tasked to consecutively address issues related to either practice, community, or policy levels.

Afterwards, the scope was broadened involving different 17 stakeholders from various backgrounds including researchers, citizens/patients, providers, and health policymakers from six different countries. For the final voting, only 13 stakeholders participated. Participants were drawn from various countries, including Portugal, Denmark, Malta, Germany, Sweden, and United Kingdom. The pressing issues for oral care quality improvement were completed and prioritized by the representatives of the four stakeholders' groups, including five researchers, three policymakers, two providers, and three patients/citizens (Fig. 2).

In the second step, prior to the meeting, all participants were provided with the list of pressing issues related to oral health care quality, which had been developed

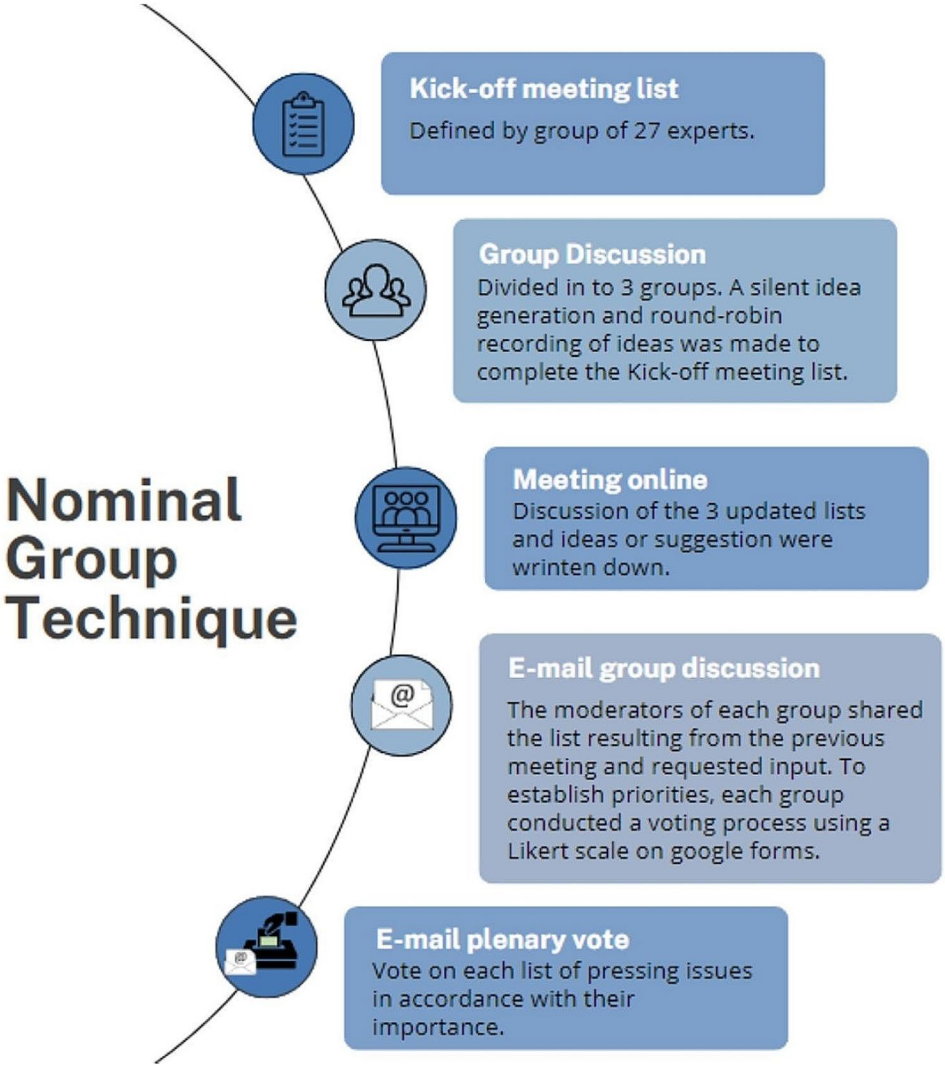

Fig. 1 Nominal group technique methodology illustration

previously by the 27 experts and they were instructed to prepare concise sentences to add to this revised list using the silent idea generation method. At the start of the online meeting, the procedures were explained, and participants were divided into three groups, each focusing on one of the three levels: practice, community, and policy. Each group, consisting of a mix of stakeholders, was assigned to a parallel online room with a moderator.

Subsequently, in a round-robin, each group member verbally expressed their ideas in brief sentences, which the moderator recorded with minimal paraphrasing. These new ideas were integrated into the existing list for their respective themes. This was followed by a discussion and voting process for each pressing issue to determine its inclusion or exclusion. Participants had the options to vote "Yes," "No," "Abstention," or "Abstention due to a conflict of interest" via an online platform. Pressing issues that received less than 75% valid positive votes were excluded from the list. After the meeting, the updated lists of pressing issues for each level were shared with all participants.

In the third step, the three groups together convened online for 1.5 h to collaborate on finalizing the list of pressing issues that had been circulated before the meeting. The representative of each group presented their list of pressing issues and opened the floor to discussion among all participants. The group's representative recorded any ideas or suggestions that emerged from the plenary discussion.

In the fourth step, an email was sent to the participants, outlining the procedures and next steps. The moderators of each group emailed their respective group members, proposing adapted ideas based on the suggestions from the plenary meeting and solicited comments. Group members exchanged ideas via email, and adaptations were made if a consensus was reached. Any new items

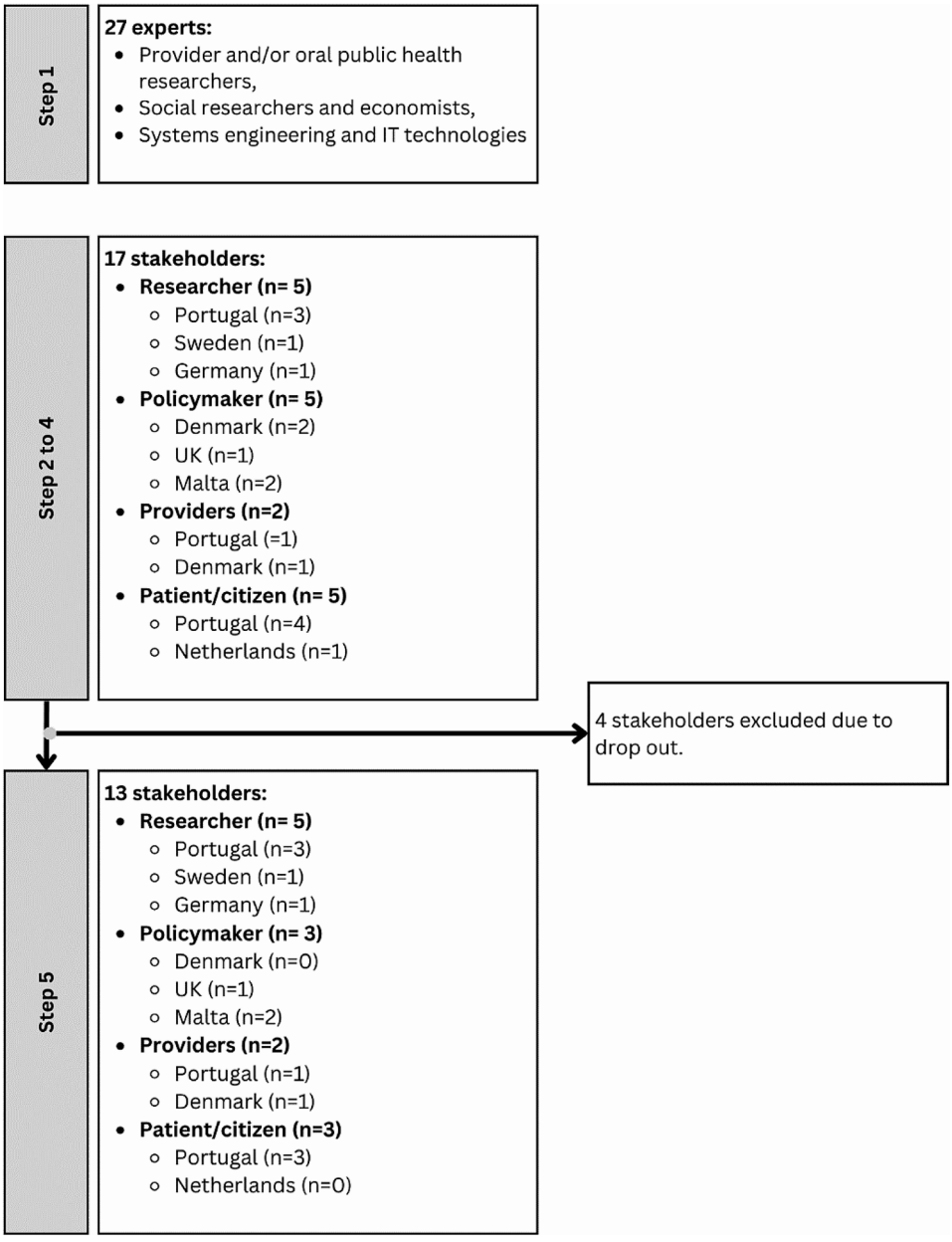

Fig. 2 The participants flow diagram

introduced had to undergo a voting process similar to Step 2.

Upon finalizing the list of pressing issues, participants from each group were contacted via email to rank the items on the list in terms of their importance using a Google Forms survey, employing a Likert scale ranging from 1 to 9. Items with an average rating lower than 4 were excluded from the final list of pressing issues.

The final lists generated from Step 4 were combined, and another email was sent to all participants, inviting them to vote on all pressing issues according to their perceived importance. For each selected pressing issue it was calculated the mean, median, minimum and maximum rating. The pressing issues related to oral health care quality were subsequently ranked based on the average ratings obtained, resulting in a prioritized list, both on a global scale and within each level.

The pressing issues for oral care quality improvement were ranked using the following approach and criteria:

1. The scores' mean for each pressing issue were calculated in different levels.
2. Within each level, the mean of means was calculated to achieve a cut-off.

Table 1 Score distribution given to pressing issues in policy level

Variable	min	mean	median	max
Accessibility*	8	8.7	9	9
Measures to improve access to oral care to underserved populations*	5	8.4	9	9
Health System financing Oral Health with improvement of resource allocation for oral care*	7	8.3	9	9
Lack of Universal access to oral health*	3	8.2	9	9
Oral Health in all policies*	5	8.1	8	9
Lack of including oral health into general health*	6	8.1	8	9
Cost efficiency*	4	7.9	8	9
Lack of consensus/decisions of oral care system*	6	7.7	8	9
National policy should only include evidence-based care delivery models*	6	7.7	8	9
Lack of quality by commissioning (dentist should not be paid only for quantity) *	5	7.6	7	9
Dental care insurance coverage and payment with emphasis on curative care*	5	7.3	8	9
Workforce planning and distribution	5	7.3	7	9
Interprofessional dental education (with regular update of academic curricula)	5	7.2	7	9
Tool for measuring quality for practices on a national level (national system in place)	5	7.2	7	9
Negative framing of quality assurance	3	7.1	7	9
Lack of legislation to facilitate dental service access to misinterested people and outreach to those with dental anxiety	3	6.5	7	9

* Prioritised pressing issue above cut-off

3. In each level, the cut-off point for final prioritization was the value obtained in point 2 and the pressing issues above the cut-off point were considered.

Results

The present study outlines the results of a prioritization process that involved 13 stakeholders.

The policy level, as depicted in Table 1, reveals that accessibility was voted as the most pressing issue for oral care quality improvement, followed by the implementation of measures to improve access to oral care for underserved populations. Stakeholders also emphasized the need for increased health system financing for oral health with improved resource allocation for oral care.

Table 2 show the results regarding the community level, where the most pressing issues for oral care quality improvement were identified as prioritizing oral health for underserved populations, accessibility to community dental services, and addressing problems in state affordability, particularly concerning state-funded dental care.

Table 2 Score distribution given to pressing issues in community level

Variable	min	mean	median	max
Prioritizing oral health for underserved population*	8	8.6	9	9
Accessibility - access to community dental services*	7	8.6	9	9
Problems in state affordability (state-funded dental care) *	6	8.4	9	9
Support for self-care*	6	8.2	9	9
Oral health promotion*	6	8.0	8	9
Surveillance of quality*	7	8.0	8	9
Oral health literacy*	6	7.9	8	9
Serving people who don't attend the practices*	7	7.9	8	9
Identifying unmet needs at community level*	5	7.9	8	9
Empowerment of patients in local communities*	6	7.6	8	9
Interdisciplinary/ collaboration - oral care outside the dental office*	6	7.5	7	9
Failure to involve patients in cocreation of initiatives of local communities	6	7.0	7	8
Lack of dental workforce	1	6.9	7	9
Reduced efficiency after the pandemic	1	5.9	6	9

* Prioritised pressing issue above cut-off

Table 3 outlines the practice level, where stakeholders identified the lack of prioritization and targeting of groups in vulnerable situations as the most pressing issue for oral care quality improvement. The prevention of oral health issues, to be prioritized by both clinicians and patients, was also highlighted as a priority. Additionally, there is a strong emphasis on affordability, such as insufficient coverage of dental care, insufficient public care provision, coverage throughout the life course, and regular revision of coverage amounts.

Discussion

This paper introduces an approach, that involves incorporating the perspectives of patients/citizens as significant stakeholders. Given that these groups have traditionally not taken part in such studies, a strategic kick-off meeting list of pressing issues for oral care quality improvement was created by experts from various fields to facilitate the first phase of the NGT, "silent idea generation".

Accessibility, a crucial issue at both the community and policy levels, depends on three major factors: availability (the accessibility of care in terms of location, timing, and eligibility requirements), affordability (the total expenses sustained by patients for healthcare relative to

Table 3 Score distribution given to pressing issues in practice level

Variable	min	mean	median	max
Lack of prioritisation and targeting of groups in vulnerable situations*	6	8.1	8	9
Prevention to be prioritised by both clinicians and patients*	5	7.9	9	9
Affordability: Insufficient coverage of dental care, insufficient public care provision, coverage throughout the life course, regular revision of coverage (amounts)*	5	7.8	8	9
Minimize overtreatments, undertreatment and mistreatment (right treatment to the right patient) *	4	7.7	8	9
Effective workforce, retaining employees, better working conditions*	6	7.5	7	9
Integration of oral health in other health sectors, need of interdisciplinarity*	4	7.5	8	9
Monitoring of patient satisfaction*	6	7.5	7	9
Practice resources allocation to ensure timely quality care (waiting lists, triaging) *	5	7.54	8	9
Longevity of treatments*	5	7.5	8	9
Engage clinicians and patients in the process of care, patient empowerment, lack of patient involvement (treatment alternatives explained and discussed, informed consent)	5	7.2	7	9
Safety for dental team, work environment, safety for patient	3	7.1	7	9
Lack of service for urgent care, maintaining of existing infrastructure, expanding where this is not in place	4	7.1	8	9
Integration of innovative, digital technologies such as teledentistry, eHealth, eTraining if it is proved that it is beneficial	5	7.1	7	9
Lack of enforcement and implementation of guidelines on national and practice level	4	7.0	7	9
Routine collected data for clinical practice and management	5	7.0	7	9
Lack of enforcement and implementation of guidelines on national and practice level	4	7.0	7	9
Lack of culture for a learning system (reporting adverse events and learning from it)	5	6.9	7	9
Insufficient self-monitoring of quality & safety in dental practices	3	6.8	7	9
Lack of personalized practices	3	6.8	7	9
Pandemic preparedness, emergency plans also for disasters (e.g. natural catastrophes)	3	6.5	7	9
Awareness and comply with continued professional development (CPD) lifelong learning	3	6.5	6	9
Lack of blame-free culture	2	6.5	6	9

* Prioritised pressing issue above cut-off

their financial capacity), and acceptability (how care is provided) [16].

It was considered fundamental to improve access to oral healthcare for underserved population or in vulnerable situations at policy, community and practice levels and identifying the unmet needs at community level, thus tackling the social gradient. In truth, many barriers prevent socioeconomically disadvantaged communities from accessing dental services [17]. These difficulties include a lack of understanding about the significance of oral care, a lack of prompt action when oral problems are identified, a deficiency of dental care facilities, and irregular attendance at dental visits [17]. Indeed, there is a considerable gap in access to healthcare and essential facilities between urban and rural populations in low-income countries and high-income countries, leading to larger geographical deprivation [18, 19]. Dental care seems to be one of the few aspects of health care in the EU where equity of access to health care is largely absent [20, 21]. Proportional universalism in public health aims to reduce health inequalities by providing universal services with the intensity of services proportionate to the level of need [22]. This approach ensures that resources are distributed universally but with a gradient of intensity based on need, addressing both equity and efficiency [23].

Affordability is a top concern at the practice and policy level, particularly the insufficient coverage of dental care and state affordability. This aligns with existing literature that highlights the growing worry surrounding limited dental care coverage [12, 19, 24, 25]. As a result, oral health in all policies has gained more attention in recent years, culminating in the adoption of the WHO resolution on Oral Health in 2021 [3]. This resolution calls for state members to better integrate oral health into universal health coverage and non-communicable disease agendas, highlighting the global recognition of this issue [3, 26]. Nonetheless, the share of public funding allocated to dental care remains relatively low compared to other health services [12]. Frequently, government policies or insurances only cover one-third of dental care costs, while individuals assume over two-thirds of dental care expenses out-of-pocket or through voluntary health insurance [12, 20]. These findings emphasize the need for policy reforms and increased investment in oral healthcare by improving resource allocation and including evidence-based delivery models, allowing accessibility and affordability for all individuals, including underserved populations [12].

Finally, guaranteeing good acceptability, meaning how care is provided, requires an interdisciplinary collaboration, particularly integrating oral healthcare professionals into the essential healthcare workforce [27]. In addition, there is a need for workforce development, employee retention, and improving working conditions as integral

elements in ensuring the delivery of exceptional care. What makes this practice-level pressing issue even more compelling is recent research revealing that nearly one out of ten dental practitioners struggle with burnout syndrome, with a significant number of clinicians experiencing emotional exhaustion and depersonalization [28]. This underscores the importance of prioritizing the well-being and mental health of dental professionals to sustain and ensure the provision of exemplary patient care.

When delving deeper into the causes of inaccurate medical treatment, which include both over-treatment and under-treatment, as well as mistreatment, highlighting the lack of quality by commissioning, researchers face a complex environment formed by dental incentives and payment systems. At practice and policy level, this issue has raised a lot of attention, especially considering the common fee-for-service payment system, which has been related to cases of over-treatment [29]. Furthermore, the per capita payment system, which is intended to increase patient numbers, can occasionally result in the under-provision of services, resulting in the under-treatment of patients [29]. Indeed, there is a need for alternative payment models so that it can be ensured quality dental care. Additionally, stakeholders emphasized the need to closely monitor patient satisfaction levels, at practice level, recognizing their role as the foundation for embracing a practice more patient-centered [30] and, at community level, the importance of surveillance of quality in oral health care. These critical concerns align with the Quadruple Aim of Healthcare, encompassing key objectives: enhancing population health and patient's care experience improving the overall experience of healthcare providers, and reducing overall healthcare costs [31].

Indeed, one way of reducing costs is prioritizing prevention [2, 27, 32], by preventing disease from occurring or breaking the course of disease before getting irreversible. Unfortunately, in several countries, preventive interventions are not supported by the current payment systems, and dentists are not currently compensated for "doing prevention" [33]. This means there is currently no significant financial incentive for dentists to focus on prevention [33]. Taking this into account, reforming the approach to dentistry is essential. This involves enhancing health providers' skills in oral disease prevention and management [5, 8] and re-focusing workforce training towards prevention. The Common Risk Factor Approach (CRFA) to oral health care can be a valuable strategy for enhancing prevention and health promotion efforts [34]. Oral diseases are strongly associated with socioeconomic status and the underlying social determinants of health [35]. Therefore, efforts to address oral health inequalities should not only focus on common behavioural risks but also consider the broader shared social determinants of chronic diseases [36].

A way of preventing oral disease is by promoting oral health and improving literacy on the subject, empowering patients to take a proactive role in their health. The level of health literacy predicts strongly a person's health, health behaviours, and health outcomes [37]. Lower levels of literacy have been associated with issues with the use of preventative services, delayed diagnoses, poor adherence to doctor's advice, poor self-management abilities, increased mortality risks, and greater healthcare expenses [37].

This paper is, to our knowledge, the first-ever consented list of pressing issues for oral care quality. Provides hitherto unavailable insights into (i) the concrete pressing issues; (ii) differences in practice, community and policy levels. The utilization of online meetings enabled us to assemble a diverse and international group of stakeholders, which provided a unique multi-country European perspective that has not been explored previously. country European perspective that has not been explored previously. The inclusion of these stakeholders arises from the need to find a solution to the problems affecting the quality of oral healthcare through synergistic actions between citizens/patients, healthcare providers and political decision-makers [38]. However, our study is not without its limitations. One significant constraint was that the absence of prior research on critical issues related to oral care quality led to the initial creation of a list of potential items by a group of experts. While this approach was necessary, it carries the inherent risk of overlooking items that may be of great significance to patients or other stakeholders. Furthermore, there was a limited time available for discussion due to the use of NGT. This limitation potentially hindered the depth of exploration on certain topics, and some issues may not have been thoroughly addressed within the time constraints. Lastly, it's important to acknowledge that our selection of 13 participants may not fully represent the diverse perspectives of stakeholders from different countries, potentially limiting the inclusion of unique viewpoints and experiences in our study. However, our research adheres to the recommended sample size for studies employing the Nominal Group Technique (NGT), with 13 participants, falling within the typical range of 8 to 15 participants [39].

This pressing issue list will now be useful for the following steps of the DELIVER Project and may also be useful in future research addressing oral care quality.

Among the pressing issues for oral care quality improvement, accessibility has emerged as a prominent concern, covering aspects like affordability, availability, and the acceptability of oral healthcare services. This underscores the urgent need for policy reforms, increased investments in oral healthcare, and a shift in dental care practices toward a more preventive and

patient-centred approach. However, there is little in the literature on how policy reforms should be delivered and managed to achieve effective population outcomes. These results align with the Global strategy and action plan on oral health 2023–2030, namely with the objectives of Oral health governance, Oral health promotion and Oral disease prevention, Health workforce, and Oral health care [40]. The findings of this study also underpin the relevance of aiming to align resource allocation with normative goals such as, for example, the Quadruple Aim (improving health outcomes, improving care experiences, keeping per capita costs manageable, keeping providers engaged) or the Quintuple Aim (fifth aim: advancing health equity) [31, 41, 42].

It's also important to mention that this paper underscores the relevance and added value of addressing pressing issues as a foundation for driving positive change in collaboration with all relevant stakeholders. This becomes especially significant given the ever-evolving challenges facing healthcare and society, such as environmental sustainability and resource constraints. An iterative prioritization of pressing issues can enhance society's responsiveness and resilience in improving oral care quality. The findings of this study also emphasize the relevance for improved oral health policymaking, specifically better resource planning for equitable and affordable access to oral health care for everyone.

As a future endeavor, DELIVER aims to provide the first-ever multi-country survey on citizens' perceptions of oral care quality in Europe.

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Author contributions
PM, MLP and AA contributed conception, design, acquisition, interpretation of data for the work, drafted and critically the revised manuscript.LFF contributed to interpretation of data for the work, drafted and critically the revised manuscriptDC contributed to conception, design, acquisition, analysis of data. ML, NB and SL conception and critically revised the manuscript, gave final approval and agrees to be accountable for all aspects of the work.All authors gave final approval and agreed to be accountable for all aspects of the work.

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Data availability
All data generated or analysed during this study are included in this published article.

Declarations

Ethics approval and consent to participate
Ethical approval for this study (nº19/2022) was obtained from the Ethics Committee for Health at the Faculty of Dental Medicine of the University of Porto (Faculdade de Medicina Dentária da Universidade do Porto). All participants were provided with a detailed explanation of the study's objectives and data protection policies, and informed consent was obtained from each participant prior to their participation.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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