Sustainability as part of a quality framework for the organisation of oral healthcare

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Key points

Highlights that the organisation of dentistry at a system level lags behind other healthcare professions in regulation, policy, education and research.

Proposes a new quality framework for the organisation of oral healthcare that sees its sustainability as important as its safety.

Identifies existing guidance on practising sustainably and reinforces that it does not require radical change, but evidence-based, prevention-focused care.

Abstract

This paper aims to highlight to the reader that the organisation of dentistry at a system level lags behind other healthcare professions in regulation, policy, education and research. It argues that seeing sustainability as being as important as safety in oral healthcare quality would begin to rectify this. For the practitioner, it also identifies existing guidance on practising sustainably and reinforces that it does not require radical change but evidence-based care.

Introduction

There is scientific consensus that climate change is caused by human activity.[1] Together with associated risks of air pollution,[2] it poses the greatest threat to planetary and global health in the twenty-first century.[1,3] While intrinsically linked, planetary health includes the impacts of human disruptions on all natural systems and life on Earth,[4] and global health refers to health and health equity of worldwide human populations.[5] Global health gains over the last 50 years are likely to be undermined, especially those related to poverty reduction, which will widen existing health inequalities;[6] approximately 150,000 annual deaths are attributed to climate change and this may increase to 250,000 deaths by 2050.[7] In addition, climate change is seen as the greatest risk to economic stability[8] and will increase pressures on global health systems. The increase in annual costs to healthcare is estimated to reach $2–4 billion by 2030 and higher beyond.[8] Paradoxically, healthcare is a significant contributor to climate change, estimated to be responsible for 4.4% of global emissions,[9] and without radical change, current models of healthcare are not socially, economically or environmentally sustainable.[10]

Most countries have a healthcare system of some form and it is of note that the NHS in the UK is the largest publicly funded healthcare system in the world. It produces approximately 4–7% of all carbon dioxide equivalent[11] emissions in the UK,[12,13] which is approximately the same as the total emissions of Denmark.[14] UK governments and the NHS have pledged to radically reduce emissions.[12,15,16,17] Within the NHS, dentistry is noted as a significant contributor to its carbon footprint, with a disproportionately high level of emissions produced from patient travel[18] and private dentistry activity contributes further emissions still.

Although there is increasing global emphasis on the importance of sustainability in oral healthcare[19,20] and a growing body of literature on the topic,[21] awareness among dental professionals is relatively low and there appears to be a disconnect in the translation of attitudes and behaviours as citizens to that as dental professionals.[22] Existing barriers for dentistry to become more sustainable include: emissions from patient and staff travel and commuting; challenges relating to waste recovery and recycling; manufacturing; use and disposal of materials; and knowledge of and education on sustainable healthcare.[21]

Yet, given the links between the environment and health, service providers have ethical responsibilities to ensure that environmental impacts are minimised[23] and healthcare professionals increasingly identify climate change as a health issue.[22] However, the wide range of contributors to healthcare-related waste and carbon emissions means that action to reduce this must also be wide-ranging, multifaceted and multi-stakeholder.[10,20,23] The oral healthcare professions and associated services have a key role in this process.[20] Ensuring good-quality care, with disease prevention at its core, is seen as pivotal in reducing emissions and waste[24] and sustainability should be included when considering quality assurance and improvement.[10]

Defining and understanding quality in oral healthcare

There have been numerous attempts to define quality in healthcare, but many vary in their emphasis and largely reflect the perspectives of the authors or the organisations that produce them.[25] Traditionally, the concept of quality healthcare has been taken at face value by clinicians: to provide stratagems to ensure the health of individuals and the population at large, whether it be through preventive or intervention-based care. Other activities that also have a direct bearing on healthcare have not always been considered yet form part of the concept of quality and comprehensive healthcare. Consequently, defining quality in healthcare in a way that universally informs approaches to its management and improvement is challenging.

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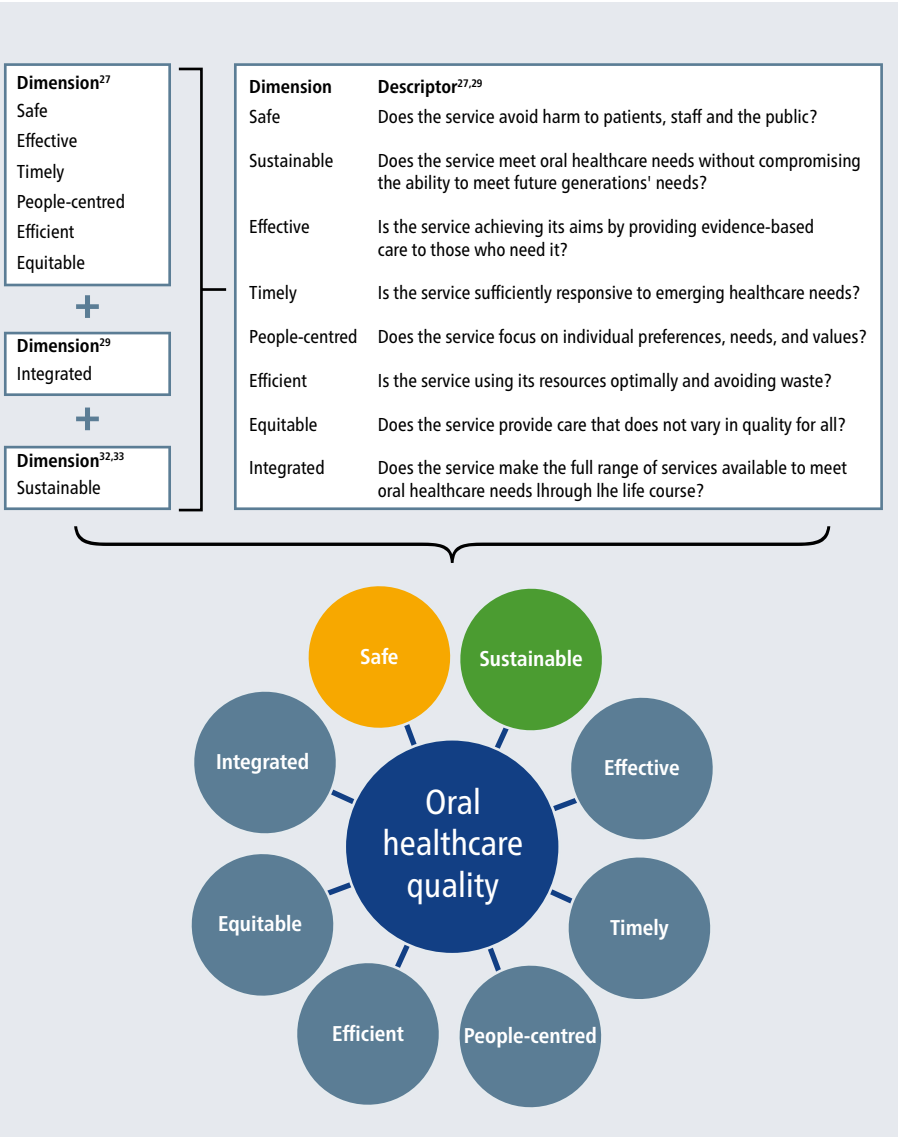
Rather than focusing on a universal definition, attempts to separate quality into domains and/or dimensions to consider when assessing healthcare quality have been considered,[25] whether that be at the service or individual patient level. The resulting quality frameworks are useful in that they allow different perspectives on quality to be incorporated but can also inform policy, regulation, approaches to measurement, and research. Byrne and colleagues[25] argued that Donabedian's three domains of quality – structure; process; outcome[26] – (Table 1), and the dimensions of the Institute of Medicine (IoM) – safety; effectiveness; timeliness; patient-centredness; efficiency; equity[27] – were appropriate for conceptualising a framework of quality in primary dental care. Donabedian's domains indicate the stages of healthcare to consider and the IoM's dimensions locate the aspects of the healthcare domains that should be assessed.[28] More recently, the World Health Organisation updated the IoM dimensions by adding 'integrated' as a seventh dimension[29] (Fig. 1).

Table 1 Donabedian's domains of healthcare[26]

Domain of healthcare	Descriptor
Structure	Physical and organisational elements of care: buildings; facilities; staff commuting; staffing availability; training
Process	Actions or interventions when delivering care: services; diagnostics; treatments
Outcome	Any changes resulting from patients' interaction with healthcare: objective and subjective measurements

Fig. 1 Proposed organisational quality framework for oral healthcare.[27,29]



Sustainability as part of an organisational framework for quality

Sustainability has been defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'.[30] This definition differentiates the generic meaning of the term, that is, that services can merely continue, from one which considers their environmental as well as financial and social impacts.[31] Some health organisations have already proposed sustainability's inclusion in their frameworks.[32,33]

Consistent with the ethical perspective of 'first do no harm', some existing frameworks imply a hierarchy of dimensions by placing 'safety' or 'safe' first in lists. Given the environment is a key determinant of the health of populations and individuals, an organisational framework for quality of oral healthcare is proposed, where 'sustainable' appears with 'safe' at the top of a hierarchy to emphasise the ethical imperative of considering both (Fig. 1). Moreover, failure to consider sustainability will undermine patient and public safety in time. As with the recommendations of Byrne and Tickle,[28] this framework could be used in conjunction with that of Donabedian,[25] to identify all aspects of oral healthcare that should be considered.

No categorisation or taxonomy is perfect and this proposed organisational quality framework is no exception; it overlaps ethical frameworks[34,35] and many dimensions are interrelated and interdependent. Indeed, one way of conceptualising quality in healthcare is to see it as a jigsaw of interconnecting dimensions:[33] by removing one piece (or dimension), quality overall is undermined.

Rather than a dimension of quality, the Royal College of Physicians (RCP) proposes sustainability as one of three domains of health and care that need to be balanced: population health and wellbeing; individual care; and sustainability. It sees these as running through the IoM's dimensions[27] and argues that value in healthcare is achieved when the best balance is found between the three domains and a system-level approach to quality involving multiple stakeholders.[32] While the RCP's conceptualisation has merit, it implies tension between the three domains, when they are often

complementary. However, sustainability does require a multifaceted, system-level approach[10,23] and seeing it as a separate dimension emphasises its importance and the need to consider it in all aspects of oral healthcare more explicit.

Potential impacts of the proposed organisational quality framework for oral healthcare

Within dentistry, there have been few attempts to define quality. The FDI World Dental Federation sees it as 'an iterative process involving dental professionals, patients and other stakeholders to develop and maintain goals and measures to achieve optimal health outcomes' and lists nine principles on which to base quality management and improvement.[36] While this is a good starting point to conceptualise quality in oral healthcare, it is of less use in practical application.

Including sustainability as a dimension of quality with equal priority as patient, staff and public safety, should drive stakeholders in oral healthcare to award it the attention it requires. The sustainability of oral healthcare has multiple external influences (policy; professional education and leadership; research) and internal influences (core emissions, for example, related to service delivery; community emissions, for example, patient and staff travel and patient oral health practices; supply chain emissions, for example, those related to products bought from third parties)[10] with a wide range of proposed recommendations for action.[10,23] Specific examples pertinent to the proposed quality framework are provided and how an emphasis on sustainability by key stakeholders should be increased in oral healthcare so that it becomes a forethought rather than an afterthought in all activities.

Current General Dental Council (GDC) standards for the dental team do not refer to sustainability.[37] New standards are being developed and will be informed by research commissioned by the GDC, yet there is no reference to sustainability in either the report[38] or in foregrounding work.[39] In contrast, the General Medical and Nursing and Midwifery Councils, which historically have embraced sustainability more, plan to embed developing sustainable healthcare in their standards for professional practice.[33] There are similar differences in published and proposed standards for undergraduate education. Despite enthusiasm for the subject, there appears to be little emphasis on sustainability in curricula and wide-ranging recommendations have been made to address existing barriers, including a need to establish specific learning outcomes.[40,41] Although there is some reference to sustainability in the GDC's recent consultation on dental team learning outcomes under the domain of professionalism,[42] it could be embedded in other domains of undergraduate learning as part of being a 'safe practitioner'. The General Medical Council identified 'demonstrating knowledge and skills to improve the sustainability of health systems' as an overarching learning outcome in medical education in 2014[43] and consequently it has featured in under- and post-graduate education quality frameworks[44,45] and medical healthcare reform documents[46] for some time.

Given this limited regulatory focus on sustainability in oral healthcare, it is perhaps unsurprising that it is omitted from proposed changes to the NHS general dental services contract and system reform in England.[47] That said, increasing emphasis on prevention, minimal intervention and risk-based recall intervals are encouraged and all have environmental benefits.[10,23,24,47,48] Sustainability should be a central tenet of future NHS commissioning guidelines but also a core principle of private oral healthcare. However, providers must have the resources, incentives and information to enable change and will require a change in emphasis in research, service design and evaluation.[10,18,20,21,23,40,48] In addition, there is a need for business models in dentistry with sustainability as a core principle around which the practice is developed. Approaches and guidance to sustainable quality improvement and commissioning are already established in general healthcare and these could be adopted in oral healthcare services.[33] In addition, the Care Quality Commission in England recently included sustainability in one of its five key lines of enquiry (KLOE) for service providers.[49] Although currently restricted to the 'is it well-led' KLOE, if, as recommended here, sustainability is seen as equally important as safety, this will act as an additional driver for it to be central to all oral healthcare services' activities.

Implementing sustainability in quality dental practice

The proposed organisational quality framework is intended to be relevant to all stakeholders in oral healthcare and to inform the assessment of quality assurance and improvement. It is not intended to be a guide to implementing sustainability in everyday dental practice at a patient-care level.

However, the FDI Sustainability in Dentistry Task Team has produced a framework and infographic which can be used as a guide for dental teams[24,50] and created a *Toolkit for sustainable dentistry*.[51] Good oral healthcare at a patient level is seen as having four synergistic domains: preventive care; operative care; integrated care; and ownership of care. It reinforces that delivering patient-centred, evidence-based, prevention-focused, minimally invasive care of good technical quality will improve patients' oral health and deliver environmentally sustainable outcomes as an unintended consequence. The environmental benefits arise from two outcomes. Firstly, fewer professional interventions will be required, resulting in fewer appointments (including recall appointments), fewer patient journeys and an overall reduction in carbon emissions. Secondly, restorations' longevity and treatment success will increase and result in less manufacturing and less waste being generated.[24] The FDI domains are consistent with the proposed organisational quality framework in that they sit within and across the dimensions of effective, patient-centred and integrated oral healthcare (Fig. 1).

Similarly, the British Dental Association has worked in sustainability in various capacities since 2018. It forms part of the Dental Sustainability Advisory Group, which is hosted by the Centre for Sustainable Healthcare, and contributed to a practical guide for dental practices.[52] This focuses on the environmental impact of practice-related travel, equipment and supplies, energy use, waste, and increasing biodiversity and green space, but less on the impact of evidence-based, technically sound patient care.

A consistent message in implementation guidance is that sustainability at a practice level should be a way of thinking; although there is a need to adapt what we do, fundamental change is not required. Barriers to implementing sustainable actions by the dental workforce include a lack of awareness of the issue and feelings that sustainability is difficult or burdensome to implement. By extolling the benefits of multiple small changes alongside good-quality oral healthcare carried out *en masse,* it becomes apparent that everyone can do something to make oral healthcare more sustainable. This message requires support and encouragement from all stakeholders within oral healthcare in the UK where it is currently absent, in particular, its regulatory bodies. In short, dental teams should continue to practise what they have been trained to do and what drives them: provide good-quality, prevention-focused care.

Conclusion

Guidance and toolkits for the oral healthcare team to improve sustainability in their daily practice are available, such as those provided by the FDI[51] and the Centre for Sustainable Healthcare.[52] They highlight that sustainability at a practice level is an unintended consequence of patient-centred, evidence-based and prevention-focused practice.

However, there is an additional need for sustainability to be embedded and prioritised more in oral healthcare at a system level. The proposed organisational framework makes it imperative for policymakers, commissioners, professional regulators and educators to consider sustainability as part of quality oral healthcare, which should drive research and incentivise sustainable practice development. This combined multistakeholder/multiagency approach is the only way that oral healthcare in the UK will be able to meet 'the needs of the present without compromising the ability of future generations to meet their own needs'.[30]

Ethics declaration

The authors declare no conflicts of interest.

Author contributions

Thomas A. Dyer, Steven Mulligan and Nicolas Martin conceived and designed the work that led to the submission, drafted the manuscript, revised the manuscript and approved the final version.

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