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Abstract

Introduction
Studies across the health service reveal benefits of teamwork and barriers to its optimal use. Drawing upon the established Maturity Matrix Dentistry method, Skills Optimisation Self-Evaluation Toolkit (SOSET) was developed to enable the whole dental team to critically review how they address skill-mix in delivery of patient-centred oral healthcare in their practice. This paper outlines the development of the SOSET and explores its usefulness to general dental practice teams.

Methods
Research literature and interview data from general dental practice teams were coded for high-level factors (positive and negative) influencing teamwork. We used this coding to identify skill-mix domains, and within each, define criteria. The SOSET process was refined following consultations with dental professionals and piloting.

Results
Eighty-four papers were coded, and 38 dental team members were interviewed across six sites. The SOSET matrix was developed containing 9 domains reflecting the use of skill-mix, each containing 6 development level criteria. The domains addressed factors such as team beliefs on skill-mix and knowledge of team members’ scope of practice, patient demand, the business case, staffing and training, and the practice premises. The process was piloted in 11 practices across South Wales and feedback was received from 92 staff members. Results showed that the SOSET process was straightforward, that the whole team could contribute to discussion and that it would be used to improve practice. Following piloting, four domains were merged into 2 new domains and the number of criteria within all domains was reduced and the wording simplified (7 domains, with 4 criteria each).

Conclusion
We used a systematic and rigorous process to develop SOSET to support dental teams to progress their teamwork practices. Its usefulness was demonstrated in the pilot. The SOSET is now being offered to general dental practices across Wales.
Introduction

Recent policy has emphasised the growing need to adopt a preventive approach to dentistry(1-4) to meet changing patient demographics and future care needs.(5, 6) To address these challenges, dental care professionals’ (DCPs) scope of practice was extended in 2013 in the UK.(7) Further, in 2013 Direct Access arrangements allowed DCPs (including dental hygienists, dental therapists, and dental nurses) to complete a range of preventive tasks and for dental hygienists and dental therapists to provide aspects of restorative care without dentist prescription.(8) In general dental practice, there is considerable scope to delegate many routine activities to DCPs. It has been estimated that up to 75% of clinical time is spent on work that could be completed by a DCP.(9) However, current National Health Service (NHS) regulations mean that only those seeing patients privately or working in the community dental service (CDS) are able to benefit from Direct Access arrangements. Currently all courses of NHS dental treatment must be opened and closed by a dentist. This means that although appropriately trained dental therapists can prescribe radiographs, dentists currently have to review the film to close the process.(10)

It is not only regulatory factors that have been found to impede skill-mix; dentists’ knowledge, understanding and opinions on teamwork also have an effect. Lack of knowledge about DCPs contribution to practice has been noted(11, 12) or a lack of confidence in the training and safety of their work.(13) Dentists have also reported concerns that patients may view delegation as a cost-cutting move, challenging the trusting relationship.(14) Furthermore, changes to division of labour may lead to concern about what this means for the dentists’ role,(15) both as a clinician and as leader of a new multi-disciplinary team.

Despite these various hurdles, some practice teams manage to make skill-mix “work”. Practices committed to team-working develop personalised, innovative approaches to overcome these difficulties.(16) The resulting diverse payment systems and working practices for DCPs may however have implications for recruitment and retention.(17) Educational support to assist practices develop payment and working practices that would be acceptable to the whole team may help. Mechanisms that support understanding of the different professional roles, enhance team communication, and develop practical processes that facilitate DCP contribution within a practice would benefit teamwork of all kinds.

The MM(D)

One established method of facilitating whole-team discussion is the Maturity Matrix (MM).(18) The MM is a practice development tool allowing teams to evaluate their current practice and help them
assess current performance (both positive and negative) and prioritise areas for improvement. Originally developed for primary medical care teams, the MM has also been adapted for use in several countries in Europe as the International Family Practice Maturity Matrix. In 2011, Wales Deanery working in collaboration with Welsh Government adapted the process for use with general dental practice teams as the Maturity Matrix Dentistry (MMD), focusing on core quality and safety issues. Supported by a facilitator, the dental team meet to discuss the MMD matrix. The matrix is a table with each column heading representing an individual “domain”, and within each domain there are a number of scaling descriptive criteria. During a facilitated discussion the practice team discuss and agree by consensus which criteria best reflects their current practice within each domain. The whole team decide the priority criteria for improvement in the practice, and which team members will lead on each action. To encourage self-directed learning, a ‘sources of help and advice’ document is provided which can be referred to after the session.

The Skills-Optimisation Self-Evaluation Toolkit (SOSET) was developed in collaboration with Health Education and Improvement Wales (HEIW), previously Wales Deanery, as part of a wider project exploring teamwork in general dental practices, funded by Health and Care Research Wales (HCRW). Drawing upon the established MMD method, SOSET was developed to enable the whole dental team to critically review how they address skill-mix in delivery of patient-centred oral healthcare in their practice and identify practical ways of improving. This paper outlines the process of developing the SOSET and explores its usefulness to general dental practice teams.

**Method**

**Development**

We adopted a realist approach in our evaluation. The aim of this evaluation was to answer: ‘does it work, for whom, when and why?’ whereby ‘it’ refers to implementing skill-mix through a teamwork approach to patient oral healthcare that uses team members’ full scope of practice. Influences on skill-mix were extracted from a structured review of the literature and a series of case studies with general dental practices. Research literature was coded for high-level factors (positive and negative) describing the conditions/context under which the mechanisms operate to produce desired outcomes. The papers were double-coded by the research team, and the final coding discussed and negotiated by three team members.

Additionally, as part of the wider study, we undertook case studies. We selected six general dental practices in South Wales from three University Health Boards (Aneurin Bevan, Cwm Taf Morgannwg
and Hywel Dda). The practices were chosen because they operated different models of skill-mix; three employed a dental therapist while three did not. At each site, we conducted semi-structured interviews with members of the dental teams, either individually or in small groups. The interview schedule drew on the outcomes of our analysis of the literature to ‘test out’ the coding. Open questions also allowed participants to describe unanticipated influences or factors. All interviews were transcribed and coded.

Drawing upon the combined coding from the literature and the interview data, we identified the main factors influencing skill-mix. These formed the domain headings in a matrix. Within each domain, stepped criteria were drafted to define and exemplify different levels of ‘maturity’ for that domain. The domains and their criteria were discussed and initially drafted into a matrix by the research team.

Refinement and piloting
The matrix was refined through repeated consultations with external professionals from the wider sphere of dentistry via an evening session, where attendees were given a blank matrix containing only the domain headings and asked to populate the matrix with the criteria statements printed on individual labels. The exercise was devised to encourage discussion. They were asked to comment on or suggest amendments to the criteria and domain titles. Following this exercise, ongoing email conversations with attendees allowed discussion and finalisation of any changes made post-session. Attendees were asked whether they would be willing for their dental practice to take part in the piloting stage, or to nominate other practices that they thought would be willing.

The pilot sessions were led by HEIW tutors who volunteered their services. All participants who piloted the SOSET were awarded two verifiable CPD hours for their contribution. At each session, the dental team completed individual post-session feedback forms and tutors recorded their reflections post-session. A focus group discussion was held with the tutors when all the sessions had been completed. Following feedback, the SOSET matrix was refined. All amendments were discussed and negotiated with the quality improvement (QI) tutors.

HRA ethical approval was obtained for the study (Ref. 16/LO/0113).

Results

Initial development
Eighty-four papers were coded in total. Of these, there were 34 UK-based research papers, 25 research papers from elsewhere, 12 UK-based systematic reviews (n=3) or discussion papers (n=9) and 13 (post-2005) worldwide systematic reviews (n=4) or discussion papers (n=9). Thirty-eight
dental team members were interviewed across six case study sites (7 principal dentists, 5 associates, 1 trainee, 4 DTs, 13 dental nurses, 5 practice managers, 1 DH and 2 receptionists). All practices reported treating a variety of patients; all practices saw a range of ages and a variety of socio-economic groups with high treatment demand.

Drawing upon the literature review and case study results,(25) nine factors were identified as influencing skill-mix in general dental practices (see Box 1). Six criteria descriptors were devised for each of these domains. These domains and criteria were presented in a matrix.

**Refinement**

An evening session was arranged to discuss the SOSET and attended by eight professionals representing government and policy (2), NHS contracts (2), dental practitioners (1), and dental educators (3). Initial responses to the SOSET was that it was long and very complex for practices to complete, particularly if skill-mix was a new topic for the dental practice. Having fewer domains and fewer subsections was suggested. As a result of the discussion, the criteria within each domain were reduced from six to five.

One dimension (“Practice, Premises and Equipment”) was considered too complicated, the criteria did not reflect levels, and it contained more than one topic. Attendees recommended moving some of domain 5 (“System efficiency through a business case”) criteria into domain 3. Also, one criterion from domain 3 was considered irrelevant and so it was removed (“Demand for appointments exceeds capacity. Emergency appointments are difficult to fit in.”). The phrasing of other criteria was commented upon. For example, the distinction between “NHS contract” and “employment contract” needed to be clearer to avoid confusion.

Regarding the process, it was noted that facilitators would have to keep a sharp focus to avoid the discussion wandering off topic. Also, of key importance was the need to keep the discussion on things that the practices can do and not focus on contract/regulatory restrictions.

Despite these suggested changes and challenges, it was widely agreed that the SOSET would benefit dental teams. It was noted that even if it did not prompt immediate changes in ways of working, it may stimulate awareness which could have beneficial effects, such as checking the scope of practice for DCPs.

Several attendees at the evening session also agreed for their own practice to pilot the SOSET and nominated other practices that would be willing to take part. Later, another practice that had heard of the SOSET via word of mouth also requested to take part in the piloting.
Piloting

The process was piloted with 11 NHS general dental practices across South Wales, supported by three QI tutors from the Dental Postgraduate Section, Health Education and Improvement Wales (HEIW). Feedback from the pilot was received from 92 participants (32 dentists, 38 dental nurses, 1 Dental Therapist, 1 Dental Hygienist, 7 practice managers, 5 receptionists, 3 clinical managers and 5 others).

Results gathered from the post-session questionnaire reflected that:

- 98% reported that SOSET was straightforward
- 91% thought the language used was clear
- 93% said that SOSET was useful
- 89% would use the SOSET to improve
- 98% said having a facilitator was helpful/somewhat helpful
- 94% felt able to contribute to the discussion
- 48% had read the ‘Sources of Help’ document; 100% of those who had read it felt that it would be useful in helping them make changes to their practice.

QI tutors reported that the SOSET worked best in practices with previous experience of completing the MMD or practices that are participating in the Welsh Government dental contract reform programme piloting ways of incentivising needs-led care, prevention and enhancing team via amended UDA management. Teams with a range of staff ages and staff with differing views of skill-mix enhanced discussion. Challenges the tutors faced included staff members not willing to engage in discussion, or team members not having read the preparatory paperwork. Longer protected session times, less paperwork and condensing the SOSET was recommended.

As a result of the feedback received, the following changes were made:

- The number of domains were further condensed from 9 to 7 (“System efficiency through a business case” and “Dental team staffing” were merged to become “Staffing and team management”; “Practice Team Belief in Skill-mix” and “Practice Team Scope of Practice” were merged to become “Belief in Teamwork”).
- The number of defined criteria were reduced from 5 to 4, to make easier to complete in a one-hour session.
- The SOSET language was modified. Statements were made clearer and less detailed.
• The flow between the different levels expressed by the criteria within each domain was improved by amending the wording, ensuring a more logical pathway of increasing “maturity”.
• The order of the domains was rearranged. The domains which were most positively received by dentists and practice managers but not with dental nurses were moved to the end of the matrix so that they could be addressed in turn without discouraging some team members or disrupting the discussion early in the session. For example, dental nurses did not feel that they had any say in staffing/premises decisions and felt less able to engage in the discussion compared to dentists/practice managers, these domains were moved to later in the matrix.

All changes were discussed and negotiated with the SOSET tutors. The final domains can be seen in Box 2. Two example domains and their criteria are displayed in Table 1.

**Discussion**

Building upon an established team development tool (MM), results from the pilot showed that SOSET was straightforward, encouraged whole team discussion and would be used to improve practice. The MM comprised 11 domains, and the MMD contained 12 domains, however, owing to the SOSET’s more specific subject matter, fewer domains were needed and were reduced further during refinement. Reducing the size and complexity of the SOSET also enhanced its suitability as a ‘lunch and learn’ exercise. The SOSET contributed two-hours verifiable CPD and its outcomes map to GDC Learning Outcomes B and C.(27)

Drawbacks to the SOSET process remain similar to those reported for MMD(21); it requires a level of engagement from all team members in order to make the discussions productive for the practice and it relies on team members seeing their planned changes. In addition, the topic of the SOSET may be difficult for some practices or team members with negative opinions or experiences of teamwork. Careful facilitation is required to acknowledge the team member’s contribution whilst keeping the discussion positively-focussed. The pilot participants thought that having a facilitator was helpful.

In Wales, Welsh Government’s Prudent Healthcare approach promotes a teamwork approach, emphasising staff ‘only do what only they can do’.(1) Adopting a teamwork approach to prevention and routine care can release the dentist for more complex cases(28,29) with time savings enabling dentists to practice at a higher level of expertise.(28) Reviews from the UK and USA concluded that inclusion of a dental therapist in the dental team improved patient access,(30-32) particularly to underserved populations (e.g. younger and older patients)(29,33) and helped reduce health inequalities.(34,35) In addition, in both NHS and private practices, dental hygienists and dental therapists are only able to issue prescription-only medicines (for example, local anaesthetic) or apply
topical fluoride either under the direction of a dentist or with a Patient Group Directive (PGD) in place. Applying for a PGD has been noted to be a lengthy and difficult process for the lead dentist who has to apply on behalf of the practice. (10,36) They are also restrictive in practice (10) as they are granted based on a document specifying named medications and the circumstances in which they would be prescribed. (37)

During piloting, there were only one Dental Therapist and one Dental Hygienist within the practice teams. While this reflects the wider staffing profiles of general dental practices it does mean that the study only gained a limited amount of feedback from people working in roles that the SOSET is aiming to optimise. Many of the stakeholders and expert advisory group were highly familiar with the roles of dental care professionals and the barriers to their work, but greater representation from both groups would have been beneficial in ensuring the appropriateness of the SOSET. A further limitation of the development process used in this study was that the post-pilot version was negotiated with tutors and stakeholders but not re-trialed with dental practice teams. As a result, we do not have evidence of pre-and post-piloting improvements to the matrix or the process, as were gained for the MMD.

However, while the SOSET is designed to optimise dental teamwork, it does not promote any one model of working or of professional skill-mix. Rather, the toolkit encourages informed discussion of the potential contribution of different professional roles and how these contributions could be utilised in a way that “works” for the individual practice. Turner, Tripathee and McGillivray note the need to explore the question ‘how can we do our best?’ rather than ‘who does what best?’ to ensure clinical quality. (38) Additionally, the SOSET recognises the limitations on teamwork resulting from the current NHS regulations. Again, dental teams can be assisted to develop practice-specific ways to optimise the teamwork within the current system.

The SOSET has already been adopted by HEIW (39) and has Welsh Government backing as it directly supports the delivery of a patient-centred approach to oral healthcare by deploying the dental team members and their skillsets most effectively. There is potential scope to extend the SOSET to other professional groups. For example, during development it was noted that many of the issues regarding skill-mix within general dental practices are also pertinent to community pharmacies and multi-professional GP clusters. This is a potential avenue for future research.

**Conclusion**
Research indicates that despite extensions to DCPs’ scope of practice, significant barriers remain to the optimisation of skill-mix in dental practice. While some obstacles are beyond the control of the practice, for example the NHS dental contract and other regulatory restrictions, others may be within their control. We devised SOSET to help support dental teams make the most of their current skill-mix and to develop practice-personalised ways to optimise their teamwork. Its development was based on an analysis of theoretical and practice-observed evidence and its usefulness has been demonstrated in the pilot testing. HEIW is now offering SOSET as part of its practice development portfolio all general dental practices in Wales.

Declaration of interests

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References


Box 1: The nine matrix domains

1. Team Belief in Skill-Mix
2. Team Scope of Practice
3. Practice, Premises and Equipment
4. Patients’ Needs and Views
5. System Efficiency Through a Business Case
6. Team Staffing
7. Delegation Systems and Protocols
8. Training, CPD and Lifelong Learning
9. Communication and Team Meetings
Box 2: The final seven matrix domains

1. Belief in teamwork
2. Delegation within the team
3. Team communication
4. Training
5. Patients’ views on teamwork
6. Staffing and team management
7. Premises and equipment
Table 1: Two example domains from the final SOSET matrix

<table>
<thead>
<tr>
<th>Belief in Teamwork 1</th>
<th>Delegation within the Team 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Not everyone in the practice believes in the principle of a teamwork approach to patient care. Some team members are largely unsure of DCPs scope of practice.</td>
<td>2.1 Dentists do not currently delegate tasks. DCPs do not have opportunities to use their full scope of practice.</td>
</tr>
<tr>
<td>1.2 All have a positive attitude to team work, understand the principles of Prudent Healthcare and are familiar with the GDC’s scope of practice and how it applies to each other.</td>
<td>2.2 Delegation happens on an ad hoc basis, at the discretion of the individual dentist.</td>
</tr>
<tr>
<td>1.3 Everyone in the team regularly works to his or her full scope of practice adopting a preventative approach to oral healthcare making use of Delivering Better Oral Health.</td>
<td>2.3 Our approach includes oral health education by dental nurses. The dentist(s) carry out more advanced procedures; less complex (routine) tasks are delegated (supervised where necessary).</td>
</tr>
<tr>
<td>1.4 We have evidence that working to our full scope of practice promotes staff satisfaction and benefits patient care.</td>
<td>2.4 We have clear referral processes and pathways in place. Treatment plans and the actions carried out are noted in sufficient detail in the patient record system.</td>
</tr>
</tbody>
</table>