

Scoping an interdisciplinary model of student dental therapists in maxillofacial trauma

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Key points

Highlights an interdisciplinary model for the curriculum for training dental therapists.

Highlights the role of therapists in the management of maxillofacial trauma patients.

Suggests the potential of such a model for training, collaborative delivery of patient care and interprofessional collaboration.

Abstract

Introduction This paper outlines a short pilot programme to assess the feasibility of an interdisciplinary model of involving student dental therapists in the management of maxillofacial trauma patients. It involved dental therapy students attending an oral and maxillofacial surgery trauma review clinic at a major trauma hospital in London, UK.

Approach The small cohort of 15 second-year dental hygiene and therapy (BSc in Oral Health) students attended the trauma clinic once a week in pairs, over a period of six weeks, after which they completed a survey questionnaire.

Findings No students had previous experience of dealing with trauma patients. The majority (81.8%) had learnt something by attending the clinic. Almost all (91.7%) had not thought previously about the importance of oral hygiene in maxillofacial trauma patients. By the end of the pilot programme, ten students (83.3%) felt that they had a role to play in the care of these trauma patients and they felt valued as members of the wider team.

Conclusion These initial findings suggest that the scheme has potential for incorporation of maxillofacial trauma experience within the formal dental therapy curriculum. This would prepare them for future involvement in the management of maxillofacial trauma patients to promote oral health benefits and more widely, to work as a team member in interprofessional health care.

Introduction

Dental therapists are healthcare professionals and are licenced to provide oral health education, prevention and therapeutic services to support total health. Their role was introduced with a view to changing dental care to a more preventive-focused, teamwork approach.¹ They routinely work alongside the rest of the dental team to provide a valuable service and may be 'employed within all sectors of dentistry'.² In particular, they play a significant role to improve access to oral healthcare for underserved communities

through treatment and prevention.³ Over time, the roles of dental therapists have evolved and expanded. They have also supported academia, as well as public health, research and industry.⁴

The regulatory body in the UK – the General Dental Council – requires all education providers to follow the curricula laid out in their document *Preparing for practice*.⁵ The learning outcomes that are relevant to this clinical experience/opportunity are:

- Individual patient care
 - 1.1: The registrant will recognise and take account of the needs of different patient groups, including children, adults, older people, and those with special care requirements through the patient care process
 - 1.7.10: Discuss the role of the dental therapist and other members of the dental team in the patient management process.
- Team and the wider healthcare environment
 - 4.1: Communicate effectively with colleagues from dental and other healthcare professions in relation to

the direct care of individual patients, including oral health promotion.

- Teamwork
 - 8.1: Describe and respect the roles of dental and other healthcare professionals in the context of learning.
- Working with others
 - 11.1: Take a patient-centred approach to working with the dental and wider healthcare team
 - 11.2: Recognise and respect own and others' contribution to the dental and wider healthcare team and demonstrate effective team working.

One example of a healthcare team that involves dentistry is the maxillofacial trauma team. Individuals who have sustained maxillofacial traumatic injuries may have complex oral hygiene needs related to their injuries, previous dental experience and co-existent surgical injuries. Such injuries include facial fractures; contemporaneous management of these fractures involves fixation of wire ligatures to the teeth which

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cause secondary plaque retention, as well as periods of elastic intermaxillary fixation ('wiring the teeth together'). Hence, they require personalised instructions for oral hygiene and selection of relevant equipment for this immediately following trauma.⁶

Very importantly, these patients may have very irregular previous attendance and are not able to easily access either secondary or primary care following their injury. Moreover, in a major trauma centre (such as The Royal London Hospital, London, UK, where this model was trialled), patients may be bedbound, with low level of consciousness or access to dental cleaning materials, and may also have hand injuries which preclude good mouth care. It should also be acknowledged that the local area of Tower Hamlets has a 77% incidence of periodontal disease, as well as a 39% instance of untreated dental decay.⁷ Potentially, there is an opportunity for establishing good dental habits which will feed forward to health promotion. The importance of embedding a system of good oral care and the provision of access to such care, therefore, cannot be overstated.

The aim of this brief scoping exercise was to assess the feasibility of implementing an interdisciplinary model of including dental therapy students in the management of maxillofacial trauma patients. The objective was to explore the potential for incorporation of maxillofacial trauma experience within the formal curriculum for dental therapy students, by timetabling attendance of a second-year cohort of BSc in Oral Health students at a weekly maxillofacial trauma review clinic.

Approach

This pilot scheme took place over a period of six weeks during the summer term in June and July 2021. The activity took place in a clinical setting on a weekly maxillofacial trauma review clinic, which occurs all day on Mondays at the Dental Hospital, The Royal London Hospital (part of Barts Health NHS Trust) in London, UK.

A total of 15 second-year students who were enrolled in the BSc in Oral Health – a three-year programme at Queen Mary University of London – participated in this pilot. The stint on the maxillofacial trauma review clinic is not required within the central part of the formal curriculum, but it was possible to incorporate the activity into the students' weekly timetable without affecting the overall teaching or clinical schedules. The students were divided into pairs, with each pair either attending the

morning session of the clinic or the afternoon session. Due to the cohort number, timing and duration of the programme that was feasible, each student pair had the opportunity to attend at least once throughout the period, with almost half of students being able to attend twice.

The students were briefed at the start of their first attendance by the lead of the trauma clinic and a restorative dentistry consultant. During their time on the clinic, the students had the opportunity to experience a variety of scenarios where appropriate. These ranged from observation of reviews of patients or different procedures (such as suture removal), assisting in some procedures, or providing oral hygiene support or initial treatment (professional mechanical plaque removal or PMPR).

At the end of the pilot scheme, the students were asked to complete a survey questionnaire (Appendix 1). The questionnaire (with a closing date) was emailed to all the participating students and they were informed that their responses would be entirely anonymous. The students who completed the survey consented to taking part; they had the option of not completing it. Ethical approval was confirmed as being not necessary (by the institutional research ethics team at the research management office) as we were gathering feedback from an educational session; obtaining feedback is akin to a service evaluation which is considered as not needing ethical approval. Moreover, this survey did not involve any personal or patient data and the students were not identifiable by their responses on completion.

Findings

By the end of the closing date for submission of responses, 12 out of the 15 students in the participating cohort had completed the survey. All students had attended either a morning or afternoon session, with five students (45.5%) having attended two sessions (both a morning and an afternoon clinic).

None of the students reported having had previous experience of dealing with trauma patients. The vast majority (81.8%) of respondents had learnt something by attending the clinic. Almost all the responding students (91.7%) had not thought about the importance of oral hygiene in maxillofacial trauma patients before this rotation. By the end of the trial period, ten students (83.3%) felt that they

had a role to play in the care of these trauma patients, while one student did not think so and one student was not sure. Apart from one student, the rest felt valued as members of the wider team. Half of the cohort was of the opinion that the experience would be useful to students earlier on in their course, with the rest reporting that it would not be useful earlier in their degree programme or they were not sure.

The free-text section of the survey revealed some interesting narratives. It appeared that the students had enjoyed the experience. There were highly positive comments, such as the timing was good, they enjoyed the experience, it was useful, they would not change anything about the rotation, they felt welcomed by the team and were made to 'feel like an important and valued member of the team'. One student added:

- 'I found this experience so interesting and exciting. This is definitely an area I would like to explore further in future.'

Another student felt that:

- 'It was a very useful experience to see how trauma patients will need to deal with their oral hygiene and how in some cases oral hygiene is an important factor in preventing further infections etc.'

They also realised and valued how the oral hygiene homecare had to be tailored to the needs of the individual patient and that 'this knowledge will come in handy even when dealing with other patients'.

In contrast, one of the students felt that they were observing cases that were outside their scope, although interesting to see, and would prefer the rotation to be scheduled less often but did not offer a suggestion. On the other hand, another student felt a full day's placement may be more useful.

Discussion

The weekly maxillofacial trauma review clinic at the Dental Hospital, The Royal London Hospital, occurs on Mondays. It is a busy, day-long clinic, routinely seeing an average of 70 patients involving a wide mix of cases with simple and complex facial trauma. A large number of these patients do not have access to primary dental care. The therapy students were involved in providing oral hygiene support where relevant.

This initiative was an educational pilot scheme with a small sample size of 15 students. As the trial period was relatively short, it was not

possible to ensure that the students' exposure and experience was consistently the same throughout. Every session was different in terms of case-mix and numbers of cases encountered.

The difference in exposure to the clinic was due to timetabling, and occasionally due to non-attendance of students, as this project was undertaken during the COVID-19 pandemic. As the maximum cohort size for the therapy students in any one year is 16 (this cohort had 15 students), it would not have been possible to have a larger cohort size. The survey was repeated in July 2022 and had a similar response.

Participation in the survey at the end of the pilot was entirely voluntary; the reasonably high response rate (12 out of 15 ie 80%) provided information about the potential pedagogical value for future programmes or embedding into existing courses. In general, the students were positive about their experience and realised the importance of oral health and hygiene in trauma patients that is unfortunately all too often not only neglected but may also be complicated. The students also appreciated the need for bespoke hygiene management in compromised situations. Moreover, the demographics of trauma patients seen in this clinic includes disadvantaged individuals who are homeless and those who have not previously had access to dental care or have difficulty accessing dental care, so it is even more important that they are provided with basic oral hygiene management. This confers immediate advantage to the patient.

This pilot increased the students' awareness of the management of trauma and the role that they can play. They were also able to have 'hands-on' experience of providing oral hygiene support and home care to patients on the review clinic and a few students were able to carry out initial hygiene procedures, such as professional mechanical plaque removal (PMPR), contributing to their overall clinical experience. In addition, the students were encouraged to reflect on their experiences by keeping a reflective log. Without a control group for comparison, it is not possible to determine whether the scheme had the potential for improving confidence and attitude solely based on attendance on this clinic. However, the qualitative information obtained through the feedback in the survey provided some measure of the value and impact of the experience.

Notwithstanding, this short interdisciplinary programme afforded the students the

opportunity to expand their knowledge and to experience a team approach to managing patients across several disciplines. They learnt the importance of being part of a large multi-disciplinary team. The team at the maxillofacial trauma review clinic, where this scheme was piloted, consists of maxillofacial surgeons, an orthoptist, an oculoplastic surgeon, clinical psychologists, and input from other surgical specialties, as well as support from restorative dentistry and periodontology. The students, therefore, also learnt the value of shared care and scheduling the care to achieve the best health outcomes, as well as improving the quality of life of these patients.

In addition, managing trauma patients requires a whole spectrum of clinical skills, including communication. During the sessions, the students reported that there was value in listening to and observing other clinicians' interactions with patients and the discussions involved, often involving sensitive conversations. This pilot would not have been possible without the incredible support of the whole team.

An interdisciplinary model may help equip students with the skills to handle a variety of challenging situations and collaborate with other healthcare professionals,⁸ as close collaboration across disciplines is fundamental to success of shared care. Additionally, such a model has the added benefits of potentially increasing confidence and reducing anxiety when faced with such patients or challenging situations in the future. It is also expected that the model is likely to offer students an experience that would increase their knowledge about how oral health is connected to overall health, enabling them to recognise that shared care involves treating a patient as a whole person, which is often overlooked. The need for integration of oral health with other healthcare professions has been recognised by the American Dental Hygienists' Association.⁹ Furthermore, expanding access and ensuring equity in oral health care requires transformative change in curricular development and student experience.⁹ Interdisciplinary educational experiences are an essential component in preparing students to participate in future interprofessional collaborations to support comprehensive patient care.¹⁰

Since the model was first implemented as a pilot, we have introduced some changes to the format to enhance the students' educational and clinical experience. For example, we have introduced booking of trauma patients to be specifically seen by the students on the

trauma review clinic in dedicated clinical slots supervised by restorative staff. We have also included specific clinical activity, such as PMPR, repair of fractured anterior teeth with composite resin etc, to be carried out by the therapy students, unlike previously, when they were primarily involved in administering oral hygiene support.

As far as the authors are aware, there is no such 'pedagogy of connection'¹¹ with maxillofacial trauma existing in any formal dental hygiene and/or therapy programme in the UK. It should not only be part of the curriculum but should have support from the host institution with allocation of resources to ensure its success. The key features to success of any such placement are engagement of the staff and students in the team. Importantly, in order for any such programme to achieve its objectives, the students must recognise the importance of good oral hygiene and effective homecare practices by patients on treatment outcomes, and their responsibility as a team member. For future consideration of such placements, it would be useful for the students to be involved in co-creating details of the model, such as frequency of the placement and tasks they feel comfortable carrying out. This model may in the future expand access to dental services through the formal and routine integration of dental hygienists and dental therapists into maxillofacial trauma services in other units elsewhere.

The recent publication of the World Health Organisation's Global Oral Health Action Plan 2023–2030 involves six strategic objectives that include oral health promotion and prevention to enable all people to achieve the best possible oral health.¹² It also includes a strategic objective to develop innovative health workforce models.¹² The model outlined in this paper is in keeping with these important objectives.

Further work is planned to fine-tune the questionnaire used in this model. For example, informal feedback from members of staff and the team has been very useful and indicates the value of having the student therapists on the clinic. Therefore, we plan to devise a survey to more formally capture staff feedback in the future. We also plan to include a section in future questionnaires to ask students specifically what they gained from their sessions.

This is currently the only multi-disciplinary clinic that the students attend during their training. Future developments could potentially include exposure to incorporate other groups of patients such as oncology patients.

Conclusion

A short-term scheme of attendance of dental therapy students on a maxillofacial trauma review clinic was conducted to assess the feasibility of implementing an interdisciplinary model of dental therapy personnel involvement in the management of maxillofacial trauma patients. The initial findings suggest that the scheme has potential for embedment within the formal curriculum for dental hygiene and/or dental therapy students. Such interdisciplinary exposure in their education may help prepare dental hygienists and dental therapists for collaborative delivery of patient care and interprofessional collaboration in the future. This model has utility of preparation for future involvement of dental hygiene and dental therapy personnel in the management of maxillofacial trauma patients.

Ethics declaration

The authors declare there are no conflicts of interest in this paper and no funding involved.

Ethical approval was confirmed as being not necessary (by the institutional research ethics team at the research management office) as we were gathering feedback from an educational session; obtaining feedback is akin to a service evaluation which is considered as not needing ethical approval. Moreover, this survey did not involve any personal or patient data and the students were not identifiable by their responses on completion. The students who completed the survey consented to taking part.

Data availability

The participants of this study did not give written consent for their data to be shared publicly, so due to the nature of the research, supporting data are not available. The survey questionnaire was undertaken as an Online Survey via the university's software tool (JISC). The data that support the findings of this study are held by the author responsible for the data curation (SMM). The students were informed that their participation was entirely anonymous and that individuals would not be identified. However, as the participants were not explicitly asked to provide written consent for their data to be shared publicly, it would be reasonable to assume that this is not available.

Attendance at maxillofacial trauma review clinic

- 1) How many sessions of the trauma review clinic have you attended?
Morning/Afternoon/Both morning and afternoon
- 2) Have you previously had experience of dealing with trauma patients?
Yes/No
- 3) Did you feel you learnt anything from attending the trauma review clinic?
Yes/No/Not sure
- 4) Did you feel you were valued on these clinics?
Yes/No/Sometimes
- 5) Before this pilot study and rotation, did you think about the importance of oral hygiene in trauma patients?
Yes/No
- 6) Do you feel you have a role to play in trauma patients?
Yes/No/Not sure
- 7) Do you think this experience of the trauma review clinic would be useful to students earlier in the programme?
Yes/No/Not sure
- 8) Anything you would suggest changing about the rotation through the clinic (examples may be too often, should be a full day, once a week/month/term etc)?

- 9) Anything else that you would like to add regarding the experience you have had?

Appendix 1 Survey questionnaire for completion by participating students at the end of the pilot scheme

Author contributions

Sharanbir K. Sidhu: conceptualisation of model, supervision and drafting of the manuscript; Sarah M. Murray: survey design and data curation; Domniki Chatzopoulou: validation and review; Simon Holmes: critical review and final approval.

References

1. Barnes E, Bullock A, Chestnutt I G, Cowpe J, Moons K, Warren W. Dental therapists in general dental practice. A literature review and case-study analysis to determine what works, why, how and in what circumstances. *Eur J Dent Educ* 2020; **24**: 109–120.
2. Sadura Z, Hanks S, Tredwin C, McColl E. The dental therapist's role in a 'shared care' approach to optimise clinical outcomes. *Br Dent J* 2021; **231**: 104–108.
3. Chen D, Hayes M, Holden A. A global review of the education and career pathways of dental therapists, dental hygienists and oral health therapists. *Br Dent J* 2021; **230**: 533–538.
4. The Editors. Dimensions of Dental Hygiene's 10th Annual Six Dental Hygienists you want to know: celebrating excellence. *Dimens Dent Hyg* 2017; **15**: 19–25.
5. General Dental Council. Preparing for practice: Dental team learning outcomes for registration (2015 revised edition). Available at [https://www.gdc-uk.org/docs/default-source/quality-assurance/preparing-for-practice-\(revised-2015\).pdf](https://www.gdc-uk.org/docs/default-source/quality-assurance/preparing-for-practice-(revised-2015).pdf) (accessed June 2024).
6. Nardi G M, Guerra F, Ndokaj A et al. Phototherapy and tailored brushing method. Personalized oral care in patients with facial and dental trauma. A report of a case. *Healthcare (Basel)* 2021; **9**: 561.
7. Tower Hamlets Council. Oral Health – oral health of adults. Available at https://www.towerhamlets.gov.uk/ignl/health__social_care/public_health/oral_health.aspx (accessed June 2024).
8. Tabrizi M, Lee W-C. A Pilot Study of an Interprofessional Program Involving Dental, Medical, Nursing, and Pharmacy Students. *Front Public Health* 2020; **8**: 602957.
9. Battrell A, Lynch A, Steinbach P, Bessner S, Snyder J, Majeski J. Advancing education in dental hygiene. *J Evid Based Dent Pract* 2014; DOI: 10.1016/j.jebdp.2014.02.005.
10. Tolle S L, Vernon M M, McCombs G, De Leo G. Interprofessional education in dental hygiene: attitudes, barriers and practices of program faculty. *J Dent Hyg* 2019; **93**: 13–22.
11. Dillon P. Creativity, integrativism and a pedagogy of connection. *Think Skills Creativ* 2006; **1**: 69–83.
12. World Health Organisation. Global Oral Health Action Plan 2023–2030. 2022. Available at <https://cdn.who.int/media/docs/default-source/ncds/mnd/eb152-draft-global-oral-health-action-plan.pdf> (accessed June 2024).



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