

Medical history complexity of patients attending dental student restorative treatment clinics compared with dental emergency clinics

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Abstract

Introduction: Dental students should graduate from undergraduate programmes with the knowledge and skills to safely manage patients. This requires exposure to patients with a range of medical needs, which may impact the planning and delivery of care.

Aims and Objectives: We wished to establish the medical history complexity of patients presenting to student restorative clinics and compare them to patients attending a dental emergency clinic.

Materials and Methods: We recorded the medical history data of 200 anonymised patients attending student restorative clinics and compared them to previously collected data from 200 dental emergency clinic patients. We collected basic demographic data (age/gender) and noted the number of medical disorders, amount of comorbidity and the number and types of medications for each patient.

Results: The age and medical complexity of patients were different, with fewer young patients seen in the dental restorative clinics. Patients attending restorative clinics were more likely to have multiple comorbidities and took greater numbers and types of medications than those seen in dental emergency clinics.

Conclusions: For patients seen in student restorative clinics, medical histories are taken once at the beginning of care and the subsequent treatment plan is delivered over many appointments accounting for that medical history. Emergency clinic patients attend for single treatment episodes and their medical complexity is immediately relevant to the treatment offered. Students have multiple, single encounters with patients in emergency clinics. In both clinics, dental treatment plans need to be adjusted to account for patients' drugs and diseases, providing opportunities to consolidate human disease learning.

KEYWORDS

chairside learning, dental undergraduate, human disease, medically compromised

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1 | INTRODUCTION

The United Kingdom (UK) General Dental Council (GDC) maintains the undergraduate curriculum document 'Preparing for Practice' (P4P), which says that 'Students must have the opportunity to practise on a sufficient number and a wide range of patients ... of all ages and including those with special care requirements, with a wide range of treatment needs, simple and complex...', 'Identify general and systemic disease and explain their relevance to oral health and their impact on clinical treatment' and also, in relation to patients and their prescribed medications, 'Identify where medicines may cause adverse effects in patients and initiate action to manage and report'.¹

In the United States (US), all licensing jurisdictions (e.g., states and territories) require licensure candidates who have passed their university dental degree (e.g., DDS and DMD) to also pass the Integrated National Board Dental Examination (INBDE), which was launched in 2020. The 2023 INBDE candidate guide (the equivalent of the GDC P4P) says in relation to diagnosis and treatment planning, candidates must 'Recognize the manifestations of systemic disease and how the disease and its management may affect the delivery of dental care' and 'Understand how patient attributes (e.g., gender, age, race, ethnicity, and special needs), social background and values influence the provision of oral health care at all stages of life'.²

In Europe, the Association for Dental Education in Europe (ADEE) has published a series of curriculum documents to help guide students and schools on what should be included in teaching and learning, including elements of human disease/medical history and medications. In the paper regarding Patient Centred Care (Domain III),³ the curriculum included the following:

Learning outcomes:

A graduating dentist must be able to apply the scientific knowledge base relating to:

- 3.1.9 Disease processes relating to acute and chronic orofacial conditions, and how inflammation, disorders of the immune system, degeneration, neoplasia, metabolic disturbances, and genetic disorders can impact these
- 3.1.10 The aetiology and pathological features of common disorders of the major organ systems and their relationship with oral health
- 3.1.11 Pharmacology and therapeutics relevant to clinical practice

In the paper Safe and Effective Clinical Practice (Domain II),⁴ the curriculum included the following:

Learning outcomes:

A graduating dentist must be able to apply the scientific knowledge base relating to:

- 2.3.5 Request and correctly report on clinical laboratory and other diagnostic procedures and tests

- 2.3.6 Effectively engage with the wider medical team, as required, during routine and emergency care

- 2.3.15 Manage acute oral conditions, including appropriate communication for patient referral and prescription of drugs

The UK population is becoming more aged, and with age comes increased morbidity and multimorbidity (four or greater diseases) along with an increase in prescribed medications required to manage these conditions. In 2018, Kingston and colleagues projected the multimorbidity of the population in England to 2035 and estimated that the population with multimorbidity will likely double.⁵ In 2015, the UK government published 'What is Known About the Oral Health of Older People in England and Wales'. This document stated that 11 million people in the UK would be aged over 65, and by 2032, this would increase to 14 million. Importantly, it also revealed that older people are retaining more of their teeth in later life.⁶

In the US for comparison, seniors aged 65 and older have an average of 20.7 remaining teeth and only 17.3% of seniors over 65 are edentulous.⁷ Estimates of morbidity in the US population are that 82 million (32.9%) adults are receiving treatment for two or more conditions, 51.7 million (20.7%) have three or more conditions, and 30.6 million (12.3%) have four or more conditions, and that the prevalence of multimorbidity in those aged 65 and older is 38 million people (73%).⁸

With these curriculum statements and patient demographics in mind, and with a continuously ageing and increasingly dentate population, it is important for all graduating dentists to be able to record and understand a medical and drug history of their patients, and to be able to develop and deliver an appropriate and safe treatment plan, which takes into account their patients' medical complexities and dental needs.

There are a number of papers in the literature, which describe the medical morbidity and complexity of patients attending dental hospitals and school outpatient treatment clinics.⁹⁻¹³ We wished to determine the medical complexity of patients attending dental student restorative treatment clinics in a university dental hospital and compare them to a similar group attending the same dental hospital emergency clinic where students are present to help plan and deliver urgent dental care in a single treatment episode.

2 | MATERIALS AND METHODS

We used a similar study carried out at Cardiff University Dental Hospital and School which looked at the medical complexity of 200 patients attending for urgent dental care as a comparator study, using the same methods for data collection and analysis.¹⁴ We also matched the time period of attendance for patient's data collection to allow for direct comparison. Following appropriate institutional approval, we collected the medical history and medication data from just over 200 patients attending dental student restorative treatment clinics beginning in January 2020. After the removal of duplicates, we identified 200 individual records. The data were anonymised and analysed using MS Excel. Medical diagnoses were categorised according to the standard dental hospital medical

questionnaire, and the names and numbers of medications were recorded for each patient.

3 | RESULTS

62.5% of patients attending the student restorative clinics were male, compared with 52.5% of the emergency clinic patients.

Seventy-seven per cent of student restorative clinic patients were taking one or more medications, compared with 66% of those attending in the dental emergency clinic.

The patient age profiles in the two clinics are markedly different (Figure 1). Patients attending the dental emergency clinic are predominantly in the younger age group, whereas those attending the student restorative treatment clinics are older, with the age distribution more pyramidal in shape and peaking around the 56–65 years group. This second group more closely matches the census population data for Cardiff, which shows the biggest age demographic is in the 55–59 years age group.¹⁵ Cardiff is home to several universities with a large transient student population aged between 18 and 25. Many of these students will not be registered with local dental practices (being registered primarily at their family home addresses), but in the case of needing urgent, dental care will need to access local NHS services, including in the university dental hospital.

Figure 2 shows the distribution of medical conditions of patients presenting to the two clinics, and both groups show a wide range of disorders. However, in the student restorative treatment clinics, the number of patients presenting with medical conditions is far greater and matches what would be expected of an older age group, with a large number of cardiovascular, musculoskeletal, gastrointestinal and respiratory conditions.

Figure 3 shows the number and types of medication taken by patients in the two clinics, and unsurprisingly, the student restorative clinic patients (who are predominantly older and with more medical disorders) are taking many more medications than the mostly younger patients seen in the dental emergency clinic.

Figure 4 shows the mean number of comorbidities for patients attending the student restorative clinics and dental emergency clinic, and again, the mean number of comorbidities is greater with increasing age (apart from 18 to 25 in the dental emergency clinic sample). Multimorbidity (four conditions or more) mean values are much greater for the students' restorative treatment clinic patients in the 66 years and older, and for 76 years and older age groups for both clinics.

4 | DISCUSSION

Our results show that dental students looking after patients in restorative clinics are planning treatments which need to take account

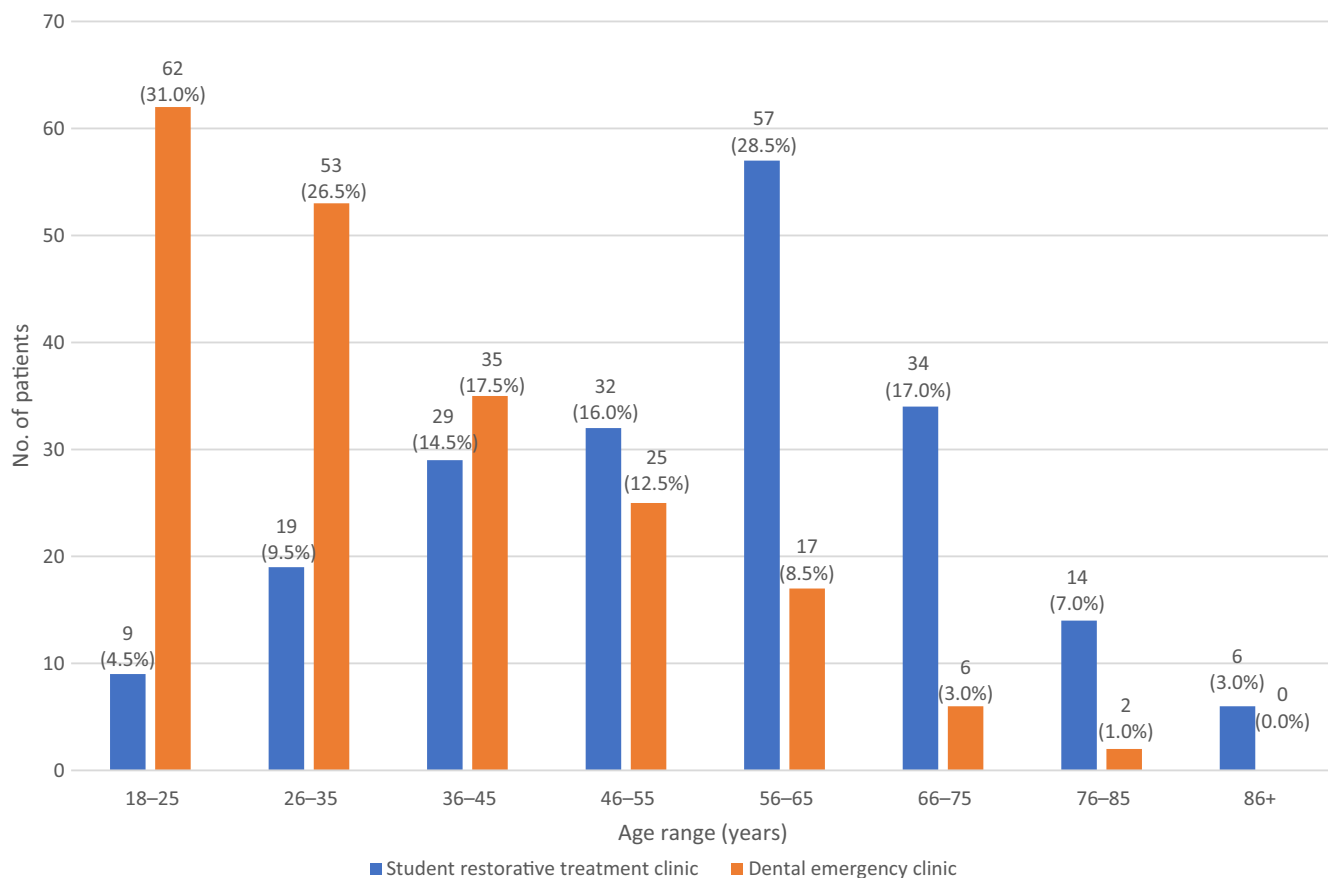


FIGURE 1 Age ranges of patients seen in student restorative treatment clinics and dental emergency clinics.

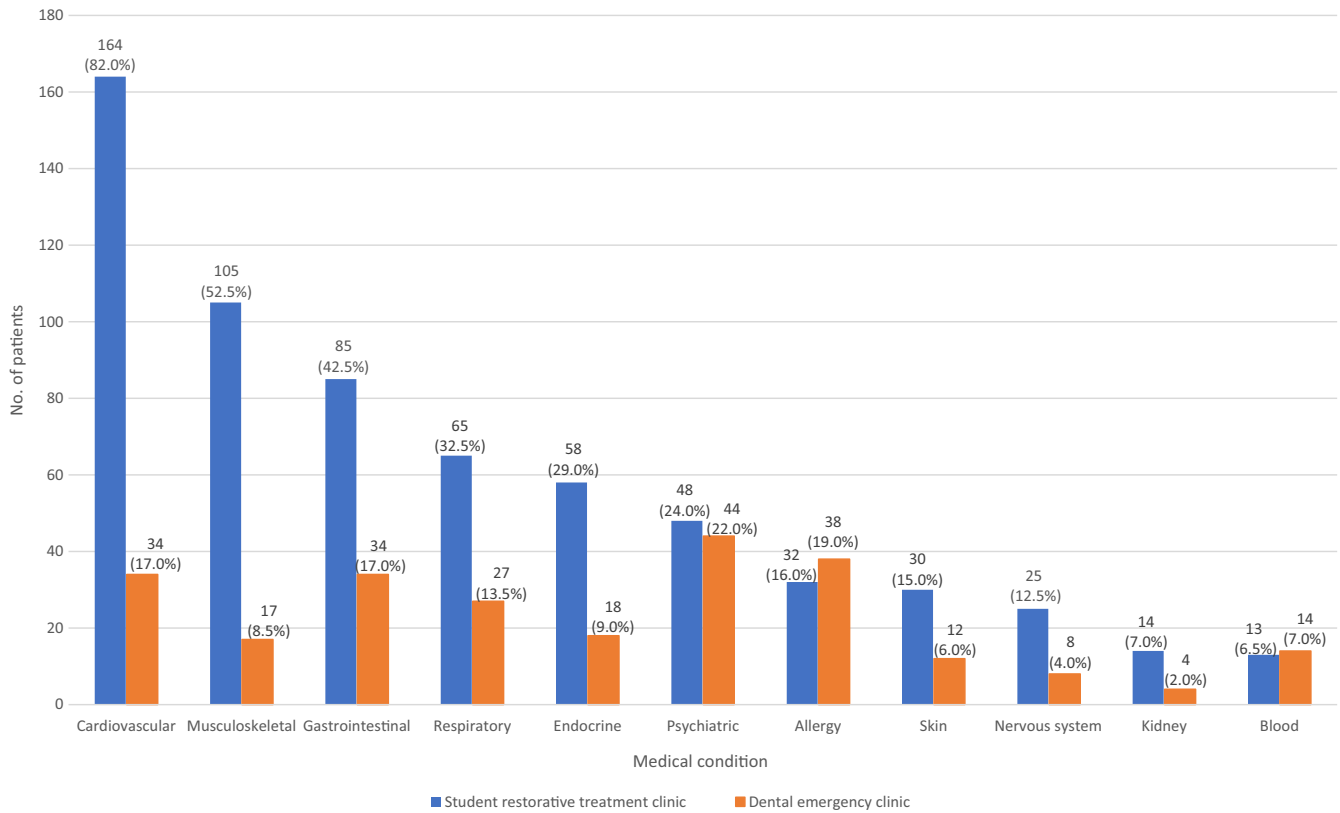


FIGURE 2 Medical conditions of patients seen in student restorative treatment clinics and dental emergency clinics.

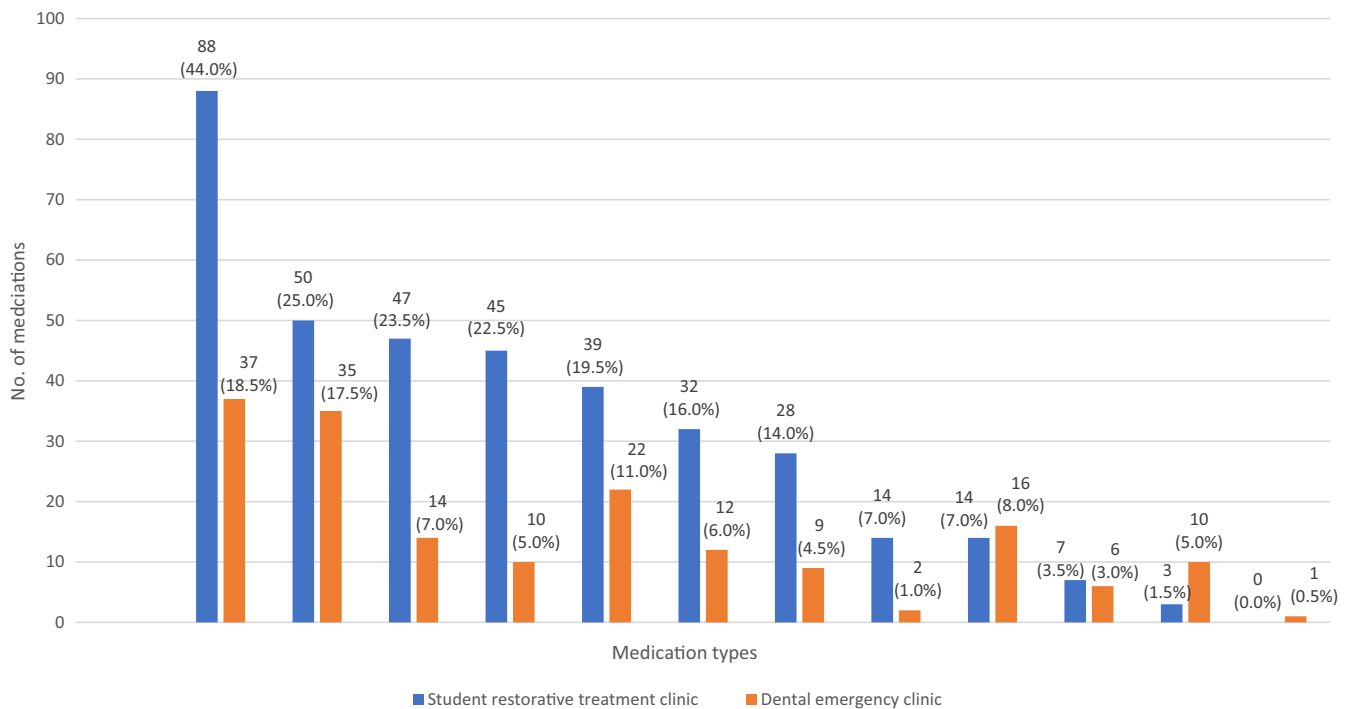


FIGURE 3 Medications of patients seen in student restorative treatment clinics and dental emergency clinics.

of patients' sometimes complex medical conditions and medications. This may include patients needing oral antimicrobial prophylaxis an hour before a dental intervention because of a cardiac problem, or a patient on warfarin needing their International Normalised Ratio to

be checked prior to a dental extraction. Patients with serious cardiovascular or respiratory disease may not be suitable for any treatment, which requires a general anaesthetic or sedation, and modifications will be needed to accommodate this.

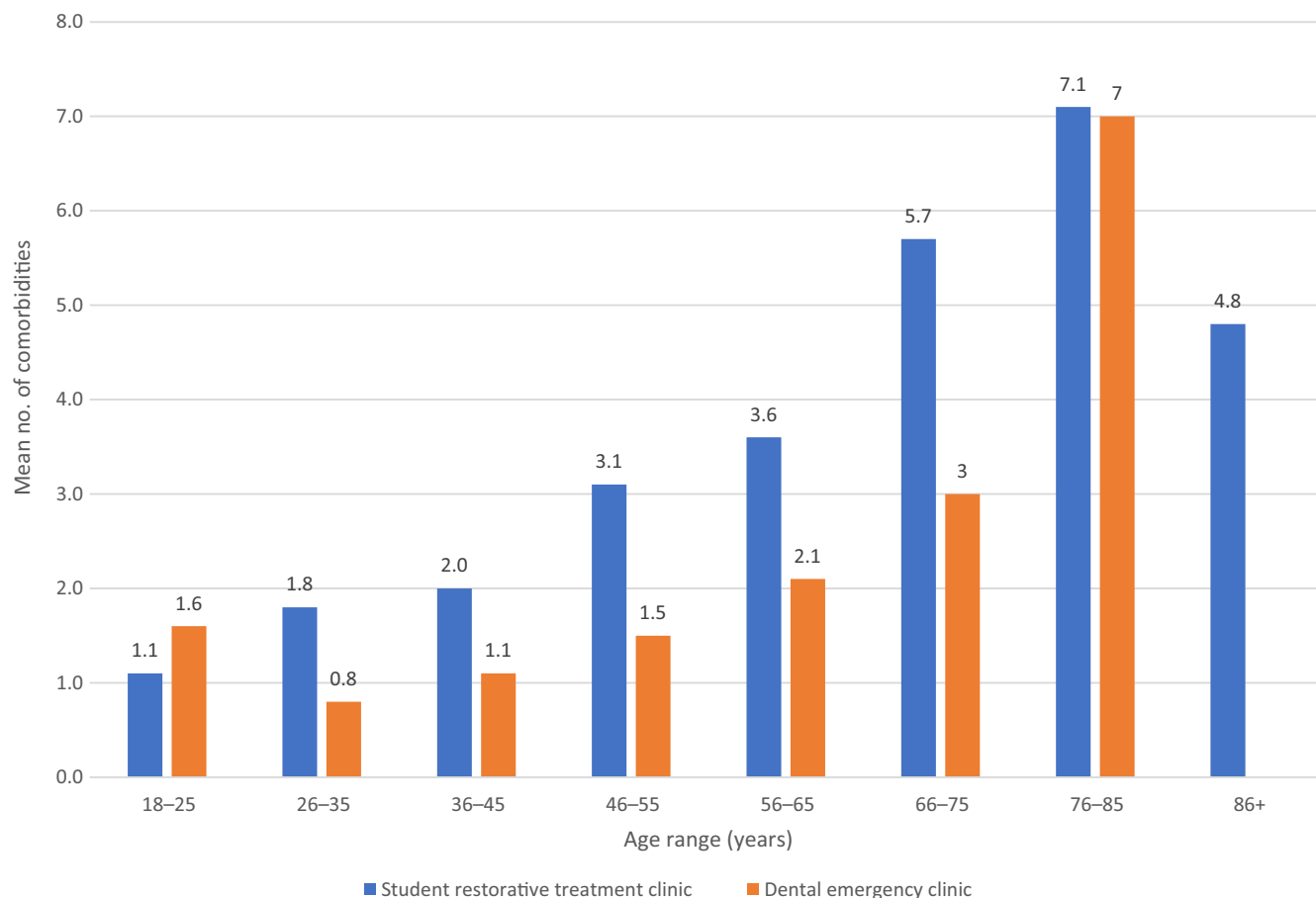


FIGURE 4 Mean number of comorbidities for patients seen in student restorative treatment clinics and dental emergency clinics.

For patients to be allocated to dental student restorative treatment clinics, they are first seen in a screening clinic to assess their dental needs so they may subsequently be allocated appropriately for student care. The screening clinic will also review the patients' medical history and medication. One aspect of this research was to see whether patients with complex medical histories were weeded out of the pool to make the restorative treatment planning and care simpler for students. This might help reduce delays or complications for dental planning and treatment, but might inadvertently give the students the impression that either they were never going to need to balance a medical history with treatment planning, or that patients with complex medical histories were only to be seen in secondary care rather than in a primary dental care or family dental practice environment. It was pleasing to discover that such patients are not removed from the student treatment pool, and therefore, the complexity of patients chosen for allocation to student restorative treatment clinics more closely matches the states of health and disease of the general population, which will be the patient group newly graduating dentists are charged with looking after.

5 | CONCLUSIONS

There were two principal motivations behind this research. The first was to see what the exposure or experience was of undergraduate

dental students in providing restorative dental care for patients with a range of medical disorders, which would give them some preparation for the start of their working life when managing a patient's medical history and planning dental care need to go hand in hand, and to recognise that the current and future population they will serve are ageing, retaining more teeth for longer and will have an increasing number of medical comorbidities. The second was to explore whether the assessment and screening clinics (through which patients pass to assess their suitability for dental student restorative treatment) also filtered out those patients with complex medical histories to allow the students to focus on the technical aspects of dental procedures.

In a previous paper,¹⁴ we looked at the complexity of the medical histories of 200 patients who were attending a dental emergency clinic, with the focus on whether that clinic was a place where undergraduate dental students could consolidate their learning in human disease (medicine and surgery) whilst also delivering a complete care package: history, medical history, clinical examination, investigations, diagnosis, treatment plan and treatment provided—all in a single episode/appointment.

This paper describes a dental hospital patient group with more complex medical histories than patients in the dental emergency clinic, but where students will see the patient at the beginning to formulate a treatment plan with due consideration of the patient's

medical history, but then likely never have to revisit the medical history over the next several appointments until the course of treatment is complete.

By treating patients in both the student restorative clinic and the dental emergency clinic, students get the best of both clinic experiences during their undergraduate studies—managing single episodes of dental care in the dental emergency clinic whilst immediately accounting for the patient's medical history and medications, as well as planning more comprehensive dental care over a longer time course looking after patients with more complex medical and dental needs in the student restorative clinic, compared with those typically seen in the dental emergency clinic. For both clinics, the application of students' earlier human disease teaching and learning is key to appropriate treatment planning and delivery of safe dental care.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Data requests should be directed to the main author.

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