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Clinical experience of undergraduate dental students in paediatric dentistry: A 5-year cross-sectional study

Rona Leith | **Isabel Cristina Olegário** | **Anne C. O'Connell**

Department of Public and Child Dental Health, Dublin Dental University Hospital, Trinity College, University of Dublin, Dublin, Ireland

Correspondence
Rona Leith, Department of Public and Child Dental Health, Dublin Dental University Hospital, Trinity College, University of Dublin, Dublin 2, Ireland.
Email: rona.leith@dental.tcd.ie

Abstract

Introduction: The clinical experience of undergraduate dental students in Paediatric Dentistry has a profound influence on their future confidence. The purpose of this study was to evaluate the clinical experience of undergraduate students in Paediatric Dentistry over five consecutive years and to determine whether changes in teaching practices are reflected in the clinic.

Materials and Methods: In total, 196 records submitted at the end of the Paediatric Dentistry training from the last 5 years (2016–2020) were evaluated. The variables analysed included the number of patients treated per student, the year, and the numbers and types of procedures performed individually across the years. The data were grouped into two categories; pre and post implementation of an electronic portfolio and a change in teaching practices (2016–2017 and 2018–2020 respectively). Data were analysed using Student's *t*-test or Mann–Whitney for two group comparison, depending on data distribution ($\alpha = 5\%$).

Results: There was a significant reduction in the number of radiographs exposed ($p = .013$) between the two groups. The number of fissure sealants had increased in recent years ($p < .001$). Although the number of stainless steel crowns performed remained unchanged ($p = .98$), there was an increase in the number of crowns placed using the Hall technique ($p < .001$) and a concurrent decrease in the number of conventional crowns placed ($p < .001$).

Conclusion: The clinical experience of undergraduate students has changed in line with evolving teaching practices. The use of objective measures such as patient numbers and range of procedures can be used as a method of evaluating student clinical experience. Other assessment tools are still required to evaluate additional aspects of clinical learning in paediatric dentistry.

KEYWORDS
children, clinical education, paediatric dentistry, undergraduate curriculum, undergraduate students

1 | INTRODUCTION

The education of undergraduate dental students is crucial in shaping their future provision of dental treatment for children in general practice.[1] A graduating dentist must be 'competent in managing patients from different age groups, bearing in mind the different needs of young children'.[2] A comprehensive and rounded experience in paediatric dentistry is needed so that future dentists will be motivated to treat children and continue to master their skills on graduation. Anecdotally, inadequacies in undergraduate training results in a reluctance by some dentists to treat children, especially younger children.[3] The clinical undergraduate training in paediatric dentistry should be proportionate to what they will encounter in dental practice and instil confidence in the successful management of the child patient.

The European Academy of Paediatric Dentistry published a framework for undergraduate education in Paediatric Dentistry in 2007, stating that dental students should be "trained to be competent and confident in most common areas of Paediatric Dentistry".[4] However, assessment of all these domains is challenging. There is no benchmark provided to estimate the required number of patient exposures or procedures that would enable a graduate to achieve this competence or knowledge in paediatric dentistry. Furthermore, there are very few recent studies quantifying numbers and types of paediatric dental procedures completed by students on graduation.[5–7]

Teaching of Paediatric Dentistry in the Dublin Dental University Hospital spans a consecutive two-year period of the dental science curriculum (4th and 5th year). In advance of the clinical training, students complete modules of Problem-Based Learning and 39 h of dedicated laboratory training in different paediatric techniques. The clinical exposure is delivered over a one-year period, consisting of students working individually during weekly 3.5-h clinical sessions. Patients requiring treatment are allocated to students for holistic care rather than specific procedures. Students manage their own bookings and carry out all types of basic dental treatment for patients aged 4–12 years. Each session is led by paediatric dentists and complemented by part-time clinical instructors supervised in groups of eight or less. Assessment is based on a clinical credit system and a set of core competencies, as well as documented procedures. At the end of their clinical training, all students must submit a record of their clinical experience (paper-based logbook or electronic portfolio). Students meet with their supervisor individually to verify and assess this record.

Over the last 5 years, there have been changes in our teaching practices. From 2018, we improved the student–supervisor ratio by increasing the number of supervisors for the same amount of students. We also introduced an electronic portfolio to replace the paper-based logbook. Furthermore, our teaching has also evolved over the years to embrace minimal intervention techniques, which may have an impact on students' practical experience.

The purpose of the present study was to evaluate the clinical experience of undergraduate dental students in Paediatric Dentistry over five consecutive years and to determine whether changes in teaching practices are reflected clinically.

2 | MATERIALS AND METHODS

2.1 | Study design and ethics

This is a cross-sectional study conducted in the Dublin Dental University Hospital (DDUH). Ethical approval was received from the Research Ethics Committee (School of Dental Science & Dublin Dental University Hospital).

2.2 | Data collection

Final year students' paper-based logbooks (2016 to 2017) or electronic portfolios (2018 to 2020) delivered at the end of the Paediatric Dentistry discipline from the last 5 years were selected. The data were aggregated into student classes (2016, 2017, 2018, 2019, and 2020) and reported anonymously, without student identification.

The records across all years were categorised into procedures that can be compared across the entire 5-year period. When the portfolio was implemented, more detail and types of procedures were documented by the students. The differences between procedures recorded in the paper-based logbook versus the electronic portfolio are highlighted in Table 1.

2.3 | Statistical analysis

Data tabulation was done using Excel (Microsoft). Descriptive analysis of the data was performed by the total number, mean, and standard deviation for each procedure performed. The variables analysed were the number of patients treated per student, year, as well as the numbers and types of procedures performed individually across the years. For descriptive analysis, procedures were divided into "Procedures documented in all years" (logbook and portfolio) and "Additional recorded procedures from 2018" (portfolio only).

For statistical analysis, the data were grouped into two categories pre- and post-implementation of the portfolio (2016–2017 and 2018–2020, respectively). Normality of quantitative data was tested using the Kolmogorov–Smirnov test, followed by its parametric or non-parametric statistical test (Student's *t*-test or Mann–Whitney) for two group comparison respectively. The significance level was set at 5% (95% confidence interval) for all analysis. All anonymised data from this study are available on request.

3 | RESULTS

A total of 206 students were enrolled in the Paediatric Dentistry undergraduate clinical programme between the years 2016 and 2020. A total of 196 records were available, with 10 logbooks unavailable (4.8%).

TABLE 1 Differences between the recorded procedures in the paper-based logbook versus the electronic portfolio.

Procedures recorded in all years (logbook and portfolio)	Additional recorded procedures from 2018 (portfolio only)
Radiographs	Prevention
Fissure sealants	Anaesthesia
Restoration	• Buccal infiltration
Stainless Steel Crowns (SSC)	• Inferior dental block
• Conventional technique	Restoration
• Hall technique	• Primary/Permanent
Pulpectomy/Pulpotomy	• Anterior/Posterior
Extraction	Extraction
Interceptive orthodontics	• Primary/Permanent
Sports guard	
Other	

Table 1 highlights the differences in the recorded procedures between the logbook and the portfolio. In 2016 and 2017, many procedures were not specified in the logbook (such as local anaesthesia and type of intracoronal restoration). Prevention procedures were not well-defined in the logbook and not reliably captured; therefore, they were excluded from analysis. Prevention procedures in the portfolio now include caries risk assessment, oral hygiene instructions, diet analysis, topical fluoride application, scaling, and dental prophylaxis. Other less common procedures such as gingivoplasty, pulp therapy in permanent teeth, and use of study cast for erosion monitoring were included in the "other" category.

The descriptive analysis (total number of all documented procedures, mean, and standard deviation) and range per year is described in Table 2. The number of students changed throughout the study period, and the total number of patients increased. A total of 2687 patients were seen over the 5 years, and a total of 21 659 procedures were carried out. The variety of procedures generated by the portfolios (2018–2020) was greater than those in the logbook. The missing procedures in Table 2 were not recorded in the logbook and are now being recorded in the electronic portfolio.

Table 3 shows the analysis of the procedures documented in the logbooks and portfolios. There was no difference in the mean number of patients seen per student. There was a significant reduction in the number of radiographs taken ($p = .013$). The number of fissure sealants increased from 2016 to 2020 ($p < .001$). There was no difference in the number of restorations performed, pulp treatments, extractions, interceptive orthodontics, and number of sports guards provided ($p > .05$).

Although the number of stainless steel crowns (SSCs) performed remained unchanged ($p = .88$), there was a difference in the technique used, observing an increase in the number of crowns placed using the Hall technique ($p = .002$) and a decrease in the number of conventional crowns performed ($p < .001$).

The mean number of total procedures reported in the logbook increased from 73.07 ± 19.77 to 85.14 ± 18.88 in the portfolio ($p < .001$*).

4 | DISCUSSION

The confidence of new graduates to treat paediatric patients will be influenced by their clinical undergraduate experience. Our teaching practices evolved to recognise the value of close supervision and mentoring for each student when managing a child patient by increasing the staff–student ratio by 50% (one supervisor for a maximum of four students). There is no expectation that students must see more patients as a result; instead, this closer supervision encourages more individualised support on clinics and enhanced communication with parent and child. This allows the students to develop other skills that are essential to the holistic management of the child patient that cannot be objectively assessed. Supervisors are also provided with additional information on curriculum, portfolio structure, and training on student feedback in order to ensure consistency within the team. The present paper focuses only on comparing the clinical procedures of undergraduate students in Paediatric Dentistry over five consecutive years and evaluated whether changes in teaching practices are reflected clinically.

A key change in teaching practices which took place in 2018 was the introduction of a portfolio to replace the paper-based logbook. The use of a portfolio has been found to be beneficial in developing the clinical skills of trainees over time.[8] This electronic-based document enabled a more detailed record of the students' experience, both in terms of recording procedures and reflection. It allows us to quantify the students' experience based on the number and variety of procedures, and this objective measurement allows us to compare the practical effect of these teaching changes on the students' experience over time.

A review of studies addressing inadequacies in predoctoral paediatric dental education highlighted decreasing patient numbers and disease pools as core problems.[3] Reassuringly, there has been no change in the numbers of patients treated by our students over the course of 5 years (Table 2). This is perhaps unsurprising given their allocated clinical time has remained unchanged. However, the number of procedures performed had significantly increased since 2018. This could be explained by the closer individualised supervision, improved recording, and emphasis on a minimal interventional approach.

TABLE 2 Descriptive analysis of all documented procedures performed from 2016 to 2020 both in logbooks and portfolios.

	Logbook		Portfolio			
	2016	2017	2018	2019	2020	TOTAL
	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max
Included	38	30	41	45	42	196
Excluded	6	4	0	0	0	10
Patients	460 (12.10 ± 3.07) 7–19	440 (14.66 ± 3.26) 8–21	574 (14 ± 4.28) 7–33	603 (13.4 ± 2.59) 9–20	610 (14.52 ± 2.39) 9–10	2687 (13.71 ± 3.26) 7–33
Radiographs	608 (16 ± 5.11) 1–28	743 (24.76 ± 7.20) 9–39	766 (18.68 ± 7.18) 6–36	759 (16.87 ± 8.40) 4–39	698 (16.61 ± 37.66) 7–29	3574 (18.23 ± 7.49) 1–39
Prevention	–	–	1417 (34.56 ± 16.13) 9–73	2010 (44.66 ± 16.05) 9–93	1594 (37.95 ± 13.54) 12–70	5021 (39.22 ± 13.54) 9–93
Fissure Sealants	1352 (35.57 ± 13.33) 10–70	1363 (45.43 ± 13.66) 22–78	1944 (47.41 ± 12.83) 16–77	2544 (56.53 ± 14.52) 26–91	2439 (58.07 ± 19.92) 24–119	9642 (49.19 ± 17.16) 10–119
Anaesthesia TOTAL	–	–	277 (6.75 ± 3.38) 2–22	274 (6.08 ± 2.56) 2–15	216 (5.14 ± 2.89) 2–15	767 (5.99 ± 3.00) 2–22
Infiltration	–	–	238 (5.80 ± 3.25) 1–19	233 (5.17 ± 2.35) 1–15	186 (4.42 ± 2.38) 1–11	657 (5.13 ± 2.72) 1–19
Block	–	–	39 (0.95 ± 1.16) 0–4	41 (0.91 ± 1.27) 0–6	30 (0.71–1.08) 0–5	110 (0.85 ± 1.17) 0–6
Restorations TOTAL	217 (5.71 ± 3.43) 0–13	210 (7 ± 4.35) 1–16	290 (7.07 ± 3.70) 0–16	282 (6.26 ± 3.54) 1–16	251 (5.97 ± 4.05) 0–21	1250 (6.37 ± 3.80) 0–21
Primary Molar	–	–	149 (3.63 ± 2.71) 0–9	84 (1.86 ± 1.65) 0–5	91 (2.16 ± 2.19) 0–10	324 (2.53 ± 2.33) 0–10
Permanent Molar	–	–	88 (2.14 ± 2.19) 0–10	108 (2.4 ± 2.52) 0–13	112 (2.66 ± 2.04) 0–8	308 (2.40 ± 2.26) 0–13

TABLE 2 (Continued)

	Logbook		Portfolio			
	2016	2017	2018	2019	2020	TOTAL
	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max
Primary Anterior	–	–	20 (0.48 ± 0.95) 0–4	30 (0.66 ± 1.55) 0–7	13 (0.31 ± 0.89) 0–4	63 (0.49- ± 1.18) 0–7
Permanent Anterior	–	–	33 (0.80 ± 1.31) 0–6	60 (1.33 ± 1.89) 0–7	35 (0.83 ± 1.97) 0–12	128 (0.83 ± 1.97) 0–12
SSC TOTAL	132 (3.47 ± 3.16) 0–15	114 (3.8 ± 2.41) 0–9	144 (3.51 ± 2.69) 0–12	169 (3.75 ± 2.88) 0–15	156 (3.71 ± 2.67) 0–10	715 (3.64 ± 2.76) 0–15
SSC conventional	50 (1.31 ± 1.80) 0–9	50 (1.66 ± 1.72) 0–6	21 (0.51 ± 0.84) 0–3	23 (0.51 ± 0.79) 0–3	9 (0.21 ± 0.47) 0–2	153 (0.78 ± 1.29) 0–9
Hall technique	82 (2.15 ± 2.53) 0–8	64 (2.13 ± 1.94) 0–7	123 (3 ± 2.66) 0–12	146 (3.24 ± 2.75) 0–13	147 (3.50 ± 2.68) 0–11	562 (2.86 ± 2.60) 0–13
Pulpotomy/Pulpectomy	6 (0.15 ± 0.43) 0–2	11 (0.36 ± 0.85) 0–4	8 (0.19 ± 0.45) 0–2	10 (0.22 ± 0.47) 0–2	3 (0.07 ± 0.26) 0–1	38 (0.19 ± 0.51) 0–4
Extraction TOTAL	99 (2.60 ± 2.34) 0–8	77 (2.56 ± 1.97) 0–7	99 (2.41 ± 1.93) 0–7	122 (2.71 ± 2.12) 0–9	103 (2.45 ± 2.39) 0–8	500 (2.55 ± 2.15) 0–9
Primary tooth	–	–	91 (2.21 ± 1.87) 0–7	118 (2.62 ± 2.11) 0–9	95 (2.26 ± 2.32) 0–8	304 (2.37 ± 2.10) 0–9
Permanent tooth	–	–	8 (0.19 ± 0.67) 0–4	3 (0.06 ± 0.33) **0–2**	8 (0.19 ± 0.50) 0–2	19 (0.15 ± 0.51) 0–4
Interceptive Orthodontics	12 (0.31 ± 0.52) 0–2	11 (0.36 ± 0.62) 0–2	29 (0.70 ± 0.87) 0–3	28 (0.62–1.19) 0–6	13 (0.30 ± 0.74) 0–3	93 (0.47 ± 0.85) 0–6
Sports Guards	6 (0.15 ± 0.36) 0–1	8 (0.26 ± 0.69) 0–3	7 (0.17 ± 0.49) 0–2	22 (0.48 ± 1.03) 0–5	13 (0.31 ± 0.51) 0–3	56 (0.28 ± 0.67) 0–5

(Continues)

TABLE 2 (Continued)

	Logbook		Portfolio			
	2016	2017	2018	2019	2020	TOTAL
	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max	Total[a] (Mean ± SD) Min-Max
Others	1 (0.0.2 ± 0.16) 0–1	0	0	1 (0.22 ± 0.14) 0–1	1 (0.23 ± 0.15) 0–1	3 (0.01 ± 0.12) 0–1
Total Procedures	2433 (64.02 ± 16.25) 34–101	2537 (84.56 ± 17.90) 53–113	4981 (121.48 ± 27.22) 82–189	6221 (138.35 ± 28.5) 92–229	5487 (130.24 ± 24.48) 93–189	21 659 (110.50 ± 37.03) 35–229

[a]Total stands for the number of patients treated by all students from that academic year, while the mean ± SD values refer to data from patients treated by each student.

Current caries management emphasises prevention procedures such as oral hygiene instruction and dietary advice in order to control caries progression on a patient level. Caries risk assessment is also an essential tool for an individualised approach. Prior to portfolio implementation, prevention procedures were assumed to be delivered to every patient and not documented accurately. Currently, these procedures are now recorded as part of patient care to highlight the importance of prevention.

Fissure sealants are an important component in the preventive caries approach. There was a significant increase in the number of fissure sealants placed between the two student cohorts. This aligns with modern caries management using minimal intervention where sealants are used both for prevention and for treatment of early carious lesions. We did not differentiate between these indications for fissure sealants within the data we collected; however, it would be an interesting trend to observe in the future.

Interestingly, there was a significant decrease in the number of radiographs taken between the two student cohorts. This is in line with the changes in contemporary guidelines for radiographic evaluation in children,[9] which has changed to a more individualised approach rather than a screening diagnostic tool. Students are also instructed in alternative clinical caries diagnosis such as tooth separation for proximal surfaces, which may ultimately lessen the need for radiographic exposures.

There was no change in the number of restorations placed over the study period, indicating that caries rate in the children selected for the undergraduate clinic has remained unchanged. We can therefore assume a similar range of patients attended over the years. Since 2018, the students specifically documented the restoration site and location (primary/permanent, anterior/posterior), showing their exposure to a variety of restorative techniques (Table 2). No data were collected in relation to the restorative material used.

Our teaching has evolved to embrace minimal intervention techniques, and this is reflected in a significant reduction in the number of conventional SSC placed by our students and a concurrent increase in the use of the Hall technique. It is encouraging that both our student cohorts placed an average of 3.6 crowns each given that this is an evidence-based and effective restoration. In contrast, findings of a similar but older UK-based study reported that student's experience of crowns remained consistently low over a 5-year period.[7]

The students' experience in invasive pulp treatment is very low because of the changes in contemporary management of deep caries lesions, where pulpotomy is avoided by use of indirect pulp therapy.[10] There is a clear reduction in the number of invasive pulp therapies (pulpotomy and pulpectomy) over the last 5 years (n = 38). In contrast, 58 pulp therapies were carried out in just 1 year in a previous study conducted in the same institution 18 years ago.[5] For more extensively damaged teeth, there has been no change in the number of extractions carried out over the 5 years. This is reassuring, as it is important that the students have exposure to extraction in the primary dentition during their undergraduate training. The portfolio captured new data regarding the techniques used to administer local anaesthesia (infiltration or block), which was not captured by

TABLE 3 Analysis of documented procedures common to the logbook (2016–2017) and portfolio (2018–2020). Figures represent average values per student.

	Logbook 2016–2017 (Mean ± SD) Min-Max	Portfolio 2018–2020 (Mean ± SD) Min-Max	*p*-Value
Students *N*	68	128	–
Excluded	10	0	–
Patients KS = 0.124	13.23 ± 3.38 7–21	13.96 ± 3.19 7–33	.069¥
Radiographs KS = 0.052	19.86 ± 7.49 1–39	17.36 ± 7.37 4–39	.013*,¥
Fissure Sealants KS = 0.339	39.92 ± 14.25 10–76	54.11 ± 16.57 16–119	<.001*,¥
Restorations KS = 0.010*	6.27 ± 3.88 0–16	6.42 ± 3.76 0–21	.792Ω
SSC conventional KS < 0.001*	1.47 ± 1.76 0–9	0.41 ± 0.72 0–3	<.001*,Ω
Hall crown KS < 0.001*	2.14 ± 2.27 0–8	3.25 ± 2.70 0–13	.002*,Ω
SSC Total KS < 0.001*	3.61 ± 2.84 0–15	3.66 ± 2.73 0–15	.875Ω
Pulpotomy/Pulpectomy KS < 0.001*	0.25 ± 0.65 0–4	0.16 ± 0.41 0–2	.523Ω
Extraction KS < 0.001*	2.58 ± 2.17 0–8	2.53 ± 2.14 0–9	.853Ω
Interceptive Orthodontics KS < 0.001*	0.33 ± 0.56 0–2	0.54 ± 0.97 0–6	.375Ω
Sports Guards KS < 0.001*	0.20 ± 0.53 0–3	0.32 ± 0.74 0–5	.267Ω
Total procedures KS = 0.454	73.07 ± 19.77 34–113	85.14 ± 18.88 47–143	<.001*,¥

Note: KS, Kolgomorov–Smirnov test; ¥, *T*-test; Ω, Mann–Whitney Test; *$p < .05$ (CI 95%).

the logbook (Table 1). However, we did not collect further information regarding the choice of local anaesthetic agents used (lidocaine or articaine). This would be interesting to investigate in the future as our current teaching supports the use of a buccal infiltration with articaine in order to avoid an inferior dental nerve block where possible.

Growth and development are an integral part of a holistic evaluation of the child. For this reason, students are exposed to interceptive orthodontic procedures within the paediatric dental clinic, which has not changed over the years. The students are encouraged to provide sports guards for prevention of traumatic dental injury, and the number provided remained unchanged.

A number of studies were published in the 1990s and early 2000s examining the clinical experience and treatment trends in paediatric dentistry at an undergraduate level.[7,11-13] However, the procedures in these studies are not directly comparable to the current study given the different non–contemporaneous techniques used. A UK-based study from 1997–2001 found that students' treatment planned a mean of 13 patients each.[7] Another study recommended increasing the required number of patients seen by their students from 10 to 13 to compensate for declining procedure numbers observed.[11] These figures are in line with the mean number reported in our study. Two separate Irish studies investigated the type and variety of procedures according to logbook analysis of a single class of undergraduate dental students (both $n = 34$ students).[5,6] Comparing patient numbers to the study carried out at the same institution 18 years previously,[5] our current students see at least 2.5 times more patients in total. In contrast, the mean number of restorations carried out (13.2) was slightly more than in our study cohort, but this is likely a reflection of the current ethos of minimal invasive dentistry. Another Irish study looked at the clinical experience of 34 undergraduate students,[6] however, no direct comparisons can be made as this was over a 2-year training period and the clinical experience was structured differently.

It has been suggested that it may be time for dental education to focus more on specific techniques in order to address the recognised needs of specific age groups including children.[3] We recognise that many skills are required to be learnt when managing the child patient, but in the present study, we have focussed on the clinical techniques provided by using objective measures of patient

number and procedure types. Our educational goal is to ensure all students are competent in treatment planning, taking high-quality radiographs, communicating preventive measures and oral health education, placing fissure sealants, and delivering local anaesthesia for extraction or restoration in a child patient. We still require a number of competencies for some of these core procedures, which are specially supervised and assessed. Within our patient population, these competencies are easily achieved within the 13-patient average seen by our students over a 1-year period. However, this may vary across countries and institutions.

One limitation of our study is that the logbooks were initially submitted in hardcopy, resulting in 4% ($n = 10$) loss of the records in the first cohort (2016–2017). The portfolios are now submitted electronically for evaluation. The accuracy of the portfolio content is verified by the clinical supervisor as part of patient management competence.

While guidelines exist regarding the overall expected knowledge of a dental graduate[2,4] there is little contemporary information on the quantity of procedures and patient numbers which should be completed by a graduating student. The results of the present study provide information to fill this knowledge gap. While the number of patients and procedure types are useful to quantify clinical experience, we also address the importance of holistic patient care by improving close supervision, mentorship, reflection, and exposure to a diverse range of families. This enhanced experience should positively influence the students' confidence in treating paediatric patients in their future career.

5 | CONCLUSION

There are changes in the clinical experience of undergraduate students in recent years, which are in line with evolving teaching practices. The use of objective measures such as patient numbers and range of procedures can be used as a method of evaluating student clinical experience. A structured electronic portfolio provided more reliable documentation than that of previous paper-based logbook. Close student supervision of 13 patients over a 1-year period should provide adequate exposure to both procedure skills and communication, in order to achieve holistic patient care and holistic teaching. Other assessment tools are still required to evaluate additional aspects of student learning in paediatric dentistry.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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