

AWARENESS, KNOWLEDGE AND PRACTICES OF THE USE OF DIGITAL TECHNOLOGY AMONG A GROUP OF EGYPTIAN DENTAL STUDENTS AND PEDIATRIC DENTISTS: A CROSS-SECTIONAL STUDY

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DOI: 10.21608/dsu.2025.299553.1244

Manuscript ID: DSU-2406-1244

KEYWORDS

Digital dentistry, Dentist, Knowledge, Practices, Students

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ABSTRACT

Introduction: Efforts toward incorporating technological advances in dentistry have been successful and the trend toward further digitization is growing. Aim: This research aimed to evaluate the awareness, understanding, perceptions, and practices concerning the application of digital technology in dentistry among dental students and pediatric dentists in Egypt. Materials and Methods: A cross-sectional online selfadministered survey. The survey was delivered as a Google Form to 564 participants including a group of final-year dental students and pediatric dentists in Egypt. Results: Out of 564 responses, most students (81.7%) students and pediatric dentists (89.9%) were significantly familiar with digital dentistry (p.005). 54.9% of students and 74.9% of dentists significantly reported attending educational courses related to digital dentistry p < 0.05). Only 19.8% of students and 23.1% of dentists reported attending CAD/CAM training programs. Both students (93.8%) and dentists (98.0%) agreed significantly on digital dentistry's precision over conventional methods (p=0.009) they also agreed on digital dentistry's time-saving impact. Most students (94.9%) and dentists (98.0%) believed significantly in digital dentistry's enhancement of patient care quality (p=0.042). 54.5% of students felt skillful in using technology compared to dentists (41.7%), showing a statistically significant difference (p=0.002) Higher proportion of students (89.9%) envisioned significantly using digital dentistry in their future careers compared to dentists (79.2%) (p=0.001). Remarkably, 100% of students and dentists unanimously agreed on the importance of increasing knowledge in this area.Conclusion: Including digital dentistry education in undergraduate programs and providing specialized training for pediatric dentists can help bridge knowledge gaps

INTRODUCTION

The dental profession is characterized by continuous advancement and innovation, which significantly improves various facets of practice. The integration of a wide array of new digital technologies into dental workflows plays a crucial role in enhancing the quality of dental care and increasing patient satisfaction. These technologies not only streamline processes but also enable more precise diagnostics and treatment planning, ultimately leading to better patient outcomes and experiences ^(1,2). Revolutionary digital tools such as cone beam computed tomography (CBCT), 3D intraoral and facial scanners, and 3D printers, along with integrated processing software like computerassisted design/computer-assisted manufacturing (CAD/CAM) for prosthetics and dental implant planning, have been introduced to dentistry ⁽³⁾. These recent techniques, combined with significant advancements in dental materials, are fundamentally transforming the entire dental field. This integration of technology not only enhances the precision and efficiency of dental procedures but also improves patient outcomes and satisfaction, marking a significant shift in how dental care is delivered ⁽⁴⁻⁸⁾.

The integration of digital technologies into dentistry represents a fusion of traditional analog methods with modern innovations. A key clinical benefit of this integration is the enhancement of both perceived and measured quality of care. Digital applications enable dentists to make precise, diagnostic-based decisions, which can lead to more accurate treatments and improved patient outcomes ⁽⁹⁾. For example, intraoral scanners provide the ability to view tooth preparations on a computer screen with high-contrast magnification, which is frequently visible to the patient. This feature enables real-time modifications and careful planning for both aesthetic and functional restorations, thus enhancing the overall quality of dental treatments. By offering instant visual feedback, these technologies improve the dentist's capacity to deliver accurate and customized care, resulting in greater patient satisfaction and better treatment outcomes (10). Additionally, the broad implementation of electronic patient records, facilitated by intraoral scanners and contemporary digital imaging methods, offers several benefits to the field of dentistry. These advantages encompass improved communication between dentists. patients, dental laboratory technicians, and other involved parties, as well as enhanced data archiving and quality. Furthermore, this transition contributes to a better overall experience for patients ⁽¹¹⁾.

Digital technologies have numerous advantages in dentistry, but their adoption faces barriers, notably the lack of knowledge and skills required for effective integration in dental practices. ⁽¹²⁾ Consequently, many US dental schools are integrating these technologies into their curricula to equip students with essential competencies for meeting the rising demand for digital dental techniques and workflows ⁽¹³⁻¹⁶⁾.

There is a lack of research on the familiarity with digital dentistry among pediatric dentists and undergraduate dental students before they enter dental school. As technology continues to advance, driven largely by industry progress, it is important to assess whether dental students' knowledge and expectations of digital dentistry align with ongoing changes in dental education. Understanding dental students' perceptions and awareness of digital dentistry is crucial for shaping institutional admissions criteria and determining resource allocation. Moreover, exploring students' current knowledge and exposure to digital dentistry will inform teaching methods, encourage research partnerships, and influence the future direction of dental care⁽¹⁷⁾.

Moreover, in Egypt, there has been a significant expansion of digital dental technology adoption, especially within private dental practices, despite the fact that most dentists in Egypt work in the governmental sector ⁽¹⁸⁾. This suggests there may be differences in how digital dental technology is utilized and the levels of knowledge among practitioners across various institutions in Egypt. In comparison to other developed countries, the primary barrier to market expansion in Egypt remains the high cost associated with digital technology.

Previous studies by Wang *et al.*, ⁽¹⁹⁾ and Schlenz *et al.*, ⁽¹³⁾ concluded that digital training could be

a valuable and effective teaching tool that should be integrated into dental education. On the other hand, Zande et al.,⁽²⁰⁾ found that dentists who prioritize digital dentistry appear to experience higher added value and motivation in their practice. Also, Nassani et al., ⁽²⁾ it has been observed among Saudi Arabian dentists that there is an increasing application and positive perception of digital dentistry outcomes in clinical practice. Additionally, Hall et al.,⁽²¹⁾ concluded that digital dentistry education programs should be prioritized, focusing on both undergraduate and postgraduate levels. To the best of the author's understanding, there have been limited studies comparing the familiarity with dental digital technology between undergraduate students and dental specialists. These comparisons aim to evaluate the efficacy of dental education curricula, pinpoint areas needing enhancement, and ensure that both undergraduates and specialists are equipped to utilize digital dentistry proficiently in clinical settings (21).

Therefore, this research primarily aimed to evaluate the awareness, understanding, perceptions, and practices concerning the application of digital technology in dentistry among dental students and pediatric dentists in Egypt.

MATERIALS AND METHODS

Ethical considerations: The study was conducted after approval of the research ethics committee at (October University for Modern Sciences & Arts - MSA University) No REC-D 2116-4.

The study's purpose was communicated to participants through a cover letter attached to the Google form, informing them that participation was optional and anonymous, and indicating the expected time needed to complete the questionnaire. **Subjects:** The questionnaire was distributed electronically through social media platforms such as WhatsApp, Telegram, and Facebook groups to pediatric dentists employed in government, private, and academic settings. Additionally, it was sent to final-year dental students via their official university email, following approval from the head of the pediatric dentistry department at various universities.

Study design: This research adopted a crosssectional study design. The survey employed is a modified version of previous surveys ⁽¹⁷⁻²¹⁾ with necessary modifications in the demographic characteristics and the addition of some questions to suit Egyptian society.

The two online surveys were conducted using a Google Form template, featuring 25 questions for pediatric dentists and 23 questions for undergraduate students. The initial sections gathered demographic information, including gender, age group, primary practice, and years of experience. The second section included five questions aimed at evaluating the participants' awareness and knowledge regarding the applications and benefits of digital technology. The third section comprised 16 questions that measured the participants' familiarity with digital technology in clinical settings, its applications, common digital systems, and associated materials. All questions, except those related to demographics, were answered with a simple yes or no.

Pilot study: Prior to launching the survey, a pilot test was conducted with 10 participants, which included final-year dental students and pediatric dentists, to evaluate the clarity and ease of completion of the questionnaire. The trial indicated that there were no significant issues with the design of the questionnaire, and participants reported no difficulties in responding to the questions. The initial distribution of the survey occurred in February 2024, followed by a second round sent to the same group three months later to improve the response rate.

Sample size calculation and sampling method:

The link to the Google Form was distributed to participants through social media platforms such as WhatsApp, Telegram, and Facebook groups. A snowball sampling method was employed, encouraging participants to share the form with their friends and colleagues to ensure a more representative sample.

Based on findings from a previous study by **Sri** *et al.*, ⁽²²⁾ which reported a (95.3%) prevalence of knowledge regarding digital dentistry, a confidence interval of (99%) and a margin of error of (3%) were adopted. Consequently, the estimated sample size (n) required was determined to be (330) participants, calculated using EPI INFO version 7.2.5.0.

STATISTICAL METHODS

For numerical or quantitative variables, the data will initially be assessed for normality using tests such as Kolmogorov-Smirnov and Shapiro-Wilk. The mean and standard deviation will be utilized for data representation. If the data is found to be normally distributed, group comparisons will be conducted using independent t-tests for two groups, paired t-tests for related groups, and One-Way ANOVA followed by Tukey's Post Hoc test for comparisons involving multiple groups. For nonparametric data, analyses will be performed using Mann-Whitney tests for two groups, Wilcoxon Signed Rank tests for related groups, and Kruskal-Wallis tests for more than two groups.

For categorical or qualitative variables, the data will be presented as frequencies and percentages, with comparisons made using the Chi-square test. Statistical analyses will be carried out using Microsoft Excel® 2016, the Statistical Package for Social Science (SPSS)® version 24, and Minitab® statistical software version 16 for data collection, tabulation, and analysis.

RESULTS

Demographic data:

Dentists showed a diverse age distribution, with 42.0% aged 21-29, 42.7% aged 30-39, and smaller proportions in older age; 4.6% aged 50-59 years, and 2.0% above 60 years old.While the age of students ranged from 19-21. Female students constituted 69.6%, whereas female dentists comprised 83.1%, indicating a significantly higher female representation.

Regarding practicing, 14.7% of pediatric dentists worked in government settings, 32.9% in private practices, and more than half of participants 52.4% in academic roles. Concerning years of experience, 31.9% of pediatric dentists had less than 5 years, 42.3% had 5-10 years, and 25.7% had over 10 years of experience (**Table 1**).

A significant majority of students (81.7%) and dentists (89.9%) were significantly aware of digital dentistry (p=0.005).

Regarding the inclusion of digital dentistry in the university curriculum, 68.5% of students and 68.4% of dentists affirmed its presence. The chi-square test showed no statistically significant difference (p=0.98), suggesting similar inclusion rates for both groups.

All respondents among students and pediatric dentists, unanimously agreed on the necessity to enhance knowledge of digital dentistry during undergraduate and postgraduate courses.

		Group					
		St	udent	Pediatric dentist			
		Count	Column N %	Count	Column N %		
1-Gender	Male	78	30.4%	52	16.9%		
	Female	179	69.6%	255	83.1%		
2-Age	21-29			129	42.0%		
	30-39			131	42.7%		
	40-49			27	8.8%		
	50-59			14	4.6%		
	Above 60			6	2.0%		
3. Main Practice	Governmental			45	14.7%		
	Private			101	32.9%		
	Faculty teaching			161	52.4%		
4. Years of experience	Less than 5 years			98	31.9%		
	5-10 years			130	42.3%		
	More than 10 years			79	25.7%		

Table (1) Demographic data of both groups:

Among students, 54.9% attended educational digital dentistry seminars and courses and responded positively, while a majority of dentists (74.9%) reported attendance (p < 0.05).

Regarding attending training programs on CAD/ CAM or other digital tools. Only 19.8% of students and 23.1% of dentists reported attending such programs. However, the chi-square test revealed no statistically significant difference (p=0.35) (**Table 2**, **Figure 1**).

The majority of both students (93.8%) and dentists (98.0%) agreed significantly on the precision of digital dentistry compared to conventional methods (p=0.009). In terms of digital dentistry's timesaving impact in pediatric dentistry, a significant majority of students (93.0%) and dentists (81.4%)approved (p=0.000). Furthermore, most students (94.9%) and dentists (98.0%) significantly believed in digital dentistry's ability to enhance patient care quality (p=0.042). Additionally, 54.5% of students felt proficient in using technology compared to 41.7% of dentists, indicating a statistically significant difference (p=0.002). Although most students (94.9%) and dentists (91.9%) agreed that digital dentistry would revolutionize the workplace and the same percentages among students (94.9%) and dentists (91.9%) foresaw digital dentistry revolutionizing workplaces, however, both were not statistically significant difference p-value of 0.15. Moreover, an overwhelming majority of students (98.8%) and dentists (97.7%) acknowledged digital dentistry's efficiency in labs, additionally, (94.9%) of students and dentists (91.5%) expressed interest in integrating digital technologies into their workflows, however, there were not any with no statistically significant difference (p=0.31 and p=0.11 respectively).

			Gro	P value			
		5	Student	Pedia	atric dentist	Chi	Dualua
		Count	Column N %	Count	Column N %	square	P value
1- Are familiar with digital dentistry?	No	47	18.3%	31	10.1%	7.87	.005*
	Yes	210	81.7%	276	89.9%		
2. Did you have digital dentistry in your	No	81	31.5%	97	31.6%	0.00	0.98
university curriculum?	Yes	176	68.5%	210	68.4%		
3- Do you agree on the need to increase the	No	0	0.0%	0	0.0%		
during undergraduate/postgraduate courses?	Yes	257	100.0%	307	100.0%		
4- Did you Attend any educational seminars	No	116	45.1%	77	25.1%	25.00	0.000*
or courses related to digital dentistry?	Yes	141	54.9%	230	74.9%		
5- Are you attending any training programs on CAD/CAM or any digital tools?	No	206	80.2%	236	76.9%	0.89	0.35

Table (2) Knowledge and awareness of digital dentistry among students and dentists, comparison between them:



Fig. (1) Bar chart representing Knowledge of digital dentistry in both groups.

A higher percentage of students (89.9%) expressed significant interest in using digital dentistry in their future careers compared to dentists (79.2%)(p=0.001). Significantly more students (94.6%) preferred digital technologies over conventional methods compared to dentists (74.6%) (p=0.000). Moreover, a majority of students (84.8%) believed that digital dentistry significantly influences clinical decision-making, whereas fewer dentists (54.7%) shared this belief (p=0.000). Interestingly, a greater number of students (90.3%) perceived digital dentistry as having a significant impact on treating uncooperative children compared to dentists (74.6%)(p=0.000). Additionally, most students (92.2%) and dentists (85.3%) agreed significantly on the capabilities of digital technologies for simultaneous review and modification (p=0.011). Furthermore, a larger proportion of students (94.2%) recognized the significant advantage of digital technologies in eliminating problems associated with impressionmaking compared to dentists (87.6%) (p=0.008).

Both students (96.5%) and dentists (93.5%) acknowledged the positive impact of digital dentistry on the future of the profession, with (97.7%) and dentists (95.8%) recognizing the immediate data transfer and retrievability of digital technologies. However, these differences were not statistically significant (p=0.11, p=0.21 respectively). Additionally, both students (95.3%) and dentists (95.8%) agreed on the accurate restoration and orthodontic fit provided by digital technologies, with no statistically significant difference between the two groups (p=0.80) (**Table 3**).

Table (3) Practices of digital dentistry in both groups and comparison between them:

		Group					
		Student		Dentist		Chi	
		Count	Column N %	Count	Column N %	square	P value
1. Does digital dentistry provide more precise results	No	16	6.2%	6	2.0%	6.81	.009*
than conventional dentistry?	Yes	241	93.8%	301	98.0%		
2- Would digital dentistry have a positive impact on	No	18	7.0%	57	18.6%	16.22	$.000^{*}$
time saving in pediatric dentistry?	Yes	239	93.0%	250	81.4%		
3- Do you think that there will be improve in the	No	13	5.1%	6	2.0%	4.14	.042*
quality of patient care using digital dentistry?	Yes	244	94.9%	301	98.0%		
4- Do you see digital dentistry revolutionizing the	No	13	5.1%	25	8.1%	2.12	0.15
workplace?	Yes	244	94.9%	282	91.9%		
5- Do you think digital dentistry has improved work	No	3	1.2%	7	2.3%	0.99	.319 ^b
efficiency in the lab?	Yes	254	98.8%	300	97.7%		
6- Do you consider yourself skillful in using	No	117	45.5%	179	58.3%	9.16	.002*
technology?	Yes	140	54.5%	128	41.7%		
7- Do you see yourself using digital dentistry in your	No	26	10.1%	64	20.8%	12.01	.001*
future career?	Yes	231	89.9%	243	79.2%		
8. Are you interested in incorporating digital	No	13	5.1%	26	8.5%	2.53	0.11
technologies in your regular workflow?	Yes	244	94.9%	281	91.5%		
9- Do you prefer digital technologies over conventional	No	14	5.4%	78	25.4%	40.83	$.000^{*}$
methods?		243	94.6%	229	74.6%		
10- Does digital dentistry have a significant impact on	No	39	15.2%	139	45.3%	58.69	$.000^{*}$
your clinical decision-making?	Yes	218	84.8%	168	54.7%		



		Group				_	
		Student		Dentist		- Chi	
		Count	Column N %	Count	Column N %	square	P value
11- Would digital dentistry have a positive impact on	No	9	3.5%	20	6.5%	2.60	0.11
our profession and would be the future of dental practice?	Yes	248	96.5%	287	93.5%		
12- Would digital dentistry significantly impact the	No	25	9.7%	78	25.4%	23.04	$.000^{*}$
treatment of uncooperative children?	Yes	232	90.3%	229	74.6%		
13- Did digital technologies offer review your	No	20	7.8%	45	14.7%	6.49	.011*
preparation and modify it at the same time?	Yes	237	92.2%	262	85.3%		
14- Did digital technologies eliminate the problems	No	15	5.8%	38	12.4%	7.03	.008*
associated with impression-making?	Yes	242	94.2%	269	87.6%		
15- Did digital technologies offer immediate data	No	6	2.3%	13	4.2%	1.55	0.21
transfer and retrievability of scan data at any point?	Yes	251	97.7%	294	95.8%		
16- Did digital technologies offer accurate and precise	No	12	4.7%	13	4.2%	0.06	0.80
fit of the restoration/orthodontic appliances?	Yes	245	95.3%	294	95.8%		

*Significant difference as P<0.05.

DISCUSSION

Digital technology has become a crucial element in contemporary dentistry, with the potential to redefine its future. Recent advancements in pediatric dentistry aim to overcome the limitations of traditional approaches. This research aims to fill a gap in the current literature by exploring the knowledge, awareness, and perspectives on digital dentistry among students and pediatric dentists in Egypt. The objective is to offer valuable insights that can guide the development of ongoing dental education in this critical field.

The present study found that a majority of students and pediatric dentists were significantly familiar with digital dentistry (p=0.005). Although there was no statistically significant difference, a similar proportion of both pediatric dentists and students learned about digital dentistry through their educational curricula. This suggests that educational institutions are effectively incorporating digital dentistry into their programs. These findings align with previous results, which indicated that the

current generation of dental students, having grown up in a digital era, is proficient in utilizing emerging technologies⁽²³⁾. and disagreed with other studies⁽²⁴⁾ which reported that Only 26.5% of participants were fully or partially knowledgeable about using software and various digital/electronic devices.

Most pediatric dentists and half of the students have participated in seminars and courses related to digital dentistry. However, only a small percentage of both groups are currently engaged in training programs on CAD/CAM or other digital tools. Additionally, while half of the students felt proficient in using technology, this contrasts with the skills reported by dentists, suggesting a possible gap between theoretical knowledge and practical experience. Differences in the training curricula between undergraduate dental programs and postgraduate pediatric dentistry training could influence the level of knowledge and practical skills in digital dentistry. Furthermore, disparities in continuing education opportunities might affect the ongoing adoption of digital technologies in dental practice. This was similar to the results of **Balakrishnan** *et al* ⁽²⁵⁾ and **Hall** *et al* ⁽²¹⁾. However, it was in disagreement with **Nayakar** *et al* ⁽²⁶⁾ who proved that 96.7% of participants were aware of CAD/CAM technology.

Furthermore, this study included a majority of female participants among pediatric dentists and students. This is similar to previous findings by Al-Ibrahim et al., 2022 ⁽²⁷⁾ indicating a superior understanding and a greater intention to utilize digital technology among female students. However, it was not similar to previous findings⁽²¹⁾.

In Egypt, dental care is provided by three main sectors: governmental, private, and academic healthcare facilities, with most of the dentists practicing in the governmental sector⁽¹⁸⁾. However, this contrasts with our study's findings. Only 14.7% of dental practitioners are employed in government facilities, whereas half of the participants hold teaching positions at universities, and a significant proportion (32.9%) practice in the private sector. This marked difference in ongoing professional training among participants may be attributed to the availability of dental facilities and continuing education programs, especially within the private and academic sectors which was consistent with the findings of **Nayakar** *et al* ⁽²⁶⁾.

Among pediatric dentists,42% of the dentists were between the age of 21-29 years, which is similar to previous findings⁽²¹⁾. In terms of experience, a notable percentage of pediatric dentists (42.3%) had 5-10 years of experience, while 31.9% had less than 5 years. This suggests that younger pediatric dentists are more adept at adopting and understanding technology in their field, highlighting the trend of increasing technology integration in dentistry, with newer professionals being more skilled in incorporating these tools into their practice. These findings are consistent with previous research⁽²⁸⁾. Our study revealed a striking consensus, with 100% of both students and pediatric dentists agreeing on the need to enhance their knowledge of digital dentistry in undergraduate and postgraduate courses. This unanimous agreement underscores the importance of expanding education in this field. The lack of widespread use of digital dentistry in pediatric practices compared to other specialties highlights a gap in education. Therefore, it is crucial to incorporate courses and workshops on digital dental technology into undergraduate and postgraduate pediatric training to address this shortfall. This finding was similar to a previous study by **Hall et al** ⁽²¹⁾but that was not similar to previous findings ^(29,30).

Most students and pediatric dentists significantly agreed that digital dentistry would positively impact time efficiency in pediatric care, promote engagement with pediatric patients, and encourage a cooperative and positive attitude toward the profession. These findings were similar to a previous study by **Khan et al** ⁽³¹⁾ but disagreed with **Walker et al** ⁽³⁰⁾ results.

Although a larger proportion of students believed that digital dentistry would have a significant impact on treating uncooperative children compared to pediatric dentists, this view aligns with the majority of students also believing that digital dentistry significantly influences clinical decision-making more than pediatric dentists do. This suggests that students may see greater potential in digital technology for overcoming challenges in pediatric dental care compared to experienced practitioners, reflecting their enthusiasm for digital dentistry. However, this perception may be influenced by their relatively limited hands-on experience. This finding was in accordance with previous findings by Hall et al (21) and Mühlemann et al (29) which concluded that digital dental applications could support dentists in making the most accurate diagnostic-based decisions and disagreed with **Sharab** *et al* ⁽¹⁷⁾ findings.

An overwhelming majority of both students and pediatric dentists strongly agreed that digital dentistry offers greater precision than traditional methods. Moreover, a notably larger percentage of students favored digital technologies over conventional techniques compared to pediatric dentists. This finding was similar to previous research by **Naderi** *et al* ⁽³²⁾ but it was not in accordance with **Benic et al** ⁽³³⁾ results.

Digital impressions introduce a new dimension in dentistry by offering 3D previsualization of the preparation and reducing the risk of distortion and material wastage during the impression process. This advantage likely explains why the majority of participants—94.2% of students and 87.6% of pediatric dentists—agreed that digital technologies have resolved the issues related to impressionmaking. and this was similar to a previous study by **D'Ambrosio** *et al* ⁽³⁴⁾ and was in contrast with **Mangano** *et al* findings⁽³⁵⁾.

Moreover, a substantial majority of students and pediatric dentists agreed that digital dentistry has improved work efficiency in the lab. This can be elucidated by digitizing patients' photographs and diagnostic records enhanced communication, improved predictability, and improved patient's experience⁽³⁶⁻³⁷⁾. These findings are similar to the previous studies by **Sheba** *et al* ⁽³⁸⁾ and disagreed with **Sharab** *et al* results ⁽¹⁷⁾.

A majority of students and pediatric dentists believed that digital dentistry would improve the quality of patient care. This could be accomplished by minimizing the duration and frequency of dental appointments, employing less invasive surgical techniques, and decreasing the interaction between the laboratory and the clinic. The fact that these findings were similar to previous findings by Markarian *et al* ⁽³⁹⁾.

With resounding concurrence, both students and pediatric dentists highly agreed that digital technologies provided an accurate and precise fit of restorations/orthodontic appliances. Furthermore, a significant majority of students and pediatric dentists agreed that digital technologies simultaneously offered the ability to review and modify preparations. This was in accordance with previous research, which demonstrated greater enhancement in patients' social and school lives, heightened overall satisfaction, and a less painful experience when using digitally fabricated appliances compared to traditional interceptive orthodontics⁽⁴⁰⁾.

Both students and pediatric dentists demonstrated strong interest in integrating digital technologies into their routine workflows. Additionally, the majority of both groups agreed that digital dentistry would positively impact their profession and represents the future of dental practice. This consensus aligns with the expectations of a significant proportion of students and pediatric dentists who foresee incorporating digital dentistry into their future careers. This broad agreement is likely due to the adoption of digital workflows across nearly all dental specialties, from diagnosis to final treatment. ⁽⁴¹⁾. Additionally, the findings suggest that students hold a favorable attitude toward digital dentistry, aligning with prior studies⁽⁴²⁻⁴⁴⁾.

A majority of both students and dentists agreed that digital dentistry would revolutionize the workplace. This could be attributed to the extensive use of modern digital technology in dental practices, which may have a positive effect on patient satisfaction and the quality of dental care. These findings are similar to the previous study by **Sharab** *et al* ⁽¹⁷⁾.

Additionally, both students and dentists highly agreed that digital technologies offered immediate data transfer and retrievability of scanned data. The extensive utilization of electronic patient records, combined with contemporary digital imaging methods, provides numerous advantages for dentists. It fosters improved communication among dentists, patients, and dental laboratory technicians, ultimately enhancing the overall patient experience⁽⁴⁵⁾ which is similar to previous studies by **Sharab** *et al* ⁽¹⁷⁾ however it disagreed with **Matthews** *et al* ⁽¹²⁾ which reported that the lack of knowledge and skills is one of the most important factors limiting technology's efficient integration and utilization in dentistry.

SUMMARY AND CONCLUSION

- Undergraduate students may lack practical experience in digital dentistry while Pediatric dentists likely have a better grasp of digital dentistry's impact. Improving digital dentistry education for undergraduates and providing advanced training for pediatric dentists could narrow this knowledge gap. Collaboration and knowledge sharing can enhance digital dentistry implementation.
- Differences in training and continuing education opportunities influence digital dentistry integration, while challenges like equipment costs and lack of standardized workflows hinder digital dentistry adoption.

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