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## BACKGROUND

- AI is increasingly applied in dentistry for caries detection, radiograph interpretation, and clinical decision support; however, formal integration into pediatric dental residency training remains limited.
- Prior studies (Alharbi & Alharbi, 2024; Khanagar et al., 2022) confirm AI's diagnostic superiority over traditional methods while identifying lack of training and ethical concerns as main implementation barriers.
- Understanding resident perceptions is essential to developing evidence-based curricula that support responsible AI adoption.

**OBJECTIVE:** To evaluate attitudes and acceptance of AI integration among pediatric dental residents, identify perceived barriers to implementation, and determine factors associated with readiness for AI adoption in clinical training environments.

## METHODS

- Design:** Prospective, cross-sectional, IRB-approved survey study
- Participants:** N=100 pediatric dental residents (PGY1=49, PGY2=51) enrolled in CODA-accredited 2-year U.S. residency programs
- Distribution:** Anonymous online survey via AAPD listserv; data stored on encrypted DMC institutional server
- Assessed:** Demographics and prior AI exposure; perceptions, barriers, and readiness for AI used 5-point Likert scales and multi-response items
- Statistics:** Descriptive statistics, independent t-tests, chi-square analysis

## RESULTS

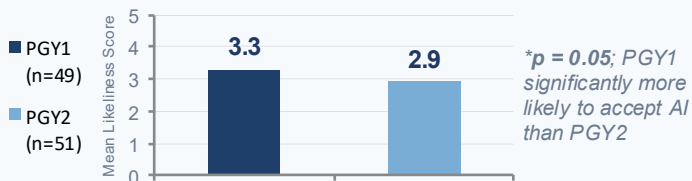
**100** Residents Surveyed

**53%** Gen Z  
**47%** Millennial

**87%** No Formal AI Training

**81%** Likely to Accept AI

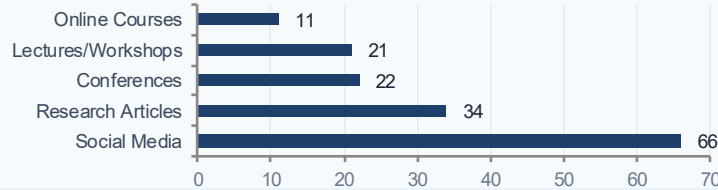
**Figure 1. Readiness: Likelihood to Accept AI as Supportive Tool\***



PGY1 vs. PGY2 compared using independent t-test. Likelihood to accept AI as a supportive tool in training rated on a 1–5 scale (1 = very unlikely, 5 = very likely).

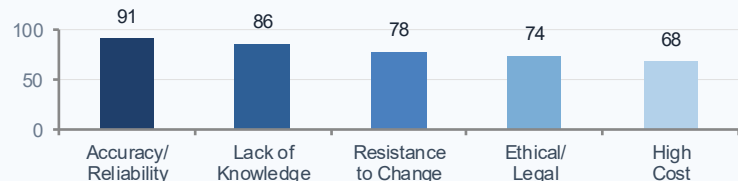
## RESULTS

**Figure 2. Sources of AI Knowledge (% Yes)**



Social media (66%) is the dominant AI knowledge source- far exceeding formal academic channels, indicating a significant educational gap in residency curricula.

**Figure 3. Barriers to AI Adoption (% Endorsing)**



Accuracy/reliability (91%) and lack of formal training (87%) are the top barriers. No significant differences by PGY year- concerns are uniform across training level.

**Table 1. Prior AI Exposure & Acceptance**

Variable (mean 1–5 scale; higher = more positive)	No Exposure (n=78)	Prior Exposure (n=22)	p
<b>Comfort &amp; Acceptance</b>			
Comfort using AI tools during clinical training	2.6	2.8	.31
Acceptance as supportive tool in training	2.9	<b>3.5</b>	<b>.02*</b>
<b>Perceptions</b>			
AI improves diagnostic accuracy	3.9	4.0	.62
AI enhances treatment planning & decision-making	3.7	3.8	.60
AI supports- not replaces- pediatric dental residents	4.3	4.4	.58
AI integration improves clinical competence	3.9	4.0	.48

\*p<0.05 (independent t-test). Bold = statistically significant.

Only acceptance differed significantly by prior AI exposure (p=0.02); perceptions and comfort were equivalent, suggesting targeted exposure- not familiarity alone- shifts willingness.

## RESULTS

- 81% of residents endorsed AI as a supportive clinical tool; acceptance varied significantly by training year (p=0.05), with PGY1 more likely than PGY2 to endorse integration (Figure 1).
- Prior AI exposure was the strongest predictor of acceptance (p=0.02); perceptions and comfort did not differ between exposure groups, indicating experience, not familiarity, drives readiness (Table 1).
- Despite 87% affirming AI's supportive role, fewer than 17% across both cohorts had received formal AI training, reflecting a systemic educational gap across accredited programs (Table 1).
- Social media (66%) was the predominant AI knowledge source, far exceeding formal academic channels (Figure 2).
- The top barriers- accuracy and reliability concerns (91%) and lack of formal training (87%)- were uniform across PGY year (p>0.05), indicating experience alone does not address these gaps (Figure 3).

## LIMITATIONS & STRENGTHS

- Limitations:** Low response rate and cross-sectional design limits generalizability and causal inference.
- Strengths:** Responses obtained from national sample limits bias.

## CONCLUSION

- The majority of pediatric dental residents are willing to accept AI as a supportive tool in clinical training, yet readiness remains constrained by a near universal absence of formal training- fewer than 17% of all respondents reported any structured AI education- alongside concerns about accuracy, reliability, and ethical accountability.
- Formal AI training modules should be embedded into CODA curricula for all pediatric dental residency programs, with faculty support and access to AI tools prioritized as foundational readiness factors.
- Ethical concerns about AI use in clinical training should be addressed directly, including guidance on data privacy, patient consent, and the appropriate scope of AI-assisted decision-making.

## ACKNOWLEDGEMENTS

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