



A Mixed-Method Study of AI Use in ABPD Exam Preparation

Song H^{*1}, Chin K², Puranik CP², Katebzadeh S²

¹*Presenting Author and Pediatric Dental Resident, ²Department of Pediatric Dentistry, Children's Hospital Colorado, University of Colorado's School of Dental Medicine, Aurora CO



Background

- American Board of Pediatric Dentistry (ABPD) Certification Examination (CE) preparation traditionally relies on textbooks, lectures, handouts, mock oral examinations, and American Academy of Pediatric Dentistry (AAPD) review courses.
- These methods may not fully address diverse learning styles, time constraints, or evolving learner needs.
- Generative artificial intelligence (GenAI) has rapidly emerged in higher education, with student utilization increasing from ~66% to ~92% year-over-year.
- Formal training and evidence-based guidance on the use of AI in professional education remain limited.
- There is no published evidence on AI utilization, attitudes, or adoption for ABPD CE preparation.
- No studies have evaluated the efficacy or quality of AI-generated study materials for ABPD CEs or compared free versus paid platforms using standardized tools.

Methods

Study design: mixed-methods study design

- Arm 1 (Survey):** National, cross-sectional REDCap survey distributed via the AAPD listserv to pediatric dental residents, diplomates, and program directors.
- Arm 2 (GenAI evaluation):** Two free and two subscription-based GenAI platforms assessed for efficacy in developing CE preparation materials using standardized knowledge-based prompts (KBP) and critical-thinking prompts (CTP) aligned with ABPD blueprints. AI-generated responses reviewed by masked, calibrated, board-certified pediatric dentists using the AI-SMART tool (accuracy, clinical relevance, readability, evidence, user interface, and overall score).

Figure 1: Proportion of respondents using GenAI for ABPD CE.

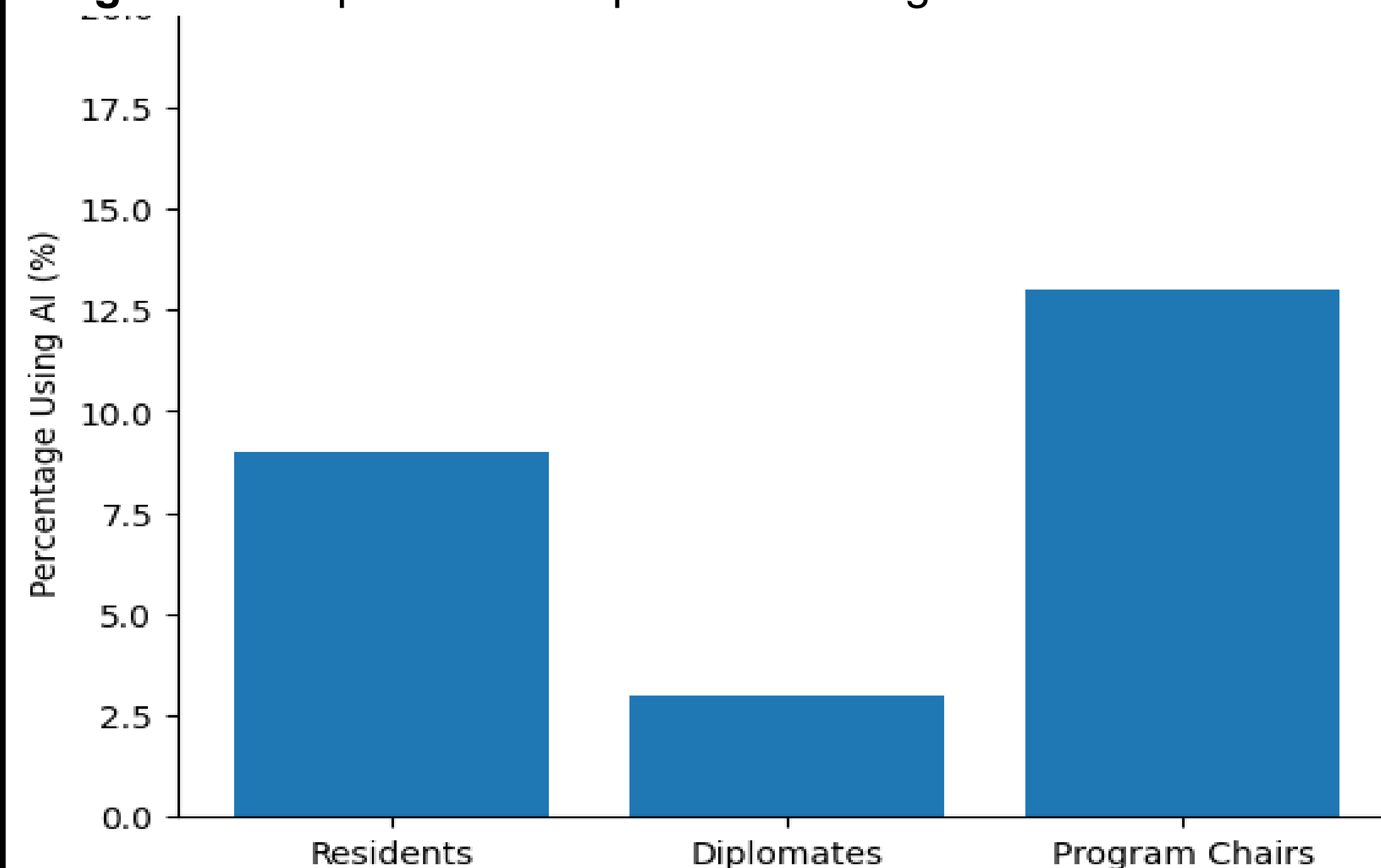
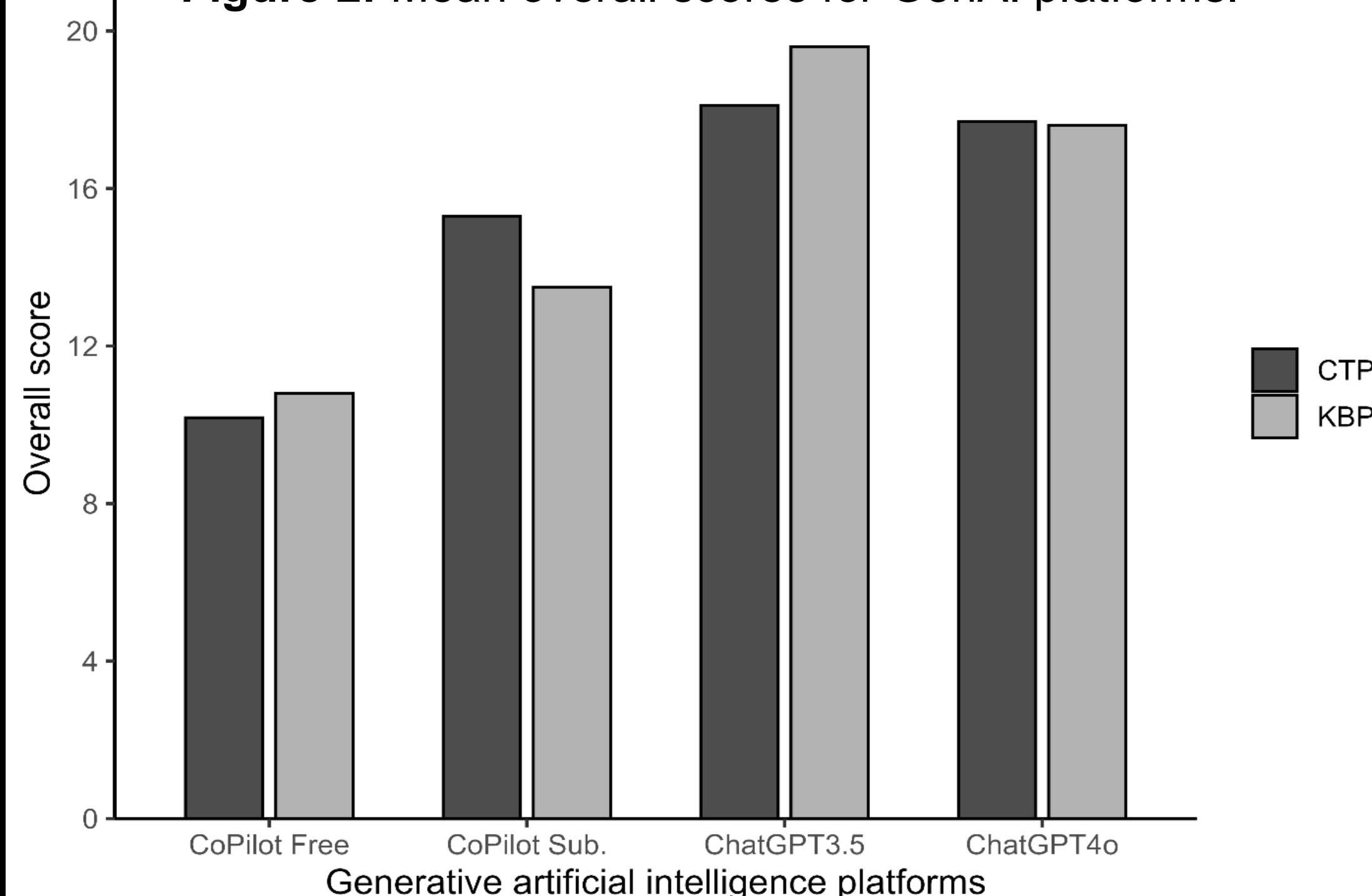


Figure 2: Mean overall scores for GenAI platforms.



Discussion

- Survey Results:**
 - Traditional study resources remain the primary and most trusted methods for ABPD CE.
 - Adoption of generative artificial intelligence (GenAI) among pediatric dental professionals remains limited.
- GenAI Evaluation:**
 - ChatGPT-3.5 and ChatGPT-4o achieved significantly higher overall scores for developing study materials for ABPD CE than Copilot Free or subscription.
 - Subscription-based Copilot demonstrated improved performance compared with Copilot Free; however, both remained inferior to ChatGPT models.
 - No statistically significant differences were observed between KBP and CTP overall scores within individual AI platforms, indicating that question-type did not impact the performance of the tested GenAIs.
 - Trained GenAI outperformed untrained GenAI, supporting the need for GenAI training, structured guidance for learners and educators for responsible use of GenAI for generating ABPD CE study materials for effective integration of GenAI in pediatric dentistry.

Conclusions

- Reliance on traditional ABPD study resources, with limited adoption of GenAI for ABPD CE preparation.
- GenAI evaluation demonstrates platform-dependent performance, with minimal impact of question type, supporting cautious educational integration.

Acknowledgement

- Financial Support: The Jeffrey A. Dean / American Board of Pediatric Dentistry (ABPD) Research Grant Award.