



Aims

- To assess differences in didactic instruction and clinical incorporation of minimally invasive dentistry (MID) techniques across predoctoral pediatric dentistry curricula in the United States and United Kingdom, with the goal of informing evidence-based curriculum enhancement.
- H₀: The scope and integration of MID techniques within didactic and clinical curricula are equivalent in U.S. and U.K. predoctoral pediatric dentistry programs.**

Introduction

Recent endorsement of minimally invasive dentistry (MID) techniques by the American Dental Association¹, American Academy of Pediatric Dentistry (AAPD)², along with documented increases in MID adoption within U.S. postdoctoral pediatric programs³, reflects a continued shift toward biologically driven caries management. Prior research conducted by Boston University's Office of Global and Population Health demonstrated greater integration of MID techniques in U.S. postdoctoral programs compared to predoctoral curricula, suggesting that translation to foundational training may be incomplete. Meanwhile, the British Society of Paediatric Dentistry (BSPD) actively promotes MID as the standard of care, reinforcing the United Kingdom's longstanding emphasis on preventive and minimal intervention dentistry⁴. Given that students are unlikely to implement techniques they have not practiced clinically⁵, assessing both didactic instruction and clinical integration is essential. Despite evolving professional standards, variability in MID teaching have been reported internationally. Therefore, directly comparing U.S. and U.K. predoctoral pediatric dentistry curricula provides critical insight into how MID principles are incorporated during formative clinical training globally. This study aims to compare the incorporation of MID techniques in U.S. and U.K. predoctoral pediatric dentistry curricula to identify opportunities for curriculum advancement.

Materials & Methods

An anonymous 26-question electronic survey was developed using REDCap based on current American Academy of Pediatric Dentistry (AAPD) recommendations² and a previously published survey of postdoctoral pediatric dentistry residency directors³. The survey included multiple question and response formats with an estimated completion time of 10–15 minutes. In January 2022, the survey was distributed via email to predoctoral pediatric dentistry program directors at 60 accredited U.S. dental schools using the AAPD contact list and publicly available institutional email addresses; newly established schools that had not yet graduated a class and those without identifiable contact information were excluded. The U.S. survey closed in June 2022, and descriptive statistics were calculated using REDCap and Microsoft Excel. In June 2024, a 21-question adaptation of the survey was distributed to the 12 program leads responsible for undergraduate pediatric dentistry teaching in the United Kingdom, with one reminder sent at three months; the U.K. survey closed in November 2024. Comparative analyses between U.S. and U.K. programs were performed using Fisher's exact two-tailed tests, with statistical significance set at $p < 0.05$.

Results

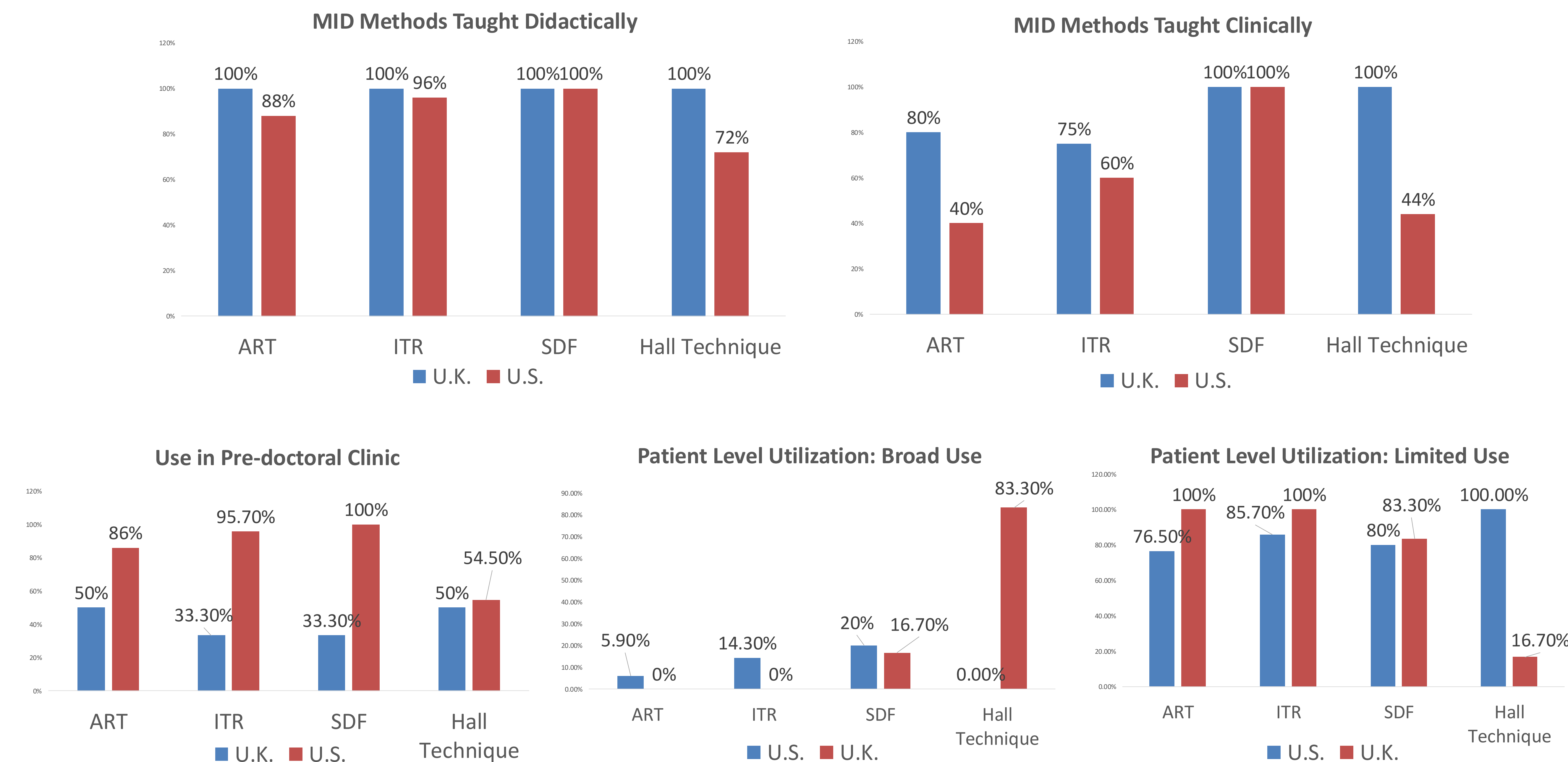
U.S. Survey:

- The response rate was 46% (n=25).
- All respondents were Predocutorial Pediatric Dentistry Program Directors, with an average of 5 years in the role, and a range of 1 to 20 years.
- The geographic distribution of the represented institutions was as follows: 28% from the U.S. Northeast, 20% from the U.S. Midwest, 20% from the U.S. Southeast and Puerto Rico, 12% from the U.S. Plains region, and 20% from the Pacific West.

U.K. Survey:

- The response rate 50% (n=6).
- All respondents were program leads of undergraduate pediatric dentistry, with a range of 4 to 13 years in the role.
- All respondents were based in England.

MID Techniques Assessed: Atraumatic Restorative Treatment (ART), Interim Therapeutic Restoration (ITR), Silver Diamine Fluoride (SDF), Hall Technique



Summary of results:

- Didactic instruction:** All MID techniques were taught didactically universally in both countries.
- Clinical instructions:** Hall Technique clinical instruction was reported by 100% of U.K. programs vs. 44% of U.S. programs ($P = .02$)
- Use in undergraduate clinics:** No significant difference in use of ART or Hall technique. ITR and SDF were more commonly utilized in U.S. clinics ($P = .003$ and $P = .0005$).
- Patient application in undergraduate clinics:** Broader use of the Hall Technique across patients was more frequently reported in U.K. programs ($P = .0007$). MID techniques were most commonly used for high-carries-risk or select patient groups (limited use) rather than universally applied.
- Future expectations:** No significant differences in anticipated increases overall. Trend toward increased Hall Technique adoption in U.S. programs ($P = .054$).

Conclusions

Didactic instruction of minimally invasive dentistry (MID) techniques was nearly universal in both U.S. and U.K. predoctoral programs. However, meaningful differences persist in how these approaches are clinically taught and applied. The Hall technique demonstrated the most significant variation with more consistent clinical teaching and broader patient application reported in U.K. programs. In contrast, U.S. programs reported greater clinical utilization of ITR and SDF. Overall, MID techniques were most commonly reserved for high caries risk or select patient populations than universally integrated into care. However, a trend toward increased Hall technique adoption in U.S. program highlights continued shifts in curriculum.

As emphasized in the introduction, increasing professional endorsement of MID by organizations such as the AAPD and BSPD signals a paradigm shift in pediatric caries management^{2, 4}. However, these findings demonstrate that endorsement and classroom instruction alone do not ensure consistent translation into clinical practice. These findings underscore opportunities for U.S. programs to learn from U.K. programs regarding effective integration of MID techniques into clinical curricula.

References

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