



Clear aligners versus fixed orthodontic appliances: a cross-sectional study in orthodontics on the future of treatment

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ABSTRACT

Introduction: Orthodontics has undergone significant advancements, driven by technological progress and the growing demand for more aesthetic and minimally invasive treatments. The development of transparent aligners has challenged the predominance of orthodontic treatments using traditional fixed braces.

Objectives: This study aims to identify differences between generations of dentists and stomatologists practicing orthodontics by evaluating each generation's perspective on the future of orthodontic aligners. A secondary objective is to assess whether the perspective changes with the nationality of the professional and the country in which they work. The research hypothesis is that there is a significant difference in the percentage of professionals from different generations who use clear aligners and, as a secondary hypothesis, that there is a significant difference in this percentage according to nationality and the country in which they work.

Methods: Data were collected using an online self-completion questionnaire administered to a convenience sample (n=93) of dentists or stomatologists practicing orthodontics in Portugal and other countries (Spain, France, Italy, among others). The questionnaire link was made available to professionals by direct contact or via professional forums in the field.

Results: The primary hypothesis was rejected, as no significant differences were found in clear aligner use by professional generation ($p > 0.05$). No significant associations or differences ($p > 0.05$) were found based on gender or professional situation, nor were there any significant differences in attitudes, choice of aligners and evaluations by professional generation. Portuguese professionals

Contributions: Conceptualization: AIA and MCM; Data curation: SB and MCM; Formal Analysis: SB, AIA, MCM and MMP; Investigation: SB, AIA; Methodology: AIA, MCM and MMP; Project administration: AIA, MCM and MMP; Resources: SB, AIA and MCM; Supervision: AIA, MCM and MMP; Validation: AIA and MMP; Visualization: SB, AIA and MCM; Writing – original draft: SB, AIA and MCM; Writing – review & editing: SB, AIA, MCM and MMP.

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showed greater expectations regarding the role of companies in the sustainable innovation of aligners ($p=0.006$), while Italians and French professionals showed greater skepticism or distancing from this responsibility.

Conclusion: Although transparent aligners have gained ground as an aesthetic and functional alternative, especially in less complex cases, fixed appliances are still indispensable in more challenging clinical situations. The future of orthodontics could involve hybrid approaches and the development of aligners with less environmental impact. Nationality proved to be a more impactful variable than professional generation, showing different cultural, educational and economic dimensions in the context studied. Professionals of different nationalities showed different patterns in recognizing adherence to sustainability, in brand preference and in clinical practice.
