

Digital Dental Desensitization Storyboards for Children with Autism: Multi-Specialty Perspectives

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Introduction

Children with autism spectrum disorder (ASD) often experience increased anxiety and sensory sensitivities during dental visits. Social stories and visual schedules are commonly used to support predictability and reduce distress; however, many existing tools lack multimedia integration and few dental-specific preparatory resources for children with autism have undergone structured expert content validation. To address this gap, digital dental desensitization storyboards were developed and evaluated through multidisciplinary expert review.

Objectives

The purpose of this study was to develop a printable PDF and video-based digital storyboard that can be taken home for pediatric dental preparation and to establish its content validity, clinical relevance, and innovation through expert review.

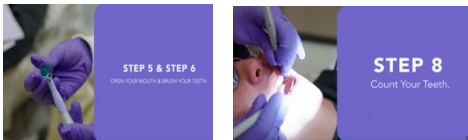


Figure 1: Video-based narrated storyboard demonstrating step-by-step dental visit preparation.

Methodology

PDF and Video Storyboard Development

- PDF printable storyboard was designed for caregiver-led pre-visit preparation and includes step-by-step visuals and simple language in both English and Spanish
- Video storyboard created using visual modeling to show proper steps to a dental visit

Expert Validation

- Multidisciplinary panel including pediatric dentists and allied developmental professionals (pediatrician, speech-language pathologist, psychologist)
- Experts rated items using a 5-point Likert scale
- Domains assessed the following: Clarity, Developmental appropriateness, Accessibility, Clinical relevance, Innovation
- Item-level content validity indices (I-CVI) and a scale-level content validity index (S-CVI/Ave) were calculated. Qualitative feedback was collected through open-text responses.

Results

- Eight clinical experts completed the validation survey.
- All items achieved an item-level content validity index (I-CVI) of 1.00, with a scale-level content validity index (S-CVI/Ave) of 1.00, indicating excellent content validity.
- Experts unanimously rated the storyboard as clinically relevant, developmentally appropriate, and innovative compared to existing preparatory tools.
- Suggested refinements included clarifying step progression within the printable storyboard, aligning visuals across PDF and video formats, adding captioning and accessibility features, and incorporating clearer anticipatory guidance regarding optional comfort measures and break requests.



Figure 2. Printable visual storyboard (PDF format) outlining the steps of a pediatric dental visit.

Expert Informed Revisions

- Based on expert recommendations to improve narrative cohesion and format flexibility, a condensed single-page social story version was created using validated storyboard content to enhance accessibility for caregiver-led preparation.
- Aligned language and imagery across PDF and video formats
- Added autonomy and break language that supports self-advocacy
- Added sensory transparency statements describing expected sounds and sensations

Conclusion

- This project demonstrates the design and expert validation of an accessible, visually oriented digital storyboard that supports dental desensitization for children with ASD.
- Multidisciplinary expert input strengthens the clinical relevance and accessibility of this preparatory resource.
- This resource shows promise as a caregiver-led preparatory aid and provides a foundation for future IRB-approved studies involving patient and caregiver outcomes.

Future Studies

Future studies will evaluate caregiver-reported usability and implementation feasibility in clinical and home settings.

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