

Orthodontic Patients' Experience with Low-Intensity Pulsed Ultrasound (LIPUS) Treatment.

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Rationale:

Low-Intensity Pulsed Ultrasound (LIPUS) has been introduced as a non-invasive adjunctive therapy in orthodontics, with potential benefits for accelerating tooth movement and improving patient comfort. Because LIPUS is primarily used in a home-based setting, its effectiveness depends strongly on patient experience, usability, and sustained adherence. Despite increasing clinical use, orthodontic patients' experiences with LIPUS remain poorly understood, largely due to the lack of a condition-specific, validated Patient-Reported Experience Measure (PREM).

Objectives:

This two-phase study aimed to (1) develop and establish initial validity evidence for a LIPUS-specific PREM for orthodontic patients, and (2) apply the validated instrument to characterize patient-reported experiences with LIPUS over time and explore associations with duration of use and demographic factors.

Methodology:

Phase 1 followed AMEE Guide No. 87 for instrument development and validation. Methods included a comprehensive literature review, semi-structured patient interviews, construct definition, item generation, expert review, cognitive pre-testing, and pilot evaluation. Four domains were identified: Symptom Improvement, Device Usability, Delivery of Care, and Overall Satisfaction. Phase 2 employed a prospective cross-sectional design with repeated measures. 43 orthodontic patients undergoing aligner therapy with adjunctive LIPUS completed the validated PREM at Week 4 (Time 1) and Week 8 (Time 2). Descriptive statistics, correlation analyses, and multiple linear regression adjusted for age and gender were performed. Withinpatient changes were assessed using paired analyses, and test-retest reliability was evaluated using intraclass correlation coefficients (ICC).

Results:

Phase 1 resulted in a final 24-item PREM demonstrating satisfactory face and content validity. In Phase 2, patients reported overall positive experiences with LIPUS therapy. Satisfaction and delivery of care scored highest, while usability scored comparatively lower. Longer duration of LIPUS use was positively associated with perceived symptom improvement. Experience scores were stable or improved over time, and ICC values indicated acceptable short-term reliability.

Conclusions:

Orthodontic patients report generally positive experiences with LIPUS therapy, with perceived benefits increasing over time. The validated LIPUS-specific PREM is a reliable and practical tool for patient-centered evaluation and highlights device usability as a key target for optimizing clinical implementation.