

## Understanding Pain after Dental Procedures: Interim Data Analysis of an Ongoing Longitudinal Prospective Cohort Study

Sayali Tungare<sup>1</sup>, Alfa-Ibrahim Yansane<sup>2</sup>, Sharmeen Hamid<sup>1</sup>, Rebecca Kim<sup>2</sup>, Swaroop Gantela<sup>3</sup>, Krishna Kumar Kookal<sup>1</sup>, Janelle Urata<sup>2</sup>, Celeste Machen<sup>4</sup>, Kim Funkhouser<sup>4</sup>, Rahma Mungia<sup>4</sup>, Donald Rindal<sup>4</sup>, Joel White<sup>2</sup>, Elsbeth Kalenderian<sup>5</sup>, Muhammad Walji<sup>1, 3</sup>

<sup>1</sup> UTHealth Houston School of Dentistry

<sup>2</sup> UCSF School of Dentistry

<sup>3</sup> UTHealth Houston School of Biomedical Informatics

<sup>4</sup> National Dental Practice Based Research Network

<sup>5</sup> Marquette University School of Dentistry

**Background and Objectives:** Prospectively capturing post-procedural dental pain is the first step to understand the pain experience associated with dental procedures and may offer insights towards improving pain management. Patient self-report is a critical component of comprehensive pain assessment, given the subjective and multi-dimensional nature of pain. Growing evidence suggest that mobile phones are an effective platform for assessing patients' symptoms, health behaviors and health-related quality of life. POPS (Post-Operative Pain Study) is a US-wide longitudinal, prospective cohort study with the primary objective of assessing post-operative pain experiences through 21 days post-procedure as reported by patients following dental procedures.

**Methods:** In this study, 150 dental practitioners from the National Dental Practice Based Research Network will enroll 3147 total patients who will undergo a surgical dental procedure. These patients will receive text messages via an mHealth (FollowApp.Care) platform on their cellphones on days 1, 3, 5, 7, 14, and 21 following the dental procedure to collect information on their post-operative dental pain experience using mHealth questionnaires. Data analysis will be performed using a generalized mixed model to determine variation in pain intensity and pain interference by dental procedure.

**Results:** Between November 2021 and September 2023, 152 practitioners have participated in the study and recruited 2600 patients. Patients' intensity of pain significantly decreased from day 1 to 7 postoperatively for all procedure types. After adjusting the mixed effects linear regression model for patients' demographic and socioeconomic variables, their pre-operative pain levels, medication taken on each day, whether long acting anesthetic was administered and practitioner level variables, it was found that simple extractions, surgical extractions, periodontic surgical and implant surgical procedures had statistically higher pain levels on all days as compared to endodontic non-surgical root canal treatment procedures.

**Conclusion:** Post-operative dental pain intensity varies by procedure type and is mediated by preoperative pain intensity, medications taken, type of anesthetic administered, patient-level factors such as age, gender, education, income, insurance, number of household members and practitioner-level factors such as practitioner's gender and type of practice.

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