Patient Experience of Anesthesia and Surgery From Twitter Data

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Background: Patient feedback is necessary to improve care guidelines, patient education and the patient experience. Traditional methods of interviews, focus groups and questionnaires are known to give an incomplete and biased picture, whereas social media is often frank and contemporaneous, offering insights into patients' experiences undergoing anesthesia and surgery. Our study aims to characterize public Twitter messages to find peri-operative reports,

Methods: We retrieved tweets from a database comprised of a random subset of approximately 10% of all 'tweets' from October, 2011 to March, 2018. We first searched for tweets related to anesthesia and surgery (sub-strings 'surgery', 'anesth' or 'anaesth'), and used this filtered subset for all analysis. We excluded 're-tweets' and messages with hyperlinks. Next we classified tweets by theme, e.g., pain. Each theme was defined by a set of word stems, e.g. for pain, pain, agony, hurt, ache. These were honed by reading many tweets. We manually reviewed 100 tweets for each theme to calculate specificity.

Results: The database contained a total of 5,173,115,347 tweets, of which 2,584,474,720 were in English. Of these, 180,838 tweets mentioned surgery or anesthesia and were neither retweets nor contained hyperlinks. See Figure 1a for specificity. The most common themes regardless of temporal relation to surgery were, in order of prevalence: family (n=26,057), pain (n=7,346), and anxiety (n=3,817). Hunger/thirst (n=964) and PONV (n=1,024) were similar. Figure 1b presents numbers also filtered for pre- vs. post-op.

Conclusion: We demonstrate a new use of social media as a rich source of information on patients' peri-operative experiences. Compared to well-known peri-operative concerns, tweets related to hunger and fasting were more prominent than expected. Patient experiences seen on social media may help with targeted education, shared-decision making, and better choices for patients before surgery and anesthesia.

Figure 1
Figure 1a : Red, orange are personal or family; green shows general observations about surgery or anesthesia; grey represents false positives. Figure 1b: Counts of tweets by group