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Research Week 2023

Insights into Digital Assessments: Analyzing User Engagement Trends to Optimize Feedback in Surgical Education

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Keywords

Surgical Education, Human-Computer Interaction, Competency, Surgical Data Management, Educational Platform

Abstract

Background

Providing timely and comprehensive feedback is fundamental in preparing surgical trainees for independent practice. A transition to digital platforms has helped increase the accessibility of assessment tools for both educators and learners, though user behaviors remain undefined. We aim to study the user behaviors of these two groups utilizing a novel digital surgical education assessment tool.

Methods

This was a retrospective study of compiled user data from a HIPAA-compliant, electronic medical record (EMR) integrated, web-app based surgical education information management system. Based on the operative procedure details and case staff, the platform generated assessments related to the operation. Each case had its own individual assessment for attending completion specific to each resident. The time between attending completion and resident opening of an assessment was defined as the open-lag time. Automated email reminders to complete assessments were generated by the platform and delivered to attendings at 5pm every weekday; residents were notified by e-mail at the time of assessment completion.

Results

2,937 evaluations were completed by 196 attendings for 293 residents across 12 institutions, from 2022 to 2024. 2513 (85.6%) of evaluations were completed by attendings during weekdays, most commonly on Wednesday (20.8%); 2475 (84.3%) of evaluations were opened by residents during weekdays, most commonly on Wednesday (20.9%). The

median open-lag time was 1.5 hours, with 92.9% of evaluations opened within 24 hours of completion. During each weekday, both attending completion and resident opening of evaluations tracked with one another and significantly increased at 5pm. On weekends, attending and resident behaviors similarly matched one another, though did not change at 5pm.

Conclusions

Our EMR-integrated web-based assessment platform can feasibly generate rapid feedback for surgical trainees. Automated e-mail reminders significantly improve successful evaluation completion. Attending behaviors represent a major and potentially actionable bottleneck, as residents open evaluations rapidly regardless of when evaluations are completed.