Impact of Gamification Techniques on Trainee Engagement with Operative Assessment

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Background: Engaging surgical trainees with resident-initiated assessment is challenging. Gamification techniques that incorporate competition and leaderboards have been successfully used to engage trainees with self-directed curricula. However, gamification techniques have not been used to encourage trainee engagement with assessment. We set out to determine the impact of gamification techniques on trainee engagement with the Society for Improving Medical Professional Learning (SIMPL) operative assessment app.

Methods: General surgery residency programs in SIMPL were stratified into three study cohorts. A subset of programs already enrolled in a separate research study were assigned to one of two intervention groups, while all other programs in SIMPL were included in the control group. Over a 4-month study period, the first intervention group received a weekly leaderboard of the top 5 most active residents engaged with the SIMPL app, while the second intervention group received the same leaderboard every other week. The control group did not receive a leaderboard. For each cohort, we measured resident engagement with the SIMPL app defined as the average number of SIMPL evaluations submitted by residents per day. Linear mixed models were used to longitudinally explore the association between the mean number of evaluations completed by residents in each intervention group while adjusting for program-specific effects.

Results: A total of 320 residents from 9 programs were included in the weekly intervention, 509 residents from 9 programs in the biweekly intervention, and 382 residents from 19 programs in the control group. In programs receiving a weekly leaderboard, the adjusted mean number of evaluations increased from 7.1/day at the beginning to 9.8/day at the end of the study period ($p<0.01$). Adjusted mean daily operative evaluations declined from the beginning to the end of the study period for the biweekly intervention (9.5 to 8.7/day, $p=0.28$) and control groups (2.8 to 2.5/day, $p=0.68$).

Lessons Learned: Sending a weekly leaderboard of resident activity in the SIMPL app had a positive impact on trainee engagement compared to biweekly or no leaderboard interventions.

Future Application and Next Steps: Strategically applying gamification techniques to assessment may help improve trainee engagement.