

Student Self-assessment Versus Faculty Evaluation of Operative Dentistry Practical Examinations

Purpose: Practicing dentists rely on self-assessment in order to provide the highest level of oral health care. Accordingly, a comprehensive goal of dental education is to foster a self-critiquing, critically thinking mind in novice dental professionals. While a literature review revealed a great deal of research focusing on the benefits of critical thinking and self-assessment in relation to success and clinical discernment in nursing and medical students, there is a distinct lack of data concerning dental student self-evaluation, especially in the preclinical setting. Therefore, this study aimed to examine first year dental students self-assessment ability, while also comparing it to faculty grading. If our hypothesis proved true, and the self-assessment skills of students could be equivocated to faculty grading, it would reaffirm the professional standard young dentists maintain. It would additionally demonstrate that the 2012 CODA recommendations, which stated that after four years dental students should have cultivated the ability to accurately self-assess their work, are benefiting students and should influence future dental school curriculum modifications. Finally, correlations between students' self-assessment and faculty grading would indicate that Tufts University School of Dental Medicine's (TUSDM) calibration procedures are reliable and valid tools.

Methods: Prior to the study, IRB approval was achieved and the TUSDM class of 2017 (D17s) was informed and shown a consent form. Throughout the 2013-14 school year, the D17s completed six (6) regularly-scheduled operative dentistry practical examinations in Simulation Clinic. After completing each examination, students self-assessed their work, and then left their self-assessment forms at their seats. Next, two (2) randomized and calibrated faculty members collaboratively scored each students' practical. Both students and faculty used the same ten (10)-point grading scale, with the lowest passing score being a seven (7). The scale also included half-points (e.g. 7.5, 9.5, etc.). Students and faculty used separate, but identical standardized grading forms. Student self-assessment and faculty score were coupled using seat number, and the data was not linked to identifiable information.

Findings and/or Conclusion Text: One hundred ninety-two ($n = 192$) D17s were eligible to participate. The lowest response rate occurred on practical #4 (76%) and the highest response rate occurred on practical #1 (95%). When a student self-assessed his or her work within 0.5 points higher or lower than the faculty grade, the student was deemed to have graded accurately or 'the same' as faculty. 'The same' scoring ranged from 49% to 59% of students throughout the 6 practicals. The remaining students self-assessed themselves greater than 0.5 points away from the faculty score. The majority of students tended to over-estimate their work. This most often occurred on practical examinations where students were asked to complete Class I or II preparations. Meanwhile, students under-estimated or scored their work 'the same' most frequently on practical examinations which were assessing Class I or II amalgam or composite restorations. The highest over-estimation (41% of students) occurred on practical #1, a Class I preparation. This was anticipated because at this early stage of dental

education, D17s were inexperienced at self-assessment and operative dentistry. The lowest over-estimation (21% of students) occurred on practical #6, a class II amalgam restoration, and also correlated with the highest 'the same' scoring (59% of students). This was dually anticipated, as students were more practiced self-assessors, had improved hand skills, and had acquired a wealth of operative dentistry knowledge. The mean faculty score was lowest on practical #1 (7.65), highest on practical #6 (8.34), and increased almost linearly across the 6 practicals. Additionally, the mean faculty score (8.04, on average) was lower than the mean student score (8.27, on average), not only overall, but also on each individual practical. The largest difference in mean scores occurred on practical #1 (0.51 points), while the smallest difference occurred on practical #6 (0.03 points). It was determined that mean student scores were closer to mean faculty scores on practical examinations which were assessing restorations rather than preparations. Overall, it was determined that students improved both on self-assessing and on the practical examinations throughout the eight month-long operative dentistry course, but faculty do tend to score students lower than students anticipate.

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