Received: 10 June 2022 | Revised: 8 July 2022 | Accepted: 16 July 2022

DOI: 10.1002/jdd.13067



ADEA THE VOICE OF DENTAL EDUCATION WILEY

# A deep dive into complete denture outcomes at an academic teaching center

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## 1 | PROBLEM

Data from our electronic health records suggested our complete denture (CD) failure rate was 3.0% for the period of January 2017 to January 2020. However, those providing oversight to clinical education believed actual failure rates were much higher, and that CD education needed improvement. Inadequate documentation is a cause for concern in an academic dental setting because there are so many transitions of care (as providers graduate), and there is a heightened need for excellent communication in the health records.[1] Failure to recognize and document clinical errors also means there is a missed opportunities to learn and improve the gaps in CD education.

## 2 | SOLUTION

We designed an educational quality improvement project to manually search electronic health records associated with all CD's delivered between January 2017 and January 2020 in order to understand how to improve CD clinical education. Two dentists served as independent reviewers and manually searched 417 CD histories to determine the

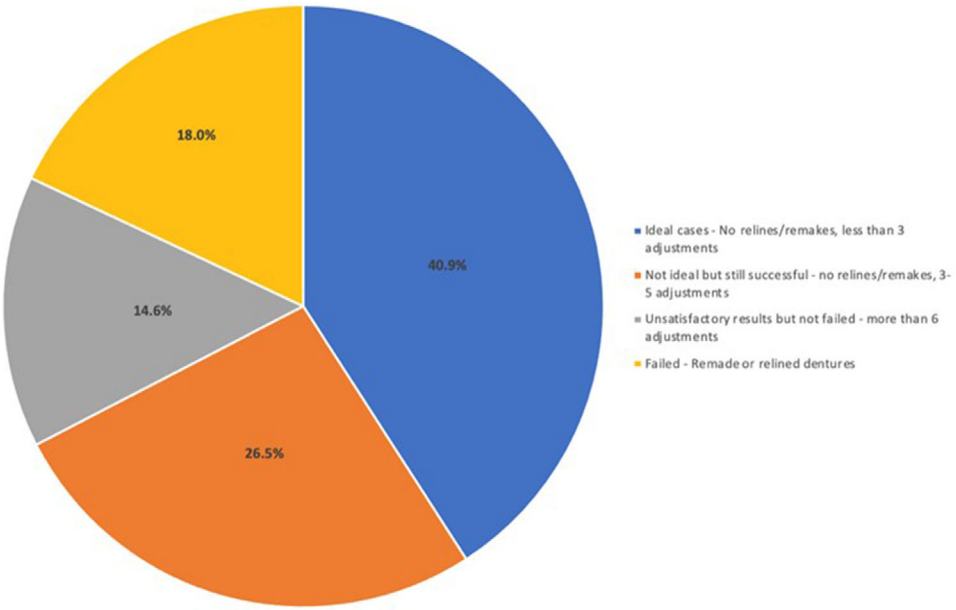



**FIGURE 1** Outcomes

**TABLE 1** Supervision model and associated success rate

| Supervision model | Number of cases | Success rate |
|---|---|---|
| One faculty + one student | 63 | 86% (54/63) |
| Multiple faculty + one student | 117 | 69% (81/117) |
| Multiple faculty + Multiple students | 59 | 52% (31/59) |

cycle of care; a third dentist reviewer was available to resolve disagreements. The University of Michigan Medical School's Committee on Human Studies reviewed the protocol and deemed it "not regulated" (HUM00197975).

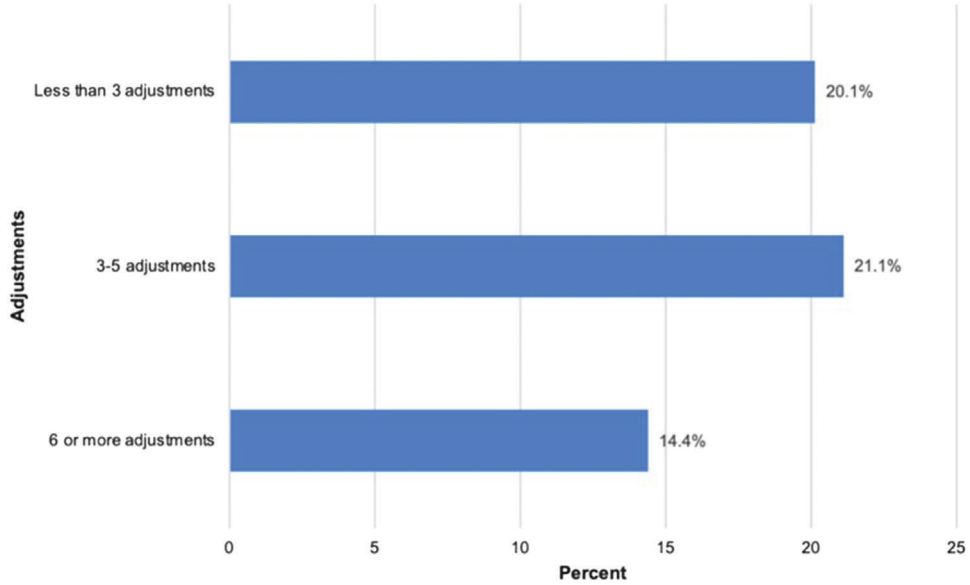
## 3 | RESULTS

We identified 270 patients who received 417 complete dentures during the study period. Out of this 417, Figure 1 shows the outcomes. We defined "ideal" as three or fewer adjustments and resolved patient complaints; "not ideal but successful" was three to five adjustments and no unresolved complaints; "unsatisfactory" was six or more adjustments and resolved complaints; and "failed" as needing to be re-lined or re-made.

Table 1 shows that 63 CD cases were supervised by a consistent faculty member from start to finish (26.4%) with a success rate of 86.0%. Table 1 shows there was one student provider (but one or more faculty supervisors) from start to finish in 180 cases (43.2%) and a 74.0% success rate. Having one faculty member and one student from start to finish had a success rate of 86.0%. Multiple faculty supervising one student was associated with 117 of the cases with a success rate of 69%. Multiple faculty instructors and multiple student providers oversaw 59 cases (21.8%) with a success rate of only 52% (Table 1). Table 2 shows the number of adjustments. Eighty-two patient cases (20.1%) expressed no dissatisfaction upon delivery. Complaints and issues were resolved in 138 cases (33.1%), whereas 21 cases (5.0%) had no documented resolution. Treatment notes were entered for only 187 cases (44.8% of all CDs).

*Lessons learned*: By our strict definition of success, we found CD failure rate was 30.5%—this high rate has implications for sustainability and educational cost. Handsearching the charts found specific areas for improvement that running reports in the electronic health record failed to capture—writing adequate treatment notes (perhaps with the help of procedure-specific templates), documenting patient satisfaction, and using appropriate Code on Dental Procedures and Nomenclature (CDT). Perhaps most importantly, we found a much higher success rate when one faculty member worked with one student throughout the fabrication steps for a CD. Academic opinion varies on the materials and techniques for different clinical situations in CD,[2] supporting previous studies suggesting that there may be discrepancies among faculty when it comes to clinical judgment.[3] Therefore, dental schools should consider co-assigning complete denture cases to one student and faculty member to minimize complications. This may be accomplished by aligning student and faculty schedules so that students are assigned

**TABLE 2** Denture adjustments



to clinic in the same session as their prosthodontic faculty throughout a year.

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**How to cite this article:** Kadhium VS, Sharma P, Xie D, Nalliah RP. A deep dive into complete denture outcomes at an academic teaching center. *J Dent Educ*. 2023;87(Suppl. 1):905–907. https://doi.org/10.1002/jdd.13067