

# QUANTIFICATION BY DENTAL STUDENTS OF THE THEORY AND PRACTICE THAT IS PRESENTED IN GENERAL DENTISTRY SIMULATION I PILOT STUDY

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## **ABSTRACT**

*This article aims to find out how the dental students at New York University College of Dentistry (NYUCD) evaluate the balance between the amount of theory taught and practice time allotted in cavity preparation presented in General Dentistry Simulation I so that recommendations to improve the curriculum can be formulated. An IRB approved anonymous six-question survey questionnaire was distributed to the dental students in the second (D2), third (D3) and fourth (D4) year at NYUCD. The questionnaire consisted of scaled responses so as to gain insight into the undergraduate opinion and their perception of whether the amount of theory and practice of cavity preparation presented in General Dentistry Simulation I was sufficient. Overall, the majority of the dental students felt that there was enough theory and practice for cavity preparation. The second year students want more theory and the third year students want more practice time.*

## **KEYWORDS**

*Cavity Preparation, Theory, Practice, Dental, Simulation*

## **1. INTRODUCTION**

At New York University College of Dentistry (NYUCD), the General Dentistry Simulation I (GDS I) course consists of didactic lectures in the classroom and hands on simulation in the bench lab. The lecture theory includes dental anatomy, operative dentistry, and biomaterials. The bench lab includes hands-on approach, which reinforces the theoretical restorative dentistry. The students are also taught preparation, restoration, and introductions to other tangent disciplines such as restorative dentistry.

Feedback is necessary to adequately evaluate the amount of theory and practice time. The current trend in dental education is with the newer generation of instructors, as well as using newer instrument and technology. The tremendous amount of new information and knowledge that a dental student must master in the 21st century also coincides with the amount of learning that has to be achieved.

In this study, we have surveyed the students in 3 of the 4 four years. We want to assess their perspective pertaining to the balance between the theory and practice in the first year introductory course of General Dentistry Simulation I. The objective is to find out how the dental students evaluate the balance between the amount of theory and practice time for cavity preparations, and how their opinions change as they progress through dental school, so that recommendations can be made to improve the curriculum.

## **2. MATERIALS AND METHODS**

This study was registered with the University Committee on Activities Involving Human Subjects at New York University. An IRB approved anonymous survey form was distributed to the dental students in the second (D2), third (D3) and fourth (D4) year at NYUCD. The questionnaire consisted of scaled responses to six questions that offered insight into the undergraduate opinion and their perception of whether the amount of theory taught and practice time allotted of cavity preparation in GDS I was sufficient.

A consent information sheet was provided to each student explaining the purpose of the study. In order to participate in this study, the student must have completed the DDS first year GDS I course at NYUCD. The participants were told that the study was completely confidential, that they do not need to write their name or student ID. In addition, they were told that there was no risk in participating in this survey and that their participation was entirely voluntary. The research is anonymous, no monetary rewards and, no increase in grade was offered. The participants may refuse to participate or withdraw at any time without penalty. Nonparticipation or withdrawal will not affect the services they receive at NYUCD.

The survey started with asking the student to circle the year of dental school that they were in. Next, the students were asked to circle “yes” or “no” as to whether they received enough theory for cavity preparation in GDS I, and whether they received enough practice time for cavity preparation in GDS I. The survey continued with the question as to whether the students felt that they should have more theory or practice time. Next, the students were asked if they wanted 0, 1, 2, or 3 more hours per session for practice. The survey was completed with a question asking the students to circle their gender.

The responses were collected and categorical responses were collated and analyzed by designated investigators. If there was a question, the principal investigator made the decision. Counts and percentages are reported. Descriptive statistics were obtained for all variables.

## **3. RESULTS**

Out of a possible 371 students in the second year class, 304 responses were obtained. Out of a possible 354 students in the third year class, 221 responses were obtained. Out of a possible 232 students in the fourth year class, 121 responses were obtained. Figure 1 shows that 86% of the second year students, 92% of the third year students and 94% of the fourth year students felt that they had enough theory for cavity preparation. Figure 2 shows that 71% of the second year students, 93% of the third year students and 97% of the fourth year students felt that they had enough practice time for cavity preparation. Figure 3 shows that the second year students felt that they should have more theory (53%), whereas the fourth year students felt that they should have more practice (64%). Figure 4 shows that the second and third year students want one more hour per session of practice time, (42%, and 33% respectively). The fourth year students want two more hours per session of practice time per session (38%).

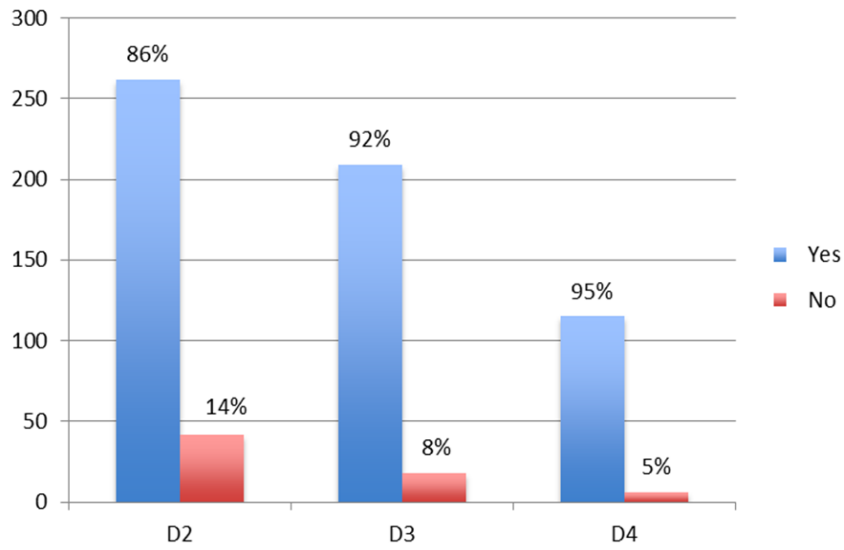


Figure1. Sufficient Theory for Cavity Preparation

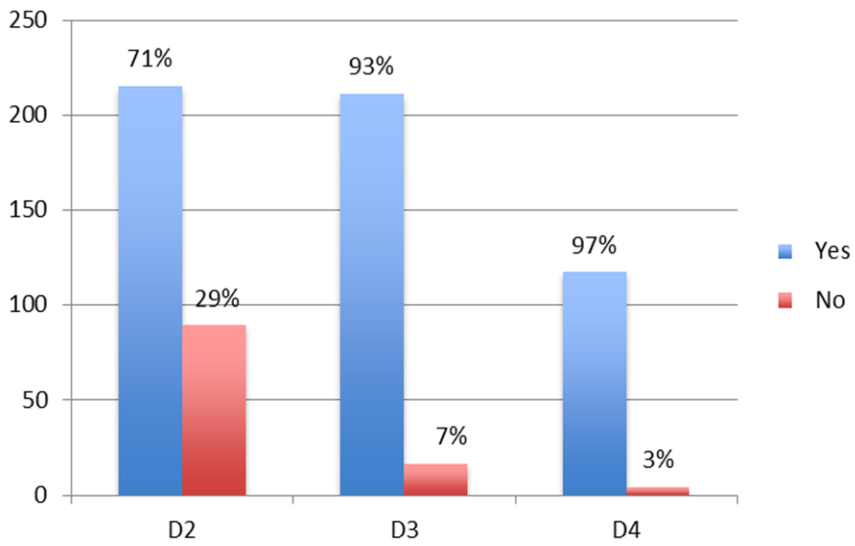


Figure2. Sufficient Practice Time for Cavity Preparation

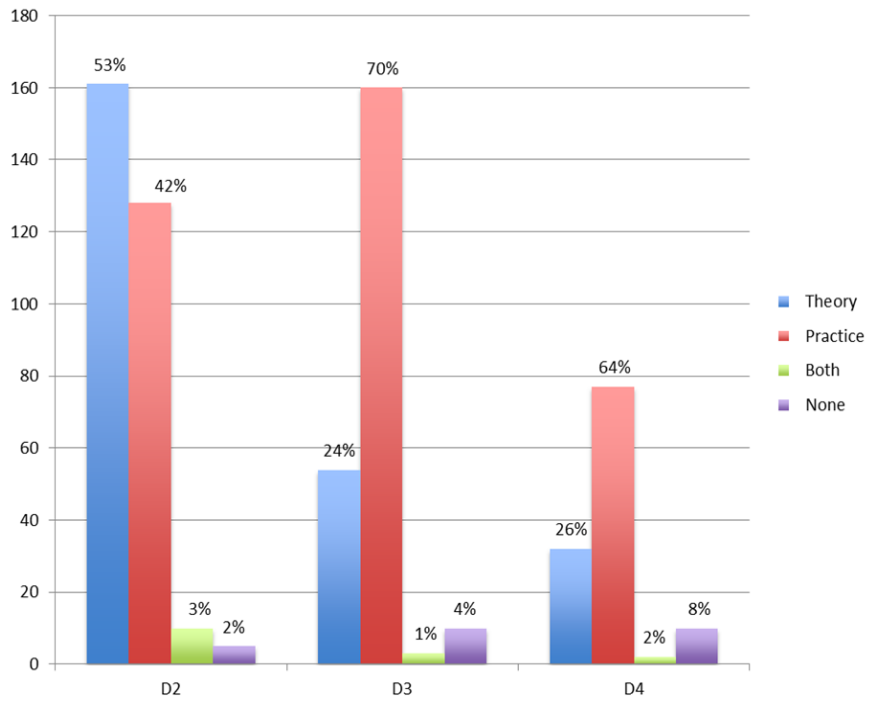


Figure3. More Theory or Practice

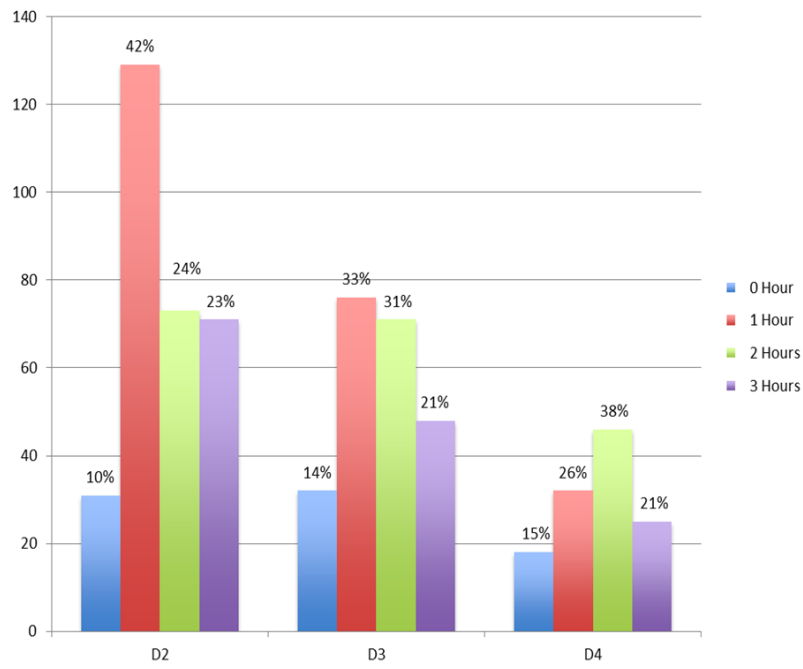


Figure 4. How Many More Hours of Practice Time

## 4. DISCUSSION

The main goal of establishing the ideal practice time and proportion of theory and practical learning, is for it to translate into success for the dental student. There are many factors that contributed to a student's success, and the trend for assessment in current dental education is based on competency. Therefore, the purpose of finding the balance regarding time management, instruction of theory, and hand on clinical practice is ultimately to enhance the students' ability to develop competence [1].

NYUCD has a competency-based curriculum that applies the hands on skill in a practical manner. As such, it is important to know how students respond to the amount of practice. A competency based education breaks down the curriculum into individual concepts so that they can be mastered before building further education upon them. The competency-based education includes biomedical, clinical, ethical, behavioral, and critical thinking skills [2]. The ADEA and Commission on Dental Accreditation define competency as, "a complex behavior or ability essential for the general dentist to begin independent, unsupervised dental practice" [3]. According to the ADEA, the competencies of each subject of dental education are combined when proper treatment is provided to a patient.

The competency system is integrated into the preclinical education as practical operative examinations. In these examinations, the tasks must be completed without a critical error. A critical error is defined as an error that reduces the prognosis of the tooth, damages adjacent teeth, or causes other harm to the patient. Therefore, by successful completion of this exam, the student has demonstrated competency in that specific task.

Many of the competencies at NYUCD also have a component of self-assessment. During self-assessment exercises, students grade themselves based on how well they think they have done. This is important because it determines whether or not the student understands a concept, independent of their ability to correctly perform it [4]. One could not possibly prepare a tooth to the proper proportions if they do not know how it should be. According to Duygu Tuncer et al, the better students tend to under-estimate their performance during the self-evaluation whereas the lower level students tend to over-estimate their performance [5].

By using Survey based study you can obtain information about the students perceptions and it is an effective way of capturing data related to educational issues. In the survey, 86% of the second, 92% third year students and 94% fourth year students who have taken the GDS I course agree by consensus that the theoretical, didactic portion of the course is sufficient. This reflects the lecture series that adequately prepare the students to enter into practical setting with the adequate background knowledge.

The same group also agreed by consensus, 71% second year students, 93% third year students, and 97% fourth year students, that the practice time for cavity preparation is adequate. Looking further into the details, we find that the second year students felt that they should have more theory (53%) whereas the fourth year students felt that they should have more practice (64%). The second and third year students want one more hour per session of practice time (42%, 33% respectively). The fourth year students want to more hours per session of practice time per session (38%).

Among the 371 second year students, there were 304 responses. The full response rate was not achieved due to a number of reasons. The class is broken down into smaller groups for most lectures and all preclinical lab sessions. Furthermore, the lectures that hold the entire class do not have mandatory attendance. Therefore, distribution of the survey was a challenge. To overcome this challenge, the surveys were distributed during mandatory preclinical sessions. However, students were occasionally missing from these sessions for various reasons. The same challenge existed for the third year students who had 221 responses out of a possible 354. The response rate probably went down because the third year class is broken up into smaller groups with a more complex schedule (including rotations) compared to the second year students. The fourth year class had a response rate of 121 out of a possible 232. It had the same scheduling complexity as the third year class but it also includes off campus rotations in the schedule. In all three of the classes surveyed, there may have been students who simply did not want to complete the survey or happened to be sick they day the survey was distributed.

## 5. CONCLUSION

Overall, the majority of the dental students at NYUCD felt that there was enough theory and practice for cavity preparation. Although most students responded to have had sufficient theory and practice time, they also acknowledged that longer sessions in either theory or practice time for cavity preparation would be more optimally ideal in order to improve the curriculum. In general, the second year students would like to have more theory, whereas the third year students would want more practice time. Additionally, both the second and third year students would like to have one more hour per session, while the fourth year students would like to have two more hours per session.

A possible solution to the opinions expressed by the students would be to extend the first half of the year to a 3 hour session and the second half of the year to a 2 hour session to prepare them for clinic.

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