Learning Anatomy through Dissection: Undergraduate Student Involvement in a Full-Body Dissection Course

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ABSTRACT

In a typical undergraduate anatomy curriculum, there are not many opportunities available for students to perform a full-body human dissection. Many anatomy courses offered to undergraduates do not have a laboratory component, have a laboratory component but utilize only models and/or cadavers, or have a laboratory component with access to only proscribed human cadavers. During the fall and spring semesters at The Ohio State University, undergraduate students registered for anatomy courses have the opportunity to work with proscribed cadavers but a question asked often has been, “Is there any opportunity for us to do a dissection?” It was from this ongoing student request that during the summer session of 2011, an undergraduate summer dissection course was first implemented to provide selected undergraduate students, in groups of four, the opportunity to prepare the following academic year’s fully proscribed cadavers. To be a participant in the summer dissection course, students had to go through an application process and, once selected, were instructed by an anatomy graduate student as they completed a full body dissection. Students met for class 9 hours a week for over 5 weeks to prepare the cadavers. The course included students in health related majors, many of whom were interested in attending medical school (e.g., medical or dental school) or graduate school. The course was offered again in the summer of 2012 with a noticeable increase in student applications and is currently being prepared for the summer of 2013.

INTRODUCTION

The importance of undergraduate anatomy courses is evidenced by many professional schools currently requiring or considering requiring human anatomy as a prerequisite into their programs (Darda, 2010; Wright, 2012). Institutions around the country would prefer to offer more upper level undergraduate, cadaver-based human anatomy courses (Wright, 2012), however many obstacles (e.g., availability of cadavers and faculty, cost, time constraints) have limited their availability (McClellan & Patton, 2006). Offering undergraduate anatomy courses in the curriculum not only can serve as a preparation for future programs, but also as an extension of the current curriculum (Darda, 2012). Additionally, research has shown medical students, who as undergraduates completed a human anatomy course with either lecture alone or lecture with laboratory scored higher in medical gross anatomy and had a higher class rank then those students who did not take anatomy but instead completed some form of an anatomy and physiology course, kinesiology course, or comparative vertebrate anatomy course (Petersen & Tucker, 2005; Forester, McWhorter, & Cole, 2003). Therefore, undergraduates who are attempting to improve their performance in medical school should consider completing human anatomy course[s] which include at least a lecture and, if available, a laboratory (Petersen & Tucker, 2005).

Research has shown other positive outcomes when students complete hands-on activities in the anatomical laboratory. In a study by Holterman, Grube, and Bogehöf (2005), students that participated in dissection showed a higher interest in this hands-on activity and the related anatomical topic than those who do not have this previous experience. Furthermore, Talarico (2010) indicated that by working with cadavers and cadaveric materials students can develop the manual dexterity. Through dissection, students also get to observe the concept of biological variation in the human body and can learn to appreciate those variations. Finally, during dissections students are typically put into dissection groups and these groups help students develop interpersonal and communication skills that they can use in their career (Talarico, 2010).

Based on this research, along with ongoing student requests for more hands-on dissection, during the Summer Session of 2011 an undergraduate summer dissection course was first implemented at The Ohio State University. This course was designed to provide selected undergraduate students with the unique opportunity to prepare proscribed cadavers for the following academic year’s undergraduate courses and to provide students with an opportunity to gain a deeper appreciation for the human body.

COURSE DESCRIPTION

Anatomy 5300 Learning Human Anatomy through Dissection is an undergraduate course where students are provided with the unique opportunity of completing a full dissection of a human cadaver. The cadavers dissected during the Anat 5300 course are then used during the upcoming academic year in undergraduate anatomy courses that utilize proscribed cadavers in the laboratory (i.e. Anat 2220 Human Structure and Function for Engineers, Anat 2310 Human Anatomy, and Anat 3300 Advanced Human Anatomy for Undergraduates).

A group of four undergraduate students are responsible for fully dissecting and preparing a single cadaver and this group is instructed in the dissection laboratory by an anatomy graduate student. Each laboratory class session begins with a short pre-dissection demonstration given by one of the graduate student instructors to orient the undergraduate students on that day’s dissection.

COURSE PREREQUISITES

To qualify for the course, students must have previously completed Anatomy 2380 “Human Anatomy”, Anatomy 3300 “Advanced Human Anatomy for Undergraduates” or an equivalent course, with a B- or better. Then, the students must complete and submit an application (see Figure 1). From the application pool, a group of students are selected by the Anat 5300 graduate student instructors and approved by the Anat 5300 course director(s) to take the dissection course during the summer semester. In the course’s inaugural year (i.e., 2011), 33 health-related majors were selected to participate, while in subsequent years 40 students have been selected.

SCHEDULE OF COURSE TOPICS

Figure 1: The Anatomy 5300 course application undergraduate students must fill out in order to apply.

Students taking Anatomy 5300 are instructed and guided through a full-body dissection by the graduate student instructors. The class typically meets on Mondays, Wednesdays, and Fridays for approximately 5 weeks and are in the laboratory for 3 hours each session. Students are also expected to spend time in the laboratory outside of the regular class time in order to complete dissections and to stay on the schedule.

The topics and areas for dissection include the back, lower limb, upper limb, trunk, and head and neck. The detailed schedule of dissections is found in Figure 2.

SUMMARY

Due to the ongoing requests by undergraduate students to have the opportunity to perform full-body dissections, a course was developed to allow selected students the chance to prepare cadavers for the following academic year’s undergraduate anatomy courses. The goal of the course is to allow the undergraduate students an opportunity to gain a better appreciation for anatomical variation and the intricacies of the human body with a hands-on experience. Students also are provided the opportunity to learn the importance of collaboration and interpersonal skills they can utilize in their future careers.

REFERENCES


