Anatomy teaching in medical schools and its influence on speciality choice

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**Abstract**

As a medical student there is a vast volume of knowledge to learn. Anatomy constitutes an integral part of medical education and all doctors should have a good working knowledge of this subject. However, medical schools vary hugely in both the time spent on and approach taken to anatomy teaching. I was interested in exploring whether the type of anatomy teaching students receive impacts on their subsequent choice of speciality, in particular the decision of whether to pursue surgical training. Looking at data from 24 UK medical schools and 238,062 students graduating between 1995-2016, there was not a statistically significant difference between courses teaching through pro-section, dissection or both in terms of the proportion of doctors who went on to do surgical training (p=0.63332). There were some caveats to this study as it did not take into account other variations in teaching styles or disparities in the time dedicated to anatomy teaching; moreover, other differences in specialties chosen were not examined. However, further exploration of whether/how aspects of anatomy teaching affects the career trajectory of future doctors is warranted, and may help to inform decisions on how anatomy should preferably be taught in medical schools throughout the UK.

**Keywords:** Anatomy; education; teaching; students; surgery; speciality

**Impact of anatomy course on specialty choice**

Anatomy is the study of the human body and its make-up. Knowledge of anatomy is integral to medicine, as without an appreciation of the normal structures within a human body it is not possible to understand how things can go wrong. I am studying medicine at the University of Southampton on the BM5 course, where we were taught anatomy with pro-section. During our first two years pro-section formed a large part of the course, constituting 2-6 hours of the 30-40 hours of teaching provided each week. In addition to the practical time spent in the anatomy lab there were lectures on anatomy (up to 6 hours per week). Anatomy exams were also considered crucial for progression in the course: they counted for 20% of the mark of each module and it was compulsory to pass them in order to move on to the next year. In these exams we were assessed on cadavers within the anatomy lab, as opposed to pictures and diagrams, so we required different skills and knowledge to students attending other medical schools.
There are enormous benefits to learning anatomy, along with other basic biomedical scientific principles such as physiology, microbiology and immunology, at the preclinical stage. It is very difficult to learn these things while on clinical placement and they underlie the understanding of most other aspects of medical knowledge, making it helpful to learn them in a formal teaching setting in the preclinical years of medical school. For example, knowing the nerve supply to the abdomen is very important in understanding how a patient will present with different kinds of intraabdominal pathology and so it is important to have a thorough grasp of this. Some courses may not emphasise the clinical relevance of anatomical details and this may lead to an underestimation of their importance in medicine.

It could be argued that some of the more specialist anatomical information should not be taught at medical school and should instead form part of registrar training and consultant level examinations, as some specialities, such as neurosurgery, need a more in-depth understanding of human anatomy than others. Students may forget some of the specific details of the anatomy taught to them before they get a chance to use the information, so it may be better to focus on the key principles of the topic initially. This is particularly important given the limited amount of time and resources available for medical teaching, which means that many important topics are not covered in as much depth as they should be. For example, psychiatry often receives little time in the curriculum despite the fact that one quarter of the general population has some kind of mental illness during their life (Mind, 2007) and hence all doctors will interact with patients with mental illnesses.

I am aware that the amount of time spent teaching anatomy varies depending on the medical school you attend, as does the style of teaching. I was interested in whether the way that anatomy is taught alters students’ decisions when choosing their specialities. Anatomy is important in all fields of medicine, but particularly so in surgery. Using data from the General Medical Council (GMC, 2020), I looked at 24 UK medical schools (238,063 students) and calculated the percentage of students graduating between 1995 and 2016 from each who had gone on to do their core training in surgery (not all medical schools had information going back to 1995 on the GMC database, so in these cases I used all available data, for example University of Southampton graduates included those from 2000-2015). I then determined whether anatomy was taught via pro-section, dissection or both (Zhang, 2019) to see if there was a difference in the proportion of students taught using each approach who chose to become surgeons. One caveat to this approach is that in some medical schools anatomy teaching methods changed during the time-frame considered, but unfortunately it was not possible to ascertain exactly how each set of graduates were taught. There are also 2 medical schools (University of Buckingham Medical School and Lancaster University Medical School) where neither pro-section or dissection are offered. However, I was unable to include these in the comparison as both are new courses and have not yet had a graduating cohort. I found that 4.2% of students taught by dissection only, 3.84% of those taught by pro-section only and 2.83% of those taught using combined dissection and pro-section methods had gone on to be surgeons. The difference between these values was found not to be statistically significant (p=0.63332 as determined using a Kruskal-Wallis test, suitable for analysis of nonparametric data from two or more groups). It would also be interesting to explore whether there is a correlation between hours of anatomy teaching, or methods of examining anatomy knowledge, and future career paths. However, this information is not widely available, so analyses of this type would require more detailed research.

Overall, it is very important to have a thorough grasp of anatomy before becoming a doctor. It may be beneficial to change the format or increase the hours of teaching in some medical schools to allow a greater understanding of the topic. Standardisation across the country may also be helpful in producing the best doctors. However, there is a limited amount of teaching time available for medical students and there are limits to the amount of information that students can absorb and retain. Therefore, it could be argued that all the anatomy that is taught should have general clinical relevance regardless of the speciality that students end up in. It would be of interest for a more comprehensive study to be done to determine not just whether there are differences in the proportion of students
taught anatomy using different approaches who go on to be surgeons, but also whether there are any other significant differences between the career paths of students taught on courses where the time spent on and methods employed for anatomy teaching varies. Findings from more in-depth research in this area may be very valuable in identifying the most effective approaches to anatomy teaching, so that they can be implemented at all medical schools.

**Take Home Messages**

- Anatomy teaching is a key element of medical education.
- Medical schools in the UK have variable anatomy teaching and assessment styles.
- Teaching styles within medical courses could go on to influence speciality choice, therefore a more standardized approach may be beneficial.

**Notes On Contributors**

Heather Tough is currently a 4th year medical student on the BM5 program at the University of Southampton.

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**Bibliography/References**


**Appendices**

None.

**Declarations**

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