Anatomical Knowledge Retention in Changing Curricula

Alexa Lean1, Juliet Lee MD2, Ellen Goldman EdD3, Gisela Butera MS4, Kirsten Brown PhD1, and Rosalyn A. Jurus MD PhD1
1Department of Anatomy and Regenerative Biology, 2Department of Surgery, 3Department of Human and Organizational Learning, 4Himmelfarb Health Sciences Library, The George Washington University, Washington DC 20037

Background

Traditionally anatomy is one of the first subjects taught in medical school. However, practicing physicians have commented on medical students’ poor retention of anatomical knowledge in surgically oriented clerkships. Literature shows that correlating clinical and anatomical sciences throughout early medical education may improve anatomical knowledge retention (1). With major medical school curricular changes happening across the nation, more quantitative data confirming this correlation is needed (2). The undergraduate curriculum at the George Washington University School of Medicine (the first 4 years of medical school) recently underwent reorganization, transforming an earlier discipline-based curriculum to that of an organ-system-based one.

Methods

In order to determine whether an organ-system-based organization of medical school curriculum has an effect on anatomical knowledge retention, comparisons of anatomical knowledge between classes in the different curricula were made (4). Students from the last class of the discipline-based curriculum and students from the first class of the new, organ-based curriculum completed the same 27-question test before beginning their general surgery and obstetrics and gynecology (OB/Gyn) rotations. Scores for specific anatomy categories related to general surgery and OB/Gyn were then analyzed and compared between classes.

Results

Comparing the scores from the 2013 and 2016 medical school classes, there was an overall decrease in anatomical knowledge retention from 65.69% to 63.64%. Item analysis by topic revealed a mean decrease in retention of surgical anatomy and OB/Gyn anatomy of 2.53% and 1.58%, respectively. There was a 21.6% increase in retention of inguinal canal anatomy and a 17.33% increase in appendix-related questions. There was also a 12.02% decrease in retention of fallopian tube anatomy.

Discussion and Conclusion

When comparing the 2013 to the 2016 data there were overall decreases in retention for anatomy knowledge as it relates to general surgery and OB/Gyn; however improvements were noted for specific topic areas. These results suggest that the change in retention is apparent and multifactorial.

Retention: The differences between surgical anatomy retention and OB/Gyn anatomy retention scores may be related to the way the subject matter was organized and presented, or how the anatomical foundational knowledge was integrated with its clinical relevance. Although organ-based curricula has been associated with better retention, more studies will have to be conducted to validate this statement (3). This study focused on how the material was presented to students, not how the students’ studied or learned the anatomical topics.

Curriculum Schedule: Finally, it should be noted that there are variations in the timing of courses taken and when the examination was given (Figure 3). For example, in the discipline-based curricula anatomy was taught during the first 4 months of medical school. In the organ system-based curriculum, relevant content being taught for OB/Gyn, for example, was in the “endo/rep” block, 3 months before the anatomical retention exam was administered during “FCP.”

Future Directions

Moving forward, the subject matter, curriculum structure, clinical focus, and objectives should be evaluated. In addition, this project has been funded by the SMHS to conduct an international, multicenter study to analyze various curricular models and retention.

References