

Moving to the Future: Incorporating Ultrasound as a Teaching Tool of Anatomy to Medical Imaging Students

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INTRODUCTION

Undergraduate medical imaging education has recently moved towards making anatomy course content directly applicable to future clinical practice. Teaching anatomy to medical imaging students can prove challenging. Being a “dry subject” the link between theory and practice is not always appreciated by students. Furthermore, the use of cadaveric dissection as a teaching tool is rare [1]. In recent years with the advancement of technology, integration of imaging technology within anatomy courses in health science programmes, has become an essential component in supporting student learning [2]. Ultrasound is considered one of the safest imaging technologies, utilising ultrasonic waves to form images of the internal human anatomy[3]. Ultrasound provides real-time regional visualization of the gross anatomical structures in two-dimensional and non-irradiating ways to study the body organs[4]. This provides an opportunity for students to study living anatomy through ultrasound utilisation.

METHOD

This study included 31 students from the year two Medical Imaging programme at Unitec Institute of Technology. The students were invited to participate in three ultrasound demonstration sessions during their anatomy block course. Ultrasound scanning covered the abdominal regions, shoulder, and ankle. At the end of the course, students were asked to complete a questionnaire focusing on the benefits and effectiveness of the introduction of ultrasound as an anatomy teaching tool. The questionnaire was conducted on Survey monkey and consisted of 10 questions

<https://www.surveymonkey.com/r/F67K52L>

The responses were collected and analysed and will also be used in the development of future iterations of the anatomy paper.

Sample of questions included in the questionnaire

Q1: Did you find ultrasound is useful in teaching and learning anatomy to undergraduate medical imaging students?

Q2: Did you find ultrasound helps you visually relate surface anatomy to the underlying structures?

Q3: Did you find ultrasound helps you reinforce your knowledge of the anatomical structures you have seen in other anatomical resources e.g. models and/or online resources?

Q4: Do you agree that ultrasound can provide you with some basic anatomical knowledge which is essential for future clinical practice?

Q5: Do you agree that the use of ultrasound as a teaching tool is a distraction when learning anatomy?

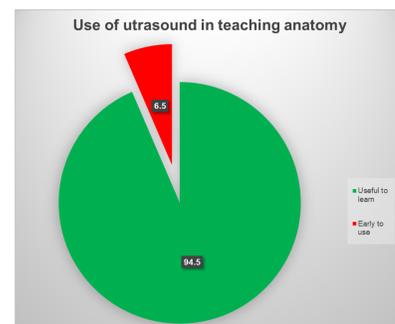
RESULTS

The students responses to the questionnaire are as follows:

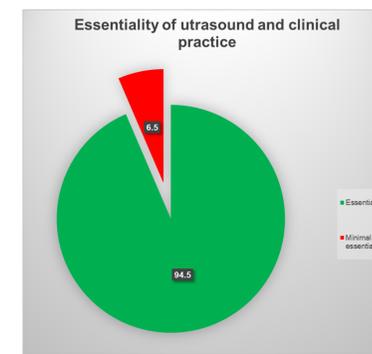
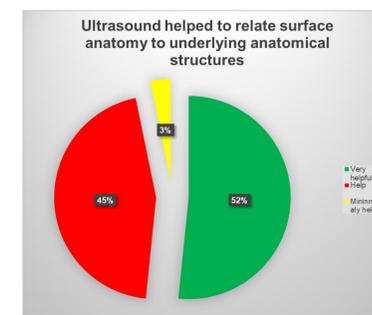
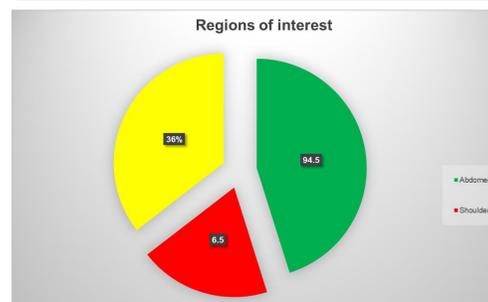
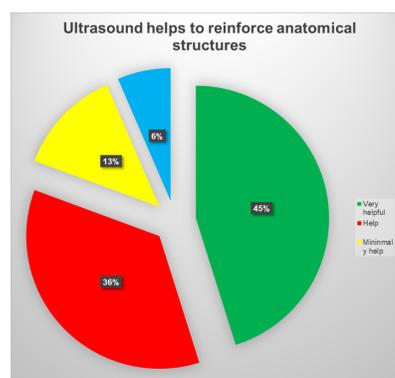
Twenty-eight students (93.5%) strongly felt that ultrasound is an important learning tool and complements a more traditional teaching method. Conversely, 6.5% of the students strongly identified that it was too early to learn about ultrasound in an undergraduate course, recommending it for postgraduate study.

Twenty-five students (81%) agreed that ultrasound reinforced and consolidated their knowledge of anatomical structures. Thirty students (97%) agreed that ultrasound helped them relate surface anatomy to underlying anatomical structures.

Likewise, twenty-eight students (93.5%) agreed that ultrasound can provide them with some basic anatomical knowledge which would be essential for future clinical practice. Whereas, 3 students (6.5%) felt its role is minimal in providing anatomical knowledge essential in supporting clinical practice.



An image from the scanning session of the abdominal region; demonstrating the gall bladder and hepatic blood vessels



CONCLUSIONS

This study showed that it is possible to introduce the use of ultrasound into the anatomy curriculum of a medical imaging programme to support student learning. It demonstrated medical imaging students felt it enhanced their knowledge and understanding of normal gross anatomy in the absence of cadaveric dissection. Through the implementation of ultrasound as a complementary teaching tool, we believe we have successfully revised the pedagogical approach to teaching anatomy in the Medical Imaging programme at Unitec Institute of Technology. Creating an approach in which the link between theory and clinical practice is made more overt to our students.

REFERENCES

- 1- Finnerty EP, Chauvin S, Bonaminio G, Andrews M, Carroll RG, Pangaro LN. 2010. Flexner Revisited: The Role and Value of the Basic Sciences in Medical Education. Acad Med. 85: 349-55.
- 2- Bergman EM, van der Vleuten, CP, Scherpbier AJ. 2011. Why don't they know enough about anatomy? A narrative review. Med Teach. 33: 403-9.
- 3- Gregory JK, Lachman N, Camp CL, Chen LP, Pawlina W. 2009. Restructuring a basic science course for core competencies: an example from anatomy teaching. Med Teach. 31: 855-861.
- 4-Tshibwabwa ET, Groves HM. 2005. Integration of ultrasound in the education programme in anatomy. Med Educ. 39: 1143-72.

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