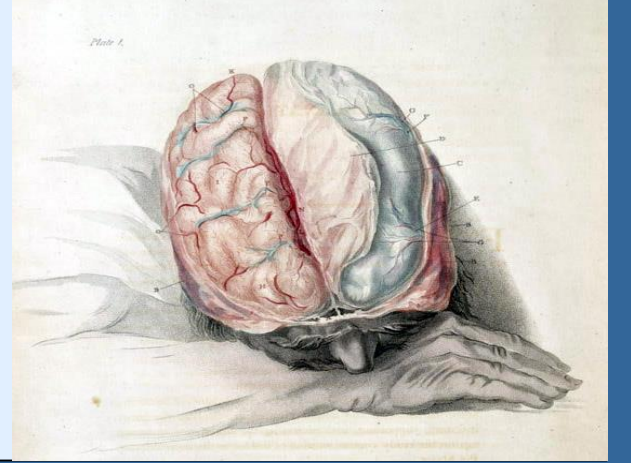


Do doctors know enough anatomy?



Dalvir S. Bajwa¹, Dr Iain Keenan², Dr Joanna Matthan²

1) Stage 4 MBBS, Newcastle University. Email: d.bajwa@ncl.ac.uk

2) Anatomy and Clinical Skills Department, School of Medical Education, Newcastle University, UK
Email: iain.keenan@newcastle.ac.uk, joanna.matthan2@newcastle.ac.uk Twitter: @dr_keenan and @DocMatthan

Aims

- Undertake a literature review surrounding anatomy education within the medical curriculum
- Complete data analysis of a pilot study evaluating knowledge of doctors undertaking anatomy demonstrator rotations
- Design a future study to review the retention of anatomical knowledge of medical students throughout their medical training
- Implement a student-partner strategy for research in anatomy education

Anatomy Education

- Anatomy knowledge forms a major part of the medical degree
- Most anatomy is taught during the preclinical phase within the core medical curriculum (1)
- Students and graduating doctors perceive a deficit in their anatomy knowledge (2)
- Concerns about patient safety have been highlighted due to the reduction in anatomy teaching during medical training
- A shift in teaching anatomy has occurred from using traditional cadaveric specimens to other methods such as virtual dissectors and clay modelling (3)
- Advances in other areas relating to medicine, e.g., cellular biology, have resulted in a reduction in anatomy teaching (4)
- Surgical errors and litigation have been highlighted as concerns but evidence is lacking - a variety of factors lead to this, such as poor communication and failure to follow protocols (5)
- Near-peer teaching is a beneficial approach (6)
- Supplementary anatomy teaching may be required through undergraduate and postgraduate medical training to ensure patient safety

Pilot Study

- Junior doctors in Newcastle have the option of undertaking a four-month anatomy demonstrator rotation
- Benefits for them include building up valuable anatomical knowledge for their future careers in Surgery, Radiology or Anaesthetics
- The rotation gives doctors the opportunity to teach
- Our research assessed the performance, perceptions and confidence of junior doctors on these rotations
- Knowledge data was also assessed against 1st and 3rd year medical students on the graduate-entry medical programme

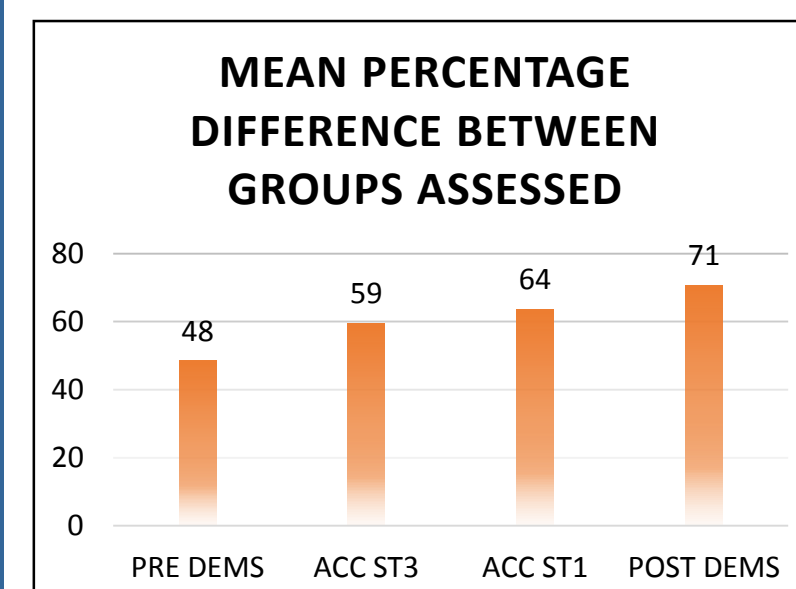


Figure 1
Average results of all individuals assessed within a specific group. The trend indicates that the further away a student or doctor is from received anatomy teaching, the worse they performed on the test.

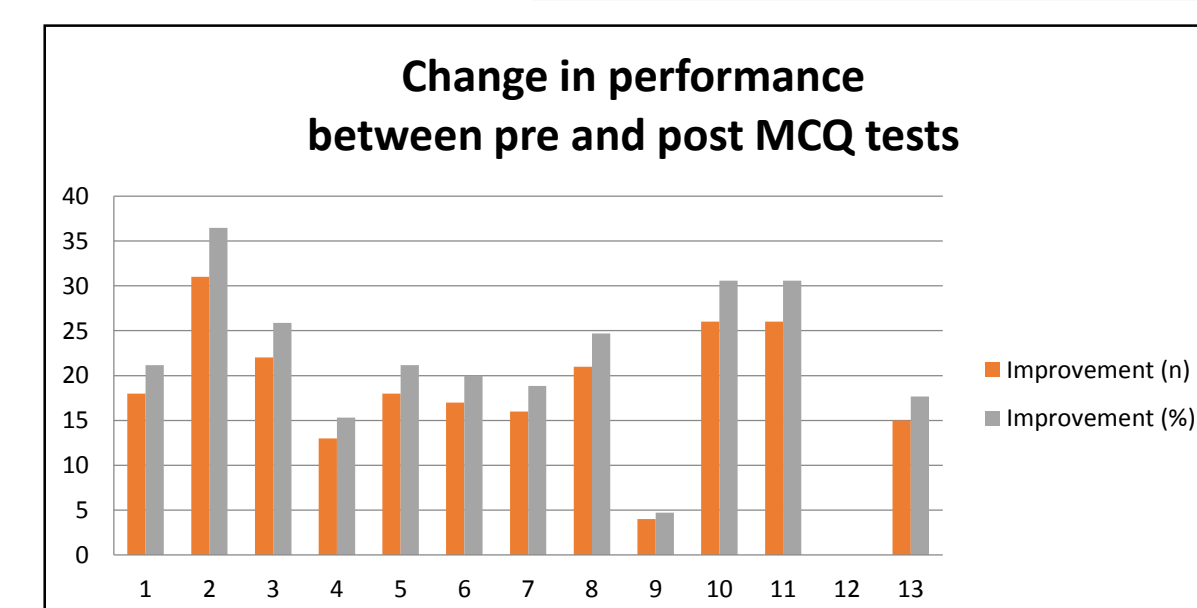
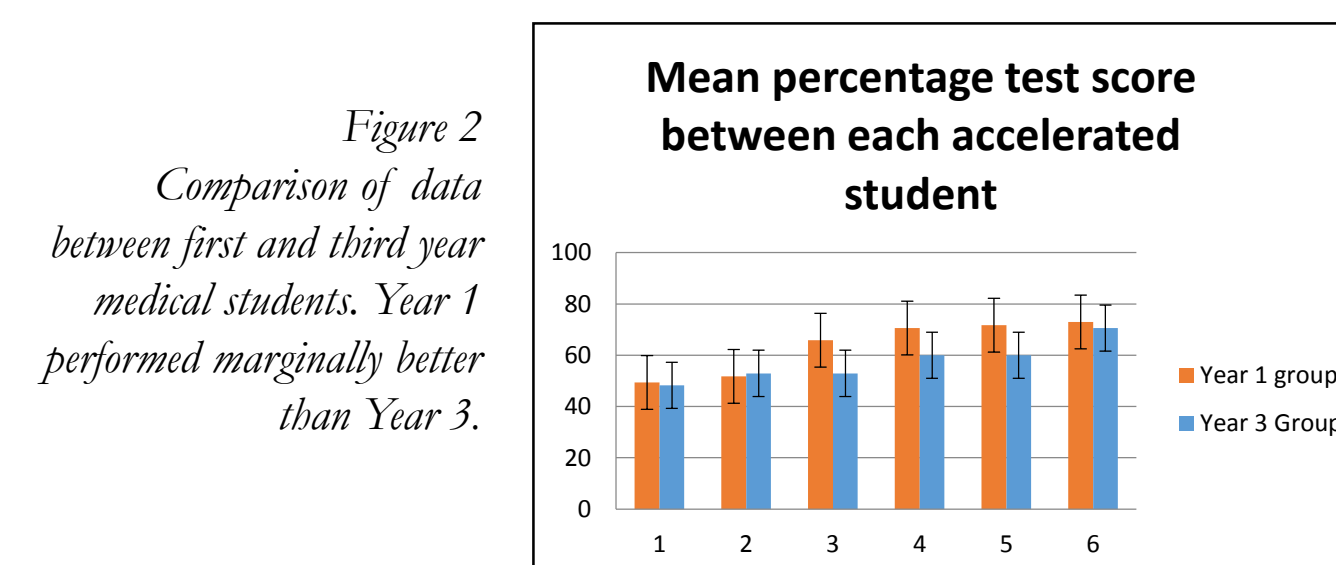


Figure 3: Change in confidence pre and post anatomy demonstrator rotation.

Future Study Design

Our future study aims to identify the extent of the decline in anatomical knowledge through the medical degree and the potential impact of this on patient safety.

- We have designed cross-sectional and cohort studies to determine anatomical knowledge of medical students across years 2 - 5.
- Our hypothesis: the further away the student is from formal anatomy teaching, the less clinically relevant anatomical knowledge is retained.
- An initial cross-sectional study will be implemented.

Methods

- Recruitment of 25 students each from years 2 – 5 of the medical degree for a fair representation of the cohort.
- Topics covered divided into 5 regions, head/neck, thorax/heart, abdomen/pelvis, upper/lower limbs, and brain/spine.
- Clinically relevant questions designed around core learning outcomes

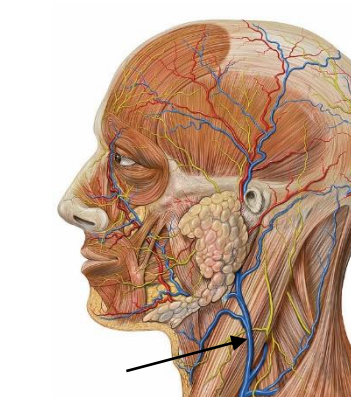
Some sample questions:

- A stethoscope placed over the left second intercostal space lateral to the sternum would be best positioned to detect sounds associated with which heart valve?

- Aortic
- Pulmonary
- Mitral
- Tricuspid

- Name the structure marked by the arrow.

A: Left External Jugular Vein



- A post-exam questionnaire will aim to gather students' perceptions of their anatomical knowledge

Potential Impact of Results

Does clinically relevant anatomical knowledge truly decline throughout the medical course? Does it matter? Does it affect patient safety?

- If 'yes', are interventions necessary?
- Possible interventions include:
 - Providing additional applied anatomy teaching during the clinical phase
 - Online tutorials to keep up knowledge
 - Online assessments of students
 - Near-peer teaching to enhance learning
- Patient safety and safe doctors are our key drivers

References

- 1) T D. Osler, Flexner, apprenticeship and the new medical education. Journal of the Royal Society of Medicine. 2005;98:91-5
- 2) Bergman EM, Prince KJ, Drukker J, van der Vleuten CP, Scherpbier AJ. How much anatomy is enough? Anat Sci Educ. 2008;1(4):184-8.
- 3) Jones DG, Dias GJ, Mercer S, Zhang M, Nicholson HD. Clinical anatomy research in a research-driven anatomy department. Clinical anatomy. 2002;15(3):228-32.
- 4) Lockwood AM, Roberts AM. The anatomy demonstrator of the future: an examination of the role of the medically-qualified anatomy demonstrator in the context of tomorrow's doctors and modernizing medical careers. Clinical anatomy. 2007;20(4):455-9.
- 5) Goodwin H. Litigation and surgical practice in the UK. British Journal of Surgery. 2000;87:977-9.
- 6) Nnodim JO. A Controlled Trial of Peer-Teaching in Practical Gross Anatomy. Clinical anatomy. 1997;10:112-7.

Acknowledgements

- We would like to thank Newcastle University for providing a research scholarship to help fund this project.
- Images used under creative commons license.