

Future of Anatomy in Integrated Medical Curriculum

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Abstract

Review Article

With the changing trends in Medical education and changing pattern of Curriculum from Traditional to the integrated one, we face many challenges as an Anatomist. On the other hand we are also facing difficulties in obtaining Cadavers and bones due to many reasons. Plus the time allotted for Anatomy in Integrated curriculum is also curtailed. There is lack of qualified anatomists and student teacher ratio is also climbing. Early clinical exposure is need of the hour. Application is the key to meaningful learning. This review is an attempt to explore the future of Anatomy in medical education. Adaptation to newer techniques like virtual anatomy and application of Anatomy in clinical subjects is future in learning Anatomy.

Keywords: Future of Anatomy, Integrated curriculum.

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INTRODUCTION

I always feel as an Anatomist that how much Anatomy is needed to a Medical student. Or for that matter I always wonder how much Anatomy a Medical graduate can recall after his or her graduation. Both the things may look different, but as a teacher for the undergraduate medical students, we have to decide how much, when, where and how Anatomy should be taught. With the change in curriculum from traditional subject based to integrated problem based learning, Anatomy is taught system wise or relevant to the problem and not region wise or as a whole body. Now many people think that the medical students don't have a proper knowledge of Anatomy. The clinicians feel that the students coming to the clinical phase do not recall Anatomy. But does that happen because of the change in the way of teaching in integrated problem based learning? Or even with the traditional curriculum where whole Anatomy is taught in first year and when the student goes in the clinical year, he has forgotten almost all of it? So the question remains as how much Anatomy the undergraduate student should know for the safe medical practice as a general practitioner.

History

My undergraduate time Anatomy was a major subject in a preclinical phase, in time allotted to it compared to other subjects as well as the space provided for that department. It had become so factual that students used to memories and reproduce in the exams and forget it very quickly. Most of the facts were learnt without knowing their application. Even the

teachers made it more difficult by giving or asking minute facts which had very minimal application. And so the subject became UN popular and just a thing to get rid of quickly. That led to superficial learning of the subject and difficulty in retaining the knowledge till the clinical years when they have to apply it. Even the clinicians looked down at the subject as theoretical and factual without relevance. Now with the changing time and the curriculum, the time and space given to Anatomy has reduced to half. In an integrated curriculum Anatomy is taught related to a system or problem, so it comes in pieces. Dissection is almost out from most of the medical schools for different reasons. So again the students are suffering with inadequate knowledge of Anatomy. Or for that matter how much is adequate?

Review of Literature

Nobody can deny that Anatomy is the integral part of Medicine. Anatomy is a basic science in Medicine that gives a foundation for future learning in Medicine. As said by Prof. S. McHanwell [1] that "A satisfactory knowledge of topographical Anatomy is one of the key foundation of safe and effective practice." The knowledge of Anatomy is "indispensable for Medical physical examination, modern imaging techniques, diagnosis and many invasive and non-invasive procedures" according to Prince K [2]. Turney [3] feels that the knowledge of Anatomy is "below an acceptable level" in qualifying doctors and also there is increase in medico-legal cases because of "claims associated with anatomical error". He also feels that there is pressure on doctors to have proper anatomy

knowledge as people get information about Anatomy from media and internet.

Many teachers feel that lack of anatomy knowledge is due to change in the curriculum where time for anatomy was reduced to 50%. Teachers feel that anatomy is “slowly Squeezed” out of the medical curriculum. While some authors feel that there is no “Holistic approach “ in teaching anatomy in integrated curriculum as anatomy is taught in pieces and not region wise as in the traditional curriculum[4, 5].

Some authors feel that availability of the qualified staff in anatomy has reduced. So the Teacher-student ratio has gone up. This has affected small group teaching. Also most of the staff available in Anatomy is not medical graduates, which affects teaching in integrated curriculum where anatomy is related to clinical scenario [6].

Dissection was the integral part of Anatomy in traditional curriculum. Horst-Werner Korf [7] thinks that Dissection is “indispensable” and “Necessary” for teaching anatomy as it improves “practical manual skills required for analytical Doctoral touching“. Dissection is almost out because of many reasons such as difficulty in obtaining Cadavers, the cost and maintenance of Cadavers, some cultural issues and so on. Dr Raja [8] feels that dissection is not the only method by which students can learn anatomy and also states that dissection takes “an inordinately long time”. So most of the universities now teach anatomy on prosected specimens or Plastinated specimens or models.

A study conducted in University of Otago medical school [9] on comparison between Problems based learning (PBL) curriculum and traditional curriculum. The authors observed that students are enthusiastic and their understanding of general principals is better in PBL curriculum but the “factual knowledge of Basic sciences” is inferior in PBL curriculum students than traditional ones. However E. M. Bergman [10] in his study showed that “undergraduate students uniformly perceived deficiency in their anatomical knowledge when they start clinical training” regardless of the curriculum they undergo.

According to E. M. Burgman [11] Learning of Anatomy through “Self Directed Learning” supervised by Non-Medical facilitator is hampering the knowledge of Anatomy. He also states that the assessment methods (MCQ) used to asses Anatomy requires minimum competence. He also thinks that in the integrated curriculum “Students no longer gain the Coherent, overall picture of Anatomy of the whole body”

Challenges

There are many challenges the Anatomy is facing, such as obtaining cadavers, real Human Bones,

time spared and also number of faculties. In many areas of the world obtaining a cadaver is becoming very difficult due to many reasons such as rules, religious beliefs, low rate of donations and funds. Same is the case for the bones. These two are integral recourses in teaching Anatomy. Less number of hours in new curriculums and less number of faculties add to the situation. As Anatomy is basic science, cannot be curtailed.

Solution

Now a day’s many options are available for learning Anatomy. Virtual Anatomy is the most upcoming trend. Virtual dissection table, various virtual apps are available. They are still in a primary mode, but they will improve as the technology improves. To be more on the realistic side, we have plastinated specimens for demonstration. Even the artificial bones are coming closer to the real ones.

But my idea to keep Anatomy strong in the integrated curriculum is to give more emphasis on surgical anatomy, and imaging techniques. Surgical anatomy can be learned on virtual dissection tables, mannequins, and also by assisting operative procedures. Radiological anatomy such as X-rays, MRI, and Ultrasound will take the students more towards early clinical exposure and application. More emphasis on Surface anatomy will be helpful in clinical examination.

CONCLUSION

Nobody will challenge the integral role of Anatomy and Physiology in any medical curriculum. But with the changing trends and curriculum we should adapt to the situation. So more of applicative anatomy than the old way of didactic anatomy will be the future for our subject. We should come out of the old thinking of traditional curriculum and adapt to the changes. This will also help the students to become more clinically oriented and application based learning. And if the learning is not memory base but application based, students will also enjoy learning it. Ultimately strong base is important if it is applied efficiently.

REFERENCES

1. McHanwell S, Davies DC, Morris J, Parkin I, Whiten S, Atkinson M, Dyball R, Ockleford C, Standing S, Wilton J. A core syllabus in anatomy for medical students-Adding common sense to need to know. *European Journal of Anatomy*. 2019 Jun 21;11(S1):3-18.
2. Prince KJ, Van Mameren H, Hylkema N, Drukker J, Scherpbier AJ, Van Der Vleuten CP. Does problem-based learning lead to deficiencies in basic science knowledge? An empirical case on anatomy. *Medical education*. 2003 Jan;37(1):15-21.
3. Turney BW. Anatomy in a modern medical curriculum. *The Annals of The Royal College of Surgeons of England*. 2007 Mar;89(2):104-7.

4. Nayak S, Ramnarayan K, Somayaji N, Bairy KL. Teaching anatomy in a problem-based learning (PBL) curriculum. *Neuroanatomy*. 2006 Dec 1;5:2-3.
5. Craig S, Tait N, Boers D, McAndrew D. Review of anatomy education in Australian and New Zealand medical schools. *ANZ journal of surgery*. 2010 Apr;80(4):212-6.
6. Kaimkhani ZA, Ahmed M, Al-Fayez M, Zafar M, Javaid A. Does the existing traditional undergraduate Anatomy curriculum satisfy the senior medical students? A retrospective evaluation. *Einstein (São Paulo)*. 2009 Jul 1;7(3).
7. Korf HW, Wicht H, Snipes RL, Timmermans JP, Paulsen F, Rune G, Baumgart-Vogt E. The dissection course—necessary and indispensable for teaching anatomy to medical students. *Annals of Anatomy-Anatomischer Anzeiger*. 2008 Feb 28;190(1):16-22.
8. Bandaranayake RC. The place of anatomy in medical education: Guide supplement 41.3—viewpoint. *Medical teacher*. 2010 Jul 1;32(7):607-9.
9. Tavanaiepour D, Schwartz PL, Loten EG. Faculty opinions about a revised pre-clinical curriculum. *Medical education*. 2002 Mar 1;36(3):299-302.
10. Bergman EM, Prince KJ, Drukker J, van der Vleuten CP, Scherpbier AJ. How much anatomy is enough?. *Anatomical sciences education*. 2008 Jul;1(4):184-8.
11. Bergman EM, Van Der Vleuten CP, Scherpbier AJ. Why don't they know enough about anatomy? A narrative review. *Medical Teacher*. 2011 May 1;33(5):403-9.