Journal of Rawalpindi Medical College (JRMC); 2023; 27(1): 1-3

Original Article

Anatomy In The Undergraduate Medical Curriculum; Blending The Old And New

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Cite this Article: *Yousaf, A. . (2023). Anatomy In The Undergraduate Medical Curriculum; Blending The Old And New. Journal of Rawalpindi Medical College, 27(1). https://doi.org/10.37939/jrmc.v27i1.2271*

"The nature of the body is the beginning of medical science"-Hippocrates.

From the chosen Dhanvantri of ancient India to Imhotep of Egypt, to Huangdi of China[1], the disease was seen as a combination of the supernatural and the natural and medicine focused on healing the soul and the body. While practices have changed drastically since the establishment of the first organized medieval medical school Schola Medica Salernitana in Italy[2], what remains unchanged is the importance of the basics. If anything, modern knowledge and analysis have increased the emphasis laid on basic sciences and anatomy can be regarded as the backbone, the core of basic medical sciences.

Just as a mechanic cannot repair a car without a thorough knowledge of its form, external and internal, a doctor cannot heal the human body without a deep understanding of its structure. A fact that has been understood and utilized by the likes of Herophilus and Vesalius, fathers of anatomy[3]. The subject deals with the learning of the structure of the human body from the gross external features down to the microscopic level, at all stages of development, from the embryo to the elderly. This knowledge is essential for a physician in order to understand the functioning of the body, disease pathophysiology, and treatment modalities.[4] The specialty that benefits the most from this subject in clinical practice is surgery while the rest of the specialties rely on anatomy during physical exams, symptom interpretation, patient education, and interpretation of radiological images.[5]

If we talk specifically about the undergraduate medical curriculum, anatomy is a vital component of the basic sciences taught during the first one or two years of medical or dental school. The role these subjects play in the curriculum can be discussed in two categories: the ideal, theoretical role and the less-than-perfect, practical reality.

Despite having adopted an integrated modular system, most medical schools in Pakistan, UK, and USA still teach anatomy in the first two years at the most.[6] During these two years, a specific number of hours (from around 150 hours of total teaching time for anatomy) is allocated to gross anatomy, neuroanatomy, histology, etc. Anatomy should be taught in all 4-5 years of medical school for deeper understanding and integration, assimilated with clinical subjects. While the systems approach of teaching medical curriculum sounds fine on paper, the lack of a standardized practical application of this approach has its pitfalls, especially for complex subjects like anatomy. Study shows that students who learned anatomy via the old curriculum scored higher in the subject as compared to students taught through the modular approach. [7] Instead of taking anatomy to a higher pedestal, newer recommendations have actually decreased the time and resources spent teaching anatomy, raising concerns among students, faculty, and clinicians. [8] A sound, comprehensive anatomy curriculum needs to be created, one aligned with clinical practice, with input from anatomists, clinicians, and educationists. [9]

Added to this is the issue of the anatomy faculty. In Utopia, medical schools would have a highly trained team of anatomists, proficient in the traditional and modern methods of teaching the subject. The reality, however, is bleak: anatomists have been rapidly

dwindling in number with the passing years and the funds allocated to anatomists and their relevant research have been declining leading to lesser people choosing the subject as a profession. The medical world has become enchanted with fields like molecular genetics and cellular biology, diverting staff, resources, and graduate requirements to newer fields. Medical students rarely choose to teach the subject after their medical school years. Anatomists now form a very small community, and their training level has deteriorated.[10] Pakistan has not been spared by this pedagogical plague and Ph.D.-trained anatomists are now an almost extinct species in the country adding to the multitude of challenges already faced in anatomy teaching. [11] The problem of the 'disappearing anatomists' and its impact on medical education has been widely studied but no concrete steps have been taken to address this issue that threatens to disrupt the fabric of medical education.

If anatomy is to be seen as the backbone of the basic sciences, the subject that sets the stage and scenery for all other basic sciences subjects, then dissection can be called the building block of that backbone. A lot has changed since the seventh century when the first dissections were practiced and consequently outlawed for the next few centuries. Dissections can now be performed legally, within ethical parameters, and yield a treasure trove of knowledge regarding the human body. [12] Dissection provides solid, tangible scientific knowledge and teaches important skills like teamwork, professional development, empathy, and coming to terms with the prosaic reality of death. [13] However, due to the question of ethics and resources, dissection has been removed from many medical curricula. But has this been a wise decision? Surveys show that most medical students feel that more hours and detail should be invested in dissections and prosections. [14] Medical schools that previously removed cadaveric dissection from the curricula realized their folly and started reintroducing this age-old practice, most of them taking steps to inculcate it along the lines of vertical integration. [15]

'Obsolete' is a slur frequently directed at the didactics of anatomy. While paying homage to tradition and all that can learn from it, it is imperative that the subject gains maximum benefit from the fruits of technology and development.[16] Computer-assisted learning utilizing 2-D and 3-D imaging, virtual dissection, radiological aids, live surgical streaming,[17] and modern educational tools like Problem-Based learning needs to be integrated especially in a country like Pakistan where most students still learn anatomy swotting over bland textbooks with the occasional once-in-a-lifetime trip to a poorly equipped dissection hall. Modern educational tools can be manna in our country where medical education is already suffering due to a lack of allocated resources and trained staff. The most avant-garde medical colleges in Pakistan are still using hopelessly outdated multimedia options, resulting in increased student dissatisfaction. [18]

In conclusion, an exhaustive amount of research has been carried out to define and appreciate the role of anatomy in the undergraduate curriculum, with most clinicians agreeing to anatomy is the cornerstone of medical education.[19] Is this subject being taught in a manner fitting its vast implications in the life of doctors and patients? The answer is no. Do most students possess an adequate knowledge of anatomy? No[20]. If anything, the conditions of anatomy learning, despite the incorporation of novel technologies, are worsening in medical institutions, leading to potentially grave consequences for the future of healthcare. The stakeholders need to take urgent and applicable steps in the right direction.

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