**ORIGINAL ARTICLE**

# Winds of change: Do we need to Change with the Changing Times?

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## ABSTRACT

Anatomy remains an integral component of medical education as an introduction to the language of medicine and underpinning of the study of patho-physiology and surgery. Revision and restructuring of the core anatomy curriculum as well as teaching methodologies are under a make-over worldwide owing to time constraints, cadaver shortage and recent advances in clinical and technological fields. The changes in the curricula have sprouted disagreements surrounding teaching styles, course content, clinical relevance and time allocated to anatomical courses. The current study was designed to analyze the perspectives of undergraduate students, postgraduate trainees and the teaching faculty of various medical colleges of Lahore, Pakistan, towards clinical relevance and space allocation. Analysis of the result established that all stake-holders unanimously favored guided, continuous and clinically oriented anatomy education in all the five years of medical teaching program rather than in a strenuous block in only the first two years of medical teaching. It is a firm belief of the students that reorganization of the sub-specialties of anatomy program are mandatory so as to enable them safer and better medical practice.

**Keywords:** Anatomy teaching, clinical relevance, student's perspective

## INTRODUCTION

Anatomy as an introduction to the language of medicine and foundation to the study of patho-physiology remains an essential component of medical teaching[1]; however, in the past decade, Anatomy, the unshakeable underpinning to medical education, has become an astonishingly controversial area[2]. The time between early 1930's and late 1980's in the American Medical Education system was designated as an uncomfortable status quo[3]. During this era, there was a gradual decrease in the teaching hours, dominance of the traditional teaching methodologies, lack of clinical relevance in basic medical science teaching, and any integration with clinical instruction caused dissonance and displeasure among pre-clinical teachers and students alike[4]. Early 1990's began as an evolution with creation of Council on Medical education (CME) in 1904, from there onwards there was a slow transformation of medical curricula from conventional, subject based approach to a multi-subject, integrated approach [5,6,7]. The mono-disciplinary basic science teaching in medical education was becoming more focused on general values, and concepts [8]; and there was a gradual shift of traditional discipline-based course towards inter-disciplinary and integrated basic science and clinical courses[5]. The curricular changes have not gone un-noticed and disagreements have sprouted surrounding teaching styles, course content, clinical relevance and the time dedicated to anatomical courses[9, 10].

The reduction in undergraduate teaching and knowledge of anatomy has caused great concern not only for the under graduates but also to the postgraduate students[11]. The members of the clinical faculty have shown a great concern over the current standards of anatomical education[12, 13.] Almost 50 % of the doctors felt that they had not received adequate anatomy training to practice capably[2].

Changes in the undergraduate medical curriculum have taken place, however, without any research into the key aspects of knowledge necessary or comparing methods of teaching[11]. Repeatedly these maintain the scrupulous approach of teaching adopted by the teaching-faculty conducting the survey themselves rather than attempting a critical evaluation [2]. Constant changes in anatomy teaching being inducted presently are unwise without evaluation of how these will affect the student expectations and consequent clinical outcomes [2]. The requirement of the current era is the significance of collecting student and faculty preferences to optimize teaching methods as well as the course content being taught in the undergraduate anatomy curriculum. The current study was designed to analyze the perspectives of undergraduate students, postgraduate trainees and teaching faculty

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towards clinical relevance, restructuring and space allocation of anatomy teaching program.

## MATERIALS AND METHODS

A feedback form designed to evaluate the career aims and explicit view-points regarding basic teaching of histology, embryology & gross-anatomy teaching along with clinical relevance. This consisted of free text, binomial, and 5-point Likert scale responses. To receive feedback and further improve question items, this was first piloted among local faculty and students.

The respondents were divided into three groups, **Group A**: comprising of undergraduate medical students of various medical colleges of Lahore, **Group B**: comprising of postgraduate medical students of various medical colleges of Lahore **Group C**: comprising of teaching faculty (Basic and Clinical) of various medical colleges of Lahore.

**Statistical analysis:** Analysis of the result was undertaken using the SPSS 21. P values were calculated using chi-squared calculations with Yates correction where appropriate and Fisher's exact test where sample sizes were sufficiently small**.**

## RESULTS

In group A (undergraduate students) 56% of the students of the students think that the anatomy course curriculum covered in pre-clinical years is relevant to clinical teaching. The percentage, however, declined to 45% in postgraduate (PG) trainees regarding the clinical relevancy of the anatomy course. 70% of undergraduate and 87.27% of postgraduate students are in favor of anatomy to be made more clinically oriented; 62% teaching faculty think that anatomy curriculum stresses more on facts and figures and less on the application of the core knowledge. 87.54% of PG trainees, 32% of undergraduates and 67% of teaching faculty members were of the view that anatomy should be taught as a pre-requisite to all clinical subjects in all the five years of medical teaching.

Restructuring of anatomical sub-specialties received a mixed response from the three groups; 46% of graduate and 61.82% of postgraduate students think that the gross anatomy course content should be reorganized. 20% of the undergraduate students as compared to 5.45% of postgraduate students appeal a revisit to the histology course, and 12.73% of postgraduate students request a change in neuro-anatomy core curriculum. The responses of the three groups regarding the restructuring of course content are summarized in the table 1

## DISCUSSION

Many anatomists judge anatomy to be in a state of crisis; with traditional teaching being side-lined[11, 14]. Taking History, Radiology, patho-physiology and surgery all necessitate the core knowledge of how the body is made up at cellular, tissue and organ levels; looking up anatomical facts and pictures just before a procedure is not a substitute to comprehensive understanding of the subject[15]. Despite the lack of formal training beyond foundation years of medical curriculum, it is generally believed by professional anatomists[9] and students alike that anatomy is critically important to clinical medicine. In USA medical residents, who have finished their MD degrees, feel that anatomy is important to them clinically[13] and nearly half the doctors surveyed by Fitzgerald in 2008, felt that they had not received sufficient anatomy instruction[2]. The thoughts were precipitated by students just entering the medical schools that anatomy is important for their training[16] and by professional anatomists[9]. Anatomy as a discipline is rapidly declining, as few new anatomists are being trained who understand the changing times. This decline, in combination with an increased emphasis on early clinical experience and decreased time in medical school for basic sciences is forcing a reconsideration of the way in which anatomy is being taught[1]. Clinical problems[17] are frequently being included in the early years of medical curricula; it is far less common for the basic sciences to be taught in later years [17]. These calls for a re-structuring and revisiting our curriculum and redesigning it to fit the needs of the modern student; 46% of graduate and 61.82% of postgraduate students in the current study, felt that the gross anatomy course content should be reorganized. 20% of the undergraduate students as compared to 5.45% of postgraduate students' plea a revisit to the histology course, and 12.73% of postgraduate students request a change in neuro-anatomy core curriculum.

Education in context implies using core subject knowledge to solve clinical problems: unless students dynamically relate to concepts they are acquiring to appreciate and explicate patient's problems, the information will remain static and will eventually become extinct [18]. Consolidation and revisit to the core anatomy should be integrated in the later years of the medical course program[11,19,20]. The data collected by AMSA stated that 79.8% students were of the view that anatomy should be taught continually through the medical course rather than in concerted blocks[21].

The reduction in undergraduate teaching and knowledge of anatomy has caused great concern not only for the clinicians but also for the under and

postgraduate students especially in surgery; tales of surgeons wearing black arm-bands to signify the death of anatomy have been promulgated in history[11]. Students feel that they are under-cooked in anatomy; they voiced their stance in our questionnaire that strengthens the beliefs of the clinicians, with 70% of undergraduates and 87.27% of PG trainees stating that the anatomy teaching being done in the pre-clinical years should focus on application of knowledge in addition to stressing on core principles and mechanisms. Consultants frequently blame the basic teachers for cramming facts & details in the course work rather than the knowledge pertinent to medical practice [20,22]. The view is amplified by surgeons who believe that only 5% of junior doctors possess a satisfactory knowledge of anatomy, and have significantly less confidence in the adequacy of anatomical knowledge of students in clinical rotation[21]. This is augmented by our findings according to which 62% teaching faculty think that anatomy curriculum stresses more on facts and figures and less on the application of the core knowledge. The sole purpose of undergraduate program/ curricula is to coach the medical graduates to become better clinicians and not an anatomist[20,23,24].

## CONCLUSION

It should be clearly established that students, teaching faculty and even more so the clinicians support guided, continuous and integrated anatomy education. Anatomy cannot be seen as a discrete pre-clinical subject; clinically oriented anatomy can even be incorporated into clinical teaching programs to consolidate anatomical knowledge after the acquisition of a clinical perspective.

## REFERENCES


1. Shaffer K. 2004. Teaching Anatomy in the digital world. N Engl J Med 13: 1279-81.
2. Fitzgerald JEF, White MJ, Tang SW, Maxwell-Armstrong, James DK 2008. Are we teaching sufficient anatomy at medical school? The opinions of newly qualified doctors. Clin Anat 21: 718-724.
3. Pawlina W. 2009. Basic Sciences in Medical Education: Why? How? When? Where? Med Teach 31: 787-789.
4. McLaren DS. 1980. What to do about basic medical science. Br Med J 281: 171-172.
5. Drake RL. 1998. Anatomy education in changing medical curriculum. Anat Rec 253:28-31.
6. Schmidt H. 1998. Integrating the teaching of basic sciences, clinical biopsychosocial issues. Acad Med 73: S21-S31.
7. Ling Y, Swanson DB, Holtzman K, Bucak SD. 2008. Retention of basic science information by senior medical students. Acad Med 83: S82-S85.
8. Bergman EM, Verheijen IWH, Scherpbier AJJA, Vleuten CPMVD, Bruin ABHD. 2014. Influences on Anatomical knowledge: the complete arguments. Clin Anat 27: 296-303.
9. Patel Km, Moxham BJ. 2006. Attitudes of professional anatomists to curricular change. Clin Anat 19:132-141.
10. Moxham BJ, Plaisant O. 2007. Perception of medical students towards the clinical relevance of anatomy. Clin Anat 20: 560-564.
11. Older J. 2004. Anatomy: a must for teaching the next generation. Surgeon J R Coll Surg Edinb Ire 2: 79-90.
12. Waterston SW, Stewart IJ. 2005. Survey of clinicians attitudes to the anatomical teaching and knowledge of medical students. Clin Anat 18; 380-384.
13. Cottam WW. 1999. Adequacy of medical school gross anatomy education as perceived by certain postgraduate residency programs and anatomy course directors. Clin Anat 12: 55-65.
14. Raftery AT. 2006. Anatomy teaching in UK. Surgery 25:1-2.
15. Auer RN, McDonald DS. 2003. Anatomy is still essential. Can Med Assoc J 168: 10-14.
16. Hennon H, Moxham BJ. 2004. How much anatomy does the layperson know? B.Sc. Thesis, Cardiff School of Biosciences, Cardiff University.
17. McCrorie P. 2000. The place of basic sciences in medical curricula. Med Educ 34: 594-595.
18. Norman G. 2007. How basic is basic science? Adv Health Sci Educ 12: 401-403.
19. Beaty HN. 1990. Changes in medical education should not ignore the basic sciences. Acad Med 65: 675-676.
20. Whitcomb ME. 2006 The teaching of basic sciences in medical schools. Acad Med 81: 413-414.
21. Mitchell R, Batty L. 2009. Undergraduate perspectives on the teaching and learning of anatomy. ANZ J Surg 79: 118-121.
22. Pabst R. 1994. Teaching Gross Anatomy: An important topic for anatomical congresses and journals? Surg Radiol Anat 16: 1-2.
23. Fraser RC. 1991. Undergraduate medical education: present state and future needs. Brit Med J 303: 41-43.
24. Drake RL, McBride JM, Lachman N, Pawlina W. 2009. Medical education in the anatomical sciences: The winds of change continue to blow. Anat Sci Educ 2: 253-259.