

Anatomy and Surgery: A Love-Hate Relationship

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Haadia Ali¹, Sophia Shahid², Javeria Noor³, Bahadur Baloch⁴

Final year MBBS Student, Lahore Medical & Dental College, Lahore ¹

3rd year MBBS Student, Fatima Jinnah Medical University, Lahore ²

Postgraduate Trainee, Department of Anatomy, University of Health Sciences ³

Assistant Professor, Department of Anatomy, Fatima Memorial Medical & Dental College, Lahore ⁴

ABSTRACT

Background: Anatomy is still taught in medical schools as a basis for studying pathophysiology and surgery. Lack of integration of basic and clinical disciplines, reduced teaching hours and poor teaching methodologies has a significant effect on anatomical knowledge and medical education standards.

Objective: To evaluate the perspectives of undergraduate students of MBBS, fresh MBBS graduates, teaching faculty of anatomy and consultants towards importance and reconstruction of anatomy curriculum

Materials & Methods: A total of 600 subjects participated in this cross-sectional study. A feedback form was used to collect data regarding time allocation, clinical relevance, integration, and clear viewpoints in basic histology, embryology, and gross anatomy. The form included free text, binomial, and 5-point Likert scale replies.

Results: Analysis of the results revealed that all stakeholders universally preferred integrated anatomy teaching throughout the academic years of medical school instead of demanding block during the early two years. According to the study, students experienced inadequacies in their anatomical knowledge when they started their clinical training.

Conclusion: This study contributes further to the ongoing discussions in anatomical sciences education by revealing that new doctors, regardless of their career goals, believe that anatomical instruction should be prioritized.

Key Words: Anatomy, teaching methodologies, clinical relevance

Corresponding Author:

Haadia Ali

Final year MBBS

Lahore Medical & Dental College, Lahore

Email address: alihaadia@gmail.com

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INTRODUCTION

Anatomy, the unwavering cornerstone of medical teaching for eons of years, has become an interesting debatable domain of medical education. The disagreements have surfaced encompassing the teaching methodologies, content, and the allocated time to anatomy subspecialties particularly gross or topographical anatomy.^{1,2}

A majority of Anatomical faculty members together with clinical consultants, declared anatomy suffering a catastrophe, with traditional teaching disregarded.³ Some of them emphasized the end of cadaveric-based teaching and adopting new, often unproven, methods.⁴ The newly

adopted teaching methodologies in addition to the traditional teaching styles include small group discussions, large group format, problem-based learning, case-based learning, dissection, prosection, information technology, living anatomy, and models.⁵ Hitherto, published evidence supporting these teaching methods based on outcomes is scanty; much depends on perceptions and the learning experience and course feedback from students. Often these support the specific teaching style employed by the author rather than attempting a critical appraisal.⁶

Many junior doctors believe they did not receive enough anatomy training at university, and their clinical anatomy knowledge is inconsistent. They consider that knowledge of anatomy is fundamental for better clinical practice. Furthermore, the majority of surgical program directors in the United Kingdom believed that new residents' anatomy knowledge was either missing, 67% were in need of revision of the basic knowledge and 52% had less anatomical knowledge than those enrolled ten years ago.⁷ Many avoidable fatalities in the United States each year can be ascribed to anatomical incompetence.⁸ A survey was done to gather clinicians' thoughts on the matter, and the results showed that the majority of physicians believe anatomy is not sufficiently taught, and as a result, students' understanding falls below the standard.⁹

The vexing topic is why students do not have sufficient anatomical knowledge to practice in an effective way. The answers range from less teaching hours to newly designed teaching approaches that do not require compulsory dissection and light microscopy sessions, as well as a focus on anatomy in the foundation years. There has been a reduction both in the gross anatomy teaching hours and its context globally which has led to a serious review of the way in which anatomy is being taught.^{8,10}

The present study was aimed to evaluate the perspectives of undergraduate medical students,

fresh graduates, teaching faculty of anatomy and consultants towards the importance and reconstruction of anatomy teaching program.

MATERIALS AND METHODS

It was a cross-sectional study conducted after approval from the Institutional Review Board Shalamar Medical and Dental College, Lahore (SMDC/IRB/11-12/141). Informed consent was taken from the participants. A total of 600 undergraduate MBBS students, fresh graduates of MBBS, basic sciences teaching faculty and consultants (surgeons, ENT surgeons and gynecologists) of different medical colleges were included in this study after taking consent. The students of BDS, allied health sciences and nursing were excluded from the study.

A simple convenient sampling technique was used. Data was collected on a questionnaire designed for the study. A validated questionnaire was shared with the participants through Google Forms. The questionnaire included the questions related to time allocation, clinical relevance, integration, and explicit viewpoints regarding anatomy teaching during undergraduate years. The study was completed in one-year duration. The study participants were categorized into four groups:

Group A: It included 100 undergraduate MBBS students of various private and government medical colleges of Lahore.

Group B: It included 100 fresh graduates of various private and government medical colleges of Lahore.

Group C: It included 100 basic sciences teaching faculty of various medical colleges of Lahore.

Group D: It included 300 consultants of various medical colleges of Lahore. It includes general surgeons, ENT surgeons and gynecologists.

Statistical Analysis

Statistical analysis was done at SPSS version 24. Frequencies and percentages were calculated.

RESULTS

Time Allocation

Majority of the non-anatomy faculty feel that an increase in time allocated to various anatomical sub-specialties would enhance the learning. A consensus was developed regarding an increase in time allocation to gross, developmental and neuroanatomy, 56.36 % of postgraduate trainees enforce a time increase in neuroanatomy and developmental anatomy, this was precipitated by 50% of the surgical consultants who feel that both neuroanatomy and developmental anatomy require more teaching hours. However, all the groups were of the opinion that time allocated to microscopic anatomy was adequate and 30.77 % anatomy faculty felt that the time should be decreased Fig.1.

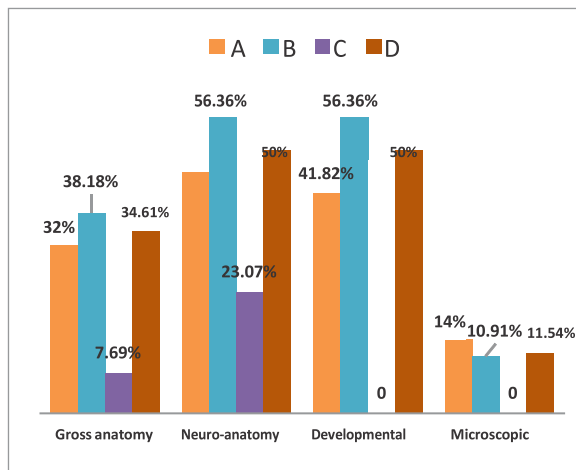


Fig 1: Perception of various groups regarding the increase in the time allocated to teaching of various sub-specialties of anatomy

Course content

The course content and transfer of knowledge to the students in the medical school received a mixed response from all the stakeholders. 48% of students and more than 50% of the teaching faculty including the anatomists believe that the content covered in the preclinical years emphasizes more on a factual basis and does not correlate the structure with function.

However, it was a belief shared by more than 55% of all the subjects that clinical or applied aspects of the major topics are correlated clinically. 63% of undergraduate and 50% of postgraduate students firmly endorse that the anatomy content taught in preclinical years is helpful in preparation for the postgraduate examinations; this belief was, however, not shared by the surgeons (26.92%).

Surgeons negated the view that the anatomy taught in preclinical years is sufficient for postgraduate exam preparation and they still believe that anatomy should be re-enforced in all academic years of medical teaching. The perceptions & view of students & faculty regarding the course content are summarized in Table 1.

Integration

Sixty percentage of the undergraduates, 80% of fresh graduates, 50 % of consultants and 90% of anatomists believe that vertical integration is the call of the day and should not be overlooked in any circumstances.

Deficiencies in the Pre-clinical anatomy Teaching

The stake holders, students, and faculty alike, voiced their concerns over the anatomy teaching program, they believe that if the need of the clinical years is to be met then certain changes are mandatory. 42.31 % surgical faculty believe that more stress should be given to the application of knowledge, 40% of postgraduate trainees are of the view that we should abandon traditional teaching methods and perhaps strengthen it with augmented teaching aid like use of computer-generated images or case-based learning/problem-based learning.

It is a belief shared by all that the anatomy course is too lengthy to be augmented in only early two years of the medical teaching program. The views of all the groups concerning the major deficiencies identified in the anatomy teaching program are summarized in Figure 2.

Table 1: Views of all the Stakeholders Regarding Course Content of Anatomy in the Pre-clinical Years

	Group A n=100	Group B n=100	Group C n=100	Group D n=300
Course stresses on facts than the correlation with its functions	48%	50.91%	67%	50%
Major topics are correlated clinically	58%	60%	6.92%	57.69%
Helps in examination of the patient	23%	30%	16%	11.54%
Formulating differential diagnosis	2%	15%	20%	24%
Understanding progress and complications of diseases	12%	3%	14%	26%
Outlining management plan	0%	2%	0%	11.54%
Postgraduate exam preparation	63%	50%	50%	26.92%

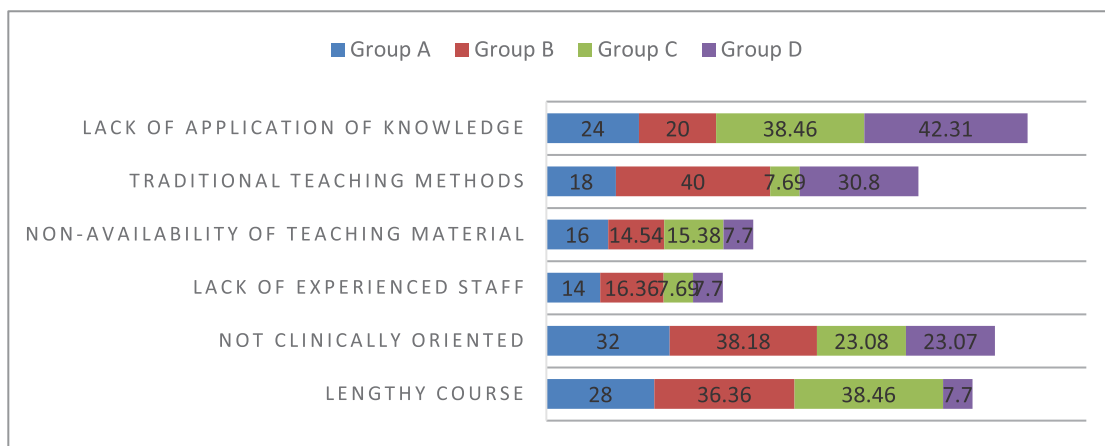


Fig 2: Opinions regarding major deficiencies identified in preclinical anatomy teaching program

DISCUSSION

Anatomy teaching is the foundation of medical education. Many anatomists and surgeons agree that medical graduates' anatomical understanding is deficient for today's clinical environment, with some even calling the condition "lamentable".¹¹ In support of these concerns, evidence suggests that students believe they are not prepared to apply anatomical knowledge in the clinic after they acquire their medical licence.¹² Despite the fact that much of this current discussion is based on anecdotal information, it is nevertheless believed that anatomical knowledge among recently graduated medical students is declining.¹³ Many authors emphasized the need of clinically focused vertical integration of anatomical instruction across all years of undergraduate training, safeguarding the frequent

exposure of medical students to anatomy.¹⁴ According to recent surveys, doctors feel that they forget much basic anatomical information through the years and need some revision. Furthermore, the rapid developments in minimally invasive surgery have changed the way anatomy needs to be understood.¹⁵

Should laparoscopy in human cadavers be used to supplement standard dissection procedures in undergraduate anatomy classes? Should it be an elective training tool for students interested in pursuing a surgical career? Would the financial costs outweigh the educational advantages? Various difficulties must be well-thought-out in this regard, and it is critical to involve medical students' ideas in the development of a course to ensure that they believe their anatomy instruction

is adequate to practice professionally as trained doctors.¹⁶

In the fast-paced, ever-changing world of medicine, the input of both students and professors is critical in developing an optimal anatomy curriculum. Learning by dissecting human cadavers has been an important element of medical school for generations, and it should continue to be a cornerstone because of its instructional value.¹⁷

Recently it is observed students' preservation of knowledge is better when they actively participate in their learning, and curriculum integration appears to be a crucial element of this process, according to data from the fields of psychology and education. The amalgamation of basic sciences and clinical medicine is frequently justified by the argument that it is the proper way for a physician to think while in contact with a patient.^{18,19,20}

The limitation of the study was that data was collected from few medical colleges of Lahore. Further studies should be conducted on large number of participants from all the medical colleges of Lahore.

CONCLUSION

The study emphasized the need of thorough anatomical knowledge in order to become a better physician and surgeon. The current doctors, regardless of their career goals, believe that anatomical instruction should be prioritized. Much thought is to be given to align anatomical teaching with reduced teaching hours to adapt to the need of producing better medical professionals.

Conflict of interest:

All authors declared no conflicts of interest.

Contributors:

HA: Manuscript writing, Data Collection and contributed to the writing of literature review

SS: Primary drafting, Data Collection, contributed to the writing of literature review

JN: Discussion, Study Design and proofread
BB: Statistical Analysis, interpreted data revised and approved the article.

All authors approved the final version and signed the agreement to be accountable for all aspects of work.

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