Original article

ASSESSMENT OF ANATOMY CURRICULUM FOR FUTURE CLINICIANS AT COLLEGE OF MEDICINE, KING SAUD UNIVERSITY, SAUDI ARABIA

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ABSTRACT

Objective: Curriculum development in medical education should be a methodical and scholarly, yet practical process that addresses the needs of future clinicians, trainees in surgery in general and Anatomy in particular. Continuous developments in undergraduate preclinical medical education in the Kingdom of Saudi Arabia have produced advancement in the content and delivery of basic medical sciences including human anatomy. Keeping in view the significance of curriculum development of Anatomy, the aim of this study was to find out the gravity of Anatomy teaching and students' feedback at the end of their preclinical course about the content of anatomy and its relation with understanding the function of the body both in health and diseases.

Methodology: This study was conducted in the Department of Anatomy, College of Medicine, King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia during the period 2004-2005. A detailed questionnaire was distributed to the medical students at the end of their anatomy course and they were asked to tick the appropriate box to give their opinion regarding course of anatomy taught to them region wise.

Results: The present study result shows that limbs and extremities (51%); histology (49%) and embryology (45%) were taught in too much detail. However, thorax (76%); abdomen (71%); headache & neck (63%); brain (57%) and pelvis and perineum (54%) were taught adequately. Furthermore, vertebral column (45%); applied anatomy (41%) and skin and connective tissue (28%) were taught less adequately.

Conclusion: It is concluded that 50% students felt that the contents of anatomy were taught adequately. However, 28(27.90%) were taught too long and 21(21.54%) students replied that they were less adequately taught. Keeping in view of the above facts, the results have a message that King Saud University should start practice, innovate the anatomy curriculum regularly to produce better future clinicians who can compete at international levels.

KEY WORDS: Anatomy, Curriculum, Medical Education.

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INTRODUCTION

Curriculum development in medical education is a scholarly process. It integrates a content area with educational theory and methodology and evaluates its impact. When curriculum development follows a systematic approach, it may fulfill criteria for scholarship and provides high-quality evidence of the impact of a faculty member's educational efforts.[1] Generalist faculty because of their unique role in both the delivery of health care and educational missions in academic medical centers, is

often recruited to medical education reform efforts and curriculum development. Faculties are usually content experts, but may not be familiar with medical education organizations and educational resources for their work in basic medical sciences.[2]

More recently, the need is felt to design the anatomy curriculum to fulfill the requirements of rapidly advancing Basic Medical Sciences.[3,4] Many changes have been made to modify the undergraduate anatomy curriculum and teaching methods. A decade ago, the number of avoidable deaths per year in the United States was estimated to be 80,000.[5] Some of these deaths were attributed to anatomic incompetence of the residents. This is supported by a recent report[6] which demonstrated the inadequate anatomy knowledge of two third of the resident doctors. Various pre-clinical departments of medical schools periodically revise the curricula, critically examine the teaching methods and make plans for updating the ways and means for enhancement of the quality of teaching.[7] With the expansion of biomedical knowledge, the way of treatment changes, thus physicians in general and surgeons in particular must timely update their knowledge and skills.[8-11] General Medical Council (GMC), the statutory regulatory body in the UK has advised that anatomy, physiology, and biochemistry should form the principal components of the syllabus in the preclinical years, but undue emphasis on details was not desirable.[12] The teaching of anatomy in Saudi Arabian Medical Schools today is an issue that has attracted attention and frequently stimulates much discussion.

The content of anatomy required in the undergraduate curriculum is lopsided and the best way to impart this knowledge are issues that excite many medical educationists. Keeping in view all these facts of anatomy course curriculum, the purpose of this study was to determine the adequacy of medical students' preparation in the gross anatomy upon their entry to clinical years to investigate the contribution of academic departments for undergraduate teaching and their plans for curriculum development.

METHODS

This study was conducted in the Department of Anatomy, College of Medicine, King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia during the period 2004-2005.

In this study a comprehensive questionnaire in English as well as in Arabic was distributed to the students of College of Medicine to know the students perception about content validity of various sub disciplines of Anatomy and the time allocated to each discipline in the existing curriculum of Anatomy at College of Medicine, King Saud University, Riyadh. In this study two hundred and fifty second year students were recruited, however 88% responded to the questionnaire, whereas 12% did not show any interest. Therefore the present study was restricted to two hundred and nineteen students, out of them 146 were males and 73 females.

A questionnaire was distributed to the medical students of King Saud University, Riyadh, Saudi Arabia at the end of their two years preclinical course during session 2004. The questionnaire was designed in such a way that students can express their point of view regarding content of anatomy taught to them during their pre-clinical tenure. They were asked to mark the appropriate box to determine that the regional anatomy taught to them was adequate or short or too long for them. For better understanding we divided four disciplines of anatomy into different regions (Histology, Neuroanatomy, Morphology and Embryology) and asked the students opinion regarding the content of anatomy taught to them.

Statistical Analysis: The analysis was primarily descriptive in nature and was performed using SPSS version 10.0 program for Windows. Comparison of data was based on the mean percentage to observe the relationship between different teaching units of Anatomy. In the present study, the numbers of male and female participants were not equal, therefore, the comparison of results between gender groups was not performed.

RESULTS

This was a preliminary study to know the students perception about content validity of various sub disciplines of Anatomy and the time allocated to each discipline in the existing curriculum of Anatomy at College of Medicine, King Saud University, Riyadh.

Table-I demonstrates the regional anatomy of head and neck, neuroanatomy, skin, lymphoreticular tissue, connective tissue, thorax, abdomen, pelvis and perineum. The content validity was adequate / satisfactory to more than 50% students. About 50% students considered the content of Histology, Limbs and extremities too long as shown in Fig-1, for under-graduate medical students being taught in the existing curriculum of King Saud University.

Similarly, the applied anatomy and vertebral column were two important sections of our curricula, considered insufficient by 41% and 45% students respectively for undergraduate medical training. Embryology was the only discipline, where the opinion was widely scattered among our students. 45% perceive embryology content too long, 40% thought adequate and 15% too short. We also calculated the total number of hours granted to each of these regions (Table-I) in order to compare our data with the time allotted for these regions, so that we can consider the proper distribution of time for future curriculum designing.

DISCUSSION

In most medical schools around the world the amount and time allocated for teaching anatomy has been significantly reduced.[13] A rapid expansion of new scientific information and the introduction of new technology in operative and diagnostic medicine have marked the last several decades.[4] Many institutions are adopting newer techniques to educate students

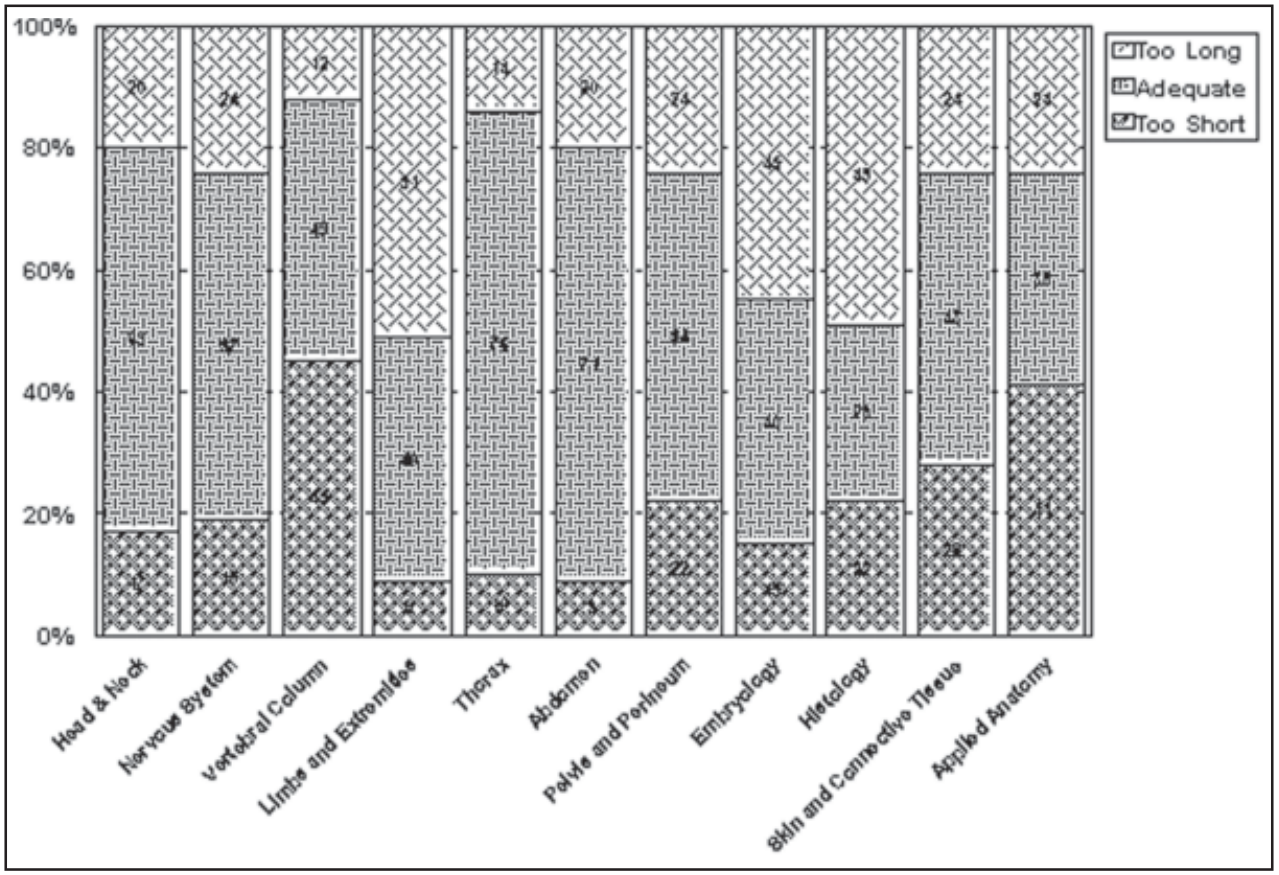

Fig-1: Response of pre-clinical medical student of King Saud University to anatomy curriculum.

in the first two years of medical school and emphasis is given on continuous improvement and development of curricula in anatomy.[6]

In this study, our aim was to get the students perception for designing a curriculum of anatomy that satisfies the students at the end of their course and to make them more confident at their arrival in the clinical practice. Students were asked to comment on adequacy of anatomy teaching in 11 regions taught to them during the first two years of medical course. It was observed that six regions out of eleven (Table-I) were those where more than 60% of the students were satisfied with the content of the course taught to them. Five regions (Table-I) were those for which more than 50% of students expressed dissatisfaction about the content as it was taught to them either too short or too long. In aggregate, it was observed that 40-50% of students were not satisfied with the content of anatomy taught to them.

When the students' opinion was critically compared with the time allotted for each region, we come to the conclusion that students' opinion is realistic and we need to revise the curriculum and proper distribution of time for each region is required. In our data, vertebral column and back is the region where least time is allocated i.e. three hours and that is why 45% of the students were of the opinion that the knowledge provided to them for this region is too short. Limbs and extremities are allocated 78 hours, therefore, 51% of the students appear disagree and marked that the amount of anatomy taught to them is too long. Here we suggest that some of the hours from limbs and extremities be reduced and should be allocated to vertebral column and back region.

About histology, not surprisingly, 49% students responded too long for them because 70 hours are granted to this section of the subject. According to our data regarding embryology 45% of students think that this portion of anatomy taught to them is too long, even though the time allotted for embryology is only 28 hours. So the understandable reason for why students think this region as too long for them is, because the teachers want to teach more and more topics in comparatively less allocated hours. Therefore it becomes difficult for them to digest more material in less period of time. To justify this problem our data suggest that some of the hours from histology be deducted and granted to embryology. Our data also stresses the need to reevaluate the approaches to teaching the basic and clinical sciences. Unfortunately, during the last decade a number of medical schools have experienced a decrease in the number of hours allotted to gross anatomy. This, in turn, has served to increase the difficulties of providing students with truly effective anatomical instruction.[14] There should be substantial variation in the level, content and depth of anatomical curricula.[15]

The curriculum content of the undergraduate health professional courses has a definite influence on number of outcomes, however it is largely ignored and there is need to develop research agenda in this area.[16] The content of

Table-I: Response of pre-clinical medical students of King Saud University to Anatomy Curriculum.

Region	*Too Short%*	*Adequate%*	*Too Long%*	*Total Time Granted in Hrs.*
Head & Neck	17	63	20	53
Nervous System	19	57	24	42
Vertebral Column	45	43	12	03
Limbs & Extremities	9	40	51	78
Thorax	10	76	14	34
Abdomen	9	71	20	42
Pelvis & Perineum	22	54	24	31
Embryology	15	40	45	28
Histology	22	29	49	79
Skin & Connective Tissue	28	48	24	09
Applied Anatomy	41	35	24	15

curriculum should be based on core clinical problems that students should be able to manage upon graduation. The content within a discipline should cater for those core clinical problems faced by the community. Students should be trained to meet future needs of community in specific and population at large. Are we really training our medical students to meet the future service needs? The future graduates' competency can be reflected only by ensuring and evaluating the courses, curricula, methods of teaching & learning and realization of the objectives.

CONCLUSION

It is concluded that, 50.54% second year students felt that the contents of anatomy were taught adequately. However, (27.90%) were taught too long and (21.54%) students replied that they were less adequately taught. Keeping in view all above facts, the results have a message that King Saud University should timely innovate the anatomy curriculum to produce better future clinicians who can compete the international levels.

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