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RELEVANCE OF ANATOMY COURSES IN CLINICAL YEARS OF MEDICAL CURRICULUM: A DESCRIPTIVE STUDY AMONG INTERNS OF A MEDICAL COLLEGE OF WEST BENGAL

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Abstract

Introduction: Human Anatomy deals with the structure of human body and Anatomy is the basic and important subject in medical curricula. In recent days the traditional way of teaching Anatomy is being replaced by competency based teaching. Preclinical subjects and training form an important foundation for the patient examination and clinical reasoning skills.

Aims & Objectives: To assess the application of anatomy knowledge and competencies of Anatomy subject in clinical practice among the interns of a medical college.

Materials and Methods: The present study was a descriptive, observation type of study with cross sectional design among the interns who were being posted for at least 6 months tenure from their starting in the wards of Medicine and Surgery or Gynaecology & Obstetrics.

Results: The mean age of the interns were 24.14 yrs with SD of 0.968. General Medicine (35.1%) and Surgery (27.7%) were preferred disciplines for higher studies among the interns. Surface anatomy (79.8%), Dissection classes (76.6%) were useful during their first year days. Regarding systemic anatomy, respiratory (77.7%), genitourinary (75.5%) and CVS(72.3%) are useful. During their posting in surgery (89.4%) and General Medicine (74.5%) interns agreed to the usefulness of anatomy. Imaging needed the knowledge of anatomy during patient care. Organ location, trauma care, delivery and minor procedures were the areas where anatomy knowledge is necessary.

Conclusions and Recommendation: A fully integrated undergraduate anatomy curriculum with incorporation of clinical applications across all aspects of learning is the need of the hour in medical education which will help the young doctors to recollect the theoretical knowledge in day to day clinical practice.

Keywords: Relevance, Perception, Anatomy, Internship, Competencies

Introduction:

Human Anatomy deals with the structure of human body.Anatomy is the basic and important subject in medical curricula. In recent days the traditional way of teaching Anatomy is being replaced by competency based teaching. The theoretical concepts and their real-world application can result in underdeveloped clinical reasoning skills, poor spatial comprehension, and an inability to adequately meet the challenges of clinical practice[1].

Internship is the final stage of medical education for a medical student. During their Medical Curriculum Anatomy knowledge was taught in the first year and vertically integrated with other subjects including clinical subjects. Interns are trained to learn clinical skills, perform some clinical procedures, provide patient management and use their judgement in clinical decision making processes[2].Common ward procedures in Surgery, Medicine, Gynaecology & Obstetrics and Paediatric wards need basic anatomy knowledge to perform both in bedside and in Emergency Room.

Every anatomist should distil the existing curriculum and incorporate newer innovative technologies, feasible to corresponding settings which may be useful. In modern era, anatomy education should focus more closely on a subset of the most clinically relevant topics like gross anatomy and medical imaging rather than core anatomy.

Many published articles reflect the lack of integration of basic sciences or traditional curriculum with clinical exposure among the medical students during their courses which give rise to incompetent interns. Preclinical subjects and training form an important foundation for the patient examination and clinical reasoning skills[3].

Cross-sectional anatomy of the body at important clinical levels is the basis of the interpretation of computed tomography (CT), magnetic resonance (MR), and ultrasound (US) images. Surface anatomy along with functional anatomy (movements, actions, and reflexes), is the basis for conducting a physical examination of the patient as well as performing clinical procedures, including medical emergencies[4]. The reconstruction of the human body occurs with the clinical application of this knowledge of anatomy[5]. The term “anatomy competence” was defined by Schoeman and Chandratilake as the possession of appropriate anatomy knowledge, and practical and clinical application of this knowledge[6].

The present study is aimed to assess how anatomy is clinically important and how much should be taught as part of medical curriculum. It was also explored regarding the relevance of anatomy in each point of clinical decision making in their respective fields among clinicians (both surgical and nonsurgical). Evaluation of the curriculum by students and educators is a very important and logical step which is recommended as part of the teaching learning process[7].

Objectives:

1. To analyse the application of Anatomy knowledge in common ward procedures among interns of a medical college of West Bengal.
2. To find out the competencies of Anatomy curriculum relevant to clinical practice.

Material and Methods:

The present study was a descriptive, observation type of study with cross sectional design among the interns who were being posted for at least 6 months tenure from their starting in the wards of Medicine and Surgery. After getting the informed consent, a pretested, predesigned schedule was administered among them to collect the data for a period of three months. Confidentiality and anonymity of the interns was maintained. Collected data was cleaned and collated and analysis of the data was done by using IBM statistical package for social sciences version 20 (SPSS 20).

Ethical clearance: Ethical approval was received from the Institutional Ethics Committee of North Bengal Medical College and Hospital

Results:

Analysis was done among 94 interns who had completed their posting in major subjects. The following findings are given in tables and diagrams. The mean age of the interns were 24.14 yrs with SD of 0.968. Gender distribution: Males 56 (59.6%) and Females 38 (40.4%) They have pursued the medical stream by their own will 83(88.3%), and not by own wish 11 (11.7%)

Figure 1 represents that 35.1% of interns preferred General Medicine as their specialty discipline for higher studies followed by General Surgery and Gynecology &Obstetrics. According to them they disliked Microbiology (19.1%) and Community Medicine(17%) most as their higher studies as shown in Figure 2.

Fig 3 shows 89.4% of interns felt knowledge of anatomy was useful in clinical wards like Gynecology and General Surgery but only 33% of them thought it useful in psychiatry wards and 21.2% in Community Medicine posting.

Table 1 depicts that 79.8% of interns opined that surface anatomy is necessary for clinical procedures and 78.7% thought mannequins are necessary as learning intervention. 31.9% of junior doctors neither agreed nor disagreed about refresher classes should be there in each semester and clinical posting or not. Disagreement was there about the use of gross anatomy (9.6%), radiology(10.6%) or early clinical exposure(10.6%) or Gastro-intestinal anatomy in clinical procedures(10.6%).

In Table 2 , 74.5% of interns opined that while examining a patient knowledge of anatomy is needed most in Imaging and diagnostic aids and 72.3% while arriving at a diagnosis.

Table 3 shows use of different competencies of anatomy while dealing with patients in different ward postings during their internship. The application of gross anatomy, surgical steps, catheterization and many clinical procedures were indispensable.

Discussion:

The integration of anatomy with other courses, such as pathology, radiology, and clinical medicine, surgery has made the subject more interesting and clinically relevant and incorporation of newer pedagogical strategies. The always changing array of newer diagnostic methodologies, including the innovations like computed tomography, magnetic resonance imaging scans require a specific level of anatomical knowledge[8].

As medical education is always evolving, the competencies of Anatomy should also be redefined and re-operationalized from time to time[9,10]. In a study by Sbayeh et al, clinicians were equivocal about the role of anatomy education in enabling them to function effectively in a clinical setting[11,12].The role of dissection classes is indispensable in curriculum which helps in clinical practice in later days. It is also found from several studies that knowledge of different procedures and newer diagnostic techniques is necessary along with gross antomy[13].

A study by Ray A in Kolkata reviewed that early clinical exposure can be best studied by attending clinical and surgical wards rather than classroom teaching[14]. 88.24% of the participants stated that anatomy education should be integrated before starting the clinical internships in the surgical departments in a study done in Turkey among medical students[15]. Anatomy is necessary for performing emergency procedures, evaluating radiological images, performing a physical examination of a patient, and referring the patient to another doctor[15]. The clinical significance of the anatomical structures should be taught rather than morphological details in the first years of undergraduate education[16].

Newer educational approaches such as problem-based learning should be aimed to integrate clinical sciences with basic sciences[17] and it should be done early in medical education[18].

The circulatory system and the locomotor system was most remembered in a study by M Akcaalan[19] but our study found genito-urinary anatomy is most needed.Surgery discipline was most favored subject for higher studies[20] as found in the present research. The application of anatomical

knowledge in diagnosing and treating patients helps reinforce learning suggested by Hołda et al[21]. and Antipova et al[22] .Frequent and repetitive application helps in retention of anatomy knowledge and apply this during their internship. In early clinical years, the goal is to assess the ability to apply that knowledge to clinical problem-solving and clinical reasoning[23,24]

Conclusions and recommendation:

Undergraduate medical education has been changed drastically in recent days by transformation of hours of theoretical classes to early clinical exposure and problem based learning. Inclusion of clinical content in each part of anatomical education has boosted the learning among the students. A fully integrated undergraduate anatomy curriculum with incorporation of clinical applications across all aspects of learning is the need of the hour in medical education which will help the young doctors to recollect the theoretical knowledge in day to day clinical practice.

Limitations: The study was based on whatever the interns said and hence there is a chance of social desirability bias.

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Results:

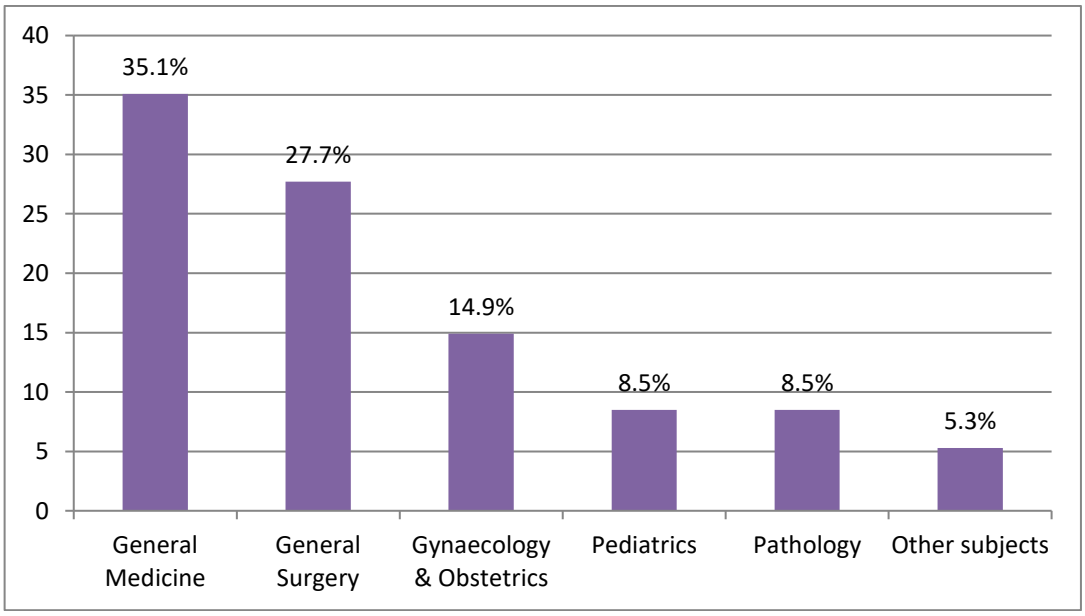

Fig 1: Bar diagram showing preference for higher studies among interns

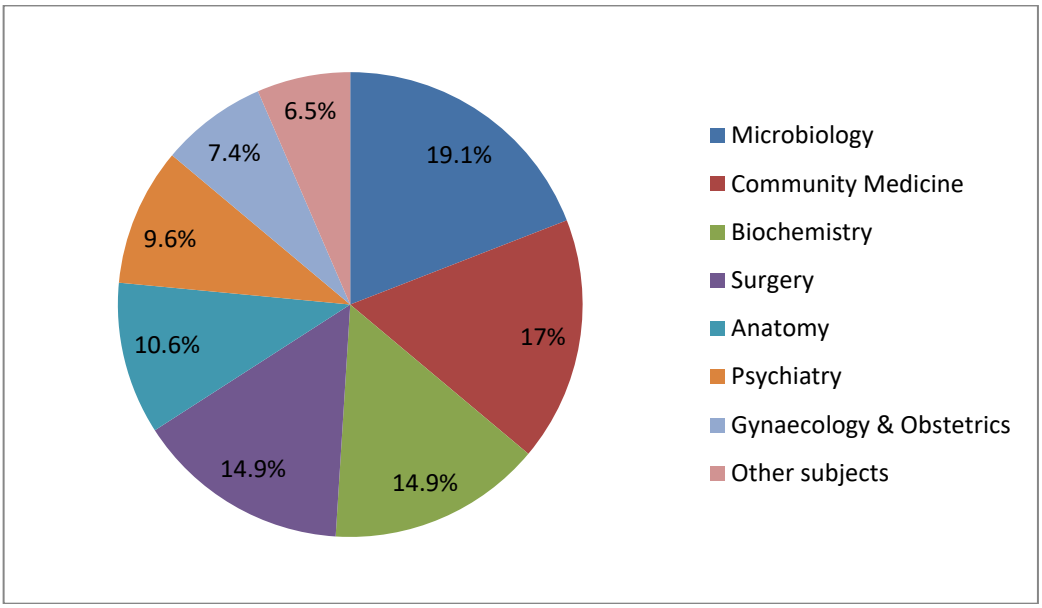

Fig 2: Pie chart showing dislike for higher study subjects among the interns

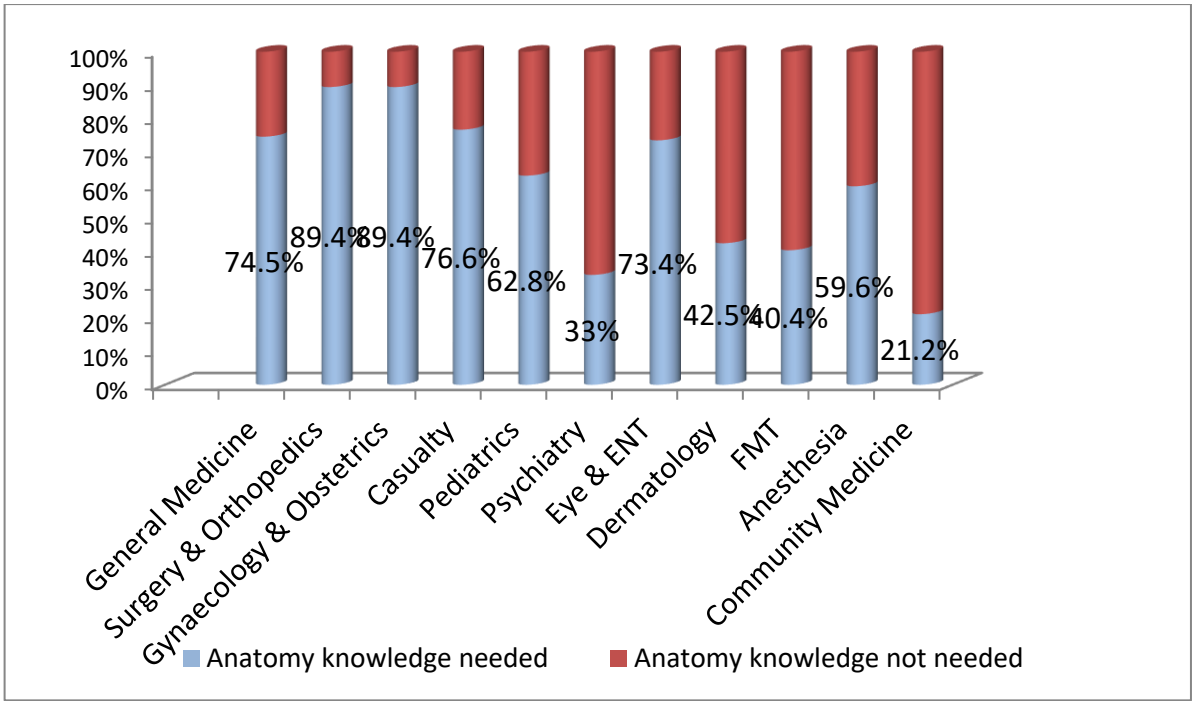

Fig 3: Bar diagram showing use of anatomy knowledge in different disciplines among interns (n=94)

Table: 1 Necessity or usefulness of areas of Anatomy curriculum among the junior doctors (n=94)

Sl No	Areas of anatomy curriculum	Agree No (%)	Neither Agree nor Disagree No (%)	Disagree No (%)
1.	Curriculum is unnecessarily lengthy	47(50)	17(18.1)	30(31.9)
2.	Teaching time inadequate	49(52.1)	18(19.2)	27(28.7)

3.	Dissection classes are effective	72(76.6)	13(13.8)	9(9.6)
Contd…….				
4.	Lecture classes are effective	43(45.7)	28(29.8)	23(24.5)
5.	Histology classes are useful	52(55.4)	22(23.4)	20(21.2)
6.	Gross anatomy is required	67(71.2)	18(19.2)	9(9.6)
7.	Radiology is necessary	66(70.2)	18(19.2)	10(10.6)
8.	**Surface anatomy is necessary for clinical procedures**	**75(79.8)**	19(20.2)	0(0)
9.	Practical classes are needed	70(74.5)	13(13.8)	11(11.7)
10.	**Refresher classes should be there in each semester and clinical posting**	45(47.9)	**30(31.9)**	19(20.2)
11.	Early clinical exposure is essential	71(75.5)	13(13.8)	10(10.6)
12.	Should incorporate Artificial Intelligence	60(63.8)	17(18.1)	17(18.1)
13.	**Mannequins are necessary as learning intervention**	**74(78.7)**	11(11.7)	9(9.6)
14.	Gastro-intestinal anatomy is necessary for clinical procedures	68(72.3)	16(17.1)	10(10.6)
15.	Genito-urinary anatomy is necessary for clinical procedures	71(75.5)	12(12.8)	11(11.7)
16.	Cardiovascular anatomy is necessary for clinical procedures	68(72.3)	13(13.8)	13(13.8)
17.	**Respiratory anatomy is necessary for clinical procedures**	**73(77.7)**	8(8.5)	13(13.8)
18.	Neuro-anatomy is helpful for clinical assessment	54(57.4)	19(20.2)	21(22.4)

Table: 2 Interns' perspectives on importance of anatomical knowledge in various aspects of clinical care

Sl No	**Aspects of clinical care**	**Likert Scale (3 point)**		
		Agree No (%)	Neutral No (%)	Disagree No (%)
1.	History of patient	48(51.1)	26(27.7)	20(21.2)
2.	General & systemic examination	57(60.6)	22(23.4)	15(15.9)
3.	**Diagnosis**	**68(72.3)**	19(20.2)	7(7.5)
4.	Treatment	43(45.7)	33(35.2)	18(19.1)
5.	**Imaging and diagnostic aids**	**70(74.5)**	13(13.8)	11(11.7)

Table 3: Competencies of anatomy in different disciplines/wards

Disciplines/wards	**Competencies**
General Medicine	Organ location, IV channel, ABG , Lumbar puncture, procedures
Surgery	Organ location, Fracture, Arteries &Veins location,catheterisation
Gynaecology & Obstetrics	Caesarean section, Normal delivery, pelvic anatomy, surgeries

Casualty	Trauma management, IV channel, catheterization, preserving vessels
Pediatrics	IV channel, tube insertion, clinical procedure, anomalies
Psychiatry	Neuro anatomy and EEG
Eye	Eye surgery, cataract, optic pathway, retina
ENT	Tympanoplasty, tonsillectomy, nasal packing, neck surgery
Community Medicine	Vaccination site location
FMT	Autopsy, nature of injury
Dermatology	Skin layers, nerve supply
Anesthesia	Intubation, spinal anesthesia