

# Importance of Cadaveric Dissection in Learning Gross Anatomy

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## ABSTRACT

**Background:** The trend of dissection training is at the verge of extinction all around the world. With literal mushrooming of private medical colleges, supporting varied degree of medical facilities. There is increasing debate regarding the significance of cadavers in the teaching of gross anatomy. A study was conducted among graduate & postgraduate doctors in order to understand the importance of cadaveric dissection.

**Objective:** To understand the importance of cadaveric dissection and determine the level of supportive rendered by cadaveric dissection at an undergraduate level for choosing the surgical field careers. To assess whether the stress and depression caused by cadaveric dissection at first exposure fades out with further exposures or lingers on.

**Methods:** A cross-sectional multicentre study conducted in Karachi at various hospitals and medical colleges from November 2013 till February 2014. Graduate and postgraduate doctors from basic sciences and clinical sciences involved in teaching as professors and assistant professors were included in the study. A structured questionnaire was administered after taking verbal consent from the participants. The data was tabulated and analyzed using the computer program SPSS Version 15.0 for the production of descriptive statistics.

**Results:** Out of 124 graduate and postgraduate doctors, 51.6% (64) were male, 48.4% (60) were female. The first visit experiences to dissection hall was documented through questionnaire, which was exiting for 71.8% (89), and 38.7% (48) got depressed. Cadaver dissection (CD) was avoided by 25% (31), out of which 18.5% (23) had allergy to formaldehyde, and 12.1% (15) had scared of the dead bodies. In 49.2% (61) helped in developing their professional endeavors, 54% (68) got inclined towards anatomy by CD, 71.8% (89) had clear concepts of gross anatomy. Understanding of in depth knowledge of structural details was found in 58.1% (72), regional anatomical concepts were cleared in 71.8% (89) of doctors.

**Conclusion:** Cadaveric dissection is a good tool in learning the concepts of gross anatomy. It helped doctors to evaluate their interest and trends towards surgical fields, and also build up concepts which were utilized in their professional life.

**KEY WORDS:** *Cadaver, Dissection, Teaching & Learning Tools, Anatomy.*

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## INTRODUCTION

The trend of dissection training is at the verge of extinction all around the world. With literal mushrooming of private medical colleges, supporting varied degree of medical facilities. In the past, anatomical skills and knowledge were gained through didactic lectures and complete dissection of the body via personal tuition. This approach has been modernized by the addition of special study modules, problem-based workshops, computers, plastic models and other teaching tools. Evidence suggests that, in some centers, dissected cadaver-based anatomy is no longer a priority. The present trend is likely to undermine the vital role of CD in anatomy.<sup>1</sup>

The human anatomist is actually a geographer of the human body. It is inescapable that the extent we experience hands-on and personal or emotional aspects of this educational journey directly affects not only how we teach the geography of the human body but also how and what our students learn. This also affects the knowledge they take with them into clinical practice as physicians. There is a link between dissection in the gross anatomy laboratory and the acquisition of clinical skills, as well as the development of professionalism and professional attitudes for medicine.<sup>2</sup>

Benefits of meticulous dissection fall into three domains;

- Knowledge acquisition & integration
- Skills
- Attitudes.<sup>3</sup>
- The cadaver was considered as the "First patient".<sup>4</sup>
- Dissection was labeled as "Royal Road".<sup>5</sup>

It is believed that CD plays an important role in developing professional endeavors, and the hand-on experience of dissection helps in developing surgical skills of clinicians. The rationale of this study was to find the correlation and importance of CD at undergraduate level in the acquisition of clinical skills, as well as the development of professionalism and

professional attitudes for medicine. The inclusion criteria were;

- Graduate & postgraduate doctors, working in different specialties of basic & clinical sciences.
- Doctors who have performed CD during their undergraduate studies.
- Doctors who are working as clinicians or as faculty in basic sciences.

The exclusion criteria were:

- Undergraduate Students
- Doctors who have not performed CD during their undergraduate studies
- Other health care professionals

Debate regarding the significance of cadavers in the teaching of gross anatomy is being heating up now a-days, thus a study was derived and the objectives of the study were to understand the role & importance of CD as a teaching & learning to clear the concepts of gross anatomy. What was the role of CD at undergraduate level in choosing the careers of surgical field? Was the stress and depression caused by CD at first exposure fade out with further exposures or linger on

## METHODOLOGY

It's a cross-sectional multicentre study conducted from November 2013 till February 2014 at Karachi in different hospitals, Medical colleges and Universities. Graduate and postgraduate doctors from basic sciences and clinical sciences were included in the study. The doctors included in the study were involved in teaching, as Professors, Associate & Assistant professors from different specialties of clinical & basic sciences. Lecturers from basic sciences, residents, interns & house officers from clinical sciences were also included. A structured questionnaire was administered after obtaining verbal consent from the participants.

Out of 140 questionnaires which were delivered and were filled-up, only 124 were included and 16 were not included because of incomplete information. Data collected for basic sciences from seven medical colleges & universities, which are; United Medical & Dental College,

Jinnah Medical & Dental college, Dow University of Health Sciences, Jinnah Sind Medical University, Ziauddin University, Bahria University of Medical & Dental College and Sir Syed College of Health Sciences. Data for clinical sciences was collected from four hospitals, which were; Civil Hospital Karachi, Institute of Skin Diseases, Creek General Hospital, and Plastic Surgery General Hospital. The data was tabulated and analyzed using the computer program SPSS Version 15.0 for the production of descriptive statistics in which the frequency of the replies was determined for each item of the questionnaire.

### RESULTS

Out of 124 graduate and postgraduate doctors it was found that 51.6% (64) were found to be male, and 48.4 % (60) were female. For the first visit to dissection hall 71.8% were excited & 26.6% were not excited 1.6% did not remember their experience of attending CD, it was depressing for 38.7%, not depressing for 54.8% & 6.5% dint remember, 46.8% lost their appetite, 46.8% had normal appetite & 6.5% don't remembered, the depression and loss of appetite got eliminated with further interactions of cadavers. About 25% experienced fainting by themselves or either by their class mates at the first site of cadaver, 67.7% did not felt fainting and 7.3% don't remember. The frequencies of

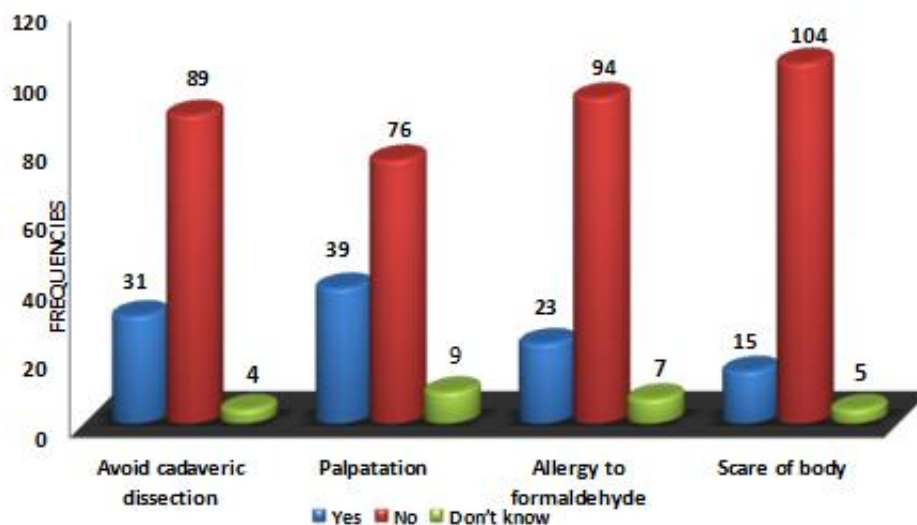
the first visit experiences of CD hall are given in Table 1.

The dissection sessions were avoided by 25%, 71.8% attended all sessions & 3.2% had mix sessions sometimes attending and sometimes missing them. There were multiple reasons for not attending the sessions, 31.5% had palpitations, 61.3% did not have palpitation & 6.5% did not remember. About 18.5% had allergy to formaldehyde, 75.8% did not have allergy to formaldehyde and 12.1% were scared of the dead body, 83.9% had no scare from the cadaver & 4% were not sure whether they were scared or not. The frequencies for avoiding the CD are shown in Figure 1.

**Table 1: The frequencies of first visit Experiences of Cadaveric Dissection:**

Experiences of Dissection Hall	Yes n	No n	Don't Know n
Visit was exciting	89	33	2
Fainted due to psychogenic shock	31	84	9
First visit was depressing	48	68	8
Loss of appetite	58	58	8

**Figure 1: Frequencies of different reasons for not attending cadaveric dissection.**



The CD helped, in understanding of regional anatomy in 71.8% of doctors, in 25.8% CD did

not help in clearing the concepts of gross anatomy & 2.4% were not sure of it. For 58.1%

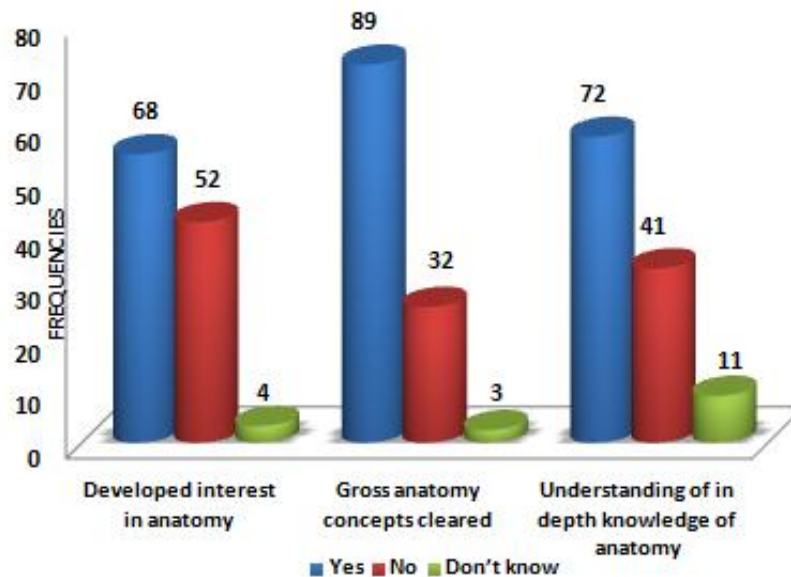
CD was helpful in learning & understanding the minor details of gross anatomy regarding small structures and their relationship to each other in 33.1% it did not add any value in clearing detailed concepts of gross anatomy & 8.9% do not remember the experience of learning, beside learning and understanding the gross anatomy 54.8% develop interest in anatomy, because of CD, in 41.9% CD played no role in building their interest in anatomy & 8.9% don't remember it. The frequencies of all the responses are shown in Figure 2.

The doctors who participated in the study are in practice at present either in basic sciences or in

the clinical sciences, so their view point in developing their professional skills and endeavors was important in relation to CD. Hands-on experience helped in developing professional endeavors in 49.2%, in 40.3% CD did not play any role in developing professional skills & 10.5% did not remember.

About 29% doctors were inspired by CD to the extent of becoming surgeons in their professional life, 63.7% have no such inspiration & 7.3% don't remember the experience.

**Figure 2: Cadaveric dissection a good teaching tool for the learning gross anatomy**



## DISCUSSION

In one of the studies 80% of the students agreed that dissection gives the best method for learning anatomy. Handling of the human structures and organs creates a photographic memory while dissecting.<sup>6</sup> In another study 80% of the students were view of that dissection gives the best method for learning anatomy.<sup>7</sup> According to our study 71.8% had clear concepts of gross anatomy by CD & also understood the relationship of detailed and minor structures.

The experience of first interaction with the cadaver was exciting in 59%<sup>8</sup>, 70%<sup>9</sup>, & 83.3%<sup>10</sup>, which is in correlation to our study in which it

was 78.1%. The symptom of palpitation was present in around 31.5% in our study which is consistent to the previous studies done by AM Izunya et al<sup>8</sup> & Bhaskar P et al<sup>7</sup> in whom it was 53% & 1% respectively. There was stress and depression in few cases which fade out with the passage of time and was present in the initial few visits to dissection hall, the feeling was also found in the studies by A.M. Izunya et al<sup>8</sup>, I P Oyeyipo<sup>9</sup>, Gaurav A et al<sup>10</sup> Saima Naz et al<sup>11</sup>, and also present in our study in 38.7% which according to our subjects trail off gradually during the first year of MBBS. In our study emotional shock resulting in fainting was seen in 25% which also gradually faded during the first year of study. This is in consistent to other studies.<sup>7, 8, 9, 11</sup>

The study done highlighted the importance and the need of cadaveric dissection for the learning and in depth understanding of gross anatomy, which is also endorsed by many other studies done previously.<sup>7,8,9,10,11,12,13</sup> Study conducted by Gaurav A et al<sup>10</sup> says that CD provides good hands-on experience in 90%, which also provides improvement of practical skills to work on patients in future, other studies also supports good hands-on experience<sup>7,8</sup> our study also support this experience..

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## CONCLUSION

Concluding our study and the previous studies in the literature, it is inferred that cadaveric dissection is still considered important and indispensable in learning gross anatomy, in the perception of doctors and students. There is no substitute for cadaveric dissection in the teaching of human anatomy. There should CD at least once a week, as cadaver availability is becoming difficult day by day.

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