

**PERCEPTION OF INTERNS TOWARDS CADAVERIC DISSECTION V/S COMPUTER ASSISTED ANATOMY TEACHING**Suresh R. Rao<sup>\*1</sup>, Gangadhar Swamy<sup>2</sup> and Laya Rose Thomas<sup>3</sup><sup>1,2</sup>Department of Anatomy Subbaiah Institute of Medical Sciences and Research Centre, Shimoga, Karnataka, India.<sup>3</sup>Department of Community Sciences Subbaiah Institute of Medical Sciences and Research Centre, Shimoga, Karnataka, India.**\*Corresponding Author: Suresh R. Rao**

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**ABSTRACT**

**Background:** The teaching of anatomy through the cadaver dissection is matter-of-fact as the vital stand for of medical courses. There are mounting concerns on the disapproving consequences of cadaver dissection on medical students, leading to suggestions on use of option technological advancements to cadaver dissection. However, literature on interns perceptions on cadaver dissection and their opinions on computer base anatomy teaching is inadequate We provided a structured questionnaire with 15 items with Likert-type questions ranging from strongly agree to strongly disagree to all the interns who were exposed for both cadaveric and computer assisted teaching anatomy at Subbaiah Institute of Medical Sciences and Research Center. **Methods:** Using a set of questions, a total of one hundred and twenty six fresh interns opinion were assessed towards cadaveric dissection v/s computer assisted anatomy teaching. The questionnaire was given to the interns just on first week of their beginning of internship. **Results:** Majority of the interns considered dissection as the best tool to study anatomy (82.77%) compared to computer assisted anatomy teaching (17.23%). About 17% of the cohort indicated that both dissection and computer assisted teaching was useful to understand the depth of anatomy knowledge. **Conclusions:** The current study found that cadaveric dissection is a very important teaching tool to study anatomy, V/S computer-assisted program. Cadaveric dissection also imparts to the student's basic surgical skills.

**KEYWORDS:** Cadaveric dissection, Computer assisted programmes, Questionnaire.**INTRODUCTION**

On going debate on how best to teach anatomy and the vital role of cadaveric dissections in medical teaching remains questioned even today Since from long time dissection has remained as a crucial teaching tool for learning anatomy. The advantages include the knowledge of practical skills such as admiration of the human body, first-hand appreciations of anatomical variations, learning teamwork and peer interaction (Ellis H, 2001) Even though the use of a variety of teaching methodologies like prosected specimens, plastinated specimens, cadaveric dissection and computer-assisted learning. There is little consensus on the best mode of teaching anatomy Review of literature suggest that traditional dissection confers better advantage (Yeager 1996 & Aziz et al., 2002). While other group of authors advocate that similar knowledge can be imparted by the using a variety of modalities, including, computer-assisted software, porsected speceimens, plastic models and radiological imaging (Jones et al., 1998, McLachlan & Patten, 2006).

Even though traditional anatomist emphasis the crucial role of the cadaver in students' acquisition of anatomical knowledge, others believe that cadaveric dissection may not be the most suitable method in teaching anatomy to the medical student, in view of the fact that the medical practitioner would deal with anatomy through forms of living anatomy and medical imaging (McLachlan *et al.*, 2004). Those who encourage the use of computer assisted learning modalities, accentuate the need to ensure that a student understands the concepts, their structural relations and its relevance to clinical practice. They also emphasis on gaining of basic anatomical skills such as: the observation, recognition and interpretation, which are necessary for effective and safe clinical practice (Boon *et al.*, 2002). Supplementary issues such as getting the skilled and experienced anatomy lecturers, maintenance of cadaveric facilities and fewer cadaveric donations have complicated the debate around teaching in the discipline. Studies suggest that the reduction in anatomical teaching has consequences, and, this is being experienced in regard to patient care (Bekele *et al.* 2011 & Sugand *et al.* .2010). Even though many studies intricate on how anatomy should be taught, very few

center on student perceptions of anatomical teaching (Lempp, 2005; Moxham & Plaisant, 2007; Azer & Eizenberg, 2007; Pabst, 2009; Notebaert, 2009).

Therefore, considering into account of interns perception in education and the current debates about the best way to teach relevant anatomy to medical students, a study on intern's perceptions of their learning and interaction with anatomy was necessary. This study explored whether students found that the learning anatomy through dissection was beneficial compared to computer-assisted learning.

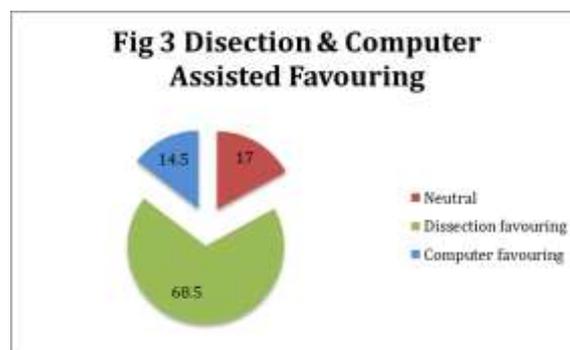
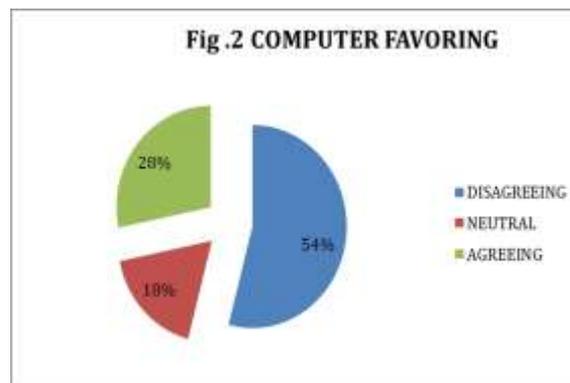
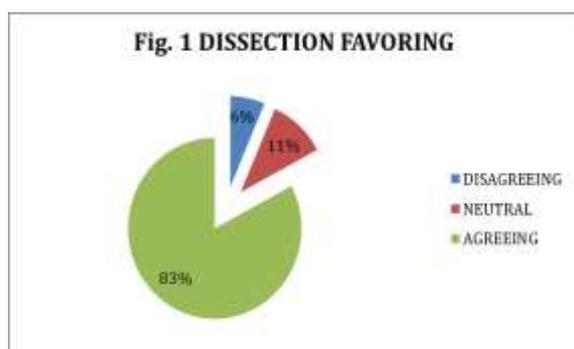
## MATERIALS AND METHODS

This study, collected quantitative and qualitative data through a self-administered questionnaire. The interns cohort (n=126) was purposefully sampled and invited to participate due to their training and exposure to Anatomy. This cohort consisted of interns who had completed the MBBS program. The cohort was introduced and exposed to the concepts in anatomy in their first year of MBBS programme and had completed a year of hands-on anatomical dissection and also with computer assisted learning anatomy.

## DATA COLLECTION AND ANALYSIS

The questionnaire was administered to all the interns by calling a small meeting during their ward rounds, where a facilitator informed the interns of their rights to anonymity and participation. The questionnaire consisted of 15 items that explored their experiences in learning anatomy by dissection and computer assisted program. The questionnaire comprised mainly open-ended statements that explored students' perceptions of the anatomy dissection program and its value in their learning and understanding. The data was captured in an Excel spreadsheet and independently analyzed by each researcher.

Statistical analysis was done using the Statistical Package for Social Sciences (SPSS version 21) for Windows (SPSS Inc., Chicago, USA). The options in the 3-point Likert scale were coded as follows: Agree (1), Disagree (2), Neutral (3). Average satisfaction index was then derived from the sum of the product of the frequency ( $n$ ) and the Likert scale response divided by total number of responses.



## RESULTS AND DISCUSSION

The cohort returned one hundred and twenty six completed questionnaires. Figure I, II & III summarizes the responses of interns to the question of how the dissection program and the computer-assisted teaching helped them in gaining a deeper understanding of the anatomical knowledge.

In broad-spectrum, a vast majority 68.5% of the cohort reported positive experiences in learning anatomy through the dissection program. About 17% found that computer assisted learning program added value to their learning. About 14.5% of cohort expressed that they have been benefited from both dissection and computer assisted teaching program.

The significance of cadaveric dissection in learning anatomy has been questioned. Some medical schools have used variety of teaching methodologies like prosected specimens, plastinated specimens, and computer-assisted learning. In our set up, at Subbaiah Institute of Medical Sciences and Research Center, we teach by both cadaveric and computer assisted teaching in anatomy. According to SK Nagar et al., (2012) and Chapman SJ et al., (2013) the best method of learning anatomy in the dissection hall was teaching on the cadavers which gives a favorable approach for achieving important learning objectives in the field of anatomy. Jones et al.1998, reports that prosected specimens can impart similar knowledge as traditional dissection.

Disapproving the consequences of cadaver dissection among medical students and some clinicians are a rising concern. Even though many reports account positive

stance on learning anatomy by cadaveric dissection (Dinsmore *et al.*, 2001, Rajkumari *et al.*, 2008). Dissection is a practical subject and therefore imparts to the student's basic surgical skills such as handling of surgical instruments (Granger, 2004; Moore, 1998, Karau *et al.*, 2014; Mulu and Tegabu, 2012). In the present study 62.5% of interns indicated that they like cadaveric dissection and also mentioned that it is a most important resource for learning anatomy. These findings are supportive with the above-mentioned reports.

In our findings about 17% of interns welcomed the use of, computer-assisted program instead of dissection. Review of literature shows that computer assisted programs are more effective in students' revision. Reports on distressing experiences in the process of cutting, dismembering, mutilating and disassembling a dead body is outside the realm of everyday experience, more so to students with little or no previous exposure to dead bodies (Hancock *et al.* 1998).

In our present study about 14% of the cohort expressed that the both approaches that is the dissection method and computer assisted teaching are best method of learning anatomy. Based on the present findings suggest that learning anatomy through dissection allowed interns to narrate the visual and practical material to the clinical content during their clinical years, They also reported expanding their knowledge and gaining an improved understanding while engaged in the encouraging group provided by their team mates. Computer assisted learning system provides suppleness, to choose the place, time and process of learning outside the classroom hours.

## CONCLUSIONS

To the best of our knowledge, this is the first study documenting interns opinions to cadaveric dissection and computer assisted learning in human anatomy in a newly established medical school. Our findings and succeeding literature survey allows us to conclude that cadaver dissection is the most ideal and crucial teaching tool for teaching human anatomy, regardless of technological advancement. The interns report suggests that computer assisted learning may be used to enhancement dissection rather than to replace it

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## CONFLICTS OF INTEREST

There are no conflicts of interest.

## REFERENCES

1. Ellis H. Teaching in the Dissecting Room. *Clin Anat*, 2001; 14: 149-151.
2. Yeager VL. Learning gross anatomy dissection and prosection. *Clin Anat*, 1996; 9: 57-9.
3. Aziz MA, Mckenzie JC, Wilson JS, Cowie RJ, Ayeni SA, Dunn BK. The human cadaver in the age of biomedical informatics. *Anat Rec*, 2002; 269: 20- 32.
4. Jones LS, Welsh MG, Terracio L. First year medical students' views on computer programs: Give us our teaching assistants. *FASEB J.*, 1998; 12: 5635.
5. McLachlan, J. C. & Patten, D. Anatomy teaching: ghosts of the past, present and future. *Med. Educ.*, 2006; 40(3): 243-53.
6. McLachlan, J. C.; Bligh, J.; Bradley, P. & Searle, J. Teaching anatomy without cadavers. *Med. Educ.*, 2004; 38(4): 418-24.
7. Boon, J. M.; Meiring, J. H. & Richards, P. A. Clinical anatomy as the basis for clinical examination: development and evaluation of an Introduction to Clinical Examination in a problem-oriented medical curriculum. *Clin. Anat.*, 2002; 15(1): 45-50.
8. Bekele, A.; Reissig, D.; Löffler, S. & Hinz, A. Experiences with dissection courses in human anatomy: a comparison between Germany and Ethiopia. *Ann. Anat.*, 2011; 193(2): 163-7.
9. Sugand, K.; Abrahams, P. & Khurana, A. The anatomy of anatomy: a review for its modernization. *Anat. Sci. Educ.*, 2010; 3(2): 83-93.
10. Lempp, H. K. Perceptions of dissection by students in one medical school: beyond learning about anatomy. A qualitative study. *Med. Educ.*, 2005; 39(3): 318-25.
11. Moxham, B. J. & Plaisant, O. Perception of medical students towards the clinical relevance of anatomy. *Clin. Anat.*, 2007; 20(5): 560-4.
12. Azer, S. A. & Eizenberg, N. Do we need dissection in an integrated problem- based learning medical course? Perceptions of first- and second-year students. *Surg. Radiol. Anat.*, 2007; 29(2): 173-80.
13. Pabst, R. Anatomy curriculum for medical students: what can be learned for future curricula from evaluations and questionnaires completed by students, anatomists and clinicians in different countries? *Ann. Anat.*, 2009; 191(6): 541-6.
14. Notebaert, A. J. *Student perceptions about learning anatomy*. PhD diss. Iowa, University of Iowa, 2009. Available in: <http://ir.uiowa.edu/etd/312>.
15. S K Nagar, Ojaswini Malukar, Dharti Kubavat, Vipul Prajapati, Dimple Ganatra, Ajay Rathwa. Students perception on anatomy teaching methodologies. *National journal of medical research*, 2012; 2(1): 111-112.
16. Chapman SJ, Hakeem AR, Marangoni G, Prasad KR. Anatomy in medical education: perceptions of undergraduate medical students. *Ann Anat*, 2013; 195(5): 409-14. doi: 10.1016/j.aanat.03.005.

17. Dinsmore CE, Daugherty S, Zeitz HJ. Student responses to the gross anatomy laboratory in a medical curriculum. *Clin Anat.*, 2001; 14: 231–6.
18. Rajkumari A, Das BK, Sangma GTN, Singh YI. Attitudes and views of first year medical students towards cadaver dissection in anatomy learning. *Calicut Medical Journal*, 2008; 6(4): 1-6.
19. Granger N.A. 2004. Dissection laboratory is vital to medical gross anatomy education. *Anat Rec B New Anat* 281B (1):6-8.
20. Moore N.A. To dissect or not to dissect? *Anat Rec.*, 1998; 253(1): 8-9.
21. Karau P.B., Wamachi A., Ndede K., Mwamisi J., Ndege P. 2014. Perception to cadaver dissection and views on anatomy as a subject between two pioneer cohorts in a Kenyan Medical School. *Anat. J. Afr.*, 3(2): 318-23.
22. Mulu A., Tegabu D. Medical students' attitudinal changes towards cadaver dissection: A longitudinal study. *Ethiop J Health. Sci.*, 2012; 22(1): 51-8.
23. Hancock, D., Williams, M, Taylor, A. Psychological impact of cadavers and prosections on physiotherapy and occupational therapy students. *Australian Journal of Physiotherapy*, 1998; 44: 247- 255.