

# Peer Teaching in Anatomy at GMERS Medical College Gotri, Vadodara, Gujarat, India – Peer Teacher’s Opinion

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## Research Article

**Abstract: Background:** Teaching is an important skill for future residency training and practice; Teaching and learning of a subject becomes effective when the teacher and student know the purpose of teaching and learning. Active learning is based on self-directed and autonomous teaching methods, whereas passive learning is grounded in instructor taught lectures. In the present study we have trained the students to teach their colleagues on the dissection table simultaneously while doing dissection. A debriefing questionnaire was administered at the end of the peer teaching program.

### Aims And Objectives:

1. To enhance the preparation of students for the future challenges of our dynamic medical communities by Peer teaching in medical curriculums.
2. To prepare medical students for their role as a teacher by implementing peer teaching programs,
3. To achieve the essential styles of teaching, particularly how to speak to your audience, maintain their attention, provide guided facilitation of discussions, assess your audience’s understanding and trouble shoot basic student/teacher incompatibilities would benefit the dynamics of the peer teacher–learner interaction, and
4. To assess the effectiveness of Peer-teaching on medical students (Peer-teachers) at G.M.E.R.S Medical college, Gotri, Vadodara, Gujarat.

**Material and Method:** The study was conducted in the Department of Anatomy at GMERS Medical College, Gotri, Vadodara, Gujarat, India. The First Year Medical Students were voluntarily selected for peer teaching program. Apart from routine lecture, Demonstration and Practical’s, Peer-teaching on various abdominal organs like kidney, stomach, spleen, testis etc. were allotted to peer teachers. Peer- teachers were well instructed and trained by faculty members. One tutorial per day was taken during dissection hours. At the end of two months all topics were completed. All peer teacher participants were asked to complete a feedback questionnaire after the peer teaching program.

**Results:** All peer teachers (100%) agreed on following statements,

- Peer teaching helps ‘In learning and retaining anatomy’, ‘To prepare medical students for their future role as educators’, and ‘Motivates to learn more in subject’.

- PT is an active learning style.
- Teaching and communication skills develop by PT.
- It increases confidence level of peer teachers.

96.7% peer teachers agreed on statement “Medical students should receive training in educational principles during their undergraduate medical education” and “Medical students can be included as teachers within medical curriculum.

Conclusion: Peer teaching program can benefit both peer student teachers and peer student learners, we should consider offering peer teaching to all students. Given the demands of future physicians to serve as educators, peer teaching program appears to be an important curricular consideration.

**Key words:** Medical education, Medical student, cooperative learning, Communication Skills, Professionalism, Tutoring

## Introduction

Medical colleges are responsible for assuring that every graduating student has the requisite knowledge, skill, and professionalism to enter residency training. ‘doctor’ in Latin means ‘teacher’, and one of the key activities of a physician is teaching. Teaching is a skill for which physicians often receive little or no formal training during their medical school and residency training years. Initiatives such as the ‘Residents as Teachers’ are now attempting to address this need in graduate medical education <sup>(1)</sup>. Teaching is an important skill for future residency training and practice, we believe that training for this role optimally should be introduced and practiced in medical colleges. Peer teaching is the phenomenon where a medical student teaches medical students. Under this teaching modality, students are instructed by students who are belongs to same class. The manner of peer teaching has varied extensively and has included one-to-one teacher-tutee interactions, group peer teaching, problem-based learning, or even peer-developed learning

materials<sup>(2,3,4,5)</sup>. However, there have been few studies that have examined how peers view the teaching and learning experience. Some theoretical frameworks support the potential use of peer teaching. Given the demands of future physicians to serve as educators, peer teaching appears to be an important curricular consideration. In peer teaching, the role of the peer teacher is to motivate the students to gather their own knowledge and to guide them in their learning. Thus, peer teacher should consider themselves as a 'facilitator' instead of a 'lecturer'. The Roman philosopher, Lucius Annaeus Seneca (4BC-AD65) advocated cooperative learning with a statement 'Those who teach learn'. Although in existence for thousands of years, peer teaching is an underutilized, yet highly valuable resource for higher education. It fosters development of professional skills such as a communication, oral presentation, teamwork, decision making, leadership, confidence and respect for peers<sup>(4)</sup>. Studies have also begun to investigate the advantages of peer teaching for the peer teachers. One study found that teaching junior students can have a positive effect on facilitation and communication skills of the senior medical students<sup>(6)</sup>. Our anatomy department offer medical students the opportunity to teach medical students of same level (First year medical students). The effectiveness of peer teaching program has been the subject of investigation. One important limitation was that the students' experiences were based on a supplemental peer teaching program unique to their curriculum. A second limitation of this study is that the students were taught by students of the same academic year (first year medical students). In this study, we investigated the perceptions of the impact of peer teaching from the perspective of the medical student (peer teacher) participants at GMERS Medical College Gotri, Vadodara, Gujarat, India.

## Methods

The study was conducted after ethical clearance was obtained from the Institutional Ethics committee in the Department of Anatomy at GMERS Medical College, Gotri, Vadodara, Gujarat, India. The First Year Medical Students were voluntarily selected for this study. The purpose and method of study was explained to the first year medical students. Twenty four medical students were voluntarily selected for peer teaching program. Every two students were allotted one topic on tutorial of abdominal organs like kidney, stomach, spleen, testis etc. Each student was taught about a particular topic in gross anatomy by well qualified and recognized teachers. One tutorial per day was taken during dissection hours in a group of 25-30 students. Students in peer teacher roles worked in pairs and rotated among their fellow classmates within the laboratory. At the end of two

months all topic were completed. Students who have had the opportunity to participate as a peer teacher were asked to complete the questionnaires. Students who have not participated as a peer teacher were excluded from our study. This questionnaire was distributed after completion of peer teaching program. The questionnaires inquired about the type of peer teaching given, perceived effectiveness of this teaching as well as merits and demerits of this teaching program.

## Results

Peer teachers were encouraged to give suggestions and recommendations for better output. All peer teachers(100%)agreed on following statements:

- Teaching skill develops by Peer teaching(PT).
- PT is an active learning style.
- PT help to prepare medical students for their future role as educators.
- PT is must in medical curriculum.
- PT helps in "learning and retaining anatomy".
- PT helps to develop communication skills.
- PT motivates to learn more in the subject.
- PT increases confidence level.
- We are assuming the responsibility of teaching our peers.
- We have improved our understanding of course content(topic).
- We will perform better in examination.
- We accept PT program in anatomy.
- We have an advantage over our peers.

96.7% peer teachers agreed on statement "Medical students should receive training in educational principles during their undergraduate medical education" and "Medical students can be included as teachers within medical curriculum. Peer teachers were asked to react on their performance as a peer-teachers: ' My confidence level has increased through PT(Peer Teaching) and wish to teach more', 'My stage fear has also decreased', 'PT helped me in an extensive study of anatomy', 'PT helped in gathering more knowledge about the topic which is prepared by us and ultimately helped in better learning', 'PT was useful in building confidence', 'We will never forget the topic which we teach the students', 'It was wonderful experience teaching classmates. We could easily understand the topics and were able to make other students understand. Topics were clearer due to same mindset'; 'Such experience of peer teaching was wonderful and very advantageous as a peer teacher. I could learn my topic very thoroughly and it helps to retain the knowledge of that subject for a longer time', 'Every medical student should learn how to teach', 'It felt how hard for a teachers to convey the knowledge

correctly without any mistake to their students. The peers were also asked to comment on merits and demerits of peer teaching. Comments on merits included that peers are closer to students because of a same age group. This may make it easier to understand the problems that students face. Also, Peer teachers identified the atmosphere in student led teaching sessions as more informal, which might stimulate more interaction between students peer teachers. Another merit cited was that peer teachers are often very motivated to teach and prepare for teaching because they are participating on a voluntary basis and they can share their clerkship experiences. Comment from one peer teacher is: 'I want to teach but I think I can't teach well like my colleagues. I think students might be confused and their facts are not cleared yet, so I would love to teach them but for the betterment of the students It would be better if I don't teach'.

Before teaching other students, peer teachers commented that they would like to learn:

- How to teach, how to introduce yourself and the subject, how to prepare yourself for teaching fellow students, how to cope with group dynamics;
- How to optimize the group learning process.
- To what extent the content of the lessons should be prepared;

## Discussion

The education of Anatomy is not only the essential part of medical curriculum but also develops medical professionalism further medical students have been taught anatomy in the same way for many years. There should be constant reassessment of the curriculum in terms of what and how the students need to learn this subject. The concept of traditional anatomy has been regularly challenged by increasing assortment of disciplines and are considerable amount of planning is required to meet the demands. The key question that arises to meet the above objective is how best we can teach anatomy. There are various factors that determine the particular teaching method to be most effective in a particular academic setting. Association of American Medical Colleges. General Professional Education of the Physician (GPEP) Report 1984 points out that lectures are largely passive activities for the students<sup>(7,17)</sup>. The Government of India recognizes Health for all as a national goal and expects medical training to produce competent "Physicians of First Contact" towards meeting this goal. However, the medical education and health care in India are facing serious challenges in content and competencies<sup>(8)</sup>. Allen and Boracks (1978) first proposed the term reciprocal peer teaching (RPT) to illustrate circumstances where students alternate roles as teacher and student<sup>(9)</sup>. Despite

the fact that RPT has been shown to be more successful than traditional teaching methods in some gross anatomy laboratory settings, implementation of the RPT is exceedingly rare<sup>(10)</sup>. Simultaneous personal dissection and reciprocal peer teaching can be done to make more efficient use of dissection hours successfully<sup>(11,17)</sup>. It also serves to engage the students more actively in the learning process and promote independent learning abilities<sup>(12)</sup>. Peer teaching program provides students with more unscheduled time for independent learning while still allowing them to participate in cadaveric dissection, and promotes more active student participation during dissection. This approach allows students the opportunity to collaboratively interact with their peers via peer teaching, at an early stage in medical training. Peer teaching into their curriculums to enhance the preparation of students for the future challenges of our dynamic medical communities. Early application of teaching skills in medical school can only enhance patient and fellow physician education upon entry to graduate medical education and beyond. With implementing peer teaching programs, it is important to note that like faculty teachers, peer teachers want to be well prepared for their role as a teacher, and most may lack formal educational experience. Taking the time to train peer teachers the essential styles of teaching, particularly how to speak to your audience, maintain their attention, provide guided facilitation of discussions, and assess your audience's understanding and trouble shoot basic Student/teacher incompatibilities would benefit the dynamics of the peer teacher-learner interaction. The majority of peer teachers felt that they learned a lot about the subject matter they taught, they were comfortable in their role as teacher and they would do it again. The majority of the students felt being able to teach is an appropriate objective of today's graduating medical student. Our findings are consistent with current theory and build upon the results reported by others in the literature<sup>(13)</sup> for the setting of peer teaching program. In various study, experiences of peer teachers was favourable. Feedback from participants suggests that the program fulfills its aims of providing an effective environment for developing deeper learning in anatomy through peer teaching. Our hope is that this study will stimulate discussion among institutions to consider (or further) incorporating Students views on peer teaching<sup>(10,11,14,17)</sup>. Our study was limited to undergraduate medical education in subject of anatomy and our findings may not be generalizable to graduate medical education settings. Peer teacher are more appropriate for teaching a small group about basic anatomy of the abdomen than a class on Histology and Neuroanatomy which are also the important part of the curriculum but with some more exercise and

modifications it can be effectively implemented on these topics also. Additional studies at other medical colleges with differing levels of peer teaching and learning opportunities would provide further basis for curriculum planners who are considering peer teaching as an important innovation for learners. Small group formats where peer teachers have relative expertise to their learners may be best. Finally do opportunities to teach as a medical student improve the teaching of their patients which may benefit patient care, patient compliance and overall patient satisfaction. It is our belief that the views of students must play a vital role in this process. Enabling students during their studies to engage in some aspect of teaching encourages deeper learning of the subject area with opportunities to teach being an opportunity to "learn twice",<sup>(15)</sup> or an alternative strategy for learning<sup>(16)</sup>

## Conclusion

The students in the peer teaching program performed significantly better than their full time dissecting counterparts. The non-dissecting time was also much-valued and well-utilized. The peer teaching program was well received by students. It reduced the crowding at dissecting tables considerably and offered them opportunities to hone their communication skills. Participants value peer teaching program and report changes in attitudes, knowledge, skills and behaviour. This teaching modality can benefit both peer student teachers and peer student learners. We propose that peer teaching can have greater impact in medical education for the following reasons. (i) It increases collaboration among same class peers. (ii) It is a form of active learning. (iii) Implementation of peer teaching program plays an important role in teaching professionalism. (iv) It improves the communication skills. (v) Helps to understand the subject conceptually. The statement of The Roman philosopher Lucius Annaeus Seneca.<sup>1</sup> Those who teach learn more' seems to be true in the anatomy settings hence we should consider offering peer teaching to all students. Given the demands of future physicians to serve as educators, peer teaching program appears to be an important curricular consideration.

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## References

1. Edwards JC, Friedland JA, Bing-You R. 2002. Residents' Teaching Skills (New York, Springer).
2. Walker-Bartnick LA, Berger JH, Kappelman MM. 1984. A model for peer tutoring in the medical school setting. *J Med Educ* 59:309–315.
3. Lake DA. 1999. Enhancement of student performance in a gross anatomy course with the use of peer tutoring. *J Phys Ther Educ* 13:34–38.
4. Krych AJ, March CN, Bryan RE, Peake BJ, Pawlina W, Carmichael SW. 2005. Reciprocal peer teaching: Students teaching students in the gross anatomy laboratory. *Clin Anat* 18:296–301.
5. Youdas JW, Hoffarth BL, Kohlwey SR, Kramer CM, Petro JL. 2008. Peer teaching among physical therapy students during human gross anatomy: Perceptions of peer teachers and students. *Anat Sci Educ* 1:199–206.
6. Solomon P, Crowe J. 2001. Perceptions of student peer tutors in a problembased learning programme. *Med Teach* 23:181–186.
7. James H. Johnson. Importance of Dissection in Learning Anatomy: Personal Dissection verses Peer Teaching. *J Clin Anat* 2002; 15:38-44.
8. Vision2015-Medical council of India. Available at [www.mciindia.org/tools/announcement/MCI\\_booklet.pdf](http://www.mciindia.org/tools/announcement/MCI_booklet.pdf). Accessed on 14 Dec 2011.
9. Allen A.R., Boracks N. Peer Tutoring: Putting It to The Test. *J Read Teacher* 1978; 32:274-278.
10. Nnodim J.O. A Controlled Trial of Peer Teaching in Practical Gross Anatomy. *J Clin Anat* 1997;10:112-117.
11. Peppler R.D., Kwasigroch T.E., Hougland M.W. Evaluation of Simultaneous Teaching of Extremities in Gross Anatomy Programmeme. *J Med Educ* 1985;60:635-639.
12. James H. Johnson. Importance of Dissection in Learning Anatomy: Personal Dissection verses Peer Teaching. *J Clin Anat* 2002; 15:38-44.
13. Lockspeiser TM, O'Sullivan P, Teherani A, Muller J. 2008. Understanding the experience of being taught by peers: The value of social and cognitive congruence. *Adv Health Sci Educ* 13:361–372.
14. Schaffer J.L., Wile M.Z., Griggs R.G. Students Teaching Students: A Medical School Peer Tutorial Programmeme. *J Med Educ* 1990;24:336-343.
15. Annis LF. 1983. The processes and effects of peer tutoring. *Hum Learn J Practical Res Appl* 2:39–47.
16. Topping KJ. 1996. The effectiveness of peer tutoring in further and higher education: A typology and review of the literature. *High Educ* 32:321–345.
17. J. E. Waghmare, B. R. Sontakke, A. M. Tarnekar, P. Bokariya, V. Wankhede, M.R. Shende. Reciprocal Peer Teaching: An Innovative Method to Learn Gross Anatomy. *The Journal of Mahatma Gandhi Institute of Medical Sciences*. Sep-2010;15(ii):40-43.