Development of Peer Tutoring Services to Support Osteopathic Medical Students' Academic Success

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Context: Peer tutoring can benefit both tutors and tutored students, but information is lacking regarding establishing and measuring outcomes of such a program at new medical schools.

Objective: To examine the outcomes of a pilot peer tutoring initiative and explore the implications for long-term program development.

Methods: Fifty-one osteopathic medical students who participated in a pilot peer tutoring program during the 2013-2014 academic year were surveyed regarding satisfaction with the program. Course grade means for the tutors (all courses) and tutored students (specific courses) were analyzed before and after participating in the tutoring experience. Data analyses were performed using frequency distributions, *t* tests, and qualitative assessment of emergent themes.

Results: The survey had a 76% response rate (39 of 51 students). Both tutored students and tutors were satisfied with the tutoring program. Statistically significant changes in course grades for the tutored courses were noted at 3 to 4 and 8 to 9 months among the tutored students who were most at risk for failure (P=.001). Tutor course grades showed no significant changes for any of the courses in which they were enrolled (P=.445).

Conclusion: Learning gains were realized by the students at greatest academic risk. Additional research is needed to evaluate long-term outcomes.

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Peer tutoring is endorsed by the American Medical Student Association,[1] yet little is known about the practicalities of piloting such a program in a newly established medical school. Research indicates that peer tutoring leads to improvements in student learning across academic settings, with documented benefits to both tutors and tutored students in content knowledge, testing outcomes, communication skills, anxiety reduction, and peer-to-peer relations.[2-8] Gains have also been noted with regard to development of learning strategies and use of academic support services.[8]

Within medical education, peer tutoring environments have been described as more open, more relaxed, and less intimidating than tutoring sessions led by faculty members.[1,2,9] Medical students who receive peer tutoring have been shown to perform at least as well on clinical skills evaluations as those who receive tutoring from more senior-level tutors or faculty.[2,10,11] In addition, given the need to assess their own knowledge and skills as part of the instructional process, peer tutors gain greater confidence and understanding of content material.[1,2,9,12-14]

Suggestions for successful implementation of peer tutoring include student leadership involvement, tutor training, process management, and formative assessment of tutoring outcomes, including measurement of participant satisfaction and academic gains.[1,2,11,15] However, creating and managing a robust tutoring program can require significant money, time, and resources.[9]

In late spring 2014, we undertook a study to examine the preliminary outcomes of a peer tutoring initiative piloted from August 2013 to May 2014 when 200 first- and second-year students were enrolled in preclinical courses.

Methods

Tutoring Program

Osteopathic medical students at the newly established William Carey University College of Osteopathic Medicine in Hattiesburg, Mississippi, conducted a formal needs assessment for peer tutoring in the 2012-2013 academic year. (In the previous academic year, peer tutors were informally used in isolated courses.) Initial results of the needs assessment indicated that lack of a formal programmatic structure limited student access to peer tutors. A review of the extant literature was subsequently performed on PubMed by several student government leaders using both PubMed and MeSH (Medical Subject Heading) search terms on the National Library of Medicine's PubMed database (ie, *peer tutor*, *peer tutoring*, *peer group*, *study skills undergraduate medical education*, *medical students*, *teaching methods*). The purpose of the literature search was to identify similar institutions that have developed peer tutoring programs, gain ideas from these institutions' failures and successes, and integrate these findings to create a program tailored to our curriculum, which is rooted in evidence-based practices. Based on a review of the needs assessment and literature search results, the students developed a formal proposal for a pilot peer tutoring program. The proposal and application materials were submitted in spring 2013 and approved by the curriculum council and dean for implementation in fall 2013. Study approval was secured through the William Carey University Institutional Review Board (IRB protocol 2014-09).

Participants

Advertisements for paid peer tutor positions were posted on campus during fall 2013 orientation. First- and second-year students self-selected themselves for involvement in the program. Students interested in becoming tutors applied directly through the course directors for the subjects they were interested in tutoring, and course directors preapproved the most qualified students. Some students voluntarily signed up to receive tutoring, and others were referred by course directors or counseling services after failing an examination. A staff counselor handled the tutor training, monitoring, and payroll management. Tutors were paid $12 per hour, with tutoring limited to 4 hours per week to protect the tutors' personal study time.

Outcome Measures

We created a database by entering student course grades expressed as percentages and constructed an online questionnaire based on extant literature.[2,9,16] The database for tutored students included course grades in the tutored courses; for tutors, it included all course grades. The survey and 4 follow-up reminders were distributed via e-mail through SurveyMonkey to participants. The survey included a series of declarative statements paired with Likert-type response scales, which were used to explore the types of study approaches used during the tutoring sessions (coded from 1 [strongly disagree] to 5 [strongly agree]) and student satisfaction with the various instructional methods (coded from 1 [very dissatisfied] to 5 [very satisfied]). These items helped gauge the tutors' ability to monitor student comprehension and content knowledge.[17]

Three additional questions focused on optimal times for recruiting students each year and the perceived adequacy of tutoring hours per week. Four open-response items captured student input about the perceived strengths and weaknesses of the sessions, as well as suggestions for program improvement.

Data analyses involved the use of descriptive statistics (frequency distributions and *t* tests) and qualitative assessment of emergent themes. Quantitative data analyses were performed using SPSS software (version 21; IBM) for Microsoft Windows.

Results

The program enrolled 42 students for tutoring and 9 tutors. By design, students who received tutoring were in their first year of medical school, and all tutors were in their second year. The requested sessions spanned 5 content areas (clinical anatomy, histology, medical genetics, medical physiology, and osteopathic principles and practice). Responses to the online survey were received from 39 students (76%), including 31 tutored students and 8 tutors. Almost all of the tutored respondents (29 of 31 [94%]) were satisfied with the overall experience, and all would recommend the program to others. A smaller majority (22 [71%]) had met with a tutor as often as they wanted, with the remaining respondents (9 [29%]) interested in more tutoring hours per week. Written comments from the participants revealed that tutoring sessions were scheduled most heavily on days before examinations. Students also tended to sign up for more tutoring sessions in the fall than in the spring semester.

Respondents' motivation for participating in the program are outlined in *Figure 1*. Among the 31 respondents who requested tutoring, 16 (52%) reported receiving a lower examination score than expected, 12 (39%) wanted to avoid failing a course, and 11 (35%) were having trouble understanding specific course material. All 8 tutor respondents stated that they became involved to help other students meet their academic goals. Other motivations for tutoring included reviewing for board examinations (6 [75%]), enhancing curricula vitae (6 [75%]), and enjoyment (5 [63%]).

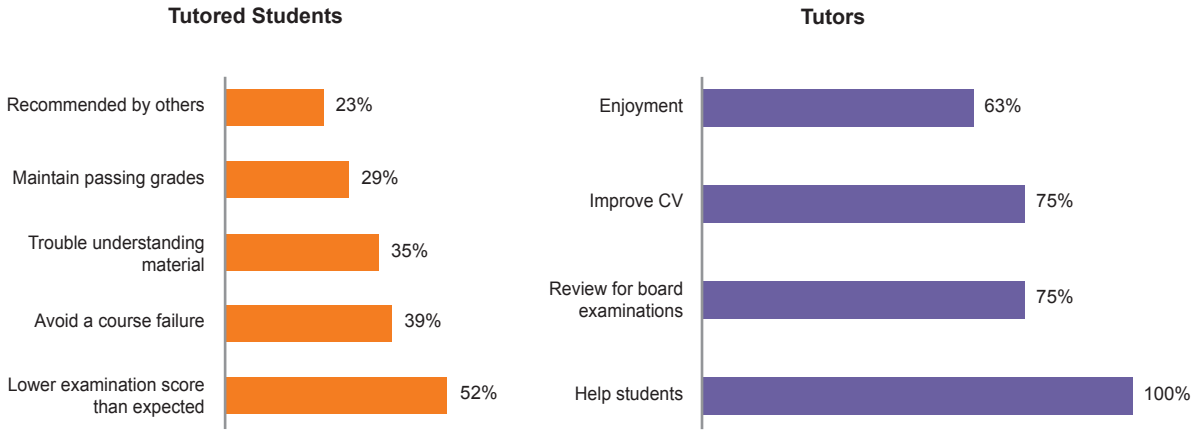

Figure 1.
Respondents' motivations for participating in peer tutoring as identified by tutored students (n=31) and tutors (n=8). [a]The item "Increased confidence in previously learned content material" was applicable to tutors only. *Abbreviation:* CV, curriculum vitae.

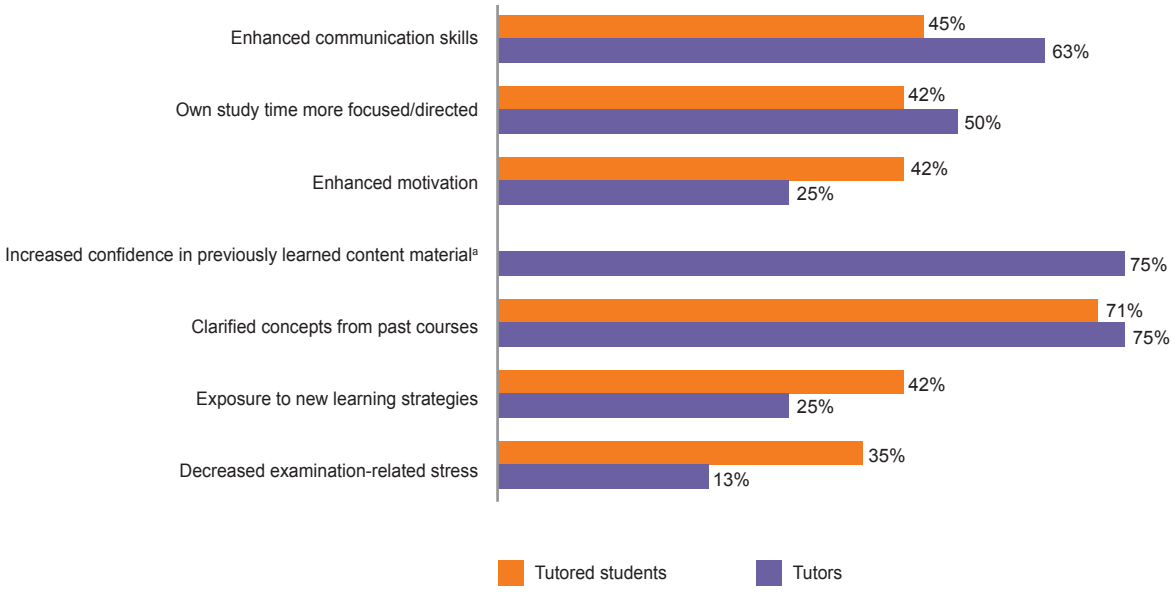

Figure 2.
Respondents' perceived benefits of peer tutoring reported by tutored students (n=31) and tutors (n=8).

Regarding perceived benefits, many of the 8 tutors reported increased confidence in their own content knowledge (6 [75%]), increased clarification of concepts from past courses (6 [75%]), and enhanced interpersonal communication skills (5 [63%]) (*Figure 2*). The tutored students strongly endorsed concept clarification as a benefit. Enhanced personal motivation, more focused study time, improved examination grades, and exposure to new study strategies were also noted by the tutored students. A higher percentage of tutored students than tutors reported reduced stress in preparing for examinations as a benefit (11 of 31 [35%] vs 1 of 8 [13%], respectively).

The tutors and the tutored students had similar levels of agreement when queried about various aspects of the tutoring sessions (*Table*). All participants agreed that their tutoring partner had a positive attitude, and what tutors thought they were doing during the sessions (eg, exhibiting knowledge of the subject matter, being patient when answering questions, and using a variety of instructional approaches) was largely reflected in what tutored students reported. Of the listed tutoring approaches, requesting explanations from tutored students to gauge their understanding was the approach reported by the fewest tutors (6 of 8 [75%]) and tutored students (27 of 31 [88%]).

In an analysis of institutional course data for tutored students, statistically significant changes in academic grades for the tutored courses were noted at 3 to 4 and 8 to 9 months after the start of the program among students most at risk of failing (those with ≥1 failing test grade before enrollment in the program; P=.001). Students who came to the tutoring sessions in good academic standing remained so, with no significant increase or decrease in their grades for the tutored courses (P=.208). One student at academic risk and none of those in good standing had a final course failure in any course for which they received tutoring. Mean course grades for the peer tutors showed no significant change from fall to spring (P=.445).

Table.
Survey Respondents' Perceptions of Peer Tutoring Sessions in Osteopathic Medical School (N=39)[a]

Survey Item	Agree	Neutral	Disagree
Tutored student thought tutor maintained positive attitude	100.0	0	0
Tutor thought tutored student maintained positive attitude	100.0	0	0
Tutored student thought tutor arrived on time	100.0	0	0
Tutor thought tutored student arrived on time	87.5	12.5	0
Tutored student thought tutor approached concepts using multiple viewpoints	96.0	2.0	2.0
Tutor tried to approach concepts from different viewpoints	87.5	12.5	0
Tutored student thought tutor asked for explanations to gauge understanding	88.0	12.0	0
Tutor tried to ask for explanations to gauge understanding	75.0	12.5	12.5
Tutored student felt the tutor listened and was patient	100.0	0	0
Tutor tried to listen and be patient	100.0	0	0
Tutored student reported tutor asked questions to help understanding	98.0	2.0	0
Tutor tried to ask questions to help understanding	100.0	0	0
Tutored student thought tutor expressed ideas and concepts clearly	96.0	4.0	0
Tutor tried to express ideas and concepts clearly	87.5	12.5	0
Tutored student felt tutor was knowledgeable about subject matter	98.0	2.0	0
Tutor felt knowledgeable about subject matter	100.0	0	0

[a] Respondents comprised 31 tutored students and 8 tutors.

Discussion

The findings of our study support the efficacy of peer tutoring in a new osteopathic medical school. All tutors who participated in the pilot program expressed a desire to help others. Their attitudes reflect the altruistic nature of medicine and imply that involvement in peer tutoring may provide important intrinsic benefits to all participants. The tutored student respondents reported satisfaction with the implementation of the peer-tutoring program and reported that peer instruction clarified difficult concepts, helped them focus and study more efficiently, and armed them with a variety of study methods they could implement on their own.

A majority of the tutored students showed grade improvement in courses for which they were tutored, with statistically significant improvement noted in the students most at-risk of academic failure. In contrast to past findings,[14,18] however, we found no statistically significant improvement in tutor grades during the study period. Additional research will be needed to determine to what extent involvement with tutoring is associated with longer-term gains in examination performance or increases in overall grade point average.[19]

Given student interest in the peer tutoring program, we expect that participation will increase over time, with concomitant increases in payroll costs. Based on the initial pilot, however, we do not anticipate that the program will require an overabundance of resources going forward, and it should prove replicable at other medical schools working to enhance academic support services. The framework of our program was based on evidence-based suggestions from previous research,[1,14-16,19] and student feedback will be used to guide program improvements.

Limitations of our study include the fact that it was conducted at a single institution and that it involved a newly launched peer tutoring program. Additional research with

larger sample sizes, comparison groups, and additional outcomes data is needed to determine the extent of benefits associated with peer tutoring, including long-term benefits.

Conclusion

In this study, a piloted peer tutoring program was shown to improve preclinical student learning outcomes. Medical schools interested in building academic services to support student success should consider implementing a peer tutoring program.

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Author Contributions

Both authors provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; both authors drafted the article or revised it critically for important intellectual content; both authors gave final approval of the version of the article to be published; and both authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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