Exposure to research concepts in medical school is thought to be helpful in preparing physicians for evidence-based medical practices. Troubling, however, are the findings of some researchers that a gender gap exists in the preparation of the next generation of physician-scientists, with fewer women pursuing research experiences than men. To extend this research, we sought to determine whether there were gender differences in perceptions about, and interests in, the conduct of research across osteopathic and allopathic medical students in Kentucky. The project was approved by the Institutional Review Boards at the study institutions.

We administered a previously published instrument to medical students at the University of Louisville, University of Kentucky, and University of Pikeville schools of medicine. The 19-item instrument addressed students’ perceptions of: a) their research needs and attitudes; b) the institutional research climate; and c) their level of research skills. Three composite scores were calculated for each student by averaging the scores of items that make up the domains listed below.

Research Needs/Attitudes: (Interest in research; importance of having the skills to: design a research study, formulate a research question, coordinate a clinical trial or site-based study, create a research poster; importance for research curriculum to incorporate research methods and statistics; importance for pre-doctoral and post-doctoral trainees to have a wide range of research skills) [7 items]

Research Climate: (Easy access to research project collaborations; climate at medical school is research friendly; faculty and staff are supportive of research efforts; researcher efforts are rewarded and appreciated; research opportunities and partnerships are easily accessible) [5 items]

Research Skills: (Having the ability to write, design and implement: single-case report, retrospective research study, prospective research study, research poster; comfort following a journal’s publication style guide; comfort with level of research skills and knowledge; knowledgeable of rules pertaining to publishing research findings) [7 items]

We also tracked the number of research endeavors that medical students had engaged in while in medical school.

Results: Gender Comparisons

Using independent samples t-tests, we looked at differences in ratings of items addressing the research needs and attitudes domain by gender.

- Males assigned significantly higher item ratings in this domain than females [average rating by males, 3.69 (SD=0.86); average rating by females, 3.54 (SD=0.84); p=0.035].
- The item with the largest effect in this domain was Research is an activity I am interested in [males assigning a rating of 3.50 (SD=1.16) and females assigning a rating of 3.22 (SD=1.16); p=0.003].

There were no differences in mean ratings assigned to the items addressing the research climate at their medical school by gender.

Males assigned significantly higher ratings across items in the research skills domain than females [average rating by males, 3.05 (SD=0.89); average rating by females, 2.88 (SD=0.85); p=0.028] (Figure 1). Males had participated in 1.74 (SD=1.55) research experiences in medical school; females, 1.43, (1.29), p=0.013 (Figure 1).

Results: Mediation Analysis

A mediation analysis is a series of regression equations performed to assess if a mediating variable can help explain the relationship between a predictor and outcome variable.

A mediation analysis was performed to test the hypothesis that the number of research endeavors mediates the relationship between gender and the three research domains.

- The analysis showed no direct relationship between gender and research climate, p=0.791 indicating that research endeavors do not mediate the effect of gender on this outcome.
- The number of research endeavors did mediate the impact of gender on the needs and attitudes domain. Figure 2 shows that when the research endeavors were entered into the model, the coefficient of gender with the needs and attitudes scale changed from 0.156 to 0.097 indicating an indirect effect of 0.058, p=0.025, and signifying that research endeavors are possibly influencing the effect of gender on students’ perceptions of their research needs and attitudes.
- Figure 3 and 4 illustrate that research endeavors also mediate gender’s impact on students’ perceptions of their research skills, and their interest in research.

Figure 4

We sought to determine whether there were gender differences in perceptions about, and interests in, the conduct of research across osteopathic and allopathic medical students in Kentucky. As compared to males, women medical students gave lower ratings to their research attitudes and needs and to their research skills. Social and cultural factors that may contribute to this finding include different academic, extracurricular, or personal priorities, alternate career paths, underestimation of competencies, and lack of female role models for women medical students.

Additional research should be conducted to determine initiatives that medical educators can take to increase the research interests and skills of all medical students in general, and female students in particular.

Discussion and Conclusions