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Abstract

BACKGROUND: North American medical schools are now creating regional medical campuses (RMCs) to train more physicians to meet the healthcare needs of rural and underserved populations. Part-time and volunteer faculty must be recruited and retained to teach medical students engaged in clinical experiences at these RMCs. Physician educators report being positively motivated by the presence of medical students but also report increased time constraints. There is a paucity of information regarding the impact on attending physicians of teaching medical students at RMCs. The aim of this study was to investigate the benefits and disadvantages for attending physicians at a rural regional medical campus on having medical students on their services during clinical rotations.

METHODS: An online questionnaire was sent to 62 Kansas University School of Medicine-Salina (KUSM-S) clinical faculty members that supervised third and/or fourth year medical students in clinics and/or the hospital. Physicians were queried as to the benefits and disadvantages of supervising medical students.

RESULTS: Thirty-six physicians completed the survey, yielding a response rate of 58%. The majority of respondents felt positively about having medical students on their service: 92% of respondents enjoyed having medical students in clinic/hospital, 81% agreed that having a medical student working with them was personally beneficial, and 72% agreed that the presence of medical students increased their job satisfaction. Fifty-six percent of respondents reported that having medical students with them in the clinic/hospital decreased the number of patients they were able to see and that additional incentive would encourage them to remain a teaching faculty member.

CONCLUSIONS: Attending physicians at KUSM-S report that they enjoy having medical students on their service and that it increases job satisfaction; however, teaching medical students is time consuming and may decrease productivity. Adequate financial compensation for physician teachers at RMCs may be necessary to ensure successful delivery of the educational product.

Key words: attending physician satisfaction, regional medical campus, teaching medical students

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Medical school enrollment has burgeoned since 2006 when the Association of American Medical Colleges (AAMC) called for a 30% increase in enrollment at Liaison Committee on Medical Education (LCME)-accredited medical schools from the 2002 level by the year 2016.¹ In reality, this increase will not be reached until 2019.² The increase in enrollment has been accomplished by increasing matriculation at existing medical schools, including creation of regional medical campuses (RMCs), and creation of new medical schools.

Concordant with the increase in medical students is a required increase in the number of physicians to teach the students. Hemmen et al³ conducted a national survey of internal medicine clerkship directors on the impact of increasing medical school class size. Respondents agreed that increasing class size necessitated recruiting more clinical teachers to avoid adversely affecting medical education. To recruit and retain faculty, administration must convince faculty that the benefits of teaching outweigh the disadvantages. If teaching is not a rewarding endeavor, medical schools, especially RMCs that depend in large part on part-time and volunteer faculty, may not be able to attract the medical educators they need.

Decreased productivity and lack of reimbursement for time spent teaching may negatively impact physicians who assume a role as a medical student educator, especially RMC physician educators dependent upon practice income for their livelihood. In 2004 a review of the literature regarding the impact of medical students on rural general practitioner preceptors was conducted by Walters, et al.⁴ They reported that satisfaction with teaching was a positive driver, while the single most negative aspect of teaching was time management. In contrast, a study conducted at the University of Kentucky College of Medicine in 1993 compared the productivity of fifteen family practice faculty and third year residents with and without medical students and found no significant

difference in the number of patients each of these groups saw.⁵

Compensation for time spent teaching may also contribute to a physician's satisfaction as a medical student educator. Shea et al⁶ studied the compensation of faculty members of the Department of Medicine at Columbia-Presbyterian Medical Center in New York City and determined that faculty members spent many hours teaching medical students and house staff but felt they were insufficiently reimbursed for their time. They concluded that compensation issues may jeopardize the teaching activities of the faculty, and compensation issues may be particularly acute on RMCs.

The aim of this study was to investigate the benefits and disadvantages of having medical students on their services perceived by the clinical faculty at KUSM-S. If the prevalence for discontent with teaching at KUSM-S was high and the predictors for this discontent were identified, corrective measures could be explored. As noted by Lowenstein et al,⁷ failure of medical schools to pay attention to sources of faculty discontent could result in a significant percentage of faculty members leaving academic careers.

METHODS

Kansas University School of Medicine-Salina (KUSM-S) is a rural, four-year RMC located in a community of approximately 48,000 in northcentral Kansas. KUSM-S was created in response to the undersupply and poor distribution of physicians in Kansas.^{8,9} The Salina RMC was opened in 2011 with a first class of eight students, making it the smallest four-year medical school in North America.¹⁰ Foundational science lectures during the first and second years of medical school are delivered to Salina students by live interactive television and are also available by podcast. Laboratory and small group discussion sessions during these years are facilitated by local faculty.

Required and elective third and fourth year clinical experiences are also provided in Salina. At the time of the study, 112 of the approximately 125 members of the active medical staff in Salina had KUSM-S clinical faculty appointments, and approximately one-half of all Salina faculty members actively participated in teaching medical students on clinical rotations. Twenty-seven clinical faculty members received small salaries (\$3,000-14,000/year) for administrative duties and teaching. The remainder of the clinical faculty received no remuneration for teaching medical students. The twenty-seven paid faculty supervised students on third and fourth year clinical rotations two to four months per year. The strictly volunteer faculty supervised students less than two months but typically more than two weeks per year.

All sixty-two KUSM-Salina clinical faculty members involved in teaching third and/or fourth year medical students on required and elective clinical rotations during the 2016 calendar year were invited to complete an online questionnaire. The survey consisted of fourteen questions on a 5-point Likert scale, two open-ended questions regarding the advantages and disadvantages of teaching medical students, and one final section for any additional comments. The survey questions were developed by the student author (C.A.) based on physician comments she and other students heard during clerkships and on issues raised by other authors studying this issue.^{4-7, 11} The fourteen Likert scale questions are listed in Table 1. The Kansas University Medical Center Institutional Review Board reviewed and approved the study protocol (IRB#00140503). Descriptive statistics were used to analyze results of quantitative survey items.

A preliminary email was sent to the physicians explaining the nature of the questionnaire and when it would be delivered. Several days later, the physicians were notified that the survey was open. Reminders to complete the survey were sent one week and ten days after the survey was opened. The survey closed two weeks after opening.

Participation in the study was strictly voluntary and no incentives were given. Respondents recorded neither compensation status (paid versus volunteer) nor their specialties, as several physicians were the sole practitioner in a specific discipline and could easily be identified. Physicians invited to respond represented a wide range of specialties, including family medicine, general internal medicine, internal medicine subspecialties, general surgery, orthopedics, urology, neurosurgery, neurology, psychiatry, pediatrics, emergency medicine, critical care medicine, and obstetrics and gynecology.

RESULTS

Thirty-six physicians completed the questionnaire (58% response rate). All respondents answered the fourteen Likert scale questions. Only two respondents did not enter free-text comments regarding the advantages and disadvantages of having medical students on their services. Seven respondents provided additional comments. Compensation status, physician specialty, and time spent teaching medical students were not reported on the survey.

Results of the survey are shown in Table 1. Instead of listing responses to questions in five columns, according to the five-point Likert scale, strongly agree and agree responses were combined in one column, neutral was left as a second column, and disagree and strongly disagree responses were combined in a third column. An overwhelming majority of respondents felt positively about having medical students in the hospital and/or clinic. Thirty-three (92%) physicians agreed/strongly agreed that having medical students in clinic/hospital was enjoyable, twenty-nine (81%) agreed/strongly agreed that having medical students working with them in clinic/hospital was beneficial to themselves, and twenty-six (72%) agreed/strongly agreed that having medical students in clinic/hospital increased their job satisfaction. Additionally, thirty-two (89%) respondents agreed/strongly agreed that having medical students in clinic/hospital prompted them

to be a more educated physician, and thirty-three (92%) agreed/strongly agreed that having medical students increased their aptitude to relearn disease processes.

Twenty-eight (78%) of responding physicians agreed that medical students were adequately prepared for clinical rotations, and thirty-four (94%) agreed that students displayed mature and professional behavior during their tenure on the clerkship. Thirty-four (94%) respondents felt valued by the medical students on their service, and twenty-nine (81%) also felt valued by KUSM-S administration.

Many of the clinical faculty at KUSM-Salina receive no financial incentive or only a small salary to serve as a medical student educator. Although survey respondents did not identify whether they received financial compensation for teaching, twenty (56%) physicians agreed/strongly agreed that additional incentive would encourage them to remain a teaching faculty member, and seventeen (47%) respondents agreed/strongly agreed that additional incentive would be necessary for them to accept more medical students.

Twelve (33%) physicians agreed/strongly agreed that medical students increased their patient satisfaction rating, seventeen (47%) physicians were neutral regarding medical students in clinic increasing their patient satisfaction rating, and seven (19%) disagreed/strongly disagreed. Slightly more than one-half of respondents (56%) felt that supervising medical students decreased the number of patients they were able to see.

DISCUSSION

This study may be limited by less than 100% participation by clinical faculty, and may not be generalizable to other RMCs that differ in size, mission or geographic location. Additionally, since respondents did not disclose their specialty focus, compensation status, or amount of time spent teaching medical students, correlation of these identifiers with question answers could not be

determined. Nevertheless, the survey provided a strong sense of physician sentiments regarding their roles as medical student educators on a rural RMC.

Several major themes emerged from review of the survey results: (1) most physicians enjoyed supervising medical students; (2) supervising medical students increased job satisfaction; (3) medical students on the service prompted physicians to become better educated or relearn disease processes; (4) financial compensation for teaching is a significant issue; and (5) supervising medical students decreases productivity.

Our findings confirmed previous reports that physicians feel positively challenged and motivated by the presence of medical students.^{4, 11} Overwhelmingly, physicians at KUSM-S valued having medical students on their service. Physicians felt energized by the presence of medical students, noted an overall increase in job satisfaction, enjoyed passing on their knowledge and being part of the education of the next generation of physicians, and felt valued by both students and the RMC administration. Additionally, student preparation and professionalism issues were not barriers to teaching. A minority of physicians believed that medical students increased their patient satisfaction rating.

Despite the majority of clinical faculty members embracing their role as teachers at the RMC, not all faculty members were entirely positive about their experiences with students. The majority of respondents felt that time management issues, productivity, and efficiency were negatively influenced by the presence of medical students on their clinical services. Nearly one-quarter of respondents felt that they saw fewer patients and spent longer hours at work due to having medical students on their service. Several physicians commented that students were not always prepared. Additionally, several physicians noted that not all of their patients were comfortable with

having a medical student in the exam room with them.

The clinical faculty at KUSM-S are asked to devote valuable time to teaching medical students, yet are given only small or no salaries for their teaching duties. Many physicians reported that additional incentive would encourage them to continue their role as medical student educators and that additional incentives would be necessary to take on more students per year. Incentive was not defined in this study, but financial compensation may be the most compelling incentive. Increasing salaries for those physicians already receiving compensation for teaching and adding physicians to the paid-teacher ranks on our RMC must be considered. In addition to providing salaries for those clinicians assuming a major role in clinical teaching, KUSM-S has developed other rewards for all physician teachers, including: (1) providing CME credits, necessary for state licensure, (2) medical library access, (3) academic promotion opportunities, (4) financial support of research initiatives or other scholarly activities, and (5) public recognition for excellence in teaching.

CONCLUSIONS

This study brings into focus the benefits and disadvantages of having medical students in clinic and/or hospital at a rural RMC. Although physicians report that having medical students is time-consuming, they also reported a variety of benefits from teaching medical students. Nevertheless, RMCs must remain cognizant of the demands medical students may place on part-time and volunteer faculty and make efforts to reward them for their educational endeavors, or face the possibility of losing their services to competing interests. Osteopathic and off-shore medical students, as well as mid-level trainees, are also seeking clinical experiences in the same communities hosting RMCs, and at times are willing to offer more compensation to clinicians than tendered by the RMC.

RMCs educate an increasing number of medical students in North America and recruiting and retaining a talented physician educator workforce is paramount to their success. Whether Salina physician satisfaction results are comparable to other RMCs is unknown, nor do we believe we have an educational template that can be adopted by other RMCs. However, we are pleased that the majority of our clinical faculty are enthusiastic about teaching. It is important that KUSM-S and other RMCs continually monitor their physicians' satisfaction to having medical students on their services.

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TABLE 1

Survey Questions	Agree/Strongly Agree	Neutral	Disagree/Strongly Disagree
1. I enjoy having medical students working with me in clinic.	91.7% (33)	2.8% (1)	5.6% (2)
2. Having a medical student working with me in clinic/hospital is beneficial to myself	80.6% (29)	8.3% (3)	11.1% (4)
3. Having a medical student working with me in clinic/hospital is beneficial to my patients	72.2% (26)	19.4% (7)	8.3% (3)
4. Having medical students in clinic/hospital increases my aptitude to relearn disease processes	91.7% (33)	8.3% (3)	0% (0)
5. Having medical students in clinic/hospital makes me a more educated physician.	88.9% (32)	11.1% (4)	0% (0)
6. Having medical students in clinic/hospital increases my job satisfaction.	72.2% (26)	22.2% (8)	5.6% (2)
7. Having a medical student in clinic increases my patient satisfaction rating.	33.3% (12)	47.2% (17)	19.4% (7)

8. Having medical students in clinic/hospital decreases the number of patients I am able to see.	55.6% (20)	16.7% (6)	27.8% (10)
9. Additional incentive would encourage me to remain teaching faculty.	55.6% (20)	13.9% (5)	30.6% (11)
10. Additional incentive would be necessary to take on more medical students.	47.2% (17)	19.4% (7)	33.3% (12)
11. Medical students are adequately prepared for clinical rotations.	77.8 % (28)	16.7% (6)	5.6% (2)
12. Medical students display mature, professional behaviors in clinic/hospital.	94.4% (34)	0% (0)	5.6% (2)
13. I feel valued by the KUSOM-Salina administration.	80.6% (29)	8.3% (3)	11.1% (4)
14. I feel valued by medical students on my service.	94.4% (34)	0% (0)	5.6% (2)