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Comparing Learning Environments Across Rural and Non-Rural Clinical Teaching Sites

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Abstract

Background

Medical schools utilizing community-based medical education (CBME) models are responsible for providing students with learning environments that are respectful, intellectually stimulating, and professionally supportive across dozens, and sometimes hundreds, of clinical teaching sites in rural and urban communities. The University of Washington School of Medicine's (UWSOM) CBME model is one of the oldest and largest, spanning across Washington, Wyoming, Alaska, Montana and Idaho. This descriptive study compared the treatment of students between rural and non-rural clerkship preceptors.

Methods

This study utilized Medical Student Evaluation of Educator (MSEE) data from 1,101 students who completed required clinical rotations in family medicine, pediatrics, internal medicine, surgery, psychiatry, and obstetrics/gynecology from 2019 to 2023. The analysis focused on two key evaluation questions regarding the clinical learning environment: Likert scale respect scores of preceptors and reports of negative behaviors by preceptors toward students. The results were compared between preceptors at rural and non-rural teaching sites. All evaluations were anonymized and aggregated to protect student identities.

Results

Across all clerkships, at both rural and non-rural sites, mean Likert respect scores were above 4.9 on a Likert Scale of 5. Similarly, less than 1% of students in both rural and non-rural sites reported negative behavior directed toward them. "Public embarrassment" was the most frequently reported negative behavior in both settings.

Conclusion

This study suggests that CBME-based medical schools can provide supportive learning environments across rural and non-rural teaching sites. However, the infrequent occurrence of negative preceptor behavior underscores the importance of continued monitoring and timely intervention to safeguard students.

Introduction

Community-based medical education (CBME) shifts clinical training from tertiary hospitals into physicians' offices, rural clinics, and other community settings where patients actually live.[1,2] The University of Washington School of Medicine first adopted the CBME model in the early 1970s.[3] In this model, students complete their required clerkships at rural and non-rural clinics and hospitals across Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI). A foundational element of these rotations is upholding a respectful and professional learning environment, as mandated by accreditation standards.[4,5] Beyond accreditation, a negative learning environment impairs learning and contributes to student anxiety and burnout.[6,7]

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While ensuring a positive learning environment is a goal of all medical schools, the CBME model introduces distinct complexities by extending clinical training across dozens and sometimes hundreds of diverse community sites. Further, rural teaching sites can present a unique subset of difficulties. The distance between rural teaching sites and medical schools can limit access to student and preceptor support. There are also potential differences between students' and rural communities' values, which may create tensions around topics such as abortion, political affiliation, firearm ownership, and LGBTQ+ inclusion.[8-10] In addition, students with backgrounds or identities that are not well-represented in their rural community placement may experience reduced psychological safety or feel pressure to suppress aspects of their identity.[11]

We found only one previous study comparing rural and non-rural clinical learning environments in undergraduate medical education. In a 2009 study, Carmody and his colleagues in Western Australia analyzed evaluation data from 172 students on an obstetrics and gynecology rotation. This study found no significant differences between rural and non-rural sites.[12] Our study presents an updated and more comprehensive comparison, based on an analysis of over 42,000 medical student evaluations of preceptors in rural and non-rural required clerkship rotations at UWSOM. The goal of this study is to elucidate any differences between rural and non-rural learning environments. Specifically, we hope to address two questions:

1. How do the mean student respect scores of preceptors compare between rural and non-rural clinical teaching locations?
2. What are the frequency and types of reported negative behaviors experienced by students in rural versus non-rural clerkship settings, and how do these compare?

Methods

Study Participants

Participants in this study include any UWSOM Medical Student who completed a Medical Student Evaluation of Educator (MSEE) of one or more clinical preceptors for at least one required clinical rotation in family medicine, pediatrics, internal medicine, surgery, psychiatry, and obstetrics/gynecology (OB/GYN). All rotations included in this study are six-weeks in length. The full internal medicine rotation is twelve-weeks in length; however, for the purposes of this study, we only analyzed MSEE data from the six-week outpatient portion of the rotation.

Clerkship Scheduling

The UWSOM Registrar's Office creates students' clinical schedules in the year before the start of clerkships. Students may make limited requests for specific clerkship teaching sites. However, most student rotations are based on the availability of the site and are randomly assigned.

The Evaluation

Following each clinical clerkship, students are asked to complete an online MSEE for each of the clinical teachers they work with on the rotation. There is no limit to the number of evaluations a student can submit. The evaluations are anonymous. To protect student identities, the evaluation data is released to each clerkship administration in aggregate.
The MSEE is comprised of two sections. The first section is related to aspects of clinical teaching, while the second section asks questions related to the learning environment. For the purposes of this study, we focused on two questions in the learning environment section. The first question asks students to score the level of respect they were given by their preceptor (Figure One). This is on a Likert scale from 1-5. The second learning environment question asks students to indicate if one or more of 19 behaviors were directed toward them by their preceptor. Figure Two lists the 19 behaviors included in the MSEE. 16 out of the 19 behaviors listed are negative and taken directly from the 2023 Association of American Medical Colleges (AAMC) Graduation Questionnaire.[13] In addition to these response options, there is one additional negative behavior: "Been subjected to negative or offensive behavior(s) based on personal beliefs or personal characteristics other than gender, race/ethnicity, or sexual orientation" and a positive behavior "I was treated with respect by this individual." Lastly, one neutral response option, "I did not personally experience any of the above behaviors directed at me," was excluded from our analysis.

Data Collection and Analysis

Between January and March 2024, our research team reviewed all MSEEs completed over four clinical clerkship years: 2019-20, 2020-21, 2021-22, and 2022-23. City and state information was replaced with a Rural-Urban Commuting Area Codes (RUCA). Communities with a RUCA code of 4 or greater, indicating less than 50,000 people, were considered rural.[14]

MSEE data for each clinical rotation (family medicine, internal medicine, pediatrics, OB/GYN, surgery, and psychiatry) were analyzed separately. We compared rural and non-rural evaluation results using Welch's Unpaired T-Tests. This test was used to compensate for the unequal number of rural to non-rural MSEEs.[15]

Results

Over the four clinical clerkship years, 1,101 students participated in one or more required clerkship rotations. Table 1 presents the mean respect scores of clinical preceptors, by clerkship, at rural and non-rural sites, on a 1-5 Likert scale. A total of 42,189 evaluations of clinical preceptors were completed by clerkship students. Of these evaluations, 2,798 were of preceptors at rural sites and 39,391 of preceptors at non-rural sites. Across all clerkships, at both rural and non-rural sites, mean Likert respect scores were similarly high. Rural mean respect scores, on a Likert Scale of 1-5, ranged from 4.97 in family medicine to 4.93 in surgery. Similarly, non-rural mean respect scores ranged from 4.98 in both family medicine and pediatrics to 4.91 in surgery. In comparing preceptor evaluations in rural and non-rural environments, there was no significant difference in mean Likert respect scores across any of the clerkships (family medicine P-Value =.092, obstetrics and gynecology P-Value=.291, psychiatry P-Value=.673, surgery P-Value = .615, pediatrics P-Value =.056, and internal medicine P-Value=.079).

Table 2 illustrates the second learning environment question, which asks students to report behaviors directed toward them by their preceptor. A total of 42,370 evaluations of clinical preceptors were completed by clerkship students. At rural sites, 2776 evaluations were completed, and 25 negative behaviors were reported (.68%). At non-rural sites, a total of 39,594 evaluations were completed, and 168 negative behaviors were completed (.42%). There was no statistically significant difference in reported negative behaviors between rural and non-rural preceptors (P-Value=.142).

Table 3 shows the five most common categories of negative behaviors across all clerkships. The most common type of negative behavior reported in both rural and non-rural was "Been publicly embarrassed"

Discussion

This study included evaluation data from 1,101 medical students across four academic years and six clinical clerkships. Students consistently reported being respected by their clinical preceptors in both rural and non-rural locations. Further, less than 1% of the evaluations reported preceptors who directed negative behaviors toward students. The common types of reported negative behaviors in both settings include offensive sexist, racial or ethnic remarks. These types of behaviors align with reporting from the AAMC Graduation Questionnaire.[16] Although reports of these behaviors are few, the exposure to such behaviors can undermine students' confidence and hinder their academic progress, while also contributing to mental health problems such as anxiety and depression.[6,7,11,19-23]

High respect scores and a low number of reported negative behaviors across both rural and non-rural teaching sites suggest that the CBME model can successfully expose students to real-world clinical practice while maintaining a supportive learning environment. At the University of Washington School of Medicine (UWSOM), several strategies have been implemented to help teaching sites and preceptors foster positive student experiences. In 2018, UWSOM created a dedicated Learning Environment Office and a Learning Environment Committee to track and follow up on reports of mistreatment. Additionally, UWSOM has made significant investments in learning environment training for preceptors across the region. For example, the Family Medicine Clerkship hosts three days of in-person faculty development each year for all clerkship site faculty leads at over 30 teaching sites across Washington, Wyoming, Alaska, Montana and Idaho. These meetings include sessions such as, how to assist students who have been mistreated by patients, how to utilize institutional support to improve the clinical learning environment,

and anti-racism training. While preceptor training is important, some attention must also be given to preparing students for the inevitable challenges of workplace dynamics. To mitigate the impact of stressful or negative experiences, several medical schools have incorporated resiliency training into their curricula.[17,18]

This study's strengths include the comprehensive evaluation data, which encompass a high volume of responses across multiple years and clerkships. This study also collected data from a wide and diverse geographic area. However, as a single-institutional study, the findings' generalizability may be limited. Another notable limitation is that the student rotations were not completely randomized, and therefore, some selection bias should be considered. In addition, power differentials within clinical settings might have deterred students from reporting disrespect or negative behaviors. This is especially true for rural teaching sites in this study which have fewer annual learners compared to urban residency sites. Therefore, it is possible that students fear that the anonymity of their evaluation at rural sites is more likely to be discovered by the site preceptors and may be less likely to report negative experiences. This study also did not consider the demographics of students rotating through either type of site. Women and minority students may have different experiences than other students. Excluding these identities from our analyses may overlook critical nuances in the experiences of these historically marginalized students and learning environment trends in both rural and non-rural teaching sites. Including student identities in future studies is necessary to further validate our results.

Conclusion

This study supports the idea that CBME-based medical schools can provide supportive learning environments across rural and non-rural sites. However, the occasional occurrence of inappropriate or disrespectful behavior underscores the importance of continued monitoring and timely intervention to safeguard students.

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Table 1. Medical Student Evaluation of Educators: "I was treated with respect by this individual"
Likert Scale 1-5[a] N=42,189

	Rural			Non Rural			
Rotation	**Students**	**Mean**	**SD**	**Students**	**Mean**	**SD**	**P-Value**
FM	1215	4.97	0.216	3263	4.98	0.166	0.092
OB/GYN	440	4.90	0.401	4268	4.92	0.379	0.291
Psych	106	4.95	0.288	4119	4.96	0.243	0.673
Surgery	131	4.93	0.308	5100	4.91	0.389	0.615
Peds	393	4.96	0.249	10505	4.98	0.141	0.056
IM	513	4.95	0.324	12136	4.97	0.199	0.076

[a]Likert Scale: 1=This individual consistently failed to treat me with respect and generally displayed an unprofessional or abusive manor during all interactions; 2= This individual treated me with respect approximately half of the time: displayed an unprofessional or disrespectful manner for the remainder of the time.;3=This individual treated me with respect most of the time.;4=This individual treated me with respect almost all of the time.;5=This individual treated me with respect throughout the rotation

Table 2. Medical Student Evaluation of Educators: Negative behaviors directed toward medical students in rural and non-rural clerkship rotations during required clerkships. All rotations are 6 weeks in length.
N=42,370

	Rural				Not Rural			
	Total students	Number of Reported negative behavior	Number of students reporting one or more negative behavior	Percent of students reporting one or more negative behavior	Total student	Number of reported negative behavior	Number of students reporting one or more negative behavior	Percent of students reporting one or more negative behavior
FM	**1225**	**10**	**7**	**0.57%**	**3286**	**9**	4	0.12%
Peds	**408**	**5**	**3**	**0.73%**	**10674**	**36**	22	0.20%
IM	**499**	**0**	**0**	**0.00%**	**11983**	**43**	25	0.20%
OB	**405**	**9**	**7**	**1.72%**	**4368**	**75**	45	1.03%
Surg	**133**	**2**	**2**	**1.50%**	**5096**	**79**	50	0.98%
Psych	**106**	**0**	**0**	**0.00%**	**4187**	**33**	22	0.78%
Total	**2776**	**26**	**19**	**0.68%**	**39594**	**275**	**168**	0.42%

Table 3. Types And Frequency of Most Cited Negative Behaviors Directed at Medical Students N=42,370	
Rural Preceptor Evaluations N=2,776	Non-Rural Evaluations N=39,594
Been publicly embarrassed (8)	Been publicly embarrassed (111)
Been subjected to racially or ethnically offensive remarks/names (6)	Been publicly humiliated (49)
Been subjected to offensive sexist remarks/names (5)	Been subjected to negative or offensive behavior(s) based on personal beliefs or personal characteristics other than gender, race/ethnicity, or sexual orientation (37)
Been publicly humiliated (3)	Been subjected to offensive sexist remarks/names (18)
Subject to unwanted sexual advances (1)	Been subjected to racially or ethnically offensive remarks/names (15)

Figure 1. Medical Student of Educator evaluation (MSEE):Respect Question: "I was treated with respect by this individual"
5 = This individual consistently treated me with respect throughout the rotation.
4 = This individual treated me with respect almost always.
3 = This individual treated me with respect most of the time.
2 = This individual treated me with respect approximately half of the time; displayed an unprofessional or disrespectful manner during the remainder of the time.
1 = This individual consistently failed to treat me with respect and generally displayed an unprofessional or abusive manner during all interactions
0 = NA/Insufficient to judge. ("This preceptor no longer works here", "I did not work with this preceptor.")

Figure 2. Medical Student of Educator evaluation (MSEE)Please indicate whether you personally experienced any of the following behaviors by this individual" Based on AAMC Graduation Questionnaire
Been publicly embarrassed
Been publicly humiliated
Been physically harmed
Been required to perform personal services
Been subjected to unwanted sexual advances
Been asked to exchange sexual favors for grades or other rewards
Been denied opportunities for training or rewards based on gender
Been subjected to offensive, sexist remarks/names
Received lower evaluations or grades solely because of gender rather than performance
Been denied opportunities for training or rewards based on race or ethnicity
Been subjected to racially or ethnically offensive remarks/names
Received lower evaluations or grades solely because of race or ethnicity rather than performance
Been denied opportunities for training or rewards based on sexual orientation
Been subjected to offensive remarks/names based on sexual orientation
Received lower evaluations or grades solely because of sexual orientation rather than performance
Been subjected to negative or offensive behavior(s) based on personal beliefs or personal characteristics other than gender, race/ethnicity, or sexual orientation
*I did not personally experience any of the above behaviors directed at me
*Not listed on AAMC Graduation Questionnaire