

Relationship of a Rural Medicine Didactic Course with Sensitivity to Rural Health Disparities



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Introduction

Rural Health Disparities in U.S.

- 20% U.S. rural population vs. only 10% U.S. rural physician practices^{1,2}
- Rural residents are less healthy & more socially disadvantaged compared to urban/suburban residents^{3,4}

Rural Medicine in Undergraduate Medical Education

- Many medical schools have developed rural medicine experiences to promote rural practice careers
- Limitations of current research on these experiences:
 - Conducted at allopathic medical schools, despite research indicating osteopathic physicians are more likely to pursue rural primary care⁵
 - Focus on clinical rotations (3rd/4th year) instead of didactic courses (1st/2nd year)
 - Limited outcome measures

Methods

Study Context

- Elective, didactic rural medicine course at DMU-COM
 - Interprofessional, interinstitutional collaboration
 - 5 six-hour sessions throughout academic year
 - Lecture, small group discussion & experiential learning components
 - Example topics:
 - Agriculture-related injuries & toxic exposures
 - Disaster planning & response in rural communities
 - Political advocacy for rural health
 - Telehealth

Outcome Variables

- Knowledge of rural population health
 - Health disparities: rural vs. urban/suburban
 - Barriers to healthcare in rural areas
- Attitudes toward rural patients & rural healthcare
 - Biases/stereotypes toward rural patients
 - Sources of negative judgment from healthcare providers
- Attitudes toward (& intention to pursue) rural practice career

Hypotheses

Comparing medical students who participated in a rural medicine didactic course with students who did not, course participants will demonstrate:

- 1) Greater knowledge of rural population health
- 2) Fewer negative attitudes toward rural patients
- 3) Increased interest in a rural practice career

Subjects, Procedures & Measures

Subjects

39 course participants OMS II, III, IV (recent graduates)

40 randomly-selected OMS IV non-participants

Procedures

Email invitation with consent & online survey link

Participation was voluntary, no incentives provided

Demographic information collected from DMU Registrar

Measures

Rural health disparity statements (6 pt agreement scale)

Barriers to healthcare rated as more prevalent in urban, suburban, or rural communities

Attitudes toward practice careers (6 pt agreement scale)

Practice intentions: rural, urban or suburban location

Rural background (high school location)

Analysis

- P-values calculated by Fisher's exact test (two-sided)
- SPSS Statistics for Windows, Vers 22.0. Armonk, NY: IBM Corp; 2013

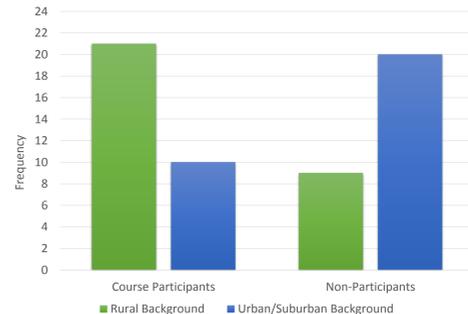
Results

Survey response rate: 75.9% (60/79 subjects)

Table 1. Respondent Characteristics

Item	Course Participants (n=31)	Non-Participants (n=29)
	Mean (SD)	Mean (SD)
Age	26.1 years (3.2)	27.4 years (3.2)
	Frequency (%)	Frequency (%)
Gender		
Female	18 (58)	14 (48)
Male	13 (42)	15 (52)
Race		
Asian	0 (0)	3 (10)
White	31 (100)	25 (86)
Other Race Designation	0 (0)	1 (3)
Ethnicity		
Hispanic/Latino	0 (0)	2 (7)
Non-Hispanic/Latino	31 (100)	27 (93)
Marital Status		
Single	16 (52)	17 (59)
Married/Partnered	15 (48)	12 (41)
Separated/Divorced/Widowed	0 (0)	0 (0)

Figure 1. Rural vs. Urban/Suburban Background



Course participants reported more positive attitudes (p=0.005) & greater intention (p<0.001) to pursue a rural practice career (Figure 2)

Figure 2. Practice Intentions by Community Type

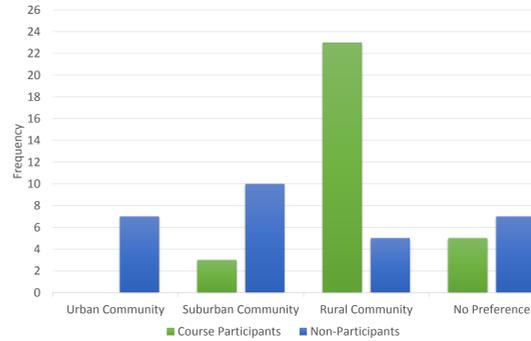


Table 3.1. Knowledge of Rural Health Disparities

Items Measuring Knowledge of Rural Population Health	Correct Response	Frequency of Correct Response (% of group)		p-value
		Course Participants	Non-Participants	
Rural communities have a higher prevalence of patients who...				
Abuse alcohol	Agree (Rural)	24 (77)	20 (71)	0.766
Are obese	Agree (Rural)	23 (74)	20 (69)	0.777
Engage in illicit drug use	Disagree (Urban)	18 (58)	16 (55)	1.000
Are relatively sedentary	Agree (Rural)	11 (37)	10 (34)	1.000
Smoke cigarettes	Agree (Rural)	22 (73)	24 (83)	0.532
Receive a fatal injury in an automobile accident	Agree (Rural)	14 (47)	16 (57)	0.445
Are age 65 or older	Agree (Rural)	27 (90)	20 (71)	0.098
Suffer from cancer	Agree (Rural)	19 (63)	17 (59)	1.000
Suffer from heart disease or are at risk for having a stroke	Agree (Rural)	25 (83)	22 (79)	0.744
Suffer from hypertension	Agree (Rural)	27 (90)	24 (86)	0.701
Test positive for HIV	Disagree (Urban)	27 (90)	25 (89)	1.000

Table 3.2. Knowledge of Barriers to Healthcare in Rural Areas

Items Measuring Knowledge of Rural Population Health	Correct Response	Frequency of Correct Response (% of group)		p-value
		Course Participants	Non-Participants	
In rural areas, patients receive unequal treatment from healthcare providers due to...				
Breaches in HIPAA privacy protections	Agree (Rural)	20 (66)	11 (39)	0.064
Community violence and crime	Disagree (Urban)	26 (87)	26 (90)	1.000
Community-based mental health services	Agree (Rural)	21 (70)	11 (38)	0.019
Community-based transportation	Agree (Rural)	26 (87)	17 (57)	0.020
Patient income level	Agree (Rural)	13 (43)	8 (27)	0.279
Patient health insurance coverage	Agree (Rural)	8 (27)	5 (17)	0.532
Patient educational level	Agree (Rural)	12 (40)	8 (29)	0.412
Shortage of healthcare providers	Agree (Rural)	27 (90)	25 (86)	0.706
I would face similar barriers to complying with HIPAA regulations regardless of whether I practice in urban, suburban, or rural communities	Disagree (Rural)	24 (77)	9 (31)	0.001
Physicians in suburban-based practices face fewer communication challenges than those working in urban and rural communities	Agree (Suburban)	16 (53)	16 (55)	1.000
I would worry more about prescription drug abuse in a rural than suburban or urban community practice	Disagree (Urban)	26 (87)	26 (90)	1.000

No differences in attitudes toward rural patients between groups, yet >50% subjects agreed with statements conveying negative attitudes toward rural patients

- Insensitivity to cultural views, community political views, & patient sexual orientation as potential sources of negative judgment toward rural patients (Table 4)

Table 4. Sources of Bias Toward Rural Patients

Items Measuring Attitudes Toward Rural Patients and/or Rural Healthcare	Frequency of Agreement with Statement (% of group)		p-value
	Course Participants	Non-Participants	
In rural areas, patients receive unequal treatment from healthcare providers due to...			
Insensitivity to cultural differences	20 (66)	17 (59)	0.596
Community political views	16 (53)	17 (59)	0.795
Patient poise and/or social sophistication	11 (37)	7 (24)	0.399
Patient race or ethnicity	10 (33)	8 (28)	0.779
Patient sex	7 (23)	8 (28)	0.771
Patient sexual orientation	19 (63)	19 (66)	1.000
Patient physical health status	4 (13)	8 (28)	0.209
Patient mental health status	12 (40)	11 (38)	1.000
Patients who live in urban and suburban communities tend to exhibit greater social sophistication than those living in rural environments	12 (40)	12 (41)	1.000

Controlling for rural background, knowledge & practice interest items remained significant by course participation (Table 5)

Table 5. Logistic Regression Analyses

Survey Item	OR	95% CI	p-value
I would face similar barriers to complying with HIPAA regulations regardless of whether I practice in an urban, suburban, or rural community			
Rural background (yes/no)	1.032	0.295-3.616	0.961
Class participation (yes/no)	0.088	0.020-0.388	0.001
Rural clinical rotation experience (yes/no)	0.431	0.104-1.794	0.248
I intend to practice in a rural community after completing residency			
Rural background (yes/no)	5.333	1.425-19.960	0.013
Class participation (yes/no)	9.382	2.277-38.651	0.002
Rural clinical rotation experience (yes/no)	0.737	0.176-3.084	0.676
In rural areas, patients receive unequal treatment from local healthcare providers due to community-based mental health services			
Rural background (yes/no)	0.863	0.260-2.871	0.810
Class participation (yes/no)	7.348	1.700-31.760	0.008
Rural clinical rotation experience (yes/no)	3.422	0.838-13.975	0.087
Setting up or joining a practice in a rural area would be a positive experience for me			
Rural background (yes/no)	1.202	0.227-6.358	0.829
Class participation (yes/no)	21.800	1.830-259.652	0.015
Rural clinical rotation experience (yes/no)	3.254	0.561-18.881	0.188
In rural areas, patients receive unequal treatment from local healthcare providers due to community-based transportation services			
Rural background (yes/no)	0.299	0.072-1.252	0.099
Class participation (yes/no)	5.425	1.126-26.151	0.035
Rural clinical rotation experience (yes/no)	0.374	0.081-1.732	0.209

Discussion

Present Findings

- Overall, subjects demonstrated fair knowledge of rural population health
- Course participants identified additional important barriers to healthcare in rural communities:
 - Lack of community-based mental health & transportation services
- Course participation predicted awareness that HIPAA compliance is challenging in rural areas
 - Previous research indicates rural communities may lack resources for safeguarding protected health information (PHI)⁶
 - Other studies identify concerns about the sharing of PHI in rural communities, given their close-knit nature⁷
- Both groups failed to identify several health disparities & barriers to healthcare
 - Rural risk factors - sedentary lifestyles, fatal injuries in car accidents³
 - Social determinants of rural health - income, education⁴
- Over half of subjects reported patients in rural healthcare setting may receive unequal treatment based on...
 - Insensitivity to cultural differences
 - Community political views
 - Patient sexual orientation

- Disappointing proportion of subjects agreed with statements conveying negative attitudes

- Controlling for rural background, course participants reported significantly greater interest in a rural practice careers

Limitations

- Single osteopathic medical school setting
 - Rural state
 - Primary care orientation
- Pre-/post-course design would better reflect growth attributable to course
- Self-report measures may not reflect actual attitudes & behaviors

Areas for Future Research

- Expand study to other institutions
- Examine students before & after completion of medical school curricula
- Examine the perceptions of rural patients⁸

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