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Family Medicine Resident Education About Health Disparities Associated With Incarceration: A CERA Research Study

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ABSTRACT

Background and Objectives: We submitted research questions to the Council of Academic Family Medicine Educational Research Alliance (CERA) to assess the format of family medicine resident education about health disparities associated with incarceration and the perceived efficacy of efforts to prepare graduates for competent care of formerly incarcerated patients in practice. We think this is a universal problem, and current efforts are insufficient.

Methods: We evaluated data as part of the fall 2022 CERA survey of program directors (PDs). We reviewed descriptive statistics, generated comparative analysis, and reported relational analysis. We analyzed internal structure with principal component analysis and inter-item reliability.

Results: A total of 286 out of 678 (42%) eligible PDs completed the survey. Most respondents felt that educating residents about health disparities associated with incarceration was important and that residents would welcome that education. However, PDs lacked existing curricula. PDs did not think that medical school graduates were well-prepared in this area, and ambivalence existed about whether residency graduates were well-prepared to treat formerly incarcerated patients upon graduation. Comparative analysis revealed differences in responses based on the type of program, the program and community size, and the PD demographics.

Conclusions: PDs acknowledged the importance of training residents about health disparities associated with incarceration and about care for formerly incarcerated patients in practice. However, they identified a gap between what was currently offered and what is needed to impact perception of resident readiness upon graduation. This training was felt to be most important in university-based programs with 31+ residents in US communities of greater than 150,000 people. We found no difference based on geographic location.

INTRODUCTION

According to the US Department of Health and Human Services, at any one time more than 6.9 million people (roughly equal to the population of the entire state of Tennessee)[1] are on probation or parole or are in state, local, or federal detention facilities, with more than 600,000 returning to the community annually.[2] An estimated 80% or more of these returning individuals have chronic medical, psychiatric, or substance use disorders.[3,4] Being previously incarcerated profoundly limits an individual's ability to find employment, housing, and social support.[5] Significant health disparities are present in this population, including, but not limited to, higher rates of diabetes, hypertension, asthma, and substance use.[6] Individuals with diverse identities continue to be disproportionately represented, which additionally introduces both conscious and unconscious bias, further impacting the care provided upon reentry.[7,8]

Residency training sites are often safety-net clinics that provide care to vulnerable population groups. Physicians and physicians in training must be educated about and mindful of these factors when providing medical care. While important for physicians to inquire about social determinants of health for all patients, these factors often have a greater impact on patients with a history of incarceration, leading to poorer health outcomes in this group. These patients can require a higher level of medical care coordination and understanding from their physician.[8]

In 2001, 1,200 residency directors at primary care programs were surveyed about whether they offered training experiences or education about working with incarcerated

or previously incarcerated patients. While only 14% reported offering instruction regarding this topic and 22% reported offering clinical experiences, a discordant 44% reported that their practices cared for these patients.[9] In those settings, residents were being asked to care for a population about which they were not being formally educated. In 2012, a published literature review documented training experiences caring for incarcerated or formerly incarcerated patients for 22 primary care training programs and 24 programs that trained other allied health professional students.[10] A study of psychiatry training programs in 2014 noted that roughly half of the 95 respondents had either mandatory or optional electives in correctional psychiatry, and programs that did not felt that the addition of such curriculum was needed and would be welcomed but difficult to achieve due to other requirements.[11] These authors also noted the disconnect between the lack of training, the lack of published studies, and the great need for physicians who do this work. Regarding this problem, family medicine appears nonunique compared to other primary care disciplines.

This problem persists, as many medical learners are unaware of the unique aspects of experience, needs, and resources of those with a history of incarceration. These learners are prepared to provide care that may not fit the needs or circumstances of their patients.[10] For this and other health disparities, the educational needs of programs and individual learners may vary. Those lacking general awareness may require baseline education in the form of lectures, independent assignments, or experiential programs before effective clinical care could be expected. Clinical teaching and guidance from educators skilled in caring for patients with a history of incarceration could then follow to hone clinical skills and behaviors to achieve the ultimate goal of improving patient care and reducing health disparities.

We hypothesized that, in the last 10 years, more family medicine residency programs had begun to incorporate education about health disparities associated with incarceration and care of incarcerated or formerly incarcerated patients. However, if most of that education has taken the form of didactic or experiential learning, not clinical learning, we would expect to see lower levels of change in physician behavior. We hypothesized that this training was occurring more often at larger, academic-affiliated, urban programs with a more diverse resident and faculty composition, but that no correlation to the resident complement of allopathic (MD) or osteopathic (DO) residents would be found. Given the extent of this population's health needs, we propose that this education is needed universally.

METHODS

In fall of 2022, questions were included in the nationally recognized Council of Academic Family Medicine Educational Research Alliance (CERA) survey of program directors (PDs) regarding family medicine resident education about health disparities associated with incarceration. The sampling size was determined by the Association of Family Medicine Residency Directors (AFMRD) list of all US family medicine residency programs accredited by the Accreditation Council for Graduate Medical Education (ACGME). The methodology of the CERA survey platform has previously been described in detail.[12] In addition to the questions submitted by research teams, the survey asks for demographic and professional information about the PDs, demographic information about the programs they direct, and demographic information about the communities in which these programs are located. The CERA steering committee evaluated our questions for consistency with the overall subproject aim, readability, and existing evidence of reliability and validity. Our project was approved by the American Academy of Family Physicians Institutional Review Board in November 2022. Data was collected from November 16 to December 18, 2022. The AFMRD list had 722 PDs at the time of the survey. Nine email addresses were undeliverable, resulting in 713 delivered invitations. The survey contained a qualifying question to remove programs that had not had three resident classes. Thirty-five PDs indicated that they did not meet criteria, and these responses were removed from the sample, reducing the sample size to 678. Four follow-up emails to encourage nonrespondents to participate were sent weekly after the initial email invitation, and a fifth reminder was sent 2 days before the survey closed.

Eight survey questions sought insight into the existence, perceived need, and acceptability of education about health disparities surrounding education. For details on the content of these questions, please reference Appendix 1. The descriptive statistics included means/standard deviations, medians/interquartile ranges, and frequencies/percentages. The comparative analysis was generated with univariate analysis of variance with post-hoc Bonferroni pairwise comparisons and Kruskal-Wallis analysis of variance with follow-up Mann-Whitney U tests. The relational analyses via bivariate associations included Spearman ρ correlations. The internal consistency of survey items was reported with inter-item reliability analysis via Cronbach α. Item domains were determined by exploratory principal components analysis (PCA) with Varimax rotation. All analyses were generated with SPSS version 26.0 (IBM).

RESULTS

Of 678 eligible PDs invited, 286 responded (42.18% response rate). Program and respondent demographics are represented in Table 1. Programs were well-distributed in size of community served, geographic region, and resident complement. Respondents were 50.7% female and 47.2% male and had served in their current role as PD for an average of 5.9 years (interquartile range 2.0–8.0). One-hundred and ninety-six (68.5%) of respondents self-identified as predominantly White, while 17 (5.9%) identified as Black/African American, 15 (5.2%) as Hispanic/Latino/of Spanish origin and 13 (4.5%) as multiracial. Fifty (17.5%) self-identified as underrepresented minority (URM).

TABLE 1. **Demographics**

Demographics	Count	Percentage
Type of residency program		
University-based	41	14.3
Community-based, university-affiliated	164	57.3
Community-based, nonaffiliated	69	24.1
Military	4	1.4
Other	8	2.8
State		
New England	7	2.4
Middle Atlantic	44	15.4
South Atlantic	42	14.7
East South Central	12	4.2
East North Central	55	19.2
West South Central	29	10.1
West North Central	24	8.4
Mountain	30	10.5
Pacific	43	15.0
Size of community		
<30,000	31	10.8
30,000–74,999	42	14.7
75,000–149,999	57	19.9
150,000–499,999	67	23.4
500,000–1,000,000	41	14.3
>1,000,000	48	16.8
Number of residents in program		
<19 residents	113	39.5
19–31 residents	126	44.1
>31 residents	46	16.1
Missing	1	0.3
Medical degree		
MD	229	80.1
DO	56	19.6
Missing	1	0.3
Years in program director role		
0.0–4.5	146	51.2
5.0–9.5	89	31.3
10.0–14.5	29	10.1
15.0–19.5	10	3.5
20.0–24.5	5	1.8
25.0–29.5	5	1.7
30.0–34.5	0	0.0
35.0–39.5	1	0.4
Gender		
Female/woman	145	50.7
Male/man	135	47.2
Choose not to disclose	6	2.1
Race		
American Indian/Native/Indigenous	3	1.0

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Table 1 continued		
Asian	33	11.5
Black/African American	18	6.3
Hispanic/Latino/of Spanish origin	20	7.0
Middle Eastern/North African	4	1.4
Native Hawaiian/Other Pacific Islander	0	0.0
White	209	73.1
Choose not to disclose	12	4.2
Underrepresented in medicine		
URM	50	17.5
Non-URM	235	82.2
Missing	1	0.3
Total	**286**	**100.0**

Abbreviation: URM, underrepresented minority

Seventy percent of respondents felt that educating residents about health disparities associated with a history of incarceration was moderately or extremely important. Most PDs (193, 67.5%) indicated that a curriculum to accomplish this did not exist. Many PDs felt that residents would welcome, or at least not resist, implementation of related curricula. Only 50% of PDs felt that residents graduated ready to provide effective care to this population. The question of whether a history of incarceration is a common experience in their patient population yielded a range of responses (40.6% strongly or somewhat disagreed; 44.3% strongly or somewhat agreed; 15.1% neither agreed nor disagreed). Responses are displayed in Table 2.

Analysis of variance revealed that the type of program significantly impacted several outcomes, as reported in Table 3. For 10 of 12 items (83.3%), university-based respondents reported higher scores than community-based and university-affiliated programs, with the same respondents to four of those 10 items reporting significantly higher scores. These areas included feeling that educating residents in these areas was more important (*P*=.043), and that residents welcomed didactic or reading education on these topics (vs community-based and academic-affiliated [*P*=.09] and nonacademic-affiliated [*P*=0.001]). Within community-based programs, those affiliated with universities felt that educating residents about these topics was more important than did nonaffiliated programs (*P*=.014).

Larger program size correlated with a sentiment that residents would welcome formal didactic education (31+ resident programs more likely than 19–31 resident programs [*P*=.022] or <19 resident programs [*P*=.029]). Self-identified URM respondents (*P*=.005) and female respondents (*P*=.008) felt more strongly than non-URM respondents and male respondents that educating residents in this topic was personally important to them. No other significant differences were seen between URM/non-URM and female/male respondents. Also, no significant differences were found based on respondent geographic region or MD/DO degree.

Spearman ρ correlations shown in Appendix Table 1 revealed associations of the six items from Table 2, along with the remaining three ordinal-scale items regarding community size, number of residents in the program, and importance of educating residents about health disparities associated with incarceration. We identified statistically significant correlations between residents that welcome formal didactic or reading assignments and (1) welcome mandatory/required clinical experiences in this area (ρ=0.70, *P*=.000); and (2) the perception that graduates are well-prepared to provide care to this population (ρ=0.25, *P*=.000). The sentiment that students matriculating into the program are well-prepared to effectively care for such patients significantly correlated with agreement that graduates of the program are well-prepared to effectively provide that care (ρ=0.51, *P*=.000). Other significant correlations included residents having chosen related elective clinical experiences and (1) history of former incarceration was a common experience of patients served (ρ=0.31, *P*=.000); (2) residents choosing elective clinical experiences (ρ=0.43, *P*=.000); and (3) residents welcoming formal didactic experiences (ρ=0.47, *P*=.000). Another significant correlation included residents welcoming mandatory/required clinical experiences and graduates are well-prepared to provide effective care to formerly incarcerated patients (ρ=0.51, *P*=.000).

Using the set of six items, PCA reported a two-factor structure. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.69 (*P*=.000), which suggested that the data was adequate for conducting a PCA. Kaiser's criteria (eigenvalues >1) revealed two factors accounting for 66% of item variance (Table 4). The inter-item reliability of all six items was α=0.74. The "resident enthusiasm" component (α=0.77) included residents welcoming didactic/reading assignments; residents welcoming mandatory clinical experiences; and residents having chosen elective clinical experiences in related areas. The "perception of need and capability to meet it" component (α=0.60) included a perception that history of former incarceration is a common patient experience; the interns are well-prepared to effectively provide care for them when first matriculating into the program; and residents are well-prepared to effectively provide care for them after graduating.

DISCUSSION AND CONCLUSIONS

The majority of PDs reported that providing education about health disparities associated with a history of incarceration was important but that they lacked existing curricula on the subject. Few PDs felt that students matriculated into their programs already prepared to provide care to formerly incarcerated patients, and only half of PDs reported that graduates of their programs were well-prepared to provide care to these patients. These findings support our hypothesis that this gap exists in family medicine residency education.

The majority of the 77 PDs who responded that they had curriculum regarding these health disparities added it during the last 1 to 3 years. This is more recent than the initially hypothesized addition in the last 5 to 10 years. The movement for Black Lives and recent wave of protest movements recognizing and publicizing the harms of systems of incarceration on American society may have spurred this recent increase. The downstream effects of these changes—in particular, changes in program culture—may not yet be fully captured in the CERA survey. Our hypothesis that this education was occurring most often at larger, university-affiliated, urban programs with more diverse resident and faculty groups was accurate. However, we were encouraged to find this education to be occurring almost as often at programs in smaller communities with less than 150,000 people, and equally likely in all geographic regions. The similar prevalence of these education programs in more conservative-leaning political regions as well as in more liberal regions was also an encouraging finding.

TABLE 2. **Descriptive Statistics**

Item	N	Median (IQR)	Percentages		
			Disagreed	Neither agreed nor disagreed	Agreed
A history of former incarceration is a common experience shared by patients in my residency clinic.	271	3.0 (2.0–4.0)	40.6	15.1	44.3
Students matriculating into my residency program are well-prepared to provide effective care to formerly incarcerated patients.	271	3.0 (2.0–3.0)	43.5	33.3	23.2
Residents welcome formal didactic or reading assignments on health disparities associated with incarceration.	251	4.0 (3.0–5.0)	12.7	30.7	56.6
Residents welcome mandatory/required clinical experiences on health disparities associated with incarceration.	247	3.0 (3.0–4.0)	19.9	36.8	43.3
Residents in my program have chosen elective clinical experiences on health disparities associated with incarceration.	232	2.0 (1.0–4.0)	58.2	16.4	25.4
Graduates of my residency program are well-prepared to provide effective care to formerly incarcerated patients.	270	3.5 (3.0–4.0)	20.7	29.3	50.0

Abbreviation: IQR, interquartile range

Self-identified URM and female respondents felt significantly more strongly than non-URM and male respondents that educating residents in this area was personally important to them. Residents at larger programs and those serving larger communities were felt to be more welcoming toward this education. PDs, in general, felt that residents would welcome many different formats for this education, including formal didactics, reading assignments, and clinical rotation experiences.

The wide range of item scores and large number of significant item correlations revealed a large, yet closely linked, distribution in individual responses. The evidence reported that the common patient experience of those formerly incarcerated was intimately linked with residents who were well-prepared to provide effective care yet were still aware of the need for and enthusiastically welcomed opportunities for further learning and clinical experiences in this area of health disparities. Resident enthusiasm accounted for most of the variability in responses among programs, but perception of need and capacity to meet it was next most important in explaining the variability.

We acknowledge that low response rates can limit the generalizability of survey results; however, this study had significant statistical power to interpret the results at the level received.

Interestingly, responses varied about whether a history of incarceration was a shared experience among many patients at the respondent's residency programs. We hypothesized that, given the large number of incarcerated and formerly incarcerated individuals present in the United States today, this education is greatly needed and is being provided to properly prepare physicians entering practice, regardless of geography. Referencing maps of the current US prison and jail population[13] and evaluating the annual statistics make clear that these patients are represented in every community. While residency clinics and community health centers are often safety-net clinics caring for a disproportionate segment of this population, all primary care physicians share this responsibility, no matter the practice setting. Physicians need to be cognizant of this population when taking a social history and considering social determinants of health that will impact the care of each patient. Perhaps if curricula about the health disparities associated with a history of former incarceration were included in all family medicine residency programs, awareness of this important social determinant would increase, and care would improve for those patients. Given the extent of this population's health needs, we propose that this education is needed universally. Family medicine is not alone in this problem. The community of physicians and educators treating patients with substance use disorder also have noted recently that despite many decades of educational research and advancement, a disconnect continues to exist between what is currently being offered in training programs and what is needed to equitably serve a population affected by significant health disparities.[14] If the current state of education on this topic continues to remain lacking in many of the nation's training programs, a national curriculum may be called for that includes a multifaceted approach to creating real behavioral change in physicians treating these patients.

We are very grateful to the survey respondents for providing this window into the state of education about health disparities associated with a history of former incarceration. We are encouraged to see some momentum and change occur-

TABLE 3. Comparative Analysis (Mann-Whitney U Tests)

Item	Program	N	Mean rank	*P*
How important do you personally feel it is to educate residents about health disparities associated with incarceration?	University-based	40	140.08	.548
	Community-based, university-affiliated	158	98.34	
A history of former incarceration is a common experience shared by patients in my residency clinic.	University-based	40	101.49	.799
	Community-based, university-affiliated	158	99.00	
Residents welcome formal didactic or reading assignments on health disparities associated with incarceration.	University-based	38	112.41	.009*
	Community-based, university-affiliated	147	87.98	
Graduates of my residency program are well-prepared to provide effective care to formerly incarcerated patients.	University-based	40	102.90	.609
	Community-based, university-affiliated	157	98.01	
How important do you personally feel it is to educate residents about health disparities associated with incarceration?	University-based	40	58.00	.043*
	Community-based, nonaffiliated	61	46.41	
A history of former incarceration is a common experience shared by patients in my residency clinic.	University-based	40	52.34	.700
	Community-based, nonaffiliated	61	50.12	
Residents welcome formal didactic or reading assignments on health disparities associated with incarceration.	University-based	38	57.41	.001*
	Community-based, nonaffiliated	55	39.81	
Graduates of my residency program are well-prepared to provide effective care to formerly incarcerated patients.	University-based	40	49.35	.626
	Community-based, nonaffiliated	61	52.08	
How important do you personally feel it is to educate residents about health disparities associated with incarceration?	Community-based, university-affiliated	158	116.21	.014*
	Community-based, nonaffiliated	61	93.92	
A history of former incarceration is a common experience shared by patients in my residency clinic.	Community-based, university-affiliated	158	110.19	.941
	Community-based, nonaffiliated	61	109.51	
Residents welcome formal didactic or reading assignments on health disparities associated with incarceration.	Community-based, university-affiliated	147	104.74	.181
	Community-based, nonaffiliated	55	92.84	
Graduates of my residency program are well-prepared to provide effective care to formerly incarcerated patients.	Community-based, university-affiliated	157	106.26	.197
	Community-based, nonaffiliated	61	117.84	

*Statistically significant difference in item mean ranks between university-based programs and community-based university-affiliated programs reported with Mann-Whitney U tests.

ring nationally, particularly in the last 3 years. However, we also believe these efforts to be insufficient to meet the societal need for family physicians capable of providing effective care for these patients. We did not find any studies that evaluated perceived barriers to implementation of this type of material in residency curricula. Lack of time and other training requirements are often major reasons cited for not implementing curricular changes. With the new ACGME program requirements for family medicine training programs, perhaps this work can be incorporated more easily without detracting from other key components of training. Assisting the change process with interventions such as creating standard or template curricula, offering faculty development, and supporting learner advocates to push for curricular changes may help. Change also may necessitate pairing these efforts with regulatory interventions such as accreditation standards, competency requirements, and inclusion of relevant content on board and recertification exams. More work is needed to identify which interventions would be most effective and acceptable for the field. Surveying residents or recent residency graduates may be

TABLE 4. **Principal Components Analysis**

Item	Resident enthusiasm	Perception of need and capacity to meet it
Residents welcome formal didactic or reading assignments on health disparities associated with incarceration.	.91	.10
Residents welcome mandatory/required clinical experiences on health disparities associated with incarceration.	.89	.10
Residents in my program have chosen elective clinical experiences on health disparities associated with incarceration.	.62	.38
Students matriculating into my residency program are well-prepared to provide effective care to formerly incarcerated patients.	−.01	.84
Graduates of my residency program are well-prepared to provide effective care to formerly incarcerated patients.	.20	.83
A history of former incarceration is a common experience shared by patients in my residency clinic.	.25	.50

a revealing next step because resident perceptions often differ from PD perspectives, and residents or early career physicians may feel differently about the way this education is presented and its value in preparing future family doctors. Carrying this work forward into presentations at national family medicine education conferences is key to connecting the organizations currently doing this work and developing a framework within which programs can innovate for their residents and local patient population. Family medicine has long led the way in filling unmet needs in the health care of our communities. We must redouble our commitment to provide excellent care for this population now and in the future.

REFERENCES

1. American Counts Staff. Tennessee population near 7 million in 2020. *US Census Bureau.* 2021. https://www.census.gov/library/stories/state-by-state/tennessee-population-change-between-census-decade.html.
2. Office of the Assistant Secretary for Planning and Evaluation. Incarceration & reentry. *U.S. Department of Health and Human Services.* 2023. https://aspe.hhs.gov/topics/human-services/incarceration-reentry-0.
3. Office of the Assistant Secretary for Planning and Evaluation . Health Care Transitions for Individuals Returning to the Community From a Public Institution: Promising Practices Identified by the Medicaid Stakeholder Group. *Department of Health & Human Services.* 2023. https://aspe.hhs.gov/sites/default/files/documents/d48e8a9fdd499029542f0a30aa78bfd1/health-care-reentry-transitions.pdf.
4. Davis DM, Bello JK, Rottnek F. Care of incarcerated patients. *Am Fam Physician.* 2018;98(10):577-583.
5. Kulkarni SP, Baldwin S, Lightstone AS, Gelberg L, Diamant AL. Is incarceration a contributor to health disparities? Access to care of formerly incarcerated adults. *J Community Health.* 2010;35(3):268-274.
6. Binswanger IA, Krueger PM, Steiner JF. Prevalence of chronic medical conditions among jail and prison inmates in the USA compared with the general population. *J Epidemiol and Community Health.* 2009;63(11):912-919.
7. Inmate race. *Federal Bureau of Prisons.* 2023. https://www.bop.gov/about/statistics/statistics_inmate_race.jsp.
8. Hofmeister S, Soprych A. Teaching resident physicians to work with the previously incarcerated patient. *Int J Psychiatry Med.* 2017;52(3):277-285.
9. Kraus ML, Isaacson JH, Kahn R, Mundt MP, Manwell LB. Medical education about the care of addicted incarcerated persons: a national survey of residency programs. *Subst Abus.* 2001;22(2):97-104.
10. Min I, Schonberg D, Anderson M. A review of primary care training programs in correctional health for physicians. *Teach Learn Med.* 2012;24(1):81-89.
11. Fuehrlein BS, Jha MK, Brenner AM, North CS. Availability and attitudes toward correctional psychiatry training: results of a national survey of training directors. *J Behav Health Serv Res.* 2014;41(2):244-250.
12. Seehusen DA, III AGM, Chessman AW. Creating a centralized infrastructure to facilitate medical education research. *Ann Fam Med.* 2018;16(3):257-260.
13. The number of individuals in jail and prison for every U.S. county. *Vivid Maps.* 2023. https://vividmaps.com/number-individuals-jail-prison-every-u-s-county.
14. Satterfield JM, Werder K, Reynolds S, Kryzhanovskaya I, Curtis AC. Transforming an educational ecosystem for substance use disorders: A multi-modal model for continuous curricular improvement and institutional change. *Subst Abus.* 2022;43(1):953-954.