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ORIGINAL ARTICLE

Integrated Behavioral Health in Primary Care Residency and Nonresidency Practices

Kris Pui Kwan Ma, PhD[a]; Brenda L. Mollis, MPH, MPA, MA[a]; Imara I. West, MPH[b]; Jennifer Rolfes, DBH, MBA, MS[c]; Jessica Clifton, PhD[d]; Rodger Kessler, PhD[e]; Laura-Mae Baldwin, MD, MPH[a]; Prama Chakravarti, PhD[f]; Sarah Dewane, PhD[g]; Winslow Gerrish, PhD[h]; John Holmes, PharmD[i]; Katie Karlson, MD[j]; Verena Roberts, PhD[i]; Kari A. Stephens, PhD[a]

AUTHOR AFFILIATIONS:

[a] Department of Family Medicine, University of Washington School of Medicine, Seattle, WA

[b] Department of Psychiatry & Behavioral Sciences, University of Washington School of Medicine, Seattle, WA

[c] Cornerstone Whole Healthcare Organization Inc, Payette, ID

[d] Department of Medicine, University of Vermont, Burlington, VT

[e] Department of Family Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO

[f] Eastside Psychological Associates, Issaquah, WA

[g] Alaska Family Medicine Residency, Anchorage, AK

[h] Full Circle Health/Family Medicine Residency of Idaho, Boise, ID

[i] Department of Family Medicine, Idaho State University, Pocatello, ID

[j] Kadlec Family Medicine Residency, Richland, WA

CORRESPONDING AUTHOR:

Kris Pui Kwan Ma, Department of Family Medicine, University of Washington School of Medicine, Seattle, WA, krisma@uw.edu

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ABSTRACT

Background and Objectives: Integrated behavioral health (BH) is becoming a preferred model of care for primary care because it improves patient outcomes and satisfaction. Little is known about whether residency practices are consistently modeling this preferred care model relative to real-world nonresidency practices. The study compared levels of BH integration, patient health outcomes, and satisfaction with care between residency practices and nonresidency practices with colocated BH providers.

Methods: Baseline data were collected in 2018-2019 from 44 practices and their adult patients with chronic conditions participating in a cluster-randomized, pragmatic trial to improve BH integration. The sample included 18 (40.9%) residency and 26 (59.1%) nonresidency practices, with 1,817 (45.3%) patients from residency practices and 2,190 (54.7%) patients from nonresidency practices. Outcomes including BH integration levels (the Practice Integration Profile), patient health outcomes (the PROMIS-29), and patient satisfaction with care (the Consultation and Relational Empathy scale) were compared between residency and nonresidency practices using multivariate regression analyses.

Results: No differences were found between BH integration levels, patient health outcomes, and patient satisfaction with care between residency and nonresidency practices. In a sample of primary care practices with colocated BH providers, residencies had BH integration and patient outcomes similar to real-world practices.

Conclusions: Primary care practices with residency programs reported comparable levels of BH integration, patient health outcomes, and patient satisfaction compared to practices without residency programs. Both types of practices require interventions and resources to help them overcome challenges associated with dissemination of high levels of BH integration.

INTRODUCTION

Primary care is the de facto behavioral health (BH) services and care system in the United States.[1] An estimated 30% to 80% of primary care visits are related at least in part to BH issues,[2] particularly among patients with multiple chronic conditions.[3] To meet the high BH needs in primary care, more practices have begun to integrate BH providers into primary care teams to offer effective interventions to patients with specific mental health, substance use, and medical conditions.[4] Research has found that patients with multiple chronic conditions have better patient outcomes and positive experiences of care in primary care practices with BH integration than those without integration.[5-7]

Attaining accreditation from the US Accreditation Council for Graduate Medical Education (ACGME) necessitates significant BH training and practice opportunities for medical residents in primary care residency training programs.[8-10] This necessity has incentivized residency practices to integrate BH providers and train primary care residents to detect BH symptoms and support whole-person care. Given the extensive programmatic and educational requirements to prepare residents for real-world practice,[11] residency practices are presumed to

be places of excellence,[12] providing higher quality of care and more team-based care than nonresidency practices.[13]

Literature on BH integration in primary care residency and nonresidency settings is scarce and tends to be limited to samples of selective, high-performing practices.[14] For instance, in the 2017 Council of Academic Family Medicine Educational Research Alliance (CERA) survey completed by program directors, Jacobs et al[15] found that about one-third of the family medicine residency programs practiced full BH integration and nearly half had BH services colocated within their clinics. Family medicine residency programs with high levels of BH integration reported using a variety of behavioral professionals and services. On the other hand, Blasi et al[14] surveyed 30 general, nonresidency, primary care practices that were selected for their innovative workforce practices in providing team-based care and found that these practices shared common goals, characteristics, and challenges when integrating BH. No known US studies have compared BH integration in residency versus nonresidency primary care practices.

Despite the strong and growing evidence base for integrated behavioral health, its implementation has lagged. In a 2022 report from the Robert Graham Center,[16] only 20.2% of primary care practices reported having a colocated BH provider. Given that ACGME requirements result in BH integration training and practice experts within residency programs, research is needed to determine how well these training programs prepare the primary care workforce for advanced integrated BH practice. Leveraging a preexisting trial that recruited a unique set of US primary care practices with colocated BH, we compared levels of BH integration, patient-reported health outcomes, and patient satisfaction with care between practices with residency training programs versus community-based, nonresidency practices.

METHODS

Setting and Sample

This study used baseline practice and patient data collected in 2018-2019 within the cluster-randomized Integrating Behavioral Health and Primary Care (IBH-PC) trial, which tested a practice-level quality improvement intervention aimed at improving integrated behavioral health in a convenience sample of primary care practices across the United States. Details of the trial and recruitment are published elsewhere.[17] Practices were recruited if they (a) had at least one primary care provider (PCP) and one on-site/colocated behavioral health provider (BHP) employed at 0.5 full-time equivalent (FTE); (b) had developed and supported electronic health records access, documentation, and communication functions to include medical and behavioral providers; (c) had at least one BHP eligible to provide services for patients with any insurance plan that made up 10% or more of the practice site's annual billings; and (d) were below the 75% percentile benchmark for integrated BH based on the Practice Integration Profile (PIP).

A random sample of qualifying adult patients (18 years or older) was recruited from each practice. The included patients had both an eligible chronic medical condition (eg, arthritis; obstructive lung disease including emphysema, chronic bronchitis, or asthma; nongestational diabetes; heart disease manifested as heart failure or hypertension) and a behavioral health condition (eg, anxiety, depression, chronic pain, insomnia, irritable bowel syndrome, substance misuse), or had at least three eligible chronic medical conditions; and had at least two visits to the participating practice sites within the last 24 months, including at least one visit within 6 months of baseline. The study was approved by the University of Vermont and through other local institutional review boards (IRBs) that were not able to defer to University of Vermont's IRB.

Data Collection

Practice Characteristics

We surveyed 44 practices at baseline to collect practice characteristics, which included residency training status (yes/no); type of organization (hospital or health system-owned clinics, academic medical center, community health centers/federally qualified health centers, or private practice); specialty of practice (family medicine, internal medicine, or both); nonprofit status; geographic location; size of the patient panel; number of visits in the last 12 months; fraction of adult visit revenue from Medicare; BHP and PCP full-time equivalents; and years of BH services offered on-site. We assigned rural or urban status using rural-urban commuting area codes (RUCAS) based on practice ZIP code designation.[18]

Patient Characteristics

We collected patient assessment data and demographic information, including patients' age, sex, race, ethnicity, marital status, education level, employment status, annual income, and urban residence via web, paper, or phone. We assigned each patient a social deprivation index (SDI) based on their ZIP code.[19] The SDI is a composite score of eight measures (ie, percent Black, percent living in poverty, percent nonemployed, percent with fewer than 12 years of schooling, percent single-parent households, percent renter occupied housing, percent households with no car, and percent living in overcrowded conditions) collected in the American Community Survey (ACS), and one measure of high needs constructed from the ACS (ie, percent under the age of 5 years, or female between the ages of 15 and 44 years). The SDI score ranges from 0 to 100, and the higher score indicates the greater social deprivation, which is positively associated with poor access and health outcomes.[19]

Outcomes and Measures

Practice BH Integration

We administered the 30-item PIP[20] at baseline to at least four members (one PCP, one BHP, one administrator, and one general staff member) from each practice to assess the level of the practice's BH integration across six domains: practice workflow, clinical services, integration methods, case identification, patient engagement, and workspace arrangement

and infrastructure. For each domain, the scores range from 0 (no integration) to 100 (full integration). The total integration score was the average of the six domain scores. The PIP has been validated with high reliability (α=0.95) for the total integration score.[20–22]

Patient Health Outcomes

We used the Patient-Reported Outcomes Measurement Information System (PROMIS-29 v2.0)[23] to measure patients' anxiety, depression, fatigue, pain interference, sleep disturbance, and physical and social functioning in the past 7 days, using a 5-point response option. We scored responses on a T-score metric based on the original PROMIS normative reference sample of US adults, scale scored with a mean equal to 50, and a standard deviation of 10. A higher T-score indicated worse severity in anxiety, depression, fatigue, pain interference, and sleep disturbance. A lower T-score indicated worse severity in physical and social functioning. Scores 5 or more away from 50 indicated at least mild impairment.[24] We included an additional pain numerical rating scale (0-10) where a higher rating was worse pain.

Patient Satisfaction With Care

We used the 10-item Consultation and Relational Empathy (CARE) survey[25] to assess patient satisfaction with care, particularly related to their perception of provider empathy and their experience of one-on-one medical consultations with providers. In the survey, we used a 5-point scale; the average score with 10 items ranged from 1 being the lowest and 5 being the highest. The CARE has high reliability (α=0.92).[25]

Analyses

In our descriptive analyses, we summarized practice characteristics, patient characteristics, and overall frequencies of baseline outcomes. We used χ^2 tests, Fisher's exact tests, and independent *t* tests to compare practice and patient characteristics between residency and nonresidency practices. We used multivariate linear regression models to compare the PIP between the two types of practices, and we adjusted for practice specialty, organization type, years of BHP services offered on-site, rural status, and PROMIS-29 mental health summary score. We clustered the regression models comparing PROMIS-29 and CARE between residency and nonresidency practices by practice and adjusted for patient age, sex, race, ethnicity, marital status, employment status, income level, education level, rural status, social deprivation index score, and practice baseline PIP score. We performed all analyses using SAS version 9.4 software for Windows (SAS Institute).

RESULTS

Practice Characteristics

Of the 44 primary care practices, 18 (40.9%) had residency training programs. Residency practices were more likely than nonresidency practices to be hospital or health system-owned or in academic medical centers, to include only family medicine providers, and to be located on the West Coast and in Hawaii. No other differences in practice characteristics were found between residency and nonresidency practices (Table 1).

Patient Characteristics

The patient sample (N=4,007) included 1,817 (45.3%) patients from residency practices and 2,190 (54.7%) patients from nonresidency practices. Compared to patients from nonresidency practices, patients in residency practices were more likely to be younger, female, identified as Black/African American or Asian, not married, disabled, more college educated, lower income, more urban, and with greater social deprivation (Table 2).

Practice BH Integration

The mean BH integration total score measured by the PIP in practices with residency training was not significantly higher than that of nonresidency practices, after adjusting for practice specialty, organization type, rural status, years of BHP services offered on-site, and PROMIS mental health summary score (Table 3). Both practice types were well below the 75th percentile. For descriptive purposes, we also examined unadjusted comparisons across six domains of BH integration (Table 4). Both types of practice had the highest average PIP scores in the domain of workplace arrangements and the lowest average PIP scores in the domain of patient engagement. Both types of practices had high variability across practice sites in levels of BH integration.

Patient Health Outcomes

Patients from both residency and nonresidency practices reported generally worse symptomatology and functioning than the PROMIS normative US adult sample across all domains as indicated by their T-scores. The T-scores were higher than the normative mean of 50 (SD=10) in anxiety, depression, fatigue, pain interference, and sleep disturbance; and lower than the normative mean in physical function and social participation (Table 5), as expected given that the patients were selected with multiple chronic conditions. No significant differences in patient-reported outcomes between residency and nonresidency practices were found when adjusting for patient age, sex, race, ethnicity, marital status, employment status, income, education level, urban residence, social deprivation index score, and practice baseline PIP score, indicating that both types of practices treated patients with similar levels of health outcomes.

Patient Satisfaction With Care

Patients from both types of practices did not report significant differences on average in their satisfaction with care (Table 4). The mean scores of patient satisfaction with care were high for patients in residency practices (mean 4.24, SD 0.92) and nonresidency practices (mean 4.28, SD 0.88), measured by the 5-point scale on the CARE survey.

DISCUSSION

Integrated behavioral health is becoming a preferred model of care for primary care, as evidenced by improvement in patient outcomes and experiences of care. More primary care

TABLE 1. Practice Characteristics by Residency and Nonresidency Practices

Characteristics	Overall (N=44)	Residency practices (N=18)	Nonresidency practices (N=26)	*P* value*
	n (%)	n (%)	n (%)	
Practice specialty				.03
Family medicine	22 (50.0)	12 (66.7)	10 (38.5)	
Internal medicine	7 (15.9)	4 (22.2)	3 (11.5)	
Both	15 (34.1)	2 (11.1)	13 (50.0)	
Organization type				.01
Community health center/federally qualified health center	14 (31.8)	2 (11.1)	12 (46.2)	
Hospital or health system-owned	20 (45.5)	11 (61.1)	9 (34.6)	
Private	4 (9.1)	0 (0.0)	4 (15.4)	
Academic medical center	4 (9.1)	3 (16.7)	1 (3.9)	
Mixed**	2 (4.6)	2 (11.1)	0 (0.0)	
Nonprofit				.31
Yes	39 (88.6)	17 (94.4)	22 (84.6)	
No	5 (11.4)	1 (5.6)	4 (15.4)	
Geographic region				.003
Mid-Atlantic and Great Lakes	6 (13.6)	2 (11.1)	4 (15.4)	
Mountain	8 (18.2)	3 (16.7)	5 (19.2)	
New England	10 (22.7)	3 (16.7)	7 (26.9)	
Pacific Northwest	3 (6.8)	2 (11.1)	1 (3.9)	
The South	8 (18.2)	0 (0.0)	8 (30.8)	
West Coast and Hawaii	9 (20.5)	8 (44.4)	1 (3.9)	
Urban				.07
Yes (RUCA codes 1-3)	39 (88.6)	18 (100.0)	21 (80.7)	
No (RUCA codes 4-10)	5 (11.4)	0 (0.0)	5 (19.2)	
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	***P* value***
BHP FTEs	1.5 (1.1)	1.5 (0.7)	1.5 (1.3)	.91
PCP FTEs	6.0 (3.1)	5.5 (2.1)	6.4 (3.6)	.36
Years of BHP services	6.8 (6.9)	8.7 (7.7)	5.6 (6.2)	.15
Visits in the last 12 months	27,297.9 (19,177.7)	28,087.6 (22,966.7)	26,751.2 (16,527.2)	.83
Total patient panel size	9,319.0 (4,969.0)	9,074.1 (3,307.3)	9,488.5 (5,912.4)	.76
Fraction of adult revenue from Medicare	0.2 (0.1)	0.2 (0.1)	0.2 (0.2)	.10

Abbreviations: RUCA, rural-urban commuting area codes; BHP, behavioral health provider; PCP, primary care provider; FTE, full-time equivalent; SD, standard deviation

*P value determined by χ^2 or Fisher's exact test or t test. Significance at $P<.05$.

**One mixed practice identified as a hospital or health system-owned and an academic center, and another mixed practice identified as a community health center and a hospital or health system-owned.

practices are recruiting and sustaining integrated BH providers nationally.[26] Because residency programs train the future primary care workforce, understanding how these programs have prepared the future workforce to practice integrated behavioral health in real-world settings is crucial. We found no differences in this sample among levels of integration, patient health outcomes, or patient satisfaction with care between residency practices and nonresidency practices, despite residencies' additional programmatic and educational commitments and resources for BH integration. However, this sample also demonstrated a significantly different population of patients in residency versus nonresidency practices, which may influence residency practices' struggle to advance BH integration. Namely, the residency practices in this study represented populations with more challenging social determinants of health in more urban areas compared to the nonresidency practices. Residency practices may require more and different resources to help address unique patient population needs and to innovate BH integration fully into their clinical and training programs to support dissemination of this evidence-based practice of integrated behavioral health.[27]

TABLE 2. Patient Characteristics by Residency and Nonresidency Practices

Characteristics	Overall(N=4,007) n (%)	Patients in residency practices(N=1,817) n (%)	Patients in nonresidency practices(N=2,190) n (%)	*P* value*
Age (in years)				<.001
18 to 34	146 (3.6)	75 (4.1)	71 (3.2)	
35 to 50	586 (14.6)	279 (15.4)	307 (14.0)	
51 to 64	1,412 (35.2)	703 (38.7)	309 (32.4)	
65 and older	1,820 (45.4)	733 (40.3)	1,087 (49.6)	
Sex				.04
Female	2,521 (62.9)	1,172 (64.5)	1,349 (61.6)	
Male	1,475 (36.8)	637 (35.1)	838 (38.3)	
Race				<.001
American Indian or Alaska Native	39 (1.0)	17 (0.9)	22 (1.0)	
Asian	138 (3.4)	94 (5.2)	44 (2.0)	
Black or African American	469 (11.7)	281 (15.5)	188 (8.6)	
Native Hawaiian or Other Pacific Islander	53 (1.3)	28 (1.5)	25 (1.1)	
Other**	217 (5.4)	100 (5.5)	117 (5.3)	
White	2,987 (74.5)	1,249 (68.7)	1,738 (79.4)	
Ethnicity—Hispanic				.67
Yes	376 (9.4)	166 (9.1)	210 (9.6)	
No	3,560 (88.8)	1,612 (88.7)	1,948 (88.9)	
Married or living as married				<.001
Yes	1,907 (47.6)	782 (43.0)	1,125 (51.4)	
No	2,080 (51.9)	1,028 (56.6)	1,052 (48.0)	
Employment status				<.001
Disabled	1,021 (25.5)	558 (30.7)	463 (21.1)	
Full-time	764 (19.1)	306 (16.8)	458 (20.9)	
Homemaker	148 (3.7)	61 (3.4)	87 (4.0)	
Part-time	332 (8.3)	136 (7.5)	196 (9.0)	
Retired	1,432 (35.7)	580 (31.9)	852 (38.9)	
Student	33 (0.8)	15 (0.8)	18 (0.8)	
Unemployed/looking	119 (3.0)	62 (3.4)	57 (2.6)	
Annual income <$30K				<.001
Yes	1,967 (49.1)	948 (52.2)	1,019 (46.5)	
No	1,831 (45.7)	780 (42.9)	1,051 (48.0)	
AA, BA, or graduate degree				<.001
Yes	1,811 (45.2)	872 (48.0)	939 (42.9)	
No	2,101 (52.4)	901 (49.6)	1,200 (54.8)	
Urban residence				<.001
Yes	3,177 (79.3)	1,685 (92.7)	1,492 (68.1)	
No	729 (18.2)	56 (3.1)	673 (30.7)	
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	***P* Value**
Social deprivation index	52.8 (28.3)	54.5 (29.7)	51.5 (27.0)	<.001

Note: Number of missing cases for each variable by practice: age, residency n=27, nonresidency n=16; sex, residency n=8, nonresidency n=3; race, residency n=48, nonresidency n=56, including 76 patients who preferred not to say their race; ethnicity, residency n=39, nonresidency n=32; married or living as married, residency n=7, nonresidency n=13; employment status, residency n=99, nonresidency n=59, including 5 patients who indicated Other for employment status; annual income <$30K, residency n=89, nonresidency n=120; AA, BA, or graduate degree, residency n=44, nonresidency n=51; urban residence, residency n=76, nonresidency n=25. *P value determined by χ^2 or Fisher's exact test. Significance at $P<.05$. **Other was a distinct category where respondents selected to identify themselves in race categories that were not reflected above. Abbreviations: SD, standard deviation.

TABLE 3. Adjusted Comparison of Baseline PIP Score by Residency and Nonresidency Practices

Baseline PIP score	Responses from residency practices (N=73), Mean (SD)	Responses from nonresidency practices(N=110), Mean (SD)	Results		
			Estimate	SE	*P* value*
Total score	57.0 (17.8)	61.8 (17.2)	-0.43	3.30	.66

Note: Analyses were adjusted for practice specialty, organization type, years of behavioral health provider services offered on-site, rural status, and PROMIS-29 mental health summary score.
**P* value determined by multivariate linear regression. Significance at *P*<.05.
Abbreviations: PIP, Practice Integration Profile; SD; standard deviation; SE, standard error; PROMIS, Patient-Reported Outcomes Measurement Information System.

TABLE 4. Unadjusted Comparisons of Baseline PIP Domain Scores by Residency and Nonresidency Practices

Baseline PIP domains	Overall responses (N=183), Mean (SD)	Responses from residency practices (N=73), Mean (SD)	Responses from nonresidency practices (N=110), Mean (SD)	*P* value *
Practice workflow	49.2 (22.0)	46.9 (22.2)	50.8 (21.9)	.25
Clinical services	59.5 (21.5)	55.5 (22.6)	62.2 (20.3)	.04
Workspace arrangements	86.5 (19.0)	81.7 (22.7)	89.6 (15.4)	.01
Integration methods	52.2 (23.7)	51.0 (22.8)	53.0 (24.4)	.58
Case identification	65.2 (22.9)	61.1 (22.5)	67.9 (22.9)	.05
Patient engagement	46.7 (22.4)	45.8 (20.5)	47.3 (23.6)	.64

**P* value determined by *t* test. Significance at *P*<.05.
Abbreviations: PIP, Practice Integration Profile; SD, standard deviation.

TABLE 5. Comparison of Patient-Reported Outcomes by Residency and Nonresidency Practices

Outcomes	Overall	Residency practices	Nonresidency practices	Results		
	Mean (SD)	Mean (SD)	Mean (SD)	Estimate	SE	*P* value*
PROMIS measures (T-scores)						
Anxiety	53.8 (10.1)	54.8 (10.3)	53.0 (9.9)	0.62	0.47	.19
Depression	52.7 (9.8)	53.6 (10.0)	51.9 (9.5)	0.37	0.38	.35
Fatigue	52.4 (10.5)	53.2 (10.4)	51.8 (10.4)	0.33	0.38	.40
Sleep disturbance	52.8 (9.1)	53.5 (9.0)	52.2 (9.1)	-0.11	0.3	.75
Pain interference	58.0 (10.1)	58.7 (10.2)	57.4 (10.1)	-0.05	0.42	.89
Pain rating scale	4.4 (2.8)	4.6 (2.8)	4.2 (2.8)	-0.12	0.13	.38
Physical function	43.5 (9.7)	42.8 (9.6)	44.0 (9.7)	-0.03	0.42	.95
Social participation	48.3 (10.1)	47.6 (10.1)	48.8 (10.1)	0.03	0.39	.94
Physical health summary score	45.8 (9.7)	45.2 (9.6)	46.3 (9.7)	-0.03	0.42	.95
Mental health summary score	50.4 (8.9)	49.6 (8.9)	51.1 (8.8)	-0.20	0.34	.55
CARE (empathy scale)						
Total score	4.3 (0.9)	4.2 (0.9)	4.3 (0.9)	0.02	0.05	.60

Note: Analyses were clustered on practice and adjusted for age, gender, race, ethnicity, marital status, employment status, income level, education level, rural status, social deprivation index score, and practice baseline PIP score.
**P* value determined by multivariate linear regression. Significance set at *P*<.05.
Abbreviations: PROMIS, Patient-Reported Outcomes Measurement Information System; PIP, Practice Integration Profile; CARE, Consultation and Relational Empathy

The lack of observed differences between residency and nonresidency practices could have several explanations. First, the wide variation in real-world implementation of BH integration in both residency and nonresidency practices made detecting any between-group differences that might otherwise exist difficult.[28,29] ACGME does not precisely define what BH integration should look like in residency training programs,[8,10] hence the implementation of integration could be highly variable across residency sites. Although our sample included only practices that had a baseline PIP score lower than the 75th percentile and had room to grow in BH integration, we found substantial variability in PIP scores among residency practices. Second, funding and reimbursement for integrated behavioral health services vary from state to stateand could potentially flatten the variance across sites within similar geographic regions.[30,31] For example, some US states implemented the Medicaid 1115 waivers[32] and participated in the State Innovation Models Initiative,[33] which provide practices with infrastructure investments and incentives for implementing integrated care activities and achieving BH integration outcomes. Practices using these programs achieved early success in developing the building blocks needed for BH integration.[4] Thus, the state-level variations in funding for BH integration may have more potent influence on integration outcomes than residency training status on its own. Third, no rural residency practices were included in our sample, so we observed the lack of differences only between urban residency practices and urban as well as rural nonresidency practices. This finding does not reflect what is happening in rural residency practices, nor can we conclude that what works in urban practices will work in rural practices, especially when prior literature has shown that urban and rural locations differ in their behavioral health needs,[34] rates of collocation with BH providers,[26] and experiences with providing high-quality integrated behavioral healthcare.[35] In rural residency practices, providers are likely to work in medically underserved areas and may prioritize training residents with the adaptive and comprehensive skills they need for resource-lean practice environments, which may counter prioritizing development of BH integration models of care.[36–38] Therefore, including rural residencies and examining their potential differences in BH integration as compared to urban residencies would be valuable for future studies.

Residency practices face other barriers that hinder BH integration. Continuity of care in residency practices is challenging, given the cross-coverage needs to accommodate highly flexible and varied training schedules of residents, potentially adding to difficulty in building cohesive, empowered teams that are the foundation for BH integration.[39] Many providers in residency practices see patients on a part-time basis and otherwise have competing demands, which produce challenges in optimizing continuity, team-based care, and population management.[40] For residency programs that lack sustainable funding, practices incur opportunity costs because resources like BH integration leaders and educators are diverted to administer other revenue-generating activities in order to maintain residency training.[41] High rates of occupational burnout among primary care providers and medical residents also could stifle the progression of BH integration and practice transformation.[42,43] Given that residency practices play an important role in building the workforce pipeline for integrated behavioral health, future interventions that aim to improve BH integration in residency practices should attend to both the educational and clinical missions, facilitate effective teamwork and supportive leadership that also could address provider burnout, develop creative strategies to overcome barriers like continuity of care, and include guidance on efficiently allocating resources.[44] Interventions focused on dissemination of BH integration need to focus on residency training practices in addition to community facing practices without residency training programs.

Limitations

Worthwhile to note is that integrated behavioral health is yet to be a common practice in the United States, and wide variations exist in the prevalence of BH integration by state and by types of practice, such as federal health care settings and independently owned practices.[45] Based on the trial inclusion criteria, we conducted our study on an idiosyncratic set of primary care practices that already had colocated BH providers with a baseline PIP score lower than the 75th percentile. Hence, the findings from this sample of practices have limited generalizability, especially to practices without colocated BHPs or highly integrated residency and nonresidency practices. Also, the convenience sample of 44 practices recruited for this trial could impact the ability to generalize results to all primary care practices, given the patient- and practice-level differences in characteristics between residency training and nonresidency practices. Patient outcomes and satisfaction were limited to patients with multiple chronic conditions, which may not include differences that exist in other patient populations seen at these practices. We did not collect data on patients' access and use of integrated BH services within practices, which disallowed examination of potential differences in service utilization. Nevertheless, the diversity of practices within this study provided a rare opportunity to conduct a rigorous comparison of BH integration and patient outcomes between practices with and without residency training programs, while adjusting for patient- and practice-level confounding factors. Future research examining the longitudinal differences and interaction of BH integration levels and patient-reported outcomes in primary care residency and nonresidency practices is needed to advance dissemination of BH integration.

CONCLUSION

Primary care practices with residency programs have additional educational and programmatic resources to meet national training requirements but do not necessarily achieve higher levels of BH integration, patient health outcomes, or patient satisfaction compared to practices without residency training programs. Both types of practices require interventions and resources to help them overcome challenges

associated with dissemination of high levels of BH integration. More studies are needed to explore the interactions between BH integration and patient outcomes across time in residency and nonresidency practices.

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