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# Residents' Confidence Providing Primary Care With Behavioral Health Integration

Patrick Hemming, MD; Amber Hewitt, PsyD; Joseph J. Gallo, MD; Rodger Kessler, PhD; R.B. Levine, MD

**BACKGROUND AND OBJECTIVES:** Behavioral health integration (BHI) entails integrated behavioral health clinicians (IBHCs) providing care—generally for mental health and substance abuse disorders and behavioral comorbidity—within the operational functioning of primary care. Because limited data exist regarding BHI in residency, we studied its impact on resident education by examining whether increased behavioral health (BH) co-management improved residents' perceived ability to treat BH conditions.

**METHODS:** We included residents from internal and family medicine training programs using BHI in residents' continuity clinics and assessed the level of co-management between primary care and IBHCs and the following domains: (1) confidence in managing BH conditions, (2) barriers to BH provision, (3) perception of autonomy when working with IBHCs, (4) satisfaction with the clinic, and (5) perceived educational value of BH learning modes.

**RESULTS:** Altogether, 117 residents participated in our survey (73.1% response rate). Residents who had co-managed  $\geq$  five patients alongside IBHCs reported significantly higher confidence than those who had co-managed  $<$  five patients with BH conditions. The association remained significant after adjustment for residents' level of training and specialty. In rating BH learning modes, residents rated most highly active collaboration with IBHCs and observation with feedback from clinic preceptors.

**CONCLUSIONS:** BHI training within residency enhances perceived learning and confidence in providing BH care.

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(IBHCs)—such as psychiatrists, psychologists, clinical social workers, or marriage and family therapists—to co-manage patients' mental and physical health needs.

Few studies have examined BHI in residency training settings, despite its potential to enhance graduate medical education. Most published articles are descriptive of BHI curricular innovations with only limited data on participant satisfaction.<sup>11-14</sup> Garfunkel et al demonstrated favorable differences in the attitudes and behaviors of pediatric residents training in clinics with BHI when compared with traditional practice models.<sup>15</sup> Landis et al reported improved depression outcomes for patients cared for in a residency clinic BHI setting.<sup>16</sup> These studies give limited understanding of the extent to which BHI impacts residents' patient care skills. Because self-efficacy has been shown to correlate with measured performance,<sup>17</sup> we surveyed residents

**B**ehavioral health (BH) conditions such as mental health and substance abuse disorders are extremely common in primary care settings<sup>1</sup> and frequently complicate the management of comorbid medical conditions.<sup>2,3</sup> Multiple randomized clinical trials have shown that team-based BH interventions for patients with comorbid

mental health conditions improve patient outcomes.<sup>4,5</sup> These team-based behavioral interventions have been called “integrated care,” “collaborative care,” and “behavioral health integration (BHI).<sup>6</sup> BHI is a component of many current primary care practice innovations.<sup>7-10</sup> Many primary care sites now directly employ integrated behavioral health clinicians

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about their confidence in addressing their patients' BH needs. We aimed to examine the impact of BHI on medical residents' confidence in providing BH care and perceptions of their education.

The present study surveyed residents to determine whether increased experience co-managing patients with integrated behavioral health clinicians (IBHCs) was associated with attitudinal outcomes in the following domains: (1) greater confidence in managing BH conditions, (2) decreased perceived barriers to successfully treating patients, (3) decreased perception of autonomy when working with IBHCs, (4) higher satisfaction with their continuity clinic experience, and (5) higher perceived educational value of active co-management as an educational mode for learning BH. To examine these questions, we recruited and surveyed residents from multiple institutions where residents actively practice with IBHCs in their primary care clinics.

## Methods

### *Study Setting and Participants*

For this cross-sectional study, we recruited participants from multiple residency training programs through two national, primary care BHI networks: the Collaborative Care Research Network (CCRN), which is a group of practices administered by the American Academy of Family Physicians (AAFP) and the Society of General Internal Medicine Mental Health Interest Group (SGIM MHIG). First we contacted a representative from more than 40 residency programs to determine their willingness to participate. For those that agreed, a researcher (PH) conducted an initial structured phone survey with a residency program faculty member who was directly involved in BHI to determine the nature of BHI in the residency and suitability for the study as well as how to best distribute the survey to their residents. We only included residencies that reported routine co-management of patients by

IBHCs and residents. Researchers also asked the faculty informant regarding the comprehensiveness of their programs' BHI services, including number and type of IBHC, availability for patient care, and whether IBHCs have any supervisory role with residents (Appendix 1 available from the corresponding author on request). We then invited residents via e-mail at the participating residency programs with a link to complete our online survey. At two of the sites, paper surveys were distributed following regularly scheduled educational sessions, and responses were manually entered by members of the research team. The survey instrument and recruitment process was reviewed and approved by an institutional review board at Johns Hopkins University.

Only residents providing care in continuity primary care clinics were included in the study. We collected surveys at one institution in May 2014 and at four other institutions between August 2014 and June 2015. As an incentive for participation, survey respondents at each site were entered into a raffle to win a gift card. We contacted residents via email between one and four times to increase the response rate. Five residency programs that had <65% response rates were not included in our analysis.

### *Survey Instrument*

We developed survey questions using constructs from the theory of planned behavior (self-efficacy, perceived behavioral control)<sup>18</sup> and adult learning theory (experiential learning and relevance).<sup>19</sup> The survey was developed by consensus among the study authors and refined through an iterative process by piloting the questions with resident and faculty volunteers in 2013 and 2014. These volunteers gave feedback on the content and clarity of the questions. Survey questions addressed the number of patients co-managed with IBHCs and the five domains previously mentioned.

Survey responses were scored as follows: for level of co-management, respondents were asked to estimate the total number of patients they had co-managed during residency with an IBHC who worked in their practice. For the five domains, survey respondents rated themselves using a 0–10 numerical response scale, a format used in other social and behavioral research to represent subjective phenomena.<sup>20</sup> The survey included 47 items and took most participants 8–10 minutes to complete (Appendix 2 available from the corresponding author on request).

### *Data Analysis*

We examined differences in proportions of responses according to resident demographic groups using chi-squared tests. To determine whether co-management was associated with outcomes in domains 1–4, we used mixed model linear regression analysis with each of these scores as dependent variables and a separate model estimated for each dependent variable. Practice site was used as the random effect in these models to control for variation between residencies,<sup>21,22</sup> and the independent variable was the number of co-managed patients analyzed as three ordinal groups (0–5 patients, 6–10 patients, >10 patients), which were chosen because the number of residents in each category was adequate for statistical comparison. We calculated regression coefficients for each of the outcomes—both unadjusted and adjusted—using the following covariates: resident sex, age (<30 years versus ≥30 years), race (white versus non-white), medical school (United States versus foreign), specialty (family medicine [FM] versus internal medicine [IM]), year of training, influence of BHI on residency choice (yes or no), and future primary care plans (yes or no). For domain 5 (perceived educational value), we examined differences in the proportions of residents who highly rated various educational modes using analysis of variance. We used Stata version 13.0 (StataCorp,

College Station, TX) to conduct our analysis. All statistical tests were two-sided with an alpha of 0.05.

## Results

### Survey Demographics

Five residency programs (representing seven primary care clinic site practices) participated with a total of 117 responses and an overall response rate of 71.3%. Five other residencies were not included in this analysis due to inadequate response rates. Table 1 shows an

overview of clinic descriptions as obtained from phone calls with faculty. Faculty informants at all five residencies reported co-management by residents and IBHCs at least 1 day per week. Seven practice sites are included because one residency program had three clinic sites with different IBHC coverage at each site. Respondents were from two IM residencies and three FM residencies. Geographic locations were as follows: two in Maryland, two in Colorado, and one in Massachusetts. Two of

the residencies served rural areas, and three were in urban centers. Two were at academic health centers, and three were affiliated with community hospitals. The programs varied on several other characteristics, as demonstrated in Table 1.

Table 2 summarizes demographic characteristics of the respondents, stratified by the number of patients they had ever co-managed. Overall, only 33% of respondents were men, compared with about 45% of residents nationally.<sup>23</sup> A total of 29.9%

**Table 1: Resident Primary Care Clinic Characteristics**

Practice Sites	Type of BHP Working in Resident Primary Care Clinic	Number of Half Days IBHC Is Available Per Week	Is There an Associated BH Training Program? (ie, Interns or Fellows)	Years Since Inception	Do IBHCs Precept Residents?
Site 1 (FM)	Psychologist, LCSW	8	Yes	4	Yes
Site 2 (FM)	MFT, addiction counselor	10	Yes	7	Yes
Site 3 (FM)	Psychologist, LCSW, child and adult psychiatrists	10	Yes	>10	Yes
Site 4 (FM)	Psychologist, psychiatrist	10	Yes	>10	Yes
Site 5 (FM)	LCSW, psychiatrist	2	Yes	1	Yes
Site 6 (IM)	Psychologist, LCSW	10	No	2	No
Site 7 (IM)	Psychologist	1	No	>10	No

IBHC—behavioral health clinician, FM—family medicine, IM—internal medicine, LCSW—licensed clinical social worker, MFT—marriage and family therapist. Note: Sites 3, 4, and 5 are three clinics within one residency program.

**Table 2: Respondent Demographics (by Total Number of Patients Co-Managed With IBHCs in Resident Primary Care Clinic)**

	0–5 Patients Co-Managed (n=51)	6–10 Patients Co-Managed (n=25)	>10 Patients Co-Managed (n=41)	P Value
Male	29.4% (15)	28.0% (7)	39.0% (16)	.536
Age >30 years	33.3% (17)	24.0% (6)	29.2% (12)	.701
Non-white race	37.2% (19)	36.0% (9)	34.1% (14)	.463
Specialty: family medicine	35.3% (18)	56.0% (14)	73.2% (30)	.001
International medical graduate	23.5% (12)	36.0% (9)	25.0% (10)	.490
Postgraduate year				<.001
1	62.7% (32)	40.0% (10)	12.2% (5)	
2	23.5% (12)	28.0% (7)	41.5% (17)	
3 or 4	13.7% (7)	32.0% (8)	46.3% (19)	
Future plan to practice primary care (% yes)	58.8% (30)	64.0% (16)	63.4% (30)	.930

IBHC = integrated behavioral health clinician

of respondents reported their age as >30 years. Of those respondents with complete data, 56% self-identified as white, with the remaining identified as Asian (33%), black (5%), and biracial (2%). Four percent of respondents declined to choose a race. FM residents comprised 52% of the sample, and IM represented 48%. IM and FM residents across all post-graduate training years were included in our analyses: year 1 (40.2%), year 2 (30.8%), and years 3 or 4 (29.1%). Our sample included 26% international medical graduates. Sixty-four percent of respondents plan on practicing in primary care settings following residency completion. Residents who co-managed more patients were more likely to be FM residents (chi-squared  $P$  value=.01) and in their second or third year of training ( $P$  value<.001). Additionally, 44% of respondents considered the presence of BHI an important factor in their residency selection (67% of FM residents versus 22% of IM residents).

#### *Domain 1: Confidence With Managing Behavioral Health*

Figure 1 plots residents' confidence (survey domain 1) in successfully managing an episode of major depressive disorder by the self-reported number of co-managed patients, revealing a linear relationship linking increased co-management with increased confidence. As described in Table 3, several other behavioral conditions had a similar linear relationship between co-management and confidence. Table 3 presents unadjusted simple linear regression and multiple linear regression on residents' confidence in managing six BH conditions. The coefficient in the table represents the mean change in score (on a 10-point scale) between residents in each co-management category (0–5, 6–10, >10). As the number of co-managed patients increases from 0–5 to 6–10 to >10, there is a significant positive linear association between collaboration with IBHCs and residents' confidence in managing each BH condition surveyed. The single

exception to this positive association was tobacco dependence, which had a nonsignificant trend toward greater confidence ( $r=0.31$ ,  $P=.06$ ).

#### *Domains 2–4: Barriers, Autonomy, and Satisfaction*

Survey domains 2–4 (perception of barriers, residents' perceived autonomy, residents' overall satisfaction) were not independently associated with residents' degree of co-management; however, we observed several important differences between FM and IM residents' responses. IM and FM residents differed significantly in their overall perception of BHI. IM residents were more likely to agree that BHI decreases their level of involvement with the patient (40%), compared with only 15% of FM residents (chi-square=16.9,  $P$  <.001). Additionally, FM residents were more likely than IM residents to rate satisfaction with their outpatient primary care practice as "high" (41.6% versus 19.2%, chi-square=6.5,  $P=.01$ ). International medical graduate residents were less likely than non-international medical graduate residents to rate satisfaction with their overall outpatient primary care practice experience as "high" (13.8% versus 38.3%, chi-square=6.3,  $P=.01$ ). Finally, FM residents were more likely than IM residents to "strongly agree" that BHI has improved their ability to provide BH care for their patients, both by themselves (80.0% versus 42.0%, chi-square=16.8,  $P$  <.01) and as a team (78.2% versus 42.9%,  $P$  <.01).

#### *Domain 5: Perception of Educational Value*

Domain 5 assessed several different educational modes, which were rated by residents for impact on their learning about BH. We examined the percentage of residents who highly rated (8 or higher on a 10-point scale) various modes of teaching BH (Figure 2). A minority of residents who had experienced the following modes reported them as highly impactful on their BH learning. A minority of residents found the

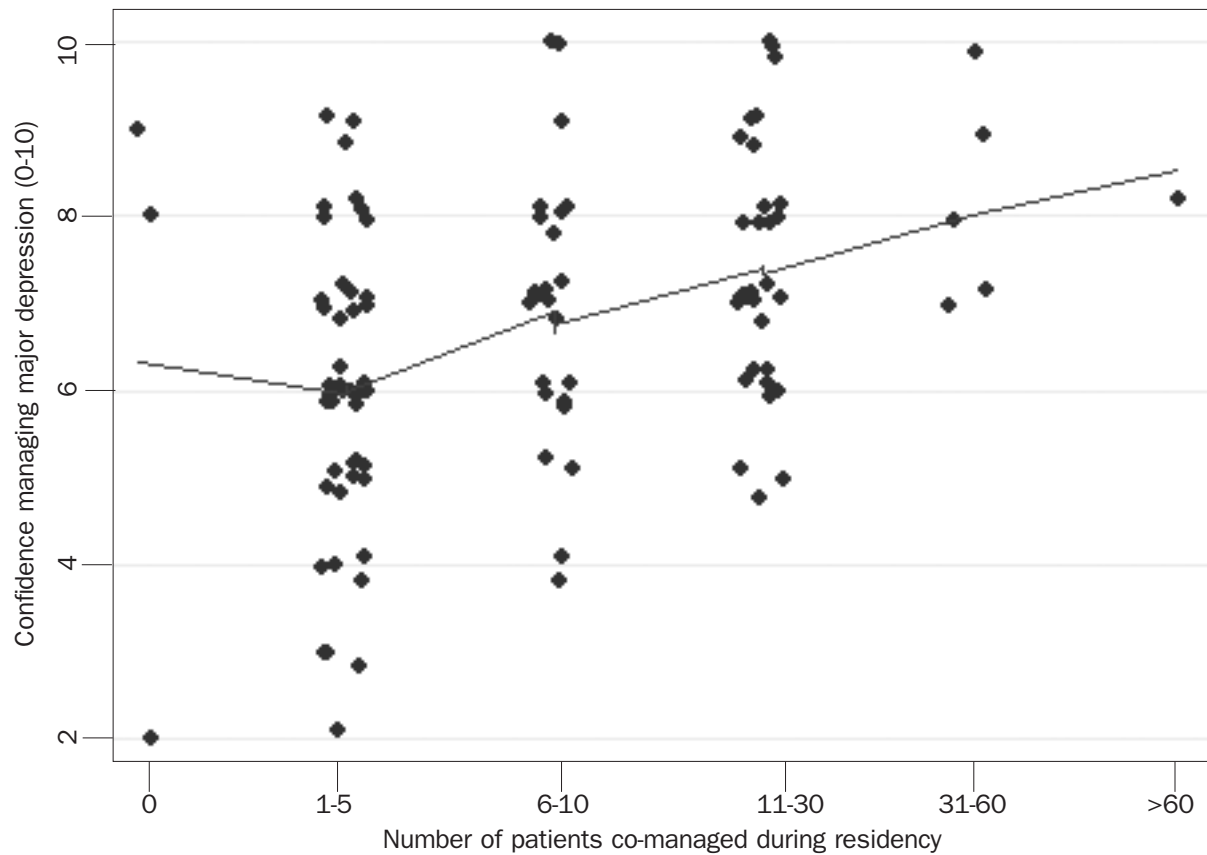
following activities highly impactful on their BH learning: BH rotations, shadowing IBHCs, case conferences, and lectures. In contrast, collaboration with IBHCs and observation with feedback by preceptors were rated highly by a majority of residents.

#### **Discussion**

Our study is the first multi-site, multi-specialty study to directly survey residents regarding BHI's impact on their attitudes and confidence in providing care for common behavioral health conditions. Our results suggest several educational benefits of integration, as well as important considerations for residency clinic leaders who are interested in enhancing residents' experiences with managing BH conditions.

BHI has the potential to enhance primary care providers' abilities to care for complicated medical patients who often have comorbid mental health and substance abuse issues. The residents in this sample reported higher confidence in managing several BH conditions if they had had more experience co-managing patients with IBHCs. This association increased with the number of patients co-managed and remained significant after adjustment for year of training and specialty. These findings suggest educational benefit from the process of co-managing patients with an IBHC. Although a total number of five or more co-managed patients appeared meaningful in our data, future educational studies on BHI might examine more closely the ideal number of co-management experiences to achieve a specific level of competency. Residents rated co-managing patients more highly than several other modes of learning. This finding is consistent with previous literature, which has demonstrated improved learner satisfaction and knowledge retention when instructors use experiential.<sup>24,25</sup> Many program directors in IM and FM report a desire to better train their residents about BH.<sup>26,27</sup> Based on our findings, residency programs with

**Figure 1: Residents' Confidence in Successfully Managing Major Depression by Number of Patients Managed During Their Residency\***



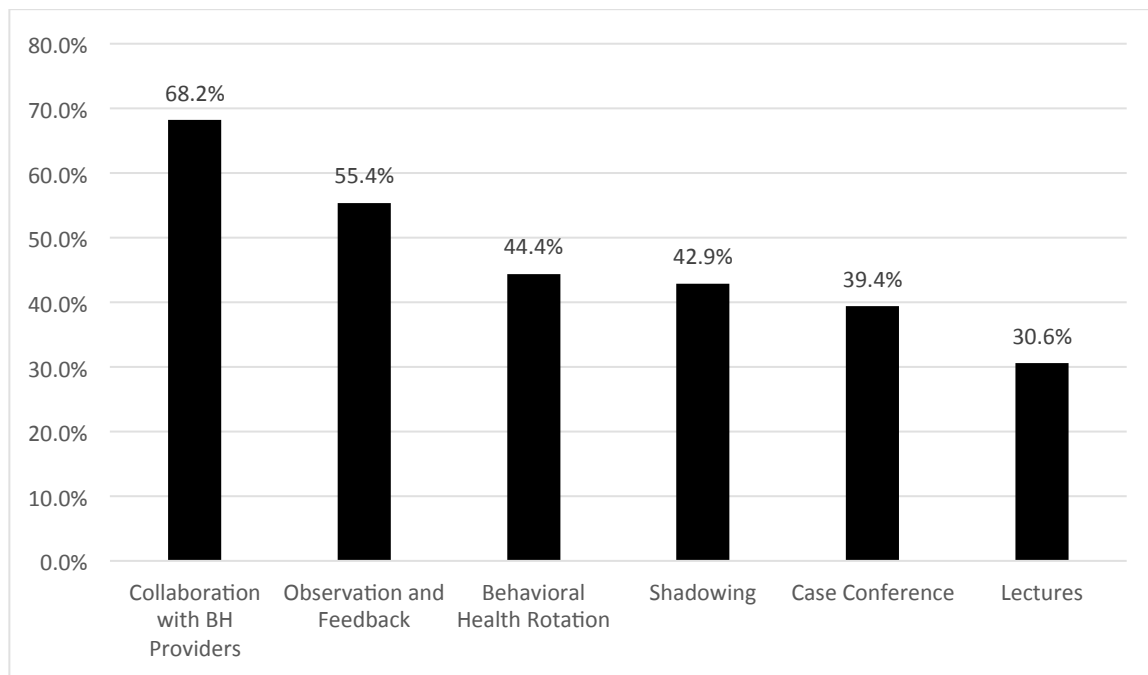
\*Residents' confidence rated on 10-point numeric scale: 0 (not confident) to 10 (highly confident). Residents were asked to estimate the number of patients co-managed with integrated behavioral health clinicians over the course of their residency. Fitted line represents locally weighted scatterplot smoothing (LOWESS)

**Table 3: Multiple Linear Regression of Residents' Confidence (10-Point Numeric Scale) and Increase in Number of Patients Co-Managed (0–5, 6–10, >10)**

	Unadjusted Linear Regression	95% CI	Adjusted Linear Regression	95% CI
Major depressive disorder	0.75*	0.41–1.08	0.51†	0.10–0.92
Anxiety disorders	0.85*	0.53–1.17	0.61*	0.23–0.99
Suicidal ideation	0.67*	0.26–1.08	0.61†	0.09–1.13
Substance abuse	1.05*	0.67–1.43	1.08*	0.63–1.54
Tobacco addiction	0.60*	0.17– 1.03	0.43	-0.09–0.94
Chronic pain	1.14*	0.74– 1.54	0.86*	0.39–1.32

\*  $P < .01$

†  $P < .05$ . Adjusted linear regression for sex, age, race (white/non-white), specialty, year of training, international medical graduate status, plan to practice primary care (yes or no), and influence of integrated behavioral health on residency choice (yes or no).

**Figure 2: Residents' Perceptions of Different Learning Modes for Providing Behavioral Health Care\***

\* Residents rated each learning mode for behavioral health on a 10-point numeric scale: 0 (not valuable) to 10 (most valuable activity). The y axis is the percentage of residents ranking mode as 8 or higher on 10-point scale. Statistical significance of proportional differences assessed using One-way ANOVA with an F statistic 4.25 and P value of <.001.

BHI may benefit from strategies that increase residents' opportunities to co-manage patients with IBHCs.

BHI presents an especially effective educational method for teaching BH, a field that relies on factual knowledge but potentially more importantly requires interpersonal skills and effective communication strategies.<sup>28</sup> Related to this, residents highly rated receiving observation and feedback from their clinical teacher on their patient interactions. From our brief phone surveys with faculty members, we determined that IBHCs—particularly in the FM residencies—were often the clinical teachers providing residents' feedback. In this manner, BHI offers the additional benefits of feedback and coaching as well as role modeling, since in some practice models IBHCs meet together with the patient and physician for a shared visit.<sup>29</sup> FM residency programs are required to have a faculty member responsible for teaching behavioral science, which provides a natural teaching

role for IBHCs in their practices. Given the positive perceptions that residents have from co-managing with and receiving feedback from IBHCs, IM programs may wish to consider expanding the role of their clinics' IBHCs to include an explicit role in resident education.

In addition to hands-on experience and direct feedback, BHI has the potential to improve care coordination and reinforce residents' skills in working with an interdisciplinary team, a common theme in current graduate medical education.<sup>30,31</sup> Our findings are consistent with prior surveys of primary care providers who report that BHI improves the quality and level of coordination of care for their patients.<sup>32</sup> A majority of residents (62.7%) strongly agreed that BHI improved their ability to care for their patients as a team. As shown in Table 1, the residents in this cohort worked with IBHCs from a number of different clinical disciplines, including psychiatrists, psychologists, clinical social workers,

and marriage and family therapists. The high level of inter-professional collaboration required for BHI practices allows residents to learn interpersonal skills and practice-based competencies that are in common with BH in primary care specialties.<sup>33-35</sup>

We examined an important potential drawback of integration, which is that physicians in training may feel that co-management makes them less central to making decisions and providing care (ie, less autonomy). Residents' complex schedules can make them the least available member of the team, particularly in IM training programs where inpatient responsibilities are more frequent. Scheduling concerns provide a possible explanation for the specialty-specific differences in our cohort. IM residents were much more likely than FM residents to believe that BHI diminishes their role as primary care provider. Differences in the training, attitudes, and practice patterns of the two specialties

have been previously documented.<sup>36,37</sup> These differences ought to be considered by IM educators seeking to increase hands-on BH training for their residents, as a failure to uncover and address IM residents' negative attitudes toward BH care may limit the effectiveness of educational interventions. Ideally, effective implementation of BHI would include regular face-to-face interaction between residents and IBHCs to allow residents to feel more personally responsible for the care of their patients.

The lack of significant findings for several associations was not entirely surprising. Greater co-management was not associated with several outcomes that were assessed: perceived patient barriers to behavioral health access, perceived autonomy, desire for BHI in future practice, and overall clinic satisfaction. Lack of association of these domains with greater co-management may stem from each resident at a particular clinic having access to identical clinic services, including BHI. Outcomes such as provider satisfaction—while hypothetically related to BHI—are complex phenomena that are influenced by many other factors.

This study has several limitations. Our study was cross-sectional and can only assess for associations and not causation. Although we examined self-reported influence of BHI presence on residency choice as a surrogate for baseline interest in behavioral health, we cannot exclude that residents with preexisting interest in behavioral health actively worked to co-manage more patients. The survey instrument has not been validated in other populations. To improve the quality of future studies of BHI, validated scales are currently under development that will likely improve our ability to measure clinic integration. The sample is relatively small and is a convenience sample, so findings may not be generalizable to all residencies practicing BHI; however, compared with a general survey of BHI in primary care practices nationwide published by Sieber

et al, the five programs included are similar to other academic programs with BHI.<sup>38</sup> The five residencies, as seen in Table 1, varied considerably in the size and scope of BHI, but we designed our analysis to control for this variation by using mixed-model linear regression with practice site as the random effect. Our results may also have been biased by the exclusion of five residencies with response rates below 65%; however, inclusion of this data (not presented here) did not alter our findings. While our findings suggest a positive relationship between practicing BHI and increased resident confidence in managing BH conditions, we did not specifically assess residents' factual knowledge, practice behaviors, or direct patient outcomes for various conditions. Future studies of primary care residents' training in mental health and BH should prospectively examine residents' knowledge and skill attainment across their training to measure the impact of specific curricular activities.

## Conclusions

This study demonstrates that co-management in BHI is associated with improved confidence among residents toward providing care for patients with BH conditions. It is the first to examine this association across multiple residency training programs and more than one specialty. Our findings suggest that BHI within residency practices may enhance the graduate medical education of physicians so that they are better prepared to address the significant need for mental health and substance abuse management in primary care.

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Hemming P, Gallo J, Kessler R, Levine R. Internal Medicine and Family Medicine Residents' Experiences With Integrated Behavioral Health: A Multi-site Survey (March 2015). Poster presented at the Society of General Internal Medicine's Midatlantic Meeting, Hershey, PA.

Hemming P, Hewitt A, Gallo J, Kessler R, Levine R. Internal Medicine and Family Medicine Residents' Confidence in Practicing With Behavioral Health Integration: A Multi-Institution Survey (May 2016). Poster presented at the Society of General Internal Medicine's Annual Meeting, Hollywood, FL.

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## References

1. Kessler RC, Petukhova M, Sampson NA, Zaslavsky AM, Wittchen H-U. Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *Int J Methods Psychiatr Res.* 2012;21:169-84.
2. Anda RF, Williamson DF, Escobedo LG, Mast EE, Giovino GA, Remington PL. Depression and the dynamics of smoking. A national perspective. *JAMA.* 1990;264:1541-5.
3. Stang PE, Brandenburg NA, Lane MC, Merikangas KR, Von Korff MR, Kessler RC. Mental and physical comorbid conditions and days in role among persons with arthritis. *Psychosom Med.* 2006;68:152-8.
4. Archer J, Bower P, Gilbody S, et al. Collaborative care for depression and anxiety problems. *Cochrane Database Syst Rev.* 2012; Oct 17.10:CD006525.
5. Coventry PA, Hudson JL, Kontopantelis E, et al. Characteristics of effective collaborative care for treatment of depression: a systematic review and meta-regression of 74 randomised controlled trials. *PLoS One.* 2014;9:e108114.
6. Peek CJ. Lexicon for behavioral health and primary care integration. Rockville, MD: Agency for Healthcare Research and Quality, 2013. Report No.: AHRQ Publication No. AHRQ 13-IP001-EF.
7. Working Party Group on Integrated Behavioral Healthcare. Joint principles: integrating behavioral health care into the patient-centered medical home. *Fam Syst Health.* 2014;32:154-6.
8. Kessler R, Miller BF, Kelly M, et al. Mental health, substance abuse, and health behavior services in patient-centered medical homes. *J Am Board Fam Med.* 2014;27:637-44.



9. Tierney K, Saunders AL, Lewis VA. Creating connections: an early look at the integration of behavioral health and primary care in Accountable Care Organizations. The Commonwealth Fund. December 10, 2014. <http://www.commonwealthfund.org/publications/fund-reports/2014/dec/creating-connections>. Accessed December 18, 2015.
10. Rubenstein LV, Chaney EF, Ober S, et al. Using evidence-based quality improvement methods for translating depression collaborative care research into practice. *Fam Syst Health*. 2010;28:91-113.
11. Ruddy NB, Borresen D, Myerholtz L. Win/win: creating collaborative training opportunities for behavioral health providers within family medicine residency programs. *Int J Psychiatry Med*. 2013;45:367-76.
12. Romain AM, Muench J, Phillips JP. Preparing family physicians for the care of patients with severe and persistent mental illness: examples from two US residency programs. *Int J Psychiatry Med*. 2015;50:25-35.
13. Triana AC, Olson MM, Trevino DB. A new paradigm for teaching behavior change: implications for residency training in family medicine and psychiatry. *BMC Med Educ*. 2012;12:64.
14. Porcerelli JH, Fowler SL, Murdoch W, Markova T, Kimbrough C. Training family medicine residents to practice collaboratively with psychology trainees. *Int J Psychiatry Med*. 2013;45:357-65.
15. Garfunkel LC, Pisani AR, leRoux P, Siegel DM. Educating residents in behavioral health care and collaboration: comparison of conventional and integrated training models. *Acad Med*. 2011;86:174-9.
16. Landis SE, Barrett M, Galvin SL. Effects of different models of integrated collaborative care in a family medicine residency program. *Fam Syst Health*. 2013;31:264-73.
17. Lent RW, Brown SD, Larkin KC. Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology*. 1986;33(3):265-9.
18. Ajzen I. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned Behavior. *J Appl Soc Psychol*. 2002;32:665-83.
19. Knowles PD, Malcolm S, Swanson PD. The adult learner: the definitive classic in adult education and human resource development, seventh ed. Burlington, MA: Elsevier Science, 2011:626.
20. Wewers ME, Lowe NK. A critical review of visual analogue scales in the measurement of clinical phenomena. *Res Nurs Health*. 1990;13:227-36.
21. Schunck R. Within and between estimates in random-effects models: advantages and drawbacks of correlated random effects and hybrid models. *Stata Journal*. 2013;13(1):65-76.
22. Friedmann PD, Zhang Z, Hendrickson J, Stein MD, Gerstein DR. Effect of primary medical care on addiction and medical severity in substance abuse treatment programs. *J Gen Intern Med*. 2003;18(1):1-8.
23. Report on residents. Association of American Medical Colleges. 2015. <https://www.aamc.org/data/448482/b3table.html>. Accessed August 19, 2016.
24. Forsetlund L, Bjorndal A, Rashidian A, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2009;CD003030.
25. Yardley S, Teunissen PW, Dornan T. Experiential learning: AMEE Guide No. 63. *Med Teach*. 2012;34:e102-15.
26. Leigh H, Stewart D, Mallios R. Mental health and psychiatry training in primary care residency programs. Part I. Who teaches, where, when and how satisfied? *Gen Hosp Psychiatry*. 2006;28:189-94.
27. Leigh H, Stewart D, Mallios R. Mental health and psychiatry training in primary care residency programs. Part II. What skills and diagnoses are taught, how adequate, and what affects training directors' satisfaction? *Gen Hosp Psychiatry*. 2006;28:195-204.
28. Hoge MA, Morris JA, Laraja M, Pomerantz A, Farley T. Core competencies for integrated behavioral health and primary care. 2014. Washington, DC: SAMHSA-HRSA Center for Integrated Health Solutions. [http://www.integration.samhsa.gov/workforce/Integration\\_Competencies\\_Final.pdf](http://www.integration.samhsa.gov/workforce/Integration_Competencies_Final.pdf). Accessed January 7, 2016.
29. Shapiro J, Prislun PM, Hanks C, Lenahan P. Predictors of psychosocial teaching styles in a family practice residency program. *Fam Med*. 2001;33:607-13.
30. Hall Barber K, Schultz K, Scott A, Pollock E, Kotecha J, Martin D. Teaching quality improvement in graduate medical education: an experiential and team-based approach to the acquisition of quality improvement competencies. *Acad Med*. 2015;90:1363-7.
31. Shunk R, Dulay M, Chou CL, Janson SANP, O'Brien BC. Huddle-coaching: a dynamic intervention for trainees and staff to support team-based care. *Acad Med*. 2014;89:244-50.
32. Gallo JJ, Zubritsky C, Maxwell J, et al. Primary care clinicians evaluate integrated and referral models of behavioral health care for older adults: results from a multisite effectiveness trial (PRISM-e). *Ann Fam Med*. 2004;2:305-9.
33. Committee on Psychosocial Aspects of Child and Family Health and Task Force on Mental Health. Policy statement—the future of pediatric primary care. *Pediatrics* 2009;124:410-21.
34. Smith RC, Laird-Fick H, D'Mello D, et al. Addressing mental health issues in primary care: an initial curriculum for medical residents. *Patient Educ Couns*. 2014;94:33-42.
35. Hemming P, Loeb D. Internal medicine residents' inadequate preparation in mental health. *SGIM Forum*. 2013;36:1-2.
36. Gallo JJ, Meredith LS, Gonzalez J, et al. Do family physicians and internists differ in knowledge, attitudes, and self-reported approaches for depression? *Int J Psychiatry Med*. 2002;32:1-20.
37. Koenig HG. Physician attitudes toward treatment of depression in older medical inpatients. *Aging Ment Health*. 2007;11:197-204.
38. Sieber WJ, Miller BF, Kessler RS, et al. Establishing the Collaborative Care Research Network (CCRN): a description of initial participating sites. *Fam Syst Health*. 2012;30:210-23.