Do Collaborative Care Managers and Technology Enhance Primary Care Satisfaction with Care from Embedded Mental Health Providers?

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BACKGROUND: To improve mental health care access, the Veterans Health Administration (VA) implemented Primary Care-Mental Health Integration (PC-MHI) in clinics nationally. Primary care clinical leader satisfaction can inform model implementation and may be facilitated by collaborative care managers and technology supporting cross-specialty collaboration.

OBJECTIVE: (1) To determine primary care clinical leaders' overall satisfaction with care from embedded mental health providers for a range of conditions and (2) to examine the association between overall satisfaction and two program features (care managers, technology).

DESIGN: Cross-sectional organizational survey in one VA region (Southern California, Arizona, and New Mexico), 2018.

PARTICIPANTS: Sixty-nine physicians or other designated clinical leaders in each VA primary care clinic (94% response rate).

MAIN MEASURES: We assessed primary care clinical leader satisfaction with embedded mental health care on four groups of conditions: target, non-target mental health, behavioral health, suicide risk management. They additionally responded about the availability of mental health care managers and the sufficiency of information technology (telemental health, e-consult, instant messaging). We examined relationships between satisfaction and the two program features using χ^2 tests and multivariable regressions.

KEY RESULTS: Most primary care clinical leaders were "very satisfied" with care for targeted anxiety (71%) and depression (69%), but not for other common conditions (37% alcohol misuse, 19% pain). Care manager availability was significantly associated with "very satisfied" responses for depression ($p = .02$) and anxiety care by embedded mental health providers ($p = .02$). Highly rated sufficiency of communication technology (only 19%) was associated with "very satisfied" responses to suicide risk management ($p = .002$).

CONCLUSIONS: Care from embedded mental health providers for depression and anxiety was highly satisfactory, which may guide improvement among less satisfactory conditions (alcohol misuse, pain). Observed associations between overall satisfaction and collaborative care features may inform clinics on how to optimize staffing and technology based on priority conditions.

KEY WORDS: primary care; mental health; care management; collaborative care; health information technology; health informatics; Veterans.

INTRODUCTION

Striving to offer Veterans "integrated, comprehensive, and coordinated" care,[1] the Veterans Health Administration (VA) underwent two major national initiatives to transform primary care into patient-centered team-based care models: (1) Primary Care-Mental Health Integration (PC-MHI)[2] beginning in 2007 and (2) VA's Patient-Centered Medical Home (termed

Patient-Aligned Care Teams or PACT) in 2010.[3] PC-MHI represents the largest US implementation of integrated mental health services (nearly 400 clinics nationally), largely based on collaborative care models.[4] These programs embedded mental health specialists (e.g., psychologists, social workers) in primary care to deliver short-term evidence-based mental health treatments.[5] It also included nurse care managers who facilitated care coordination and cross-specialty collaboration, per Translating Initiatives in Depression into Effective Solutions (TIDES) and Behavioral Health Laboratory (BHL)[6, 7] implementation studies. PC-MHI, along with PACT, enhanced primary care staffing and aimed to care for most patients with low-to-moderate complexity mental health conditions within primary care.[8] In the decade of VA practice transformation to integrate primary and mental health care, program implementation has focused on mental health specialist feedback with less input from primary care leaders and providers, whose engagement is critical.[9]

Although distinct from technical quality of care[10], primary care clinical leader satisfaction with PC-MHI services may inform model implementation and improvement. All large primary care sites, serving the large majority of Veterans, are required to have co-located mental health specialists and/or care managers collaboratively supporting primary care providers, but [11, 12] PC-MHI clinical staff composition and roles can vary. This is particularly true for small sites where implementation is voluntary, which make up the majority of clinics but serve a minority (fewer than 5000) of patients annually.[13] Assessing how well primary care providers think their local PC-MHI programs are meeting patient needs is critical for enhancing program effectiveness and for guiding future research on integrated mental health care models.

Although collaborative care programs have been viewed favorably by patients and providers in randomized controlled trials,[14] in safety net clinics,[15] and in the VA,[16] none of these studies address primary care satisfaction with PC-MHI as implemented in real-world clinical operations. Among the few studies addressing primary care views, a survey study of over 800 primary care physicians in one Canadian region found that less than half were satisfied with the quality of mental health care provided in primary care, and that timely access to mental health specialists was most commonly cited as critical to its improvement.[17] Interviews with VA clinic leaders and frontline primary care and mental health clinicians conducted within 16 clinics across 8 health care systems in 2012 identified communication barriers between specialties and that time pressures impeded relationship building.[18] Later analyses showed that personal coordination between both specialties was necessary for resolving barriers related to collaborative care implementation.[19] Few studies, however, have evaluated which clinical conditions are perceived by primary care leaders and providers as being adequately addressed by PC-MHI, or which conditions required greater specialty collaboration and may be facilitated by program features.

While collaboration between primary care and mental health is crucial to PC-MHI implementation,[20] tools for collaboration have not been explicitly linked with improved primary care–rated satisfaction across clinical conditions. Two program features aimed at supporting collaboration are traditional care managers for mental health needs[6, 7] and newer information communication technology.[21] Recognizing that on-site mental health staff availability and warm handoffs may not always be feasible, the VA has invested heavily in technology, including electronic consultation and virtual (not in-person) mental health treatments.[22] VA's primary care and mental health electronic records have been integrated for several decades, and over this time VA primary care providers and mental health specialists have also had access to real-time instant messaging.[23] Additionally, starting 2014, the VA awarded workload credit for asynchronous electronic referral and consultation embedded within patient health records.[24] Recently, telehealth services (i.e., virtual visits) have received legislative and resource support (i.e., 2018 "Anywhere to Anywhere" initiative which allows VA physicians to provide telehealth services to Veterans regardless of state regulations)[22] to better engage Veterans in mental health care.[25] While these technologies are not limited to only primary care and mental health use, we know little about how primary care rates the sufficiency of these technologies in PC-MHI programs.[26]

We partnered with primary care leadership in one regional network to design and field a survey of primary care clinical leaders across one multi-state VA administrative region as part of a quality improvement effort initiated by local and regional leadership. The VA primary care clinics represented in our study boast among the highest in penetration of PC-MHI services nationally (i.e., over one in ten primary care patients have received PC-MHI care). Study goals were twofold: (1) to determine primary care clinical leaders' overall satisfaction with care from embedded mental health providers for a range of conditions and (2) to examine the association between overall satisfaction and two program features[27]—perceived availability of care managers and sufficiency of information technology.

METHODS

Study Design and Participants

We conducted a cross-sectional organizational survey on PC-MHI services and received responses from key informants for 65 of 69 primary care clinics in Southern California, Arizona, and New Mexico, from February to May 2018 (94% response rate). While there were 76 clinics that provided primary care services to VA patients in this region during the study period, we excluded seven clinics, including sites that were specialty-based (e.g., HIV, homeless) and Indian Health Services–operated, as previously documented.[13] Electronic surveys were completed online by each clinic's designated primary care clinical leader. Leaders were frontline full-time VA clinicians (e.g., physicians, nurse practitioners), responsible for overseeing clinical operations, and most knowledgeable about

medical staffing and technology use within his/her clinic's workflow. We received and analyzed responses from leaders of 7 VA hospital- and 58 community-based primary care clinics, of which only three reported no available PC-MHI services.[13] On average, these 65 clinics were 73 miles from affiliated VA hospitals and cared for 6437 primary care patients, who were at slightly lower than average clinical risk (Nosos = 0.9[.2]).[13]

Survey Design and Measures

This study examined responses for three sets of survey questions about PC-MHI programs (Appendix). Questions were irrelevant for three clinics because they reported having neither embedded mental health providers or care managers available for mental health needs. Individual item response rates ranged from 85 to 97%.

Main outcomes were primary care clinical leader–rated satisfaction with various mental health care services provided by embedded specialists (e.g., availability of care, quality of care, communication related to care). Based on the skewed distribution of responses, we dichotomized the 5-point ordinal scale into "very satisfied" versus all other response options. We assessed satisfaction for (1) long-time target PC-MHI conditions (depression, anxiety, alcohol misuse/problem drinking), (2) non-target mental health conditions (posttraumatic stress disorder [PTSD], serious mental illness other than PTSD [schizophrenia, bipolar disorder], substance misuse/illicit drug problems, mental health symptoms related to military sexual trauma and/or intimate partner violence), (3) other mental health–linked behavioral health issues (sleep problems, complex high medical needs, disruptive behavior, medication non-adherence, non-adherence to necessary clinical care other than medications, pain), and (4) suicide risk management.

The first key independent variable was primary care clinical leader–reported availability of nurse care managers who liaison between primary care and mental health specialists (either on-site or off-site, and through PC-MHI or PACT). We chose to examine the availability of care managers, in order to explore PC-MHI features that facilitate collaboration between primary care provider and existing mental health specialists. In a previous work, we reported that 77% of study clinics reported available care managers for mental health needs, which may occur on- or off-site and may be funded by primary care and/or mental health resources.[13]

The second key independent variable was primary care clinical leader–reported sufficiency of PC-MHI information communication technology, which may similarly facilitate collaboration between primary care and mental health specialists. In a previous work, we found that the majority of primary care clinical leaders reported that in-person PC-MHI collaboration, such as "warm handoffs" and same-day consultation, were readily assessible.[13] Here, we considered technological innovations that enhanced collaboration through information sharing, specifically virtual visits and consultation platforms,[28] and then developed a scale

comprised of three sets of survey questions to measure primary care–perceived sufficiency for such technologies (Cronbach α = 0.81) (Fig. 1). Primary care clinical leader–rated sufficiency for (1) office space or tools for telemental health (virtual visit) capability, (2) electronic referral/consultation to PC-MHI (e-consult), and (3) real-time electronic communication (instant messaging) with PC-MHI staff on a 5-point ordinal scale. Responses from a 5-point ordinal scale were dichotomized as "always sufficient" versus all other responses options and scaled as follows: low (0 technology components reported as "always sufficient"), medium (1–2 components), and high (all 3 components).

Organizational characteristics, such as clinic size (total number of empaneled primary care patients), were obtained from VA administrative data sources. To adjust for case-mix, we obtained Nosos risk scores, which are calculated by the VA to adjust for patient age, gender, physical and mental health diagnoses, pharmacy records, VA priority status (e.g., having a service-connected disability), and VA-computed costs.[29] An online web mapping service was used to calculate geographical distance (mileage) from the affiliated VA hospital to each primary care clinic.

Statistical Analysis

Consistent with the survey's unit of analysis, we conducted analyses at the primary care clinic level. First, we calculated the percentage of primary care clinical leaders reporting they were "very satisfied" with PC-MHI care for target, non-target, and behavioral health conditions or concerns, and reporting "always (and usually) sufficient" for telemental health resources, e-consult, and instant messaging with PC-MHI staff. We then used χ^2 statistics to assess associations between (1) primary care clinical leader–rated satisfaction and availability of care manager for mental health needs and (2) primary care clinical leader–rated satisfaction and availability of PC-MHI information communication technology. Finally, we used logistic regressions to examine these relationships, controlling for clinic size, distance to VA hospital, and case-mix. In sensitivity analyses, we examined relationships with outcome measures (1) to each technology component (telemental health, e-consult, instant messaging) and (2) to both key independent variables concurrently in the same model. We reported all individual p values (test statistics and confidence intervals), as no mathematical correction was made for multiple comparisons. For all models, we determined significance using a 2-tailed alpha of 0.05 and analyzed data in Stata 15.0. The VA Greater Los Angeles Institutional Review Board provided a waiver for this non-research, quality improvement effort.

RESULTS

Primary Care Clinical Leaders' Satisfaction with Care from PC-MHI Providers

The majority of primary care clinical leaders were "very satisfied" with care for two of three target PC-MHI conditions
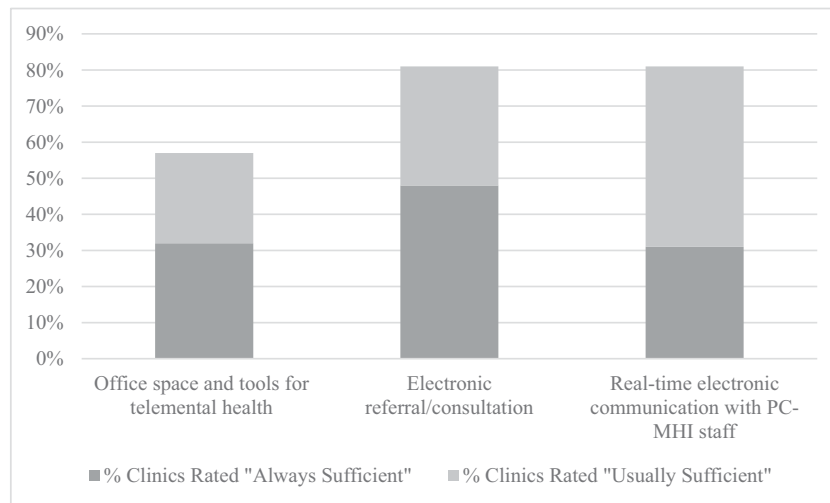
Figure 1 Primary care perceived sufficiency of PC-MHI information communication technology.

(anxiety 71%, depression 69%, alcohol use disorder 37%) (Table 1). Aside from PTSD (68%), primary care satisfaction was generally lower for non-target mental health conditions, such as substance use disorder (29%) and serious mental illness (40%). Half of primary care clinical leaders surveyed reported being "very satisfied" with suicide risk management. A quarter reported being "very satisfied" with care for mental health symptoms related to military sexual trauma and intimate partner violence. Finally, the lowest primary care

satisfaction was reported for other behavioral health issues, such as pain (19%) and sleep problems (36%).

Availability of care managers for mental health needs was positively associated with primary care clinical leader satisfaction for two PC-MHI target conditions, depression ($\chi^2 =$ 5.66; $p = .02$) and anxiety ($\chi^2 = 5.38$; $p = .02$) services (Table 1). These associations persisted when controlling for clinic size, distance to VA hospital, and case-mix in both depression (OR = 8.14; 95% CI = 1.47–45.02; $p = .02$) and anxiety (OR =

Table 1 Primary Care Leader Satisfaction with Mental Health Services Provided. Over the past six months, how would you rate your overall satisfaction with care provided by embedded mental health providers (i.e., availability of care, quality of care, communication related to care, etc.) for your clinic's patients for the following mental health conditions or concerns?

	% "very satisfied" clinics ($n = 59$–60)	Care manager rated "available" ($n = 55$–56)			No. of technology components rated "always sufficient" ($n = 53$–54)			
		Yes	**No**	**p value**	**0**	**1–2**	**3**	**p value**
Target PC-MHI conditions								
Anxiety	71%	45%	80%	0.02*	68%	84%	80%	0.44
Depression	69%	40%	78%	0.02*	72%	74%	78%	0.95
Alcohol misuse/problem drinking	37%	36%	38%	0.93	32%	42%	50%	0.58
Non-target mental health conditions								
Posttraumatic stress disorder (PTSD)	68%	45%	75%	0.06	76%	61%	80%	0.46
Serious mental illness (schizophrenia, bipolar)	40%	27%	42%	0.36	28%	53%	60%	0.12
Substance misuse/illicit drug problems	29%	36%	27%	0.52	28%	21%	50%	0.26
Other mental health–linked behavioral health issues								
Sleep problems	36%	27%	38%	0.52	40%	21%	60%	0.11
Complex, high medical needs	29%	27%	29%	0.92	20%	26%	50%	0.20
Disruptive behavior	27%	18%	29%	0.47	16%	37%	40%	0.20
Military sexual trauma, intimate partner violence	25%	18%	27%	0.56	16%	32%	50%	0.12
Medication non-adherence	22%	18%	24%	0.66	12%	26%	50%	0.06
Non-adherence to necessary clinical care	20%	18%	22%	0.77	12%	21%	40%	0.18
Pain	19%	27%	18%	0.48	12%	11%	50%	0.02*
Suicide risk assessment and management								
	50%	36%	53%	0.31	28%	74%	80%	0.002[†]

*$p < .05$
[†]$p < .01$

Response options dichotomized on a 5-point Likert scale (very satisfied, usually satisfied, neutral, usually dissatisfied, very dissatisfied, not applicable/did not need services). Response options categorized as number of technology components (telemental health resources, electronic referral/consultation, and instant messaging) rated as "always sufficient". Responses were obtained from 53 to 60 primary care clinical leaders (item response rates were 85–97%)

10.07; 95% CI = 1.50–67.66; p = .02) outcomes. There was no observed relationship between care managers and primary care satisfaction with other conditions.

PC-MHI Information Communication Technology

Less than half of primary care clinical leaders reported that resources available for PC-MHI information communication technology as "always sufficient" (Fig. 1). e-consult to PC-MHI was highest rated (48% "always"; 33% "usually"), followed next by instant messaging with PC-MHI staff (31% "always"; 50% "usually"). Office space for tools for telemental health capability was least sufficient of the three technology components assessed (32% "always"; 25% "usually"); however, 13% reported that these resources were not needed. When these three survey items were combined into one scale, 46% of primary care leaders reported 0 technology components were "always sufficient" (low category), 35% reported 1–2 components (medium category), and 19% reported all 3 components (high category).

PC-MHI information communication technology was positively associated with primary care clinical leader satisfaction with suicide risk management (χ^2 = 12.48; p = .002), even in fully adjusted models (OR = 3.40; 95% CI = 1.35–8.57; p = .009) (Table 1). We also noted a positive association between PC-MHI information communication technology and primary care satisfaction with pain services (χ^2 = 8.08; p = .02), but this association was not significant after controlling for clinic characteristics. There was no observed relationship between PC-MHI information communication technology and primary care satisfaction with other conditions.

Additionally, we did not find a synergistic effect between availability of care managers and technology on study outcomes.

DISCUSSION

Primary care clinical leader satisfaction with care from PC-MHI providers was high for depression and anxiety, though room for improvement for many other mental and behavioral health issues remained. Depression treatment and anxiety treatment were likely highly rated because they are prevalent mental health conditions for which collaborative care has a well-established evidence base.[4] PTSD, a condition in which less evidence exists for treatment in primary care, was also highly rated, perhaps because mild PTSD frequently co-occurs with depression, which is managed by PC-MHI.[8, 27] This study and others[30] have found primary care satisfaction was less than satisfactory for treatment of other conditions (e.g., substance use disorder, pain management), perhaps because accumulating evidence for collaborative care treatment for these conditions has only more recently begun.[31, 32] Despite the existence of brief effective treatments in primary care,[33] alcohol misuse continues to be the least satisfactory condition

targeted by PC-MHI, previously identified as the "greatest current gap" in PC-MHI care by a 2013 VA expert panel.[8] There is opportunity to use implementation strategies to increase access to effective therapies, such as medical-assisted treatment (MAT) for alcohol use disorder, and to apply the collaborative care model among low-performing conditions, such as designating care managers for chronic pain in Veterans.

Availability of key PC-MHI features, like care managers for mental health needs and information communication technology, holds promise in delivery of high-quality (i.e., provider-satisfying) mental health treatment. Primary care clinical leaders representing clinics affected by specialist shortages provided survey input and likely welcome any PC-MHI feature with potential to extend mental health specialist capacity. As expected, care managers were associated with higher primary care satisfaction of mental health services for depression and anxiety. VA studies that informed PC-MHI roll-out (i.e., TIDES, BHL) have long-established evidence for fidelity to models employing care managers for these two common psychiatric illnesses.[6, 7] Evidence-based tools, like care managers for mental health needs, may be further augmented with information communication technology to increase primary care satisfaction for even more conditions, such as timely suicide risk management. Future research will need to explore how to target use of technology in busy clinical settings, especially for conditions requiring urgent attention.

Though not fully envisioned during its inception, primary care clinics are beginning to embrace PC-MHI information communication technology to facilitate access to high-quality mental health care. While primary care clinics continue to ensure the availability of time-tested collaborative care features like care managers for mental health needs,[13] they have newly begun to embrace technological facilitators of PC-MHI care. While technology sufficiency was not widespread across our primary care study sites, legislative support (VA MISSION Act)[22] has accelerated its adoption, including more policies and resources that enable patients to receive virtual medical services from home. Existing evidence shows that Veterans are willing to receive technology-based services[34] and are equally satisfied with virtual (compared to in-person) mental health care.[35] As capability for telehealth, e-consult, and instant message becomes widespread in primary care clinics, contextual factors become important to end-user perceptions of technological sufficiency.[36] Our 3-item scale is among the first to attempt to measure primary care–perceived sufficiency of PC-MHI information communication technology. Ultimately, ensuring sufficient staff interaction with technology (e.g., mental health specialist assigned to telehealth, provider response time to e-consults) remains essential for the successful implementation of these digital innovations.

Our survey reflected the views of nearly all primary care clinical leaders for a VA region serving 1.5 million diverse Veterans in three states; however, there remain several limitations to consider. First, findings reflected only correlations

between measured variables, in the context of multiple comparisons (i.e., does not imply causation). Second, findings may be subject to unmeasured organizational factors (e.g., staffing and other resources for collaborative care), although we controlled for several observable clinic characteristics. Third, our study did not address clinical decision support, educational tools, or patient-facing technology, which are other potential technologies to enhance PC-MHI care delivery. Finally, our survey data are self-reported and subject to respondent interpretation. Key informants' views may also differ from the views of primary care clinical leaders and providers elsewhere. While our results were obtained from a region where PC-MHI collaborative care services are particularly robust, it may still offer insight into other settings on how to optimally organize health services, such as prioritization of technology for suicide risk management in primary care.

Lessons learned from over a decade of investment in collaborative care models within VA primary care, as highlighted in this current study, may guide other health care systems on how to adjust staffing and technology based on priority conditions. Primary care clinical leader satisfaction with PC-MHI care for depression/anxiety was high, especially among clinics with greater reported availability of care managers for mental health needs. Room for improvement existed among other common conditions (e.g., alcohol misuse, pain). Information communication technology to support PC-MHI care was not consistently implemented across clinics but may facilitate delivery of VA-prioritized suicide risk management. Availability of PC-MHI features (care managers, technology) may, in symbiotic fashion, facilitate practice transformation toward idealized integration of both VA primary care and mental health care. More research is needed to understand the optimal mix of in-person, virtual, and team-based mental health care provided within patient-centered medical homes.

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Compliance with Ethical Standards:

The VA Greater Los Angeles Institutional Review Board provided a waiver for this non-research, quality improvement effort.

Conflict of Interest: *The authors declare that they do not have a conflict of interest.*

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