Care Practices to Promote Patient Engagement in VA Primary Care: Factors Associated With High Performance

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ABSTRACT

PURPOSE Patient engagement has been broadly defined as the process of actively involving and supporting patients in health care and treatment decision making. The aim of this study was to identify organizational factors that are associated with greater use of patient engagement care practices in Veterans Health Administration primary care clinics.

METHODS We conducted a cross-sectional analysis of data from the 2016 Patient-Aligned Care Team (PACT) national survey of direct care clinicians (primary care clinicians, registered nurses, and clinical associates). Exploratory factor analysis was used to group conceptually related patient engagement survey items into 3 subscales: planning and goal setting; motivational interviewing; and organizational strategies to promote self-management. Our independent variables included literature-based factors reported to promote team-based care and interdisciplinary collaboration in primary care. We used generalized estimating equations with multivariate logistic regression analysis to identify independent correlates of high performance on each patient engagement domain (top 25th vs bottom 25th percentile).

RESULTS A total of 2,478 direct care clinicians from 609 clinics completed all patient engagement items in the PACT survey. For all patient engagement subscales, respondents at high-performing clinics were more likely to report having regular team meetings to discuss performance improvement and having leadership responsible for implementing PACT. For 2 of 3 patient engagement subscales, high performance was also associated with having fully staffed PACT teams (≥3 team members per primary care clinician) and role clarity.

CONCLUSIONS Several desirable organizational and contextual factors were associated with high performance of patient engagement care practices. Strategies to improve the organizational functioning of primary care teams may enhance patient engagement in care.

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INTRODUCTION

Patient engagement is a relationship-based approach that builds trust and promotes patient autonomy by actively involving and supporting patients in health care and treatment decision making.[1] There is growing recognition that patient engagement is a key component of a high-performing, cost-efficient health care system.[2] Patients who are actively engaged in their care are more likely to adhere to treatment, to perform regular self-monitoring, to have better intermediate health outcomes (eg, hemoglobin A_{1c} levels, blood pressure),[3] and to report better mental health and physical functioning.[4]

In 2010, the Veterans Health Administration (VHA) launched the Patient-Aligned Care Team (PACT) initiative, which is based on the medical home model and aims to provide continuous, comprehensive, and coordinated team-based care to veterans while improving access to

first-contact care.[5] The PACT model considers the patient to be an active member of the primary care team and places a high priority on involving and actively supporting patients (and their families) in addressing the patient's own treatment goals.[6] Multiple patient-related, organizational, and societal factors influence patients' ability to engage in their own care,[7] whereas relatively little is known about the relationship between organizational factors and use of patient engagement strategies in primary care.

Developing and using patient engagement processes is a first step in engaging patients in their own care and has been championed by key stakeholders within the VHA. In our conceptual model, team-based care is a key driver of the use of patient engagement care processes and may directly affect patients' level of engagement (Figure 1). Factors related to patients, team members, and workload may moderate the influence of team-based care on use of patient engagement care processes. During the first 2 years of the PACT initiative, Helfrich et al[8] demonstrated that several measures of team functioning and effectiveness were significantly associated with staff-reported improvements in patient-centered care. Building on this work, the study reported here aimed to determine which organizational and contextual factors are associated with greater use of patient engagement practices in primary care. In particular, this snapshot of patient engagement care practices and their correlates 6 years after the start of PACT may help to identify modifiable features of primary care teams for future quality improvement interventions.

METHODS

Overview

We analyzed cross-sectional data from a national survey of PACT team members in 2016 to monitor systemwide progress toward goals of the patient-centered medical home; prior analyses of data from this survey have examined staff perceptions of care delivery during PACT implementation.[9-12] Survey questions were developed by a multidisciplinary Technical Advisory Group of field and subject matter experts, as well as the VHA Healthcare Analysis and Information Group. A link to the anonymous, voluntary web-based survey was disseminated via e-mail from the VA (Veterans Affairs) Office of Clinical Operations and Management to network and facility directors, who in turn distributed the link to PACT personnel. No incentives for survey completion were provided. This work is part of a larger quality improvement effort in the VHA and is not considered research activity that is subject to institutional review board review or waiver.

Figure 1. Conceptual framework of patient engagement within VA primary care.
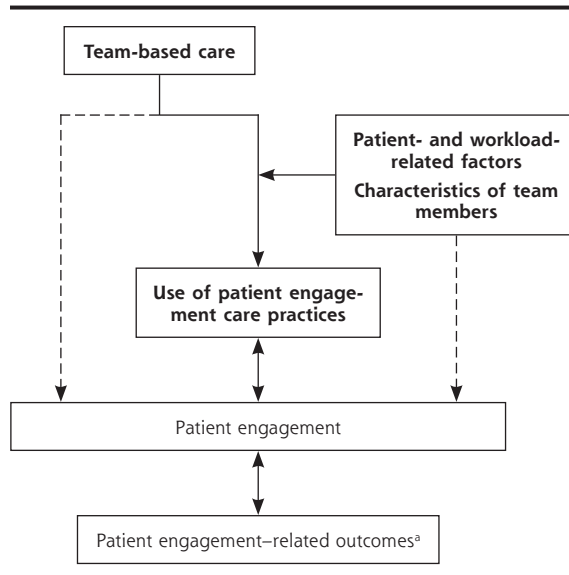
VA = Veterans Affairs.

The domains highlighted in bold are the focus of this study. The dotted lines indicate potential direct effects of team-based care and patient, workload-related, and team member characteristics on patient engagement (independent of their effects on use of engagement care processes). Double-headed arrows indicate potential bidirectional relationships between patient engagement–related outcomes, patient engagement, and use of engagement practices.

[a] Examples include improved clinician-patient communication, patient satisfaction with care, and adherence to recommended care.

Study Participants

Building on the teamlet concept originally proposed by Bodenheimer et al,[13,14] PACT "teamlets" were composed of a primary care clinician, a registered nurse (RN) care manager, a clinical associate (licensed practical nurse [LPN] or medical assistant [MA]), and an administrative associate (clerk).[15] Each teamlet was expected to care for a panel of approximately 1,200 veterans for each primary care clinician full-time equivalent (900 veterans for each nurse practitioner [NP] and physician assistant [PA]).[15] To address the project goals, the source population included 4,122 direct care clinicians (primary care clinicians, RN care managers, and LPNs/MAs) who completed the PACT national survey, as these health professionals are most familiar with patient engagement care processes used in VHA primary care.[4] For this reason, and because of concerns regarding missing patient engagement survey data, clerks and PACT "neighbors" (pharmacists, social workers, dieticians, and mental health counselors, who typically serve multiple teamlets) were excluded. To further ensure data quality, we ultimately included only the 2,478 direct care clinicians who answered all 13 of the patient engagement survey items (60% of eligible population).

Patient Engagement Care Practices (Dependent Variables)

The PACT national survey included questions about the use of care processes and strategies to promote patient engagement in primary care. Specifically, the VHA has promoted a "whole health" system of care that emphasizes the importance of planning and goal setting,[16] developed and implemented training programs in motivational interviewing for PACT clinicians,[17] and promoted the use of shared medical appointments and/or group visits,[18,19] peer support,[20,21] and home telehealth[22] to encourage self-management.[15] Response choices for most patient engagement items were Yes, No, and Don't know (unless indicated otherwise). One item asked participants to indicate which organizational strategies were used at their facility ("Check all that apply"). Conceptually related patient engagement items were grouped to create 3 independent subscales: (1) patient-planning and goal-setting practices (PLAN, 5 items), (2) motivational interviewing techniques (MI, 2 items), and (3) organizational strategies to promote self-management (ORG, 6 items) (Table 1). We identified high- and low-performing clinics by aggregating patient engagement subscale scores at the clinic level: high-performing clinics were defined as those with aggregate patient engagement scores exceeding the 75th percentile and low-performing clinics were those with scores less than the 25th percentile (Supplemental Table 1, available at https://www.AnnFamMed.org/content/18/5/397/suppl/DC1/).

Clinic Organizational Factors (Independent Variables)

The PACT survey captured several organizational and contextual factors that have been associated with team-based care and interdisciplinary collaboration in the literature (see Supplemental Table 2, available at https://www.AnnFamMed.org/content/18/5/397/suppl/DC1/, for wording of each item). These factors were staffing ratio[5,15,23]; staff turnover[11,24]; role clarity[25,26]; daily team huddles[11,12,15,25,27]; regular team meetings to discuss performance improvement (an indicator of quality improvement culture)[26]; leadership responsible for implementing PACT[5,23,25]; review of performance reports; burnout[11, 12, 23]; working to the top of one's license[12]; and psychological safety.[28]

Covariates

We used data from the VA Outpatient Care File and Patient Treatment File, VA administrative data (Primary Care Management Module), and the 2016 Survey of Healthcare Experiences of Patients to capture several patient covariates that can affect the demand on primary care teams, the use of patient engagement strategies, or both: age, non-White race, marital status, income category (tertiles), modified medical comorbidity score using outpatient and inpatient *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) codes from fiscal years 2014-2015,[29] self-reported health status from the Survey of Healthcare Experiences of Patients (single item: excellent, very good, good, fair, or poor),[30] and longitudinal continuity with the assigned VA primary care clinician using the modified, modified continuity index.[31] All patient covariates were aggregated to the clinic level (mean for continuous variables, proportion for binary variables). We also adjusted for respondents' clinician type (team role), VA tenure, and practice setting (community-based outpatient clinic vs hospital-based) in all regression models, as prior studies of the PACT survey have shown that these variables are associated with nonresponse.[10] Workload covariates included excessive workload modeled as the proportion of primary care clinicians with adjusted panel size exceeding capacity (more than 1,200 patients for full-time primary care clinicians); average panel size for clinicians was adjusted for full-time equivalents and clinician type (ie, physician vs NP and PA).

Table 1. Patient Engagement Subscales, Based on Selected Items in the 2016 PACT Survey

Patient-planning and goal-setting practices[a]

    PLAN1. Use comprehensive personalized health assessment that includes values and goals for health

    PLAN2. Explore how the health plan and recommendations will work in the veteran's daily life

    PLAN3. Conduct treatment planning, including veteran's life priorities and preferences

    PLAN4. Involve veteran/family in goal setting

    PLAN5. Document plan, goals, and progress so that all on the care team can see them

Motivational interviewing techniques to promote behavior change[a]

    MI1. Use of importance scale to assess the importance of a specific behavior change to the veteran

    MI2. Use of confidence ruler to assess the veteran's confidence that he/she can make a specific behavior change

Organizational strategies to promote self-management[b]

    ORG1. Recommend online Veterans Health Library

    ORG2. Distribute patient education materials

    ORG3. Offer group visits or shared medical appointments

    ORG4. Use health coaching

    ORG5. Use peer support

    ORG6. Use home telehealth

MI = motivational interviewing; ORG = organizational strategies to promote self-management; PACT = Patient-Aligned Care Team; PLAN = patient-planning and goal-setting practices.

[a] Response choices were Yes, No, and Don't know.
[b] Participants were asked to indicate which strategies were used at their facility ("Check all that apply").

Note: To calculate a normalized subscale score for each respondent, we summed the number of affirmative items in each subscale and divided this sum by the number of items in the subscale (and multiplied this by 100).

Statistical Analysis

We examined the factor structure of the patient engagement survey items using exploratory factor analysis and performed confirmatory factor analyses to determine model fit (eg, root mean square error of approximation, comparative fit index). We compared respondents' ratings of clinic organization and team-based care at high- vs low-performing clinics for each patient engagement subscale in bivariate analyses. To assess collinearity, we examined the correlations between individual candidate variables and calculated variance inflation factors. We used generalized estimating equations with multivariate logistic regression analysis to identify independent correlates of high performance on each patient engagement subscale at the respondent level, accounting for the clustering of respondents within the same clinic. We assumed an exchangeable correlation matrix. Using a best subsets approach, we identified the best-fitting model from among all possible combinations of the candidate independent variables; model fit was assessed using the quasi-likelihood under the independence model criterion. In all models, we adjusted for respondent characteristics, as well as patient and workload characteristics at the clinic level (as described above). To address missing covariate data, we used multiple imputation, which assumes that the data are missing at random (ie, the probability of missing data depends only on the observed data and does not depend on the value of the outcome variable itself).[32,33] SAS programming language, version 9.3 (SAS Institute Inc), was used for all analyses.
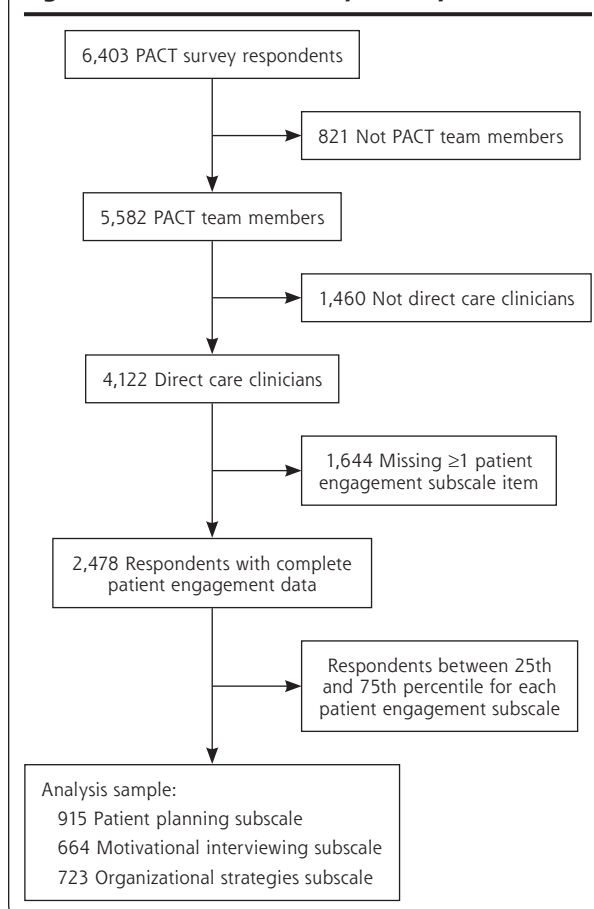
RESULTS

Study Sample

The estimated PACT survey response rate was 18.5%. Because the survey was anonymous (with only clinic identifiers) and because it is unknown whether the director of primary care disseminated the questionnaire to some or all PACT team members at any given facility, the precise denominator is unknown.

Derivation of our sample for analysis is shown in Figure 2. Compared with those who completed the VA All Employee Survey in 2016, the 4,122 direct care clinicians who participated in the PACT survey had similar demographic characteristics, but were more likely to be primary care clinicians and team leaders (Table 2). Compared with the 2,478 eligible PACT team members with complete patient engagement survey data (analysis sample), the 1,644 with incomplete patient engagement data were more likely to be clinical associates. The analysis sample included survey respondents from 61% of VHA primary care clinics (609 of 993) in 2016.

Figure 2. Derivation of analysis sample.

6,403 PACT survey respondents

821 Not PACT team members

5,582 PACT team members

1,460 Not direct care clinicians

4,122 Direct care clinicians

1,644 Missing ≥1 patient engagement subscale item

2,478 Respondents with complete patient engagement data

Respondents between 25th and 75th percentile for each patient engagement subscale

Analysis sample:
915 Patient planning subscale
664 Motivational interviewing subscale
723 Organizational strategies subscale

Factor Analysis

We next conducted factor analysis, as new measures of patient engagement care practices were developed for this study. Our analysis confirmed that the concept of patient engagement care practices is multidimensional. Specifically, we identified a 3-factor solution for patient engagement that showed acceptable model fit on confirmatory factor analysis (root mean square error of approximation = 0.073, comparative fit index = 0.93), after deleting 1 item that cross-loaded on all 3 domains. The reliability of internal consistency was good for the PLAN and MI subscales, but was marginal for the ORG subscale; corresponding Cronbach α values were 0.75, 0.90, and 0.67, respectively. Item-scale correlations showed good discrimination between the 3 subscales (Supplemental Table 3, available at https://www.AnnFamMed.org/content/18/5/397/suppl/DC1/).

Main Results

Possible scores on the 3 patient engagement subscales ranged from 0 to 100, with higher values indicating a higher level of the patient engagement care practice.

Table 2. Characteristics of Respondents to the 2016 PACT Survey of Primary Care Personnel

Characteristic	AES Survey Respondents,[a] % (N = 7,434)	PACT Survey Respondents, %	
		All (N = 4,122)	With Complete Patient Engagement Data (n = 2,478)
Age-group			
<30 years	2.7	2.1	1.9
30-49 years	46.3	43.6	42.2
≥50 years	51.0	54.3	56.0
Sex, female	77.6	75.4	75.8
Race, non-White	29.7	26.9	24.8
Type of clinician			
Primary care clinician	21.6	36.5	38.5
Nurse care manager (RN)	44.0	36.0	39.0
Clinical associate (LPN or MA)	34.4	27.5	22.5
Supervisory level			
None	67.5	55.8	51.1
Team leader	27.3	37.6	40.7
Supervisor or manager	4.9	6.3	7.8
Tenure in VA			
<1 year	10.0	13.0	9.9
1-5 years	33.7	29.6	29.7
5-10 years	26.1	24.0	25.1
10-20 years	20.6	22.8	23.9
>20 years	9.6	10.7	11.4
Burnout more than once a week	40.3	36.6	36.9

AES = All Employee Survey; LPN = licensed practical nurse; MA = medical assistant; PACT = Patient-Aligned Care Team; RN = registered nurse; VA = Veterans Affairs.

[a] Primary care respondents to the 2016 VA AES, shown for comparison.

Mean scores (and standard deviations) among the 2,478 PACT team members with complete patient engagement survey data were 70.6 (31.7) for the PLAN subscale, 50.5 (47.2) for the MI subscale, and 47.3 (26.0) for the ORG subscale.

In bivariate analyses, clinic organizational characteristics related to team-based care were significantly associated with higher PLAN, MI, and ORG scores, except that there was no significant difference in staff turnover between the top and bottom quartiles of the ORG subscale (Table 3). With regard to patient characteristics, clinics in the highest vs lowest quartile of PLAN had a higher mean patient income ($36,596 vs $33,923, $P = .01$) and higher proportions of married patients (61% vs 58%, $P = .02$) and patients in fair or poor health (41% vs 38%, $P = .02$). Clinics in the highest quartile of MI scores had a lower proportion of married patients (56% vs 61%, $P < .05$) and higher disease burden (comorbidity score = 0.77 vs 0.64, $P < .05$) (Supplemental Table 4, available at https://www.Ann FamMed.org/content/18/5/397/suppl/DC1/). Respondents in community-based outpatient care settings

were significantly more likely than hospital-based respondents to report use of PLAN practices (71% vs 49%), but less likely to report use of MI practices (64% vs 81%) (Table 3).

Best subsets regression analysis showed that several characteristics were associated with patient engagement care processes: respondents who reported having fully staffed PACT teams, daily team huddles, regular team meetings to discuss performance improvement, and leadership responsible for implementing and maintaining PACT were more likely to score in the top quartile of PLAN scores (Table 4). Respondents who reported having clearly defined roles, regular team meetings, and a responsible leadership structure were more likely to score in the top quartile of MI scores. Similar results were observed for the ORG subscale, except that having fully staffed PACT teams was also significantly associated with high performance.

DISCUSSION

Findings in Context

In this cross-sectional study, use of patient engagement care practices was highly variable across VHA primary care clinics. Lower use of these practices may be related to clinicians' perceptions that some elements of the patient-centered medical home may not be entirely relevant (or may be difficult to use) for particular groups of patients during visits.[34]

Direct care clinicians who endorsed the presence of desirable organizational attributes that facilitate effective team functioning reported high levels of performance of patient engagement practices at their assigned outpatient clinics. Our findings are consistent with the conceptual framework of high-performing primary care proposed by Bodenheimer et al,[35] who posited that the partnership between patients and team members depends on successful implementation of 4 building blocks: empanelment (ie, linking each patient to a care team and primary care clinician), data-driven performance improvement, engaged leadership, and team-based care. Especially important in primary care,

team-based care involves building relationships with patients over time and between members of the practice team.[36]

Our study showed that having a fully staffed team was significantly associated with use of patient-planning and organizational strategies to promote patient engagement. Although the VHA mandated that each primary care teamlet include 3 full-time equivalent staff per full-time equivalent primary care clinician, many primary care clinics have faced chronic understaffing and the need to cross-cover other teamlets.[37,38] Inadequately staffed teams and high turnover contribute to burnout of VHA primary care personnel[10] and make it difficult to establish relationships among team members, reconfigure roles and responsibilities, and develop new work processes, including those related to patient engagement.[39]

Our results show that role clarity is a key determinant of the use of motivational interviewing and organizational patient engagement strategies. Working in a chaotic clinic environment with vague team boundaries is associated with higher barriers to providing patient-centered care.[8] Clear expectations of each team member's duties and responsibilities are needed to optimize the team's efficiency, to promote interdisciplinary collaboration,[37,40] and to enable the team to accomplish more than the sum of its parts.[41] For example, MAs can be trained to assume an expanded role as health coaches; however, in addition to developing general ground rules, the MA and clinician need to briefly discuss the clinical goals for a given encounter and negotiate who will do what with regard to patient engagement during and after the clinic visit.[13,35]

We also found that participation in daily huddles, responsible PACT leadership, and meetings to discuss performance improvement were associated with greater use of patient engagement care practices. In a qualitative study of 27 primary care practices, team huddles

Table 3. Characteristics of Respondents and Their Clinics in Top vs Bottom Quartile for Each Patient Engagement Subscale

Characteristic	Patient Planning, %		Motivational Interviewing, %		Organizational Strategies, %	
	Top Quartile (n = 397)	Bottom Quartile (n = 518)	Top Quartile (n = 374)	Bottom Quartile (n = 290)	Top Quartile (n = 509)	Bottom Quartile (n = 214)
Respondents						
Role in PACT						
Primary care clinician	30[a]	41	34	38	29[a]	53
Registered nurse	42	39	41	41	44	26
Clinical associate	27	20	26	21	27	22
Experience in PACT						
<1 years	14	12	12	16	12	13
1-2 years	19	15	18	8	14	15
>2 years	67	73	69	73	74	71
Care setting: community-based outpatient clinic	71[a]	49	64[a]	81	65	65
Clinics						
Staffing ratio (≥3 per primary care clinician)	72[a]	47	69[a]	56	73[a]	54
Staff turnover (in past 12 months)	57[a]	65	57[a]	65	64	66
Role clarity	89[a]	65	91[a]	70	88[a]	58
Daily team huddles	80[a]	52	79[a]	60	77[a]	57
Regular team meetings	86[a]	54	82[a]	54	81[a]	55
Responsible PACT leadership	93[a]	72	94[a]	76	92[a]	67
Review of performance reports	85[a]	52	82[a]	57	82[a]	52
Work to top of license (≥75%)	70[a]	43	68[a]	48	60[a]	42
Burnout more than once a week	28[a]	47	26[a]	47	32[a]	52
Psychological safety[b]	65[a]	53	62[a]	59	63[a]	56

PACT = Patient-Aligned Care Team.

[a] Differs significantly ($P \leq .05$) between top and bottom quartiles, based on bivariate logistic regression models using generalized estimating equations to account for clustering by clinic facility.

[b] Computed as the average of 7 items on a 5-point Likert-type scale and dichotomized at ≥4.0 (corresponding to accurate/very accurate) vs <4.0.

Note: Top and bottom quartiles are unequal because of discontinuity in the distribution of patient engagement subscale scores (across the range of possible scores).

Table 4. Association Between Respondent and Clinic Characteristics and Top Quartile of Each Patient Engagement Subscale (vs Bottom Quartile)

Characteristic	Patient Planning, aOR (95% CI) (n = 915)	Motivational Interviewing, aOR (95% CI) (n = 664)	Organizational Strategies, aOR (95% CI) (n = 725)
Respondents			
Role in PACT			
Primary care clinician	0.8 (0.5-1.2)	0.7 (0.4-1.2)	0.6 (0.4-1.0)[a]
Registered nurse	1.0 (0.7-1.5)	0.9 (0.6-1.4)	1.7 (1.0-2.9)[a]
Clinical associate (ref)	1.0	1.0	1.0
Experience in PACT			
≤2 years (ref)	1.0	1.0	1.0
>2 years	0.7 (0.5-1.1)	1.0 (0.6-1.6)	1.3 (0.8-2.2)
Care setting: community-based outpatient clinic	2.5 (1.6-3.8)[a]	0.43 (0.3-0.8)[a]	1.2 (0.8-1.9)
Clinics			
Staffing ratio (≥3 per primary care clinician)	2.0 (1.4-2.8)[a]	NA	2.1 (1.4-3.2)[a]
Staff turnover (in past 12 months)	NA	0.8 (0.5-1.1)	NA
Role clarity	1.5 (0.9-2.6)	2.3 (1.3-4.1)[a]	1.9 (1.1-3.2)[a]
Daily team huddles	2.1 (1.5-3.1)[a]	NA	1.3 (0.9-2.0)
Regular team meetings	3.4 (2.3-5.1)[a]	2.7 (1.8-4.1)[a]	2.4 (1.6-3.8)[a]
Responsible PACT leadership	2.6 (1.5-4.8)[a]	1.9 (1.0-3.5)[a]	3.0 (1.6-5.4)[a]
Burnout			
At least once a week	NA	0.6 (0.3-1.1)	NA
A few times a month	NA	1.2 (0.6-2.3)	NA
Once a month or less	NA	0.8 (0.5-1.5)	NA
Psychological safety	NA	NA	NA

aOR = adjusted odds ratio; NA = not applicable (variable was not included in best subsets regression model); ref = reference group.

[a] Significant (P ≤.05), based on multivariate logistic regression models using generalized estimating equations to account for clustering by clinic facility. All models were adjusted for patient sociodemographic factors at the clinic level, as well as clinic and workload characteristics. Best subsets regression analysis was used to identify clinic characteristics that yielded the best model fit.

were reported to assist in role delegation, to improve the consistency of information collected from patients, and to provide a framework for more structured communication among team members.[25]

Responsible leadership is essential to foster a shared vision for practice transformation, to provide time and resources for team development,[38,40] and to enable team members to attain shared goals and to suggest new ideas.[42,43] In a study of practice leadership, the odds of implementing tools for patient self-management were significantly greater for primary care practices with higher leadership scores.[44] Quality and performance data are essential for good clinical leadership, and regular team meetings to review these data can help to sustain quality improvement initiatives.[45] Although lower levels of burnout and greater psychological safety have been identified as correlates of high-functioning teams,[12,41] we did not find a significant association between these variables and use of patient engagement care practices in multivariate analysis, possibly because the variance of the latter is better explained by team characteristics that are more tightly linked operationally to patient engagement.

Limitations

Limitations of this study warrant discussion. First, we conducted a cross-sectional analysis and are unable to assess causality. Second, the results may be affected by participation bias, although the demographics and VA tenure of PACT survey respondents were similar to those of primary care personnel who completed the VHA All Employee Survey. Third, measures of patient engagement practices were based on self-report and thus were subject to socially desirable response bias; however, because the PACT survey was administered anonymously, participants may have been more willing to provide honest responses. Fourth, common method bias may potentially inflate the association between variables, which were collected simultaneously in the same survey.[46] We note, however, that common method bias has typically been more of a concern for Likert-type ratings of attitudes; most of the survey items in the current analysis were based on factual observations of clinic and organizational factors (with Yes or No responses); in addition, independent and dependent variables were conceptually unrelated.

Fifth, we were unable to assess patient engagement practices at the teamlet level (eg, whether motivational interviewing was used for a specific primary care clinician's panel). Most of the variables that we examined relate to the overlying practice context, however, and transcend teamlet boundaries. Sixth, the PACT survey did not capture other important dimensions of team-based care (eg, the shared mental model,[47,48] participatory decision making by clinic staff[4,49]), but we accounted for a large set of organizational variables that are pertinent to the patient-centered medical home. Seventh, the analysis sample was missing patient engagement and covariate data for a large number of respondents. We used multiple imputation to minimize the loss of respondent data and the potential bias associated with restricting the analysis sample to those with complete data.[50] Finally, the results of this study may not be applicable to non-VA primary care clinics. Although the practice context and conceptualization of patient engagement in the VHA may differ somewhat from non-VA primary care, our findings are particularly relevant to other integrated health care systems that have embraced the medical home model.

Implications

Collectively, our findings suggest that strengthening the foundation of the medical home by promoting full staffing of primary care teams, clearly defined roles of team members, effective leadership, and a practice culture of performance improvement may increase adoption and use of patient engagement practices. Improved team collaboration and coordination are necessary for practices to manage the increasing complexity and unpredictability of clinical care[51] and to become more accountable for patient-centered outcomes. Future research should advance our understanding of how the medical home model can promote patient-centered care, using granular measures of patient activation, shared decision making, and self-management at the level of the patient-teamlet dyad.

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