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Associations between Medical Home Characteristics and Support for Patient Activation in the Safety Net: Understanding Differences by Race, Ethnicity, and Health Status

Robert S. Nocon, MHS¹, Yue Gao, MPH¹, Kathryn E. Gunter, MSW, MPH¹, Janel Jin, BA², Lawrence P. Casalino, MD, PhD³, Michael T. Quinn, PhD¹, Sarah Derrett, PhD⁴, Wm. Thomas Summerfelt, PhD⁵, Elbert S. Huang, MD, MPH¹, Sang Mee Lee, PhD⁶, and Marshall H. Chin, MD, MPH¹

¹Department of Medicine, University of Chicago, 5841 S. Maryland Ave., Chicago, IL 60637

²Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 615 N. Wolfe Street, Baltimore, MD 21205 ³Department of Public Health, Weill Cornell Medical College, 402 E. 67th Street, New York, NY 10065 ⁴School of Health and Social Services, College of Health, Massey University, Private Bag 11-222, Palmerston North 4442, New Zealand

⁵Advocate Healthcare, 205 W. Touhy Avenue, Suite 203A, Park Ridge, Illinois, 60068

⁶Department of Health Studies, University of Chicago, 5841 S. Maryland Ave., Chicago, IL 60637

Abstract

Background—Few studies have evaluated whether the patient-centered medical home (PCMH) supports patient activation and none have evaluated whether support for patient activation differs

Corresponding Author Information and Contact Information for Reprints: Robert S. Nocon, MHS, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave. MC2007 B203, Chicago, IL 60637, Phone: (773) 834-4271; Fax: (773) 834-2238, rnocon@medicine.bsd.uchicago.edu.

Robert S. Nocon, MHS, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave. MC2007 B203, Chicago, IL 60637, Phone: (773) 834-4271, Fax: (773) 834-2238, rnocon@medicine.bsd.uchicago.edu

Yue Gao, MPH, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave. MC2007 B202, Chicago, IL 60637, Phone: (773) 702-6837, Fax: (773) 834-2238, ygao3@medicine.bsd.uchicago.edu

Kathryn E. Gunter, MPH, MSW, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave. MC2007 B234, Chicago, IL 60637, Phone: (773) 834-8979, Fax: (773) 834-2238, kgunter@medicine.bsd.uchicago.edu

Janel Jin, BA, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 615 N. Wolfe Street, Baltimore, MD 21205, Phone: (410) 955-3543, Fax: (773) 834-2238, JanelJin@jhu.edu

Lawrence P. Casalino, MD, PhD, Department of Healthcare Policy and Research, Weill Cornell Medical College, 402 E. 67th Street, New York, NY 10065-6304, Phone: (646) 962-8044, Fax: (646) 962-0281, lac2021@med.cornell.edu

Michael T. Quinn, PhD, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave. MC2007 B217, Chicago, IL 60637, Phone: (773), Fax: (773) 834-2238, mquinn@medicine.bsd.uchicago.edu

Sarah Derrett, PhD, MPH, School of Health and Social Services, College of Health, Massey University, Private Bag 11-222, Palmerston North 4442, New Zealand, Phone: +64 (0) 6 356 9099 ext 83528, Fax: +64 (0) 6 356 5681, s.l.derrett@massey.ac.nz

Wm Thomas Summerfelt, PhD, Advocate Health Care, 205 W. Touhy Avenue, Suite 203A, Park Ridge, Illinois, 60068, Phone: (847)384-3621, Fax: (847)384-3620, william.summerfelt@advocatehealth.com

Elbert S. Huang, MD, MPH, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave., MC 2007 B214, Chicago, IL 60637, Phone: (773) 834-9143, Fax: (773) 834-2238, ehuang@medicine.bsd.uchicago.edu

Sang Mee Lee, PhD, Department of Health Studies, University of Chicago, 5841 S. Maryland Ave., MC2007, R-317, Chicago, IL 60637, Phone: (773) 834-6765, Fax: (773) 702-1979, sangmee@uchicago.edu

Marshall H. Chin, MD, MPH, Department of Medicine, Section of General Internal Medicine, University of Chicago, 5841 S. Maryland Ave., MC 2007 B216, Chicago, IL 60637, Phone: (773) 702-4769, Fax: (773) 834-2238, mchin@medicine.bsd.uchicago.edu

among racial and ethnic groups or by health status. This is critical because activation is lower on average among minority patients and those in poorer health.

Objective—To assess the association between clinic PCMH characteristics and patient perception of clinic support for patient activation, and whether that association varies by patients' self-reported race/ethnicity or health status.

Participants—214 providers/staff and 735 patients in 24 safety net clinics across 5 states.

Measures—Provider/staff surveys produced a 0–100 score for PCMH characteristics. Patient surveys used the patient activation subscale of the Patient Assessment of Chronic Illness Care to produce a 0–100 score for patient perception of clinic support for patient activation.

Results—Across all patients, we did not find a statistically significant association between PCMH score and clinic support for patient activation. However, among the subgroup of minority patients in fair or poor health, a 10-point higher PCMH score was associated with a 14.5-point (CI 4.4–24.5) higher activation score.

Conclusions—In a population of safety net patients, higher-rated PCMH characteristics were not associated with patients' perception of clinic support for activation among the full study population; however, we found a strong association between PCMH characteristics and clinic support of activation among minority patients in poor/fair health status. The PCMH may be promising for reducing disparities in patient activation for ill minority patients.

Keywords

PCMH; medical home; disparities; patient activation

INTRODUCTION

The patient-centered medical home (PCMH) is a model of care that advocates believe is central to achieving the “triple aim” of improving health, controlling costs, and enhancing patient experience in primary care.¹ Core components of the PCMH include comprehensive primary care, enhanced access, care management, and quality improvement; all directed toward the fundamental goal of orienting care around the needs of the patient.^{2,3} There is significant momentum behind the adoption of the medical home, with coalitions of industry stakeholders and health care policymakers calling for widespread use of the model in primary care.¹ One anticipated benefit of the model is that the PCMH will better-position health care systems and providers to support a patient's active role in maintaining their health and managing their diseases.⁴

A growing body of literature has demonstrated the benefits of patients taking an active role in their health care. Formally defined, patient activation refers to the possession of “knowledge, skills, and confidence people need to manage their health and health care.”⁵ The concept is an important aspect of patient-centeredness, one of the six fundamental aims of a high performing health system.⁶ Patient activation can lead to a broad range of health benefits such as higher rates of recommended screening, reductions in unhealthy behaviors, improvements in blood pressure and cholesterol, and fewer emergency department visits and hospitalizations.⁷ Nationally, levels of patient activation are known to differ between racial

and ethnic groups, with lower levels of activation reported among black and Hispanic patients compared to whites.^{5,8,9} Activation also tends to be lower among individuals with poorer self-rated health status.^{9,10} While the determinants of patient activation are complex, specific activities of primary care providers, such as soliciting patient ideas about treatment, have been shown to be associated with improved patient activation.^{11,12,13}

There has been little quantitative study of whether medical homes support activation. Four previous studies have examined patient activation, or related concepts such as patient engagement, empowerment, and goal-setting, as part of larger analyses of patient satisfaction and experience with care.^{14,15,16,17} Evidence from these studies was mixed, with two studies finding that the PCMH was associated with patients experiencing greater support for patient activation and related concepts^{14,15} and two finding no association.^{16,17} Existing studies have been limited by the use of PCMH measures that did not address important components of the PCMH,^{15,17} reliance on the responses of a single individual within a clinic to generate that clinic's PCMH rating,^{15,16,17} response rates of less than 30 percent,^{15,16,17} or study of a single PCMH implementation site.¹⁴ Importantly, no published studies have focused on whether the PCMH supports patient activation in the safety net population nor have any studies examined whether support for patient activation in a PCMH differs among racial/ethnic or health status groups.

Our study expands on the existing literature that addresses whether the PCMH is associated with care that supports patient activation. We measure PCMH characteristics using a more comprehensive scale than some previous studies and base each clinic's PCMH score on survey responses from multiple providers and clinical staff.¹⁸ Our PCMH score is also based on questions that ask providers and staff to rate the effectiveness of various PCMH components, as opposed to the simple presence or absence of structural components of the medical home. We believe that provider and staff perceptions of PCMH effectiveness are important because providers and staff interact most closely with patients and their perceptions can often shape whether, and how much, components of the PCMH influence patient care. Our study also focuses on a diverse set of safety net clinics and specifically examines the perceptions of racial and ethnic minorities and patients in poorer health regarding clinic support for patient activation.

METHODS

We assessed the cross-sectional association between PCMH rating and patients' perception of clinic support for patient activation in 24 safety net clinics across 5 states (5 clinics each from Colorado, Idaho, Massachusetts, and Oregon; 4 clinics from Pennsylvania). Clinics were randomly selected from the 65 participating clinics in the Commonwealth Fund-supported Safety Net Medical Home Initiative, a 4-year intervention to implement and evaluate the medical home in safety net clinics. The random selection process was carried out by the study team. Since some study clinics were part of the same parent health center organization and may have produced relatively homogenous results, we used a two stage sample. We first used a random number generator to order the health center organizations within each state. Then for health center organizations with more than one study clinic, we used a random number generator to order those clinics within the health center organization.

We selected clinics from each state for survey until we reached our desired number of clinics, starting with the lowest randomly numbered health center; for multi-clinic health center organizations, we chose the lowest randomly numbered clinic. Qualis Health and the MacColl Center for Health Care Innovation at the Group Health Research Institute led the implementation using eight “change concepts” for practice transformation that are based on medical home principles and tailored to the safety net setting.¹⁹ The Institutional Review Board of the University of Chicago approved this study.

Clinic Support for Patient Activation

Our dependent variable was based on patients’ reports of provider activities that have previously been shown to be associated with patient activation.^{11,12} These were measured via self-administered surveys mailed to 70 randomly selected adult patients seen at each clinic in the three months prior to the survey. Surveys were completed between June 2010 and November 2011 (months 13–30 of the intervention). Survey questions asked patients to respond with respect to the care they received at this clinic over the previous year. We increased one clinic’s sample to 111 patients because the clinic anticipated low response rates due to a large refugee patient population. Surveys were translated into the patient’s preferred language as reported by the clinics (English, Spanish, and Portuguese). Initial mailings included a one-time incentive of \$2; up to three more rounds of surveys were sent to non-responders. Initial surveys were mailed to 1,721 patients, 65 were returned-to-sender as undeliverable, and we received 735 eligible responses, reflecting a 44.4% response rate.

We used the patient activation scale of the Patient Assessment of Care for Chronic Conditions (PACIC) survey for our dependent variable. The PACIC patient activation scale contains three questions that ask patients how often their provider performed actions that solicit patient input and involvement in decision-making (see Table 3).¹¹ Responses are recorded on a 5-point Likert scale ranging from “None of the time” to “Always”. For each question, the original 5-point Likert response ratings were converted to 0–100 scales and responses for the three questions were averaged to create the patient activation score. We assessed the internal consistency of the patient activation scale with Cronbach’s alpha.

Our patient activation scale from the PACIC reflects patient perception of clinic care practices that support activation, as opposed to the level of activation of the patient, per se. While direct measures of patient activation exist,²⁰ measuring patient perception of clinic support for activation is a critical step in establishing the link between the PCMH and activation. The PACIC patient activation scale was noted by developers of the survey to be conceptually related to, and quantitatively correlated with, a patient’s level of activation.¹¹

PCMH Characteristics

Our key independent variable was provider and staff rating of PCMH characteristics. This was measured via self-administered surveys mailed to 271 randomly selected providers and staff from January to June 2010 (months 8–13 of the intervention). Providers were defined as physicians, nurse practitioners, or physician assistants. Staff were defined as behavioral health specialists, educators, certified medical assistants, counselors, dietitians, medical assistants, nurses (licensed practical nurse or registered nurse), psychiatrists, psychologists,

or social workers. Survey administration and psychometric properties have been described in detail in previous work.¹⁸

Of the 271 providers and staff surveyed at the 24 study clinics, we received 214 eligible responses, reflecting a 79.0% response rate and an average of 8.9 provider and staff responses per clinic. Provider and staff response rates to the survey were not significantly different from each other.

PCMH characteristics were assessed through 25 questions in the survey, organized along five domains: access and communication with patients, communication with other providers, tracking data, care management, and quality improvement. Each question was rescaled from a 5-point Likert-type scale to a score range of 0 to 100 (0 indicates worst and 100 indicates best, with 1 on the Likert-type scale representing 0 points, 2 representing 25 points, 3 representing 50 points, 4 representing 75 points, and 5 representing 100 points). These rescaled scores were then averaged within their respective domain. Finally, the total PCMH score was calculated as the mean of the 5 PCMH domain scores, yielding a total PCMH score with a potential range of 0 to 100.

Race and Ethnicity

We asked patients their race and ethnicity through two questions in the patient survey that were drawn from the Consumer Assessment of Healthcare Providers and Systems, Clinician and Group Version (CAHPS-CG).²¹ For race, patients were asked “What is your race?” and provided with response options for “White,” “Black or African American,” “Asian,” “Native Hawaiian or Other Pacific Islander,” “American Indian or Alaskan Native,” and “Other, please specify.” For ethnicity, patients were asked “Are you of Hispanic or Latino origin or descent?” and provided with response options for “Yes, Hispanic or Latino” and “No, not Hispanic or Latino.” We created a combined race and ethnicity variable as follows: non-Hispanic white, Hispanic, non-Hispanic black, and an ‘other’ category that includes other non-Hispanic race groups and individuals that listed more than one race or ethnicity.

Health Status

We asked patients to rate their health status in the patient survey using a single question drawn from the CAHPS-CG.²¹ The survey asked, “In general, how would you rate your overall health?” Response options were “Excellent,” “Very good,” “Good,” “Fair,” and “Poor.”

Covariates

We included covariates demonstrated in the literature to be associated with patient assessments of the quality of their chronic illness care.^{11,22} Patient-level covariates were age group, sex, education level, type of insurance, frequency of clinic visits in the last 12 months, and duration of relationship with provider. Clinic-level covariates were number of full-time equivalent providers (as a proxy for clinic size), and the state where the clinic is located.

Statistical Analysis

To investigate the relationship between PCMH characteristics and support for patient activation, while allowing for a clustering effect of patients within clinics, we fitted multivariate models using generalized estimating equation (GEE) models with an exchangeable correlation structure. Patient perception of clinic support for patient activation was modeled as a function of PCMH score and covariates. We created one multivariate model without interaction terms and a second model that examined the interaction term between PCMH score and patient characteristics to determine if the association varied by patient race/ethnicity, and health status. To ensure adequate sample size within each level of health status for the model with interaction terms, we used a binary health status variable that grouped “Fair” and “Poor” versus “Good,” “Very good,” and “Excellent.” We also modeled race and ethnicity in two ways: once using the groups described above (non-Hispanic white, Hispanic, non-Hispanic black, and other) and a second time using only two groups, non-Hispanic white and a “minority” category that includes all other race/ethnicity designations.

Among the 735 eligible patients, 8.7% had missing values for any independent variable or covariate (6.5% were missing only one value; the highest rate of missing values for any single variable was 3.7%). Twelve patients (1.6%) had missing values for the dependent variable. In order to decrease bias due to missing data, we used multiple imputation methods for missing values in all analyses.²³ We generated 10 imputed datasets, fitted GEE models for each, and combined the results to obtain valid statistical inferences. All statistical tests were 2-sided with the significance level at 0.05. Analysis was performed with SAS version 9.3.

For interpretation of the impact of higher PCMH scores, we display the effects of a 10-point increase in PCMH score on patient perception of clinic support of patient activation – a difference that we found to be operationally meaningful in previous work.¹⁸ For example, the following two differences (in combination) between hypothetical clinic A and clinic B would yield a 10-point difference in PCMH score: (1) in response to “my patients see me rather than some other provider when they come for a routine visit” providers/staff from clinic A “strongly agree” whereas those in clinic B “strongly disagree”; and (2) in response to “how often is it difficult to communicate with outside specialists?”, providers/staff from clinic A report “rarely” and those in clinic B report “almost always”.

RESULTS

Of the 24 clinics represented in the study, nine (37.5%) had more than eight provider full-time equivalents (Table 1). Mean PCMH score among the 24 clinics was 62.9 (standard deviation, SD=7.0). Provider and staff responses to individual questions in the PCMH scale (Table 2) ranged from the lowest ratings in response to the statement “I am rewarded for the work I do in quality improvement” (21.6% of respondents agreed or strongly agreed) to the highest ratings in response to the statement “We are actively doing things to improve patient safety” (90.5% of respondents agreed or strongly agreed).

Provider and staff respondents to the PCMH characteristics survey were mostly female (74.8%) and white (73.8%) (Table 1). Respondents were comprised of a roughly equal mix of provider (49.0%) and staff (50.9%) roles.

Patient respondents included in our analysis were mostly female (68.9%), 45.6% were aged between 45 and 64 years old, 22.8% reported Hispanic ethnicity, 62.5% were white and non-Hispanic, and 44.1% were either uninsured or on Medicaid (Table 1).

The mean score for patient perception of clinic support of patient activation was 68.8 (SD=30.0), with 61.3% of respondents noting “always” or “most of the time” when asked how often they were asked for their ideas when making a treatment plan (Table 3).

Clinic support for patient activation scores were not statistically significantly different among racial and ethnic groups. Compared to patients with excellent self-rated health status, patients who rated their health status as poor had significantly lower mean scores for patient perception of clinic support for activation (58.4 vs 73.9, $p=0.007$). Mean clinic support for patient activation scores for those rating their health status as fair, good, and very good did not statistically significantly differ from those with excellent self-rated health.

In multivariate analyses that analyzed all patients together, regardless of race/ethnicity and health status group, we did not find a statistically significant association between PCMH score and clinic support of patient activation (Table 4). In the analyses to examine potential interaction effects (Table 4), we found that a 10-point higher PCMH score was associated with a 15.2-point (CI 1.0, 29.5) higher score for clinic support of patient activation among Hispanic patients with poor/fair health, and that association was statistically significantly different from the effect seen among non-Hispanic white patients in good or better health.

When race/ethnicity was analyzed with only two categories (non-Hispanic white versus all minority patients combined), a 10-point higher PCMH score was associated with a 14.5-point (CI 4.4, 24.5) higher score for clinic support of patient activation in minority patients in fair or poor health. The effect of PCMH score on support for patient activation score among minority patients with poor/fair health status was statistically significantly different from the effect seen among non-Hispanic white patients in good or better health.

DISCUSSION

Policymakers are increasingly aware of the importance of patient activation and engagement in health care, but large-scale efforts to increase activation and engagement have been challenging, and improvements have been elusive.^{24, 25} Our surveys of providers, clinical staff, and patients at 24 safety net clinics showed that while a higher medical home rating was not associated with clinic support of patient activation across the full population of patients in our sample, we found a strong association between PCMH rating and clinic support of patient activation among minority patients with fair or poor health, which appeared to be driven by the subgroup of Hispanic patients in fair or poor health. Our study appears to be the first to use data from the perspective of patients, providers and staff to assess the association between the PCMH and clinic support of patient activation; and the

first to examine how that association varies among patient race/ethnicity or health status subgroups.

Our finding of a strong association between the medical home and clinic support of patient activation among ill minority patients suggests that the PCMH may be important to addressing racial and ethnic disparities that exist in patient activation. Minority patients often experience poor access to care, barriers to patient-provider communication, and frequent gaps in management and coordination of care,²⁶ all of which can contribute to low levels of activation. Similarly, patients with poorer self-rated health status may have more frequent and complex interactions with the health care system that makes them more likely to experience gaps in management and coordination of care. The medical home is comprised of activities that may be particularly important for addressing the health care quality problems faced by minority patients in ill health. The PCMH characteristics measured in our scale include activities such as identifying patients at high risk of poor outcomes and intensifying services, individualizing services to different patients with different needs, and utilizing community resources to meet patient's care needs. Systematic reviews of health care interventions to reduce disparities have found that these activities are particularly effective strategies for minority patients,²⁷ and our study suggests their importance in the context of the PCMH and the model's ability to support patient activation.

There are several limitations to this study. First, it is a cross-sectional, observational study, so we are unable to determine the direction of the relationship between PCMH rating and clinic support of patient activation, or to be sure that unmeasured confounders are not responsible for the apparent association between the PCMH score and patient's perceptions of clinic support for patient activation. Second, the data were gathered during the early stages of PCMH transformation and time periods for survey administration were not completely harmonized. Third, as mentioned previously, our patient activation scores reflect patient perception of clinic support for activation, as opposed to the level of activation of the patient, per se. Fourth, we cannot generalize our findings to all safety net clinics because the original 65 clinics participating in the intervention were not randomly sampled. Clinics participating in the 4-year intervention may have higher motivation and greater capacity for implementing the PCMH. Fifth, while our response rate of 44.4% for patients is high for the populations surveyed and higher than rates in previous multi-site studies that assessed the PCMH and patient activation, response bias is possible and we did not have information on non-respondents to estimate the extent of any response bias.²⁸ Sixth, while our PCMH measure covered a broader scope of medical home activities than some previous analyses of this topic and incorporated the perspectives of multiple providers and staff, the measure still does not assess some characteristics that many see as important to the PCMH, such as team-based care and shared decision-making. Our measure, like all measures of the PCMH, should continue to evolve with our understanding of the medical home model. Seventh, our results are expressed in terms of a 10-point change in PCMH score, which we found to be an operationally meaningful and attainable level of change; however, we observed relatively small variation in the distribution of PCMH scores in our sample of clinics (7.0-point standard deviation, range 43.4 to 72.7). The focus of our study is on the baseline, cross-sectional relationship between PCMH and patient perception of clinic support of activation; future studies will focus on measuring the magnitude of PCMH change attainable through a

focused improvement effort over time. Finally, while our analyses revealed important findings related to race, ethnicity, and health status, our study was not originally designed to examine small subgroups of patients. To maintain adequately sized subgroups for analysis, we combined some patient groups (e.g. patients of “fair” and “poor” health status were grouped together). The relatively small sample sizes for some groups also likely contributed to the wide confidence intervals we observed for our estimates. We hope that our findings for these patient subgroups will spur future study designs that are powered to analyze differences in outcomes for patient groups with more granularity; both examining race/ethnicity and health status in more detail, as well as exploring other aspects of patient diversity such as patients with different types of clinical needs and health conditions.

Our study suggests that when clinics deliver care consistent with the principles of the medical home, certain groups of ill minority patients experience care that is supportive of patient activation. Our results indicate that efforts to support broad adoption of the medical home may have the significant benefit of reducing racial and ethnic health disparities in patient activation. The relationship between medical home characteristics and patient activation may be especially important among safety net providers, who provide care to large populations of minority patients and where levels of activation have previously been shown to be low relative to other care settings.¹⁰ Adoption of the PCMH is increasing³ and is being supported in the safety net by federal agencies such as the Centers for Medicare and Medicaid Services²⁹ and the Health Resources and Services Administration.³⁰ While the results of our cross-sectional study should be further investigated in longitudinal analyses with comparison groups; these early findings suggest that the spread of the PCMH in the safety net may provide a unique opportunity to improve patient activation among racial and ethnic minority patients in ill health.

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TABLE 1

Characteristics of Study Clinics and Responding Providers, Staff, and Patients

CLINICS (N=24)	Percent
More than 8 provider full-time equivalents	37.5
Patient-centered medical home score ^a	Mean (SD, range) 62.9 (7.0, 43.4 – 72.7)
PROVIDERS AND STAFF(N=214)^b	
Role	Percent
Physicians	28.0
Nurse practitioner or physician assistant	21.0
Registered nurse	15.4
Certified medical assistant or licensed practical nurse	25.2
Other ^c	10.3
Female	74.8
Race or ethnicity	
White, non-Hispanic	73.8
Hispanic	15.4
Black, non-Hispanic	4.7
Multi or other, non-Hispanic	4.7
PATIENTS (N=735)^b	
	Percent
Age, years	
18–24	7.5
25–44	25.0
45–64	45.6
65 and over	21.9
Female	68.9
Completed high school or above	79.1
Race or ethnicity	
White, non-Hispanic	62.5
Hispanic	22.8
Black, non-Hispanic	9.4
Multi or other, non-Hispanic	5.3
Type of insurance	
Private	24.9
Medicaid	24.1
Medicare	21.5
Uninsured	20.0
Others or multiple insurance	9.5
Seeing this provider for 3 or more years	59.0
3 or more visits in the past 12 months	65.2

CLINICS (N=24)	Percent
Self-rated health status	
Poor	6.3
Fair	22.5
Good	36.0
Very good	25.8
Excellent	9.4

Percentages may not add to 100 due to rounding.

^a Patient-centered medical home score is from a 0–100 (0 least, 100 most) scale created by the authors and based on survey responses of providers and staff at each clinic (see reference 18).

^b All provider, staff, and patient data shown are based on self-report.

^c Includes administrator, behavioral health specialist, dentist, diabetes educator, dietician, health educator, medical records staff, social worker and others.

TABLE 2

Provider and Staff Responses to PCMH Questions^a

Question ^b	% of Respondents ^c				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Access to Care and Communication With Patients Subscale					
Patients see me rather than some other provider when they come in for					
A routine visit	1.9	4.7	8.5	53.5	31.5
An urgent care visit	3.3	31.0	33.3	26.8	5.6
Same day appointment with me or another provider	1.4	10.8	17.4	42.7	27.7
Difficult to spend enough time with patients	2.8	29.7	18.9	34.4	14.2
Adequate access to interpreters	9.6	26.4	21.2	26.0	16.8
Communication With Other Providers Subscale					
	Rarely	Occasionally	Sometimes	Frequently	Almost Always
How often is it difficult for you to communicate about your patients with					
Outside specialists ^d	13.7	26.5	36.3	21.6	2.0
Hospital-based providers ^d	24.8	28.7	30.7	12.9	3.0
Emergency departments ^d	45.0	21.0	23.0	8.0	3.0
Tracking Data Subscale					
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Easily identify patients with particular disease	3.8	16.7	18.6	49.0	11.9
Good systems to track test results and follow up	3.3	17.4	15.5	46.9	16.9
Care Management Subscale					

Question ^b	% of Respondents ^c				
	Access to Care and Communication With Patients Subscale				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Identifying patients at high risk for poor outcomes	4.8	23.3	27.6	36.2	8.1
Intensifies services...high risk for poor outcomes	2.9	15.8	23.9	45.9	11.5
Our clinic individualizes services to different patients with different needs	1.4	6.6	14.2	54.0	23.7
Effective in helping patients self-manage chronic illness	1.4	13.3	23.3	53.3	8.6
Coordinated care among clinic staff	0.5	11.0	14.3	51.4	22.9
Utilizes community resources to meet needs	0.9	7.1	16.0	51.9	24.1
EMR provides prompts at time of the patient visit ^e	10.6	23.8	19.9	36.4	9.3
Quality Improvement Subscale					
Structure promotes giving high-quality care	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	0.9	7.0	13.1	55.9	23.0
Actively improving patient safety	0.5	0.9	8.0	62.7	27.8
Studies patients' complaints	0.9	11.7	24.4	45.5	17.4
Serious effort to figure out problem in clinic	1.4	9.0	17.9	51.4	20.3
Reports on the quality of care to patients	10.5	31.0	26.2	24.8	7.6
Practice willing to change how to do things	3.3	7.5	22.1	54.9	12.2
Adequate release time from	7.6	27.5	29.9	28.0	7.1

Question ^b	% of Respondents ^c				
	Access to Care and Communication With Patients Subscale				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
regular job duties for QI					
I am rewarded for QI work	15.9	28.2	34.4	15.9	5.6

Abbreviations: EMR, electronic medical record; PCMH, patient-centered medical home.

^aThe survey questions were mapped to the domains of the 2008 National Committee for Quality Assurance PCMH standards and were then consolidated into 5 subscales based on content validity.

^bThe exact wording of some survey questions was changed slightly for brevity.

^cDue to rounding, data do not sum to 100%.

^dIncluded only responses from providers.

^eIncluded only responses from clinics that have EMRs.

TABLE 3

Patient Responses to Questions on Clinic Support of Patient Activation^a

Question	Percent responding			
	Always	Most of the time	Some of the time	A little of the time
Over the past 12 months, when I received care, I was ...				
...Asked for my ideas when we made a treatment plan (n=715)	31.5	29.8	17.1	4.9
...Given choices about treatment to think about (n=708)	37.9	30.5	13.6	7.2
...Asked to talk about any problems with my medicines or their effects (n=645)	51.3	20.2	10.5	5.7

^a Questions are taken from the patient activation scale of the Patient Assessment of Care for Chronic Conditions (PACIC) survey (see reference 11). Mean patient activation score was 68.8 (SD 30.0) and Cronbach's $\alpha=0.84$. Sample size "n" for each item did not include missing responses to the survey question or "not applicable" responses (e.g. "I am not taking any medication"). Cronbach's alpha (α) is a 0–1 measure of internal consistency that reflects whether the questions in a scale represent the same underlying concept. PACIC patient activation scale score is calculated by rescaling responses to a 0–100 (0 least, 100 most) scale, then averaging questions within the scale.

TABLE 4

Adjusted Associations Between PCMH Characteristics and Patient Perception of Clinic Support for Patient Activation

	Number (percent)	Effect of a 10-Point Increase in PCMH Score ^a on Patient Activation (95% Confidence Interval) ^b
Overall Population^c	735 (100%)	2.9 (–1.1,6.9)
Patient Subgroups (Using 4 race/ethnicity categories)^{c,d}		
Non-Hispanic white, good or better health	353 (48%)	0.2 (–5.6,6.0)
Non-Hispanic white, poor or fair health	106 (14%)	3.8 (–3.6,11.2)
Hispanic, good or better health	97 (13%)	5.7 (–4.2,15.7)
Hispanic, poor or fair health	72 (10%)	15.2 (1.0,29.5) *†
Non-Hispanic black, good or better health	47 (6%)	–6.9 (–19.9,6.0)
Non-Hispanic black, poor or fair health	22 (3%)	8.8 (–11.6,29.2)
Other and more than one race, good or better health	26 (4%)	8.4 (–4.9,21.7)
Other and more than one race, poor or fair health	12 (2%)	15.3 (–7.0,37.5)
Patient Subgroups (Collapsed to 2 race/ethnicity categories)^{c,d}		
Non-Hispanic white, good or better health	353 (48%)	0.1 (–5.7,5.8)
Non-Hispanic white, poor or fair health	106 (14%)	3.5 (–3.9,10.9)
Minority, ^e good or better health	170 (23%)	3.7 (–3.2,10.5)
Minority, ^e poor or fair health	106 (14%)	14.5 (4.4,24.5) **†

Abbreviations: PCMH = patient-centered medical home.

^aPCMH score is from a 0–100 (0 least, 100 most) scale created by the authors and based on survey responses of providers and staff at each clinic (see reference 18).

^bPatient activation is scored on a 0–100 (0 least, 100 most) scale and taken from the Patient Assessment of Care for Chronic Conditions (PACIC) survey (see reference 11).

^cCovariates were age group, sex, education level, race/ethnicity, type of insurance, frequency of clinic visits in the last 12 months, duration of relationship with the provider, self-rated health status, total clinic provider (physician, nurse practitioner or physician assistant) full-time equivalent employees, and clinic state.

^dPatient subgroup findings are based on inclusion of interaction terms for PCMH score, race/ethnicity, and health status.

^eMinority group included non-white and/or Hispanic patients, i.e. Hispanic, non-Hispanic black and non-Hispanic other/mixed races.

* Denotes statistically significant difference from zero at $p < 0.05$.

** Denotes statistically significant difference from zero at $p < 0.01$.

† Denotes statistically significant difference from non-Hispanic white, good or better health subgroup at $p < 0.05$.