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ORIGINAL PAPER

Clinic Workload, the Quality of Staff Relationships and Diabetes Management in Community Health Centers Catering to Latino and Chinese Patients

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Abstract We examine whether workplace climate-quality of staff relationships (QSR) and manageable clinic workload (MCW) are related to better patient care experiences and diabetes care in community health centers (CHCs) catering to Latino and Chinese patients. Patient experience surveys of adult patients with type 2 diabetes and workplace climate surveys of clinicians and staff from CHCs were included in an analytic sample. Comparisons of means analyses examine patient and provider characteristics. The associations of QSR, MCW and the diabetes care management were examined using regression analyses. Diabetes care process were more consistently provided in CHCs with high quality staff relations and more manageable clinic workload, but HbA1c, LDL cholesterol, and blood pressure outcomes were no different between clinics with high vs. low QSR and MCW. Focusing efforts on improvements in practice climate may lead to more consistent provision of important processes of diabetes care for these patients.

Keywords Workplace climate · Diabetes care · Safety net providers · Latinos · Chinese Americans

Introduction

Research on implementing primary care practice transformations like the patient-centered medical home (PCMH) model underscore the critical importance of a supportive learning environment and high functioning interdisciplinary teams [7, 15, 24–26]. Recent evidence suggests that more functional practice climates can foster better chronic illness care for patients [5, 13, 29]. Diverse constructs assessing workplace climate have been used to investigate links between climate and the technical quality of patient care [4, 17, 30].

Only a handful of studies have assessed the relation of primary care workplace climate and the quality of primary care. These studies use different constructs such as "organizational justice", and "voice" [3, 21, 22, 30]. While potentially fostering more supportive workplace climates, these aspects of practice climate may be less actionable because of limited interventions available for practice leaders and stakeholders to improve these dimensions of climate. In contrast, examining other factors such as the quality of primary care staff relationships (QSR) and the perceived manageability of the clinic workload (MCW) on patient care processes and outcomes could shed light on the extent to which teamwork improvement interventions [6, 19] and workflow redesign guided by operational efficiency principles [8] can improve the QSR and MCW, respectively, and ultimately, patient outcomes.

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QSR and MCW are workplace climate factors that practice stakeholders can concretely intervene on to foster supportive learning environments. Importantly, the association between specific aspects of workplace climate and diabetes control among underserved, low-income and minority patients remain unexplored. More supportive clinician and staff workplace climates may improve patients' experiences of care and health outcomes among diabetic patients by fostering functional working relationships with clinicians, staff, and patients, and promoting innovation and encouraging a shared commitment to high-quality care and improvement [3, 29]. This study examines the relation of primary care practice climate, specifically MCW, QSR, diabetic patients' experiences of care and diabetes outcomes in fourteen community health centers (CHCs) serving high proportions of low-income adult Latino or Chinese diabetic patients.

Study Data and Methods

Data

Surveys of adult patients with type II diabetes mellitus and clinicians and staff from 14 CHCs in northern California were administered. Clinician and staff practice climate survey data were collected during June and August of 2011. Primary care clinicians and staff received the survey by mail with phone follow-up of non-respondents. The overall response rate was 82 % (n = 274). Patient care experience survey data were collected between July and August of 2012. The patient inclusion criteria were 18 years of age or more, two visits or more to one of the participating clinics in 2011, and a type 2 diabetes diagnostic code or prescription. Patients were mailed the survey with a $10 gift card and the research team followed up with non-respondents by phone. Surveys were administered in English, Spanish, and Chinese. The overall response rate was 44.3 % (n = 1095).

In addition, process and outcome measures of diabetes care based on the Health Effectiveness Data and Information Set (HEDIS) guidelines were used to assess the extent of patient-level glycosylated hemoglobin (HbA1c), low density lipoprotein cholesterol (LDL-C), and systolic and diastolic blood pressure (BP) control from each patient's clinical records [10]. The average values for each outcome measure for each patient were merged with their survey responses using a unique identifier. These integrated patient data were then merged with aggregated clinic measures of workplace climate to construct the analytic sample. The final analytic sample included 907 patients and 249 CHC clinicians/staff.

Outcome Measures

Process measures for blood sugar (HbA1c), cholesterol (LDL-C) and, blood pressure (BP) testing were constructed [9]. Process measures received a value of one for being tested at least once and zero for lacking any testing. In addition, binary clinical outcome measures were constructed from the patients' clinic records, indicating whether their results met HEDIS guidelines for diabetes control. Consequently, dichotomous measures received a value of one for acceptable control (HbA1c result <8.0 %, LDL-C <130 mg/dL, and BP <140/90 mmHg) and 0 for poor control. Similar process and outcome measures of diabetes care have been used in previous studies [3].

Explanatory Variables

Manageable clinic workloads (MCW) and quality of staff relationships (QSR) were the explanatory variables of interest. These measures were assessed using a battery of questions from the clinician and staff workplace climate survey, which was adapted from the Agency for Healthcare Research and Quality (AHRQ) Medical Office Survey on Patient Safety Culture [1] and from TransforMed Clinician Staff Questionnaire (TransforMed CSQ) [16]. Summary measures of MCW ($\alpha = 0.73$) and QSR ($\alpha = 0.88$) were constructed from question responses and scored, ranging from 0 to 100, where 0 was the lowest level of MCW or QSR, while 100 was the highest MCW or QSR [9].

Covariates

Patients' experiences of diabetes care were assessed using the Patient Assessment of Chronic Illness Care (PACIC-11) adapted to reference diabetes care specifically [11, 12]. Patients' management of diabetes-related emotional distress was assessed using the Problem Areas in Diabetes (PAID-5) measure [20]. The PACIC-11 and PAID-5 composite measures were rescaled ranging from 0 to 100, where zero indicated the lowest score and 100 the highest score. Patients and clinician and staff characteristics, patient characteristics, including race/ethnicity/language (Chinese-speaking Asian, Spanish-speaking Latino/a, English-speaking Latino/a, all other English-speaking patients), sex, age, self-reported number of comorbidities, self-reported health status, education, and health insurance status (none, public, private), were included as covariates in regression analyses to control for sample heterogeneity (Tables 1, 2) and robust standard errors were used to account for the clustering of patients within practices. Additional control variables at the clinic-level were not included in regression models due to collinearity of clinic sites with the patient-level race and ethnicity variables included in the regressions.

Table 1 The relation of workplace climate, diabetes care management, and patient characteristics, unadjusted

	Manageable clinic workload			Quality of staff relationships		
	Low (n = 482)	High (n = 425)	P value	Low (n = 334)	High (n = 573)	P value
Diabetes outcome measures						
HbA1c tested	0.74 (0.44)	0.92 (0.28)	<0.01	0.72 (0.45)	0.88 (0.32)	<0.01
HbA1c <8	0.72 (0.45)	0.77 (0.42)	0.13	0.70 (0.46)	0.76 (0.43)	0.08
LDL-C tested	0.76 (0.43)	0.86 (0.35)	<0.01	0.69 (0.46)	0.87 (0.34)	<0.01
LDL-C <130	0.84 (0.37)	0.83 (0.38)	0.63	0.84 (0.37)	0.83 (0.37)	0.76
BP tested	0.89 (0.32)	1.00 (0.05)	<0.01	0.85 (0.35)	0.99 (0.10)	<0.01
BP < 140/90	0.78 (0.41)	0.79 (0.41)	0.87	0.80 (0.40)	0.78 (0.42)	0.51
Chronic care management						
Problem areas in diabetes (PAID-5)	0.53 (0.29)	0.57 (0.27)	0.03	0.53 (0.29)	0.56 (0.28)	0.15
Patients' experiences of diabetes care (PACIC-11)	0.50 (0.27)	0.46 (0.27)	0.05	0.52 (0.27)	0.46 (0.27)	<0.01
Patient characteristics						
Age	57.49 (12.64)	59.63 (12.36)	0.01	57.44 (13.05)	59.11 (12.21)	0.05
Female	0.61 (0.49)	0.57 (0.50)	0.27	0.67 (0.47)	0.54 (0.50)	<0.01
Ethnicity/language			<0.01			<0.01
Chinese	0.15 (0.35)	0.22 (0.42)		0.06 (0.23)	0.31 (0.46)	
Latino/a-Spanish	0.22 (0.41)	0.08 (0.28)		0.19 (0.39)	0.12 (0.32)	
Latino/a-English	0.09 (0.28)	0.05 (0.21)		0.07 (0.26)	0.06 (0.24)	
Other race	0.08 (0.27)	0.11 (0.32)		0.06 (0.23)	0.14 (0.34)	
Education			<0.01			0.77
<HS (ref.)	0.26 (0.44)	0.19 (0.40)		0.17 (0.38)	0.28 (0.45)	
Some HS	0.09 (0.29)	0.07 (0.25)		0.05 (0.23)	0.10 (0.30)	
>HS	0.18 (0.38)	0.21 (0.41)		0.14 (0.35)	0.25 (0.43)	
Insurance status			<0.01			<0.01
Uninsured (ref.)	0.11 (0.31)	0.19 (0.39)		0.06 (0.24)	0.24 (0.42)	
Private	0.21 (0.41)	0.08 (0.28)		0.14 (0.35)	0.15 (0.35)	
Public	0.21 (0.41)	0.20 (0.40)		0.16 (0.37)	0.25 (0.43)	
Health status			0.65			0.07
Poor/fair (ref.)	0.30 (0.46)	0.25 (0.43)		0.20 (0.40)	0.35 (0.48)	
Good	0.15 (0.35)	0.14 (0.35)		0.10 (0.30)	0.19 (0.39)	
V. good/excellent	0.09 (0.28)	0.07 (0.26)		0.07 (0.26)	0.09 (0.28)	
Comorbidities						
Total comorbidities	2.23 (1.71)	2.12 (1.65)	0.34	2.16 (1.61)	2.18 (1.73)	0.87
Hypertension	0.60 (0.49)	0.66 (0.47)	0.08	0.60 (0.49)	0.65 (0.48)	0.12
Coronary artery disease	0.06 (0.25)	0.09 (0.28)	0.19	0.07 (0.25)	0.08 (0.27)	0.43
Congestive heart failure	0.05 (0.21)	0.04 (0.18)	0.35	0.05 (0.22)	0.04 (0.19)	0.3
High cholesterol	0.57 (0.49)	0.60 (0.49)	0.49	0.59 (0.49)	0.58 (0.49)	0.87
COPD	0.12 (0.33)	0.10 (0.30)	0.18	0.12 (0.32)	0.11 (0.31)	0.54
Joint problems	0.25 (0.43)	0.23 (0.42)	0.46	0.23 (0.42)	0.24 (0.43)	0.61
Cancer	0.03 (0.17)	0.03 (0.18)	0.88	0.02 (0.14)	0.04 (0.19)	0.15
Depression	0.16 (0.37)	0.09 (0.29)	<0.01	0.15 (0.35)	0.12 (0.33)	0.29

Table 1 (continued)

	Manageable clinic workload			Quality of staff relationships		
	Low (n = 482)	High (n = 425)	P value	Low (n = 334)	High (n = 573)	P value
Stomach problems	0.23 (0.42)	0.20 (0.40)	0.28	0.21 (0.40)	0.23 (0.42)	0.44
Migraines	0.14 (0.35)	0.09 (0.29)	0.02	0.14 (0.35)	0.10 (0.30)	0.04

The median aggregated score of all survey responses in the workplace climate survey was used to classify clinics into "low" or "high" categories. The comparison of means analyses (*t* test for continuous variables, Chi square for dichotomous variables) compares patients from clinics reporting low vs. high MCW and low vs. high QSR

BP blood pressure. *PAID-5* problem areas in diabetes (emotional distress), It is reverse-coded (0—highest distress, 100—lowest distress), *PACIC-11* patient assessment of chronic illness care

Table 2 The relation of clinician and staff characteristics and workplace climate

Variable name	Manageable clinic workload			Quality of staff relationships		
	Low (n = 133)	High (n = 116)	P value	Low (n = 139)	High (n = 110)	P value
Age	38.14 (11.37)	39.46 (10.37)	0.34	39.37 (11.14)	37.97 (10.61)	0.32
% Female staff	0.91 (0.07)	0.92 (0.08)	0.74	0.93 (0.06)	0.90 (0.07)	0.62
% Latino staff	0.67 (0.38)	0.43 (0.34)	0.24	0.68 (0.31)	0.29 (0.33)	0.04
% Asian staff	0.26 (0.41)	0.37 (0.43)	0.63	0.18 (0.30)	0.53 (0.48)	0.11
% Other race staff	0.07 (0.07)	0.20 (0.13)	0.07	0.14 (0.11)	0.17 (0.16)	0.66
Occupation						
Physician	0.12 (0.33)	0.10 (0.30)	0.67	0.08 (0.27)	0.15 (0.36)	0.06
Physician's assistant	0.01 (0.09)	0.03 (0.16)	0.25	0.02 (0.15)	0.01 (0.09)	0.44
Nurse practitioner	0.03 (0.17)	0.05 (0.22)	0.39	0.04 (0.19)	0.05 (0.21)	0.71
RN	0.03 (0.17)	0.05 (0.22)	0.39	0.05 (0.22)	0.03 (0.16)	0.36
Medical assistant	0.41 (0.49)	0.38 (0.49)	0.58	0.38 (0.49)	0.42 (0.49)	0.55
Care coordinator	0.06 (0.24)	0.02 (0.13)	0.09	0.06 (0.23)	0.02 (0.13)	0.12
Clinic manager	0.05 (0.22)	0.08 (0.27)	0.42	0.05 (0.22)	0.08 (0.27)	0.31
LVN	0.02 (0.12)	0.03 (0.16)	0.54	0.02 (0.15)	0.02 (0.13)	0.85
Non-clinical staff	0.23 (0.42)	0.17 (0.38)	0.3	0.21 (0.41)	0.19 (0.39)	0.73
Other clinical staff	0.02 (0.15)	0.03 (0.18)	0.57	0.04 (0.20)	0.01 (0.09)	0.11
Unknown	0.02 (0.15)	0.06 (0.24)	0.13	0.03 (0.22)	0.03 (0.16)	0.36
Employment length			0.19			0.14
0–6 months at job	0.06 (0.24)	0.02 (0.15)		0.04 (0.19)	0.04 (0.20)	
6–12 months at job	0.08 (0.28)	0.03 (0.17)		0.04 (0.20)	0.06 (0.25)	
1–2 years at job	0.19 (0.39)	0.16 (0.36)		0.15 (0.36)	0.18 (0.38)	
2+ years at job	0.67 (0.47)	0.66 (0.47)		0.77 (0.42)	0.50 (0.50)	

The median aggregated score of all survey responses in the workplace climate survey was used to classify clinics into "low" or "high" categories. The comparison of means analyses (*t* test for continuous variables, Chi square for dichotomous variables) compares staff from clinics reporting low vs. high MCW and low vs. high QSR

Statistical Analysis

Once the integrated patient experience and workplace climate surveys and patient clinical process and outcomes data were linked at the patient-level across CHCs, the 14 clinics were categorized into two groups, differentiating between those with low/high MCW and low/high QSR. The median aggregated score of all survey responses in the workplace climate survey was used to classify clinics into each category. A comparison of means analyses (*t* test for continuous variables, Chi square for dichotomous variables) of selected patient and clinician/staff characteristics were first implemented comparing patients from clinics reporting low vs. high MCW and low vs. high QSR (Tables 1, 2).

Associations between MCW, QSR and diabetic care process and outcome measures were then estimated using logit regression models for dichotomous responses (Tables 3, 4). For the regression analyses, continuous standardized MCW

Table 3 The relation of staff relationships and diabetes care management, adjusted

	Blood sugar		Cholesterol		Blood pressure	
	HbA1c tested	HbA1c <8	LDL-C tested	LDL-C <130	BP tested	BP <140/90
	(n = 795)	(n = 661)	(n = 795)	(n = 642)	(n = 795)	(n = 740)
Quality of staff relationships	1.508*	0.990	1.633**	0.730**	1.897**	1.014
Patients' experiences of diabetes care (PACIC-11)	1.046	0.951	0.958	1.105	1.436**	1.146**
Problem areas in diabetes (PAID-5)	0.886	1.338**	0.990	1.087	1.145	1.055
Age	1.175	1.319**	0.947	1.216	0.894	0.720**
Female	0.973	1.283	1.042	0.744	1.124	1.057
Ethnicity/language						
Chinese	1.447	1.560	0.996	1.440	∞**	1.387
Spanish-speaking Latino/a	0.792	0.638	0.559*	0.764	0.828	1.178
English-speaking Latino/a	0.638	0.721	0.616	1.100	0.681	0.779
Other race (reference)	–	–	–	–	–	–
Insurance status						
Uninsured (reference)	–	–	–	–	–	–
Private	0.381**	0.873	0.833	0.863	0.234**	1.197
Public	0.330**	0.913	0.434*	0.949	0.357	1.337*
Education						
Less than HS (reference)	–	–	–	–	–	–
Some HS	1.222	1.280	1.357	0.572**	1.066	0.775
More than HS	1.270	1.436*	0.825	0.728	1.189	0.870
Health status						
Poor/fair (reference)	–	–	–	–	–	–
Good	1.491	0.778**	1.512	1.239	1.260	0.821
Very good/excellent	1.783*	1.307	2.542**	1.035	0.668	0.948
Total comorbidities	0.978	1.016	0.981	1.069	0.986	0.861**
Constant	10.159**	2.307**	7.383**	7.141**	48.974**	4.583**
Percent correctly predicted	0.830	0.740	0.823	0.841	0.943	0.785

Estimates account for clustering of patients within CHCs using robust standard errors clustered by clinic site

*<0.1, **<0.05. Odds Ratios reported. ∞ notes that being a Chinese patient perfectly predicts having blood pressure taken. PAID-5 is reverse-coded (0—highest distress, 100—lowest distress). *BP* blood pressure. For the logit regression analyses, continuous standardized MCW and QSR measures were used

and QSR measures were used. The first regression specification estimated the association of QSR and processes and outcomes of each of the three diabetes measures (Table 3). In order to examine the robustness of these results, we included MCW and QSR simultaneously in a second set of models (Table 4). Standard errors were adjusted to account for clinic clustering. The statistical analyses were implemented using STATA 12.1.

Study Results

Summary scores (0–100) for patients' experiences of diabetes care and the HEDIS process and outcome measures across CHCs are summarized in Table 1. The bivariate analyses comparing diabetic patients from clinics with low/high MCW and QSR indicate that all patients' diabetes care process measures were better in clinics with high MCW and QSR compared to clinics with low MCW and QSR, but there were no significant differences in outcomes of diabetes care between practices with high vs. low MCW and QSR. Patients of practices with high MCW and QSR had lower diabetes-related emotional distress (PAID-5). By contrast, patients' experiences of diabetes care (PACIC-11) were better in clinics with less manageable workload and lower quality staff relationships. The bivariate analyses also indicate statistically significant differences in patient age, sex/gender, ethnicity and insurance status that could partially explain differences in diabetes process and outcome differences across clinics with high vs. low QSR and/or MCW.

Table 2 summarizes aggregated differences across high vs. low QSR and MCW clinics for clinician and staff age, race/

Table 4 Comparing the relation of staff relationships vs. clinic workload in diabetes care management, adjusted

	Blood sugar		Cholesterol		Blood pressure	
	HbA1c tested	HbA1c <8	LDL-C tested	LDL-C <130	BP tested	BP <140/90
	(n = 795)	(n = 661)	(n = 795)	(n = 642)	(n = 795)	(n = 740)
Staff relationships	1.440	0.973	1.602**	0.754**	1.867**	0.999
Manageable clinic workload	1.514**	1.103	1.168	0.841**	1.304	1.098
PACIC-11	1.018	0.949	0.950	1.112	1.405**	1.141**
PAID-5	0.871*	1.329*	0.983	1.101	1.129	1.050
Age	1.146	1.317*	0.936	1.229	0.877	0.717**
Female	0.979	1.277	1.035	0.740	1.142	1.050
Ethnicity/language						
Chinese	1.294	1.560	0.969	1.434	∞**	1.381
Spanish-speaking Latino/a	0.855	0.643	0.580*	0.756	0.837	1.202
English-speaking Latino/a	0.657	0.724	0.625	1.078	0.688	0.783
Other race (reference)	–	–	–	–	–	–
Insurance status						
Uninsured (reference)	–	–	–	–	–	–
Private	0.446**	0.900	0.881	0.817	0.271**	1.246
Public	0.367**	0.926	0.453**	0.929	0.412	1.364**
Education						
Less than HS (reference)	–	–	–	–	–	–
Some HS	1.215	1.274	1.359	0.561*	1.014	0.775
More than HS	1.202	1.421*	0.809	0.742	1.132	0.860
Health status						
Poor/fair (reference)	–	–	–	–	–	–
Good	1.484	0.778**	1.517	1.249	1.223	0.825
Very good/excellent	1.828**	1.310	2.575**	1.039	0.667	0.942
Total comorbidities	0.987	1.017	0.983	1.067	0.991	0.862**
Constant	9.702**	2.265**	7.155**	7.471**	47.318**	4.486**
Percent correctly predicted	0.838	0.740	0.815	0.841	0.944	0.786

Estimates account for clustering of patients within CHCs using robust standard errors clustered by clinic site

*<0.1, **<0.05. Odds Ratios reported. ∞ notes that being a Chinese patient perfectly predicts having blood pressure taken. PAID-5 is reverse-coded (0—highest distress, 100—lowest distress). *BP* blood pressure. For the logit regression analyses, continuous standardized MCW and QSR measures were used

ethnicity, staff position and employment length. Besides the statistically significant difference in the racial/ethnic make-up of clinicians and staff across high vs. low QSR clinics, no other clinician and staff characteristics differed.

Table 3 shows the results of the regression analyses that examined the association of QSR and each of the diabetes process and outcome measures. Patients from clinics with higher QSR had statistically significant higher odds of being tested for HbA1c (OR = 1.508, $p < 0.1$), LDL-C (OR = 1.633, $p < 0.05$) and BP (OR = 1.897, $p < 0.05$). However, patients from clinics reporting higher QSR reported statistically significant lower odds (OR = 0.730, $p < 0.05$) of having their cholesterol under control (LDL-C <130). The share correctly predicted by these models ranged from 74 to 94%.

Table 4 tested for the robustness of the results in Table 3 by including MCW as an additional explanatory variable to understand the relative importance of MCW vs. QSR in relation to diabetes outcomes and patients' experiences. These analyses reveal that patients from clinics with high QSR and high MCW had higher odds of being tested for HbA1c (OR = 1.514, $p < 0.05$—for MCW only), LDL-C (OR = 1.602, $p < 0.05$—for QSR only) and BP (OR = 1.867, $p < 0.05$—for QSR only). Consistent with the results in Table 3, patients from clinics with high QSR (OR = 0.754, $p < 0.05$) and high MCW (OR = 0.841, $p < 0.05$) had lower odds of having LDL-C under control. Regression models in Table 4 had similar goodness of fit scores as in Table 3.

In both adjusted (Tables 3, 4) analyses, patients reporting less diabetes-related distress (i.e. PAID-5 composite) had

higher odds of HbA1c control. Similarly, patients reporting better experiences of diabetes care (i.e. PACIC-11) had higher odds of BP testing and having BP under control. Moreover, older patients had lower odds of having their BP under control, but had higher odds of HbA1c control compared to younger patients. Every Chinese patient had BP testing. Spanish-speaking Latino patients had lower odds of routine LDL-C screening. Surprisingly, publicly insured patients had higher odds of uncontrolled blood pressure compared to uninsured and insured patients had a lower odds of HbA1c, LDL-C and BP testing compared to uninsured diabetic patients represented in the dataset.

Discussion

Diabetic patients from CHCs where clinicians and staff reported higher quality staff relationships (QSR) and perceived more manageable clinic workload (MCW) were more likely to receive annual HbA1c, LDL-C and BP testing. These findings are consistent with recent research that demonstrates an association between a favorable workplace climate and better chronic disease management [3]. Managing the quality of staff relationships and the manageability of clinic workload may aid in reducing clinician and staff burnout, implementing practice changes, improving sense of fairness, and increasing staff commitment to improving quality [5, 15, 30]. While previous research assessing workplace climate and quality of care has been conducted abroad and in the Veterans Administration [3, 13], this study is among the first to identify similar associations in clinics primarily serving low-income minority and recent immigrant populations.

Our results highlight how patient and clinician/staff heterogeneity may influence patients' experiences of care and the capabilities of clinics to deal with the chronic care needs of specific populations [18]. For instance, while clinician characteristics were relatively homogenous across clinics in the study setting, patient characteristics and perceptions of care varied widely across CHCs and by racial/ethnic lines. Diabetes emotional distress among patients was higher in clinics with better QSR and MCW, but patients' experiences of chronic illness care were lower in these same clinics. This divergence may be explained by differences in expectations of care among Asian respondents [27, 28] who were more likely than Latino respondents to be treated in clinics with high MCW and QSR scores.

While the clinician and staff survey response rate was high (82%), the patient survey response rate was modest (44%). As we were interested in the relation of workplace climate and patient care experiences, we only included survey respondents in the analyses, limiting the patient sample. The cross-sectional design of our study limits the causal interpretation of the results. Most study measures were self-reported. Such data may be subject to measurement error. An important caveat is that any racial differences in outcomes may be attributed to unmeasured factors specific to clinics because Latinos vs. Asian patient populations were highly segregated at the individual clinic-level and were therefore unable to disentangle independent effects.

The heterogeneous distribution of the U.S. foreign-born population and their eligibility under the Accountable Care Act will generate different demands for individual CHCs [14, 23]. Some CHCs will serve a higher share of individuals eligible for coverage under the ACA, while others will cater to a higher share of ACA ineligible foreign-born individuals who will remain uninsured. Our findings suggest that focusing efforts on improvements in practice climate may lead to more consistent provision of important processes of diabetes care for these patients. In contrast with previous research [13, 17], our study finds minimal evidence that better primary care climate translates into better intermediate outcome measures of diabetes care. Some of the most innovative healthcare delivery transformations of the ACA will be implemented in CHCs [18]. New programs under the ACA aim to support coordinated, patient-centered care and expansion of the primary care workforce for CHC patients [2]. Future research should assess whether specific workplace climate factors, such as QSR and MCW predict CHC resilience to major ACA transitions.

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Compliance with Ethical Standards

Conflict of Interest All authors declares that they have no conflict of interest to disclose.

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