

Factors Associated With Primary Care Physician Turnover in the VA

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More than 6 million veterans receive primary care via the US Department of Veterans Affairs (VA), and consistent with national trends, the VA faces shortages in primary care physicians (PCPs).^{1,2} The Sergeant First Class Heath Robinson Honoring Our Promise to Address Comprehensive Toxics Act of 2022 (Honoring Our PACT Act of 2022), which was signed into law in August 2022 and expands eligibility for veteran health care,³ is likely to increase primary care demand and exacerbate the impact of existing shortages on primary care teams. Notably, in the year after the Honoring Our PACT Act of 2022 was enacted, the VA received more than 770,000 veteran-filed claims to receive VA health care and approved more than three-fourths of them.⁴ This rapid influx of VA patients will require primary care teams to care for greater numbers of veterans.

PCP shortages raise interconnected organizational challenges for those who remain employed (Figure 1⁵). PCP shortages increase workload for primary care teams, including PCPs, nurses, medical assistants, front desk personnel, and managers. Team dissatisfaction with workload is a known driver of burnout in VA primary care,⁶ and turnover is a potential downstream outcome resulting from burnout.⁷ PCP turnover can, in turn, exacerbate PCP shortages and primary care team workload. Thus, PCP turnover is an important outcome for VA and other health care organizations to better understand. Although the association between primary care team workload satisfaction and PCP burnout has been studied, the association between workload satisfaction and PCP turnover is less well described. Several studies examining potential factors contributing to PCP turnover including workload are outdated or were conducted outside the US.⁸⁻¹⁶ Others have used quantitative measures of workload (eg, patient panel size), although workload can be experienced differently based on different team support and care settings.^{15,16} We sought to quantify the association between primary care team satisfaction with the amount of work (referred to hereafter as “workload satisfaction”) and PCP turnover, which is a downstream outcome with direct, measurable implications for health care organizations.

Greater insights into the relationship between workload satisfaction and PCP turnover, including underlying mechanisms that link

ABSTRACT

OBJECTIVES: To quantify the association between primary care team workload satisfaction and primary care physician (PCP) turnover and examine potential mediation of workplace climate factors using survey and administrative data.

STUDY DESIGN: Longitudinal observational study using data from 2008 to 2016.

METHODS: The outcome variable was PCP turnover. The main explanatory variable was satisfaction with amount of workload. We included 7 additional workplace climate measures (eg, satisfaction with direct supervision) as mediators. We included characteristics of PCPs (eg, PCP years of experience, gender), salary, and clinic factors (eg, urban vs rural geography, community vs hospital based) as covariates.

RESULTS: US Department of Veterans Affairs (VA) PCPs working at 787 VA primary care clinics nationally were recruited for this study. Over the 9-year study period, 8362 unique PCPs were employed in the VA. The unadjusted mean quarterly turnover rate was 1.83%, and the mean (SD) workload satisfaction score was 3.58 (0.24) on a 5-point Likert scale over the study period. In adjusted analysis, a 1-point increase in workload satisfaction was associated with a decrease of 0.73 [95% CI, 0.36-1.10] percentage points in the probability of turnover in a calendar quarter. In the mediation analysis, we found that workload satisfaction impacted turnover through only 1 of the 7 workplace climate measures: satisfaction with direction by senior managers.

CONCLUSIONS: Our study findings highlight the key role that achieving primary care workload satisfaction can play in reducing PCP turnover. Identification of direction by senior managers as an underlying mechanism is an important finding for strategic planning to mitigate PCP turnover.

Am J Manag Care. 2024;30(7):330-336. doi:10.37765/ajmc.2024.89527

the two, are needed to inform strategic planning to staff primary care teams.² Workplace climate factors such as psychological safety, supervisor goal setting and direction, progress evaluation, and appropriate work resources are modifiable and have been studied as drivers of burnout as an intermediate outcome but not of PCP turnover as a downstream outcome.⁶ We hypothesized that workplace climate factors could mediate an association between workload satisfaction and PCP turnover (ie, that perceptions of workload may vary based on workplace climate and, in turn, could affect PCP turnover) and that these mediating factors may differ from those affecting PCP burnout.

To address this key priority of VA and other health systems to reduce PCP turnover, we sought to understand (1) the association between primary care team workload satisfaction and PCP turnover, and given a significant association, (2) mediation of workplace climate factors. Understanding workplace climate domains is particularly relevant because they present actionable areas in which to intervene from an organizational standpoint to promote PCP retention.

METHODS

Data Sources

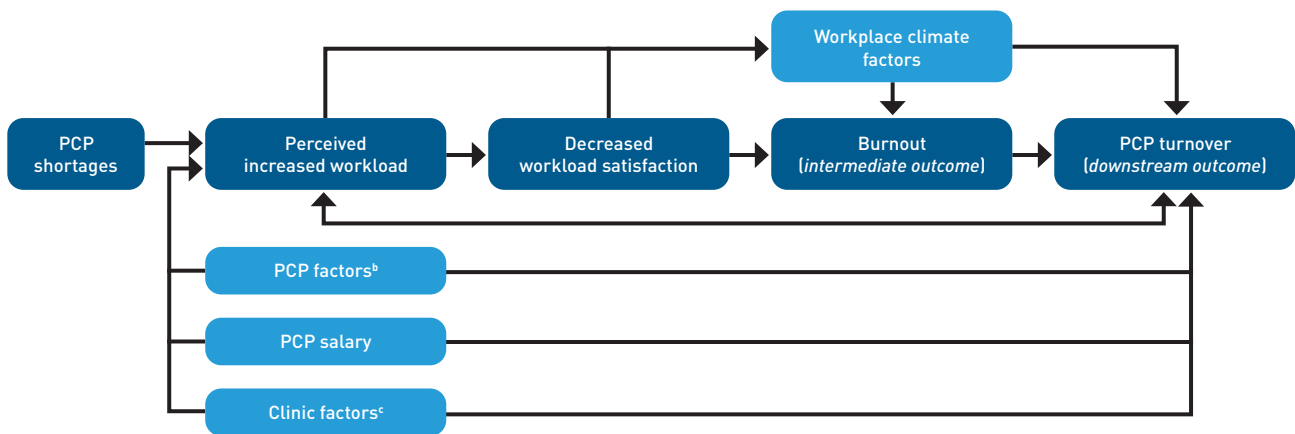
We used multiple data sources to conduct a longitudinal observational study. First, we used the 2008-2016 VA All Employee Survey (AES). The AES, which is conducted annually in June and completed by

employees confidentially and voluntarily to give feedback to the organization, includes questions regarding workplace climate.¹⁷ The AES response rate among all VA employees during our study period was 56.1% to 73.0% (D. Mohr, PhD, VA Organizational Assessment Committee, email communication, August 3, 2022). We included responses from primary care team members who work in any of the 787 VA primary care clinics (hospital- and community-based clinics). AES response data were aggregated at the parent facility level (ie, including all clinics affiliated with a VA hospital, hereafter referred to as “facility”) consistent with a data use agreement. There were 129 facilities included in the study. Second, we used the national VA Corporate Data Warehouse (CDW) for PCP characteristics. The CDW includes data on employment and termination dates, medical specialty, and primary care panel information. Third, data from the VA Personnel Accounting and Integrated Data System were linked to the CDW to determine salary information and other physician

TAKEAWAY POINTS

- ▶ Primary care team workload satisfaction was significantly associated with primary care physician (PCP) turnover over a 9-year period.
- ▶ Among several indicators of workplace climate, satisfaction with direction by senior managers was the only significant mediator of the association between team workload satisfaction and PCP turnover.
- ▶ Our study highlights the importance of primary care team workload satisfaction for retention of PCPs and identifies direction by senior managers as a potential underlying mechanism.
- ▶ These findings can provide important insights to health systems engaged in strategic planning to mitigate PCP turnover.

FIGURE 1. Conceptual Framework for Association of PCP Turnover and Workload^{5,a}



PCP, primary care physician.

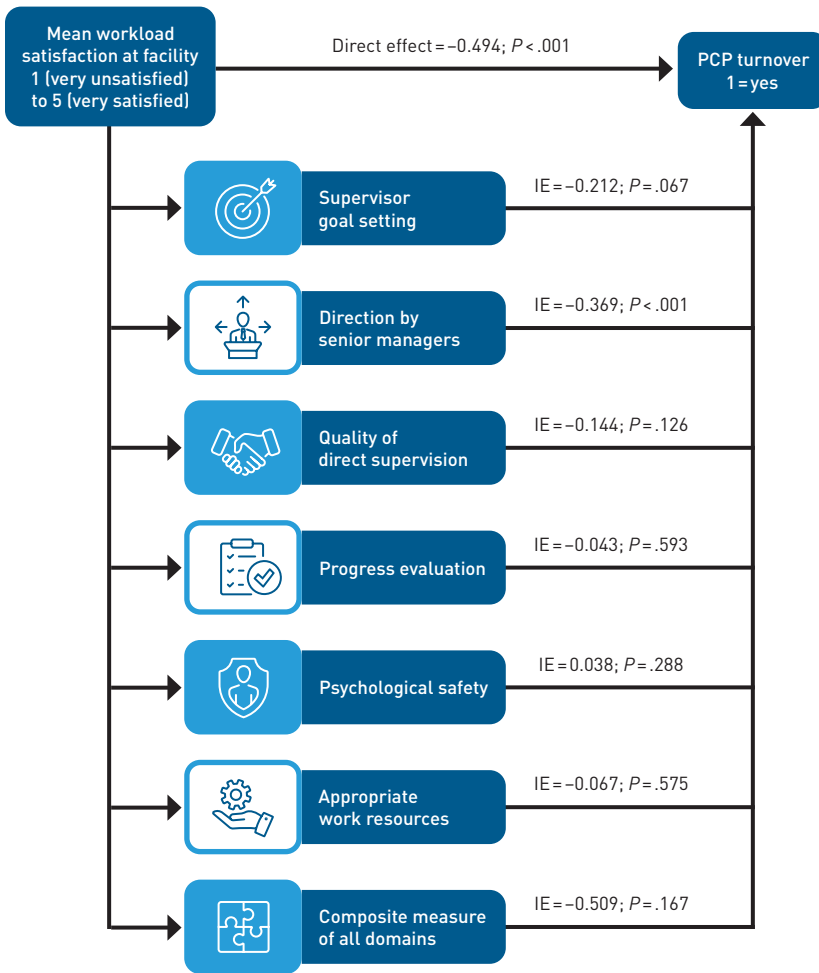
^aFigure 1 depicts the adapted conceptual framework for the analysis of workload on PCP turnover that incorporates potential mediating effects of workplace climate factors. The framework highlights the effects of PCP shortages contributing to greater workload with subsequent risk of further PCP turnover.

^bPCP factors: PCP years of experience, age, gender, veteran status, full-time status, physician type, and permanent vs temporary employment.

^cClinic factors: urban vs rural geography, labor market competitiveness, community-based clinic (vs hospital-based clinic), and empanelment gap [an aggregate ratio at the clinic level of the expected PCP panel size [1200 multiplied by the clinical full-time equivalent] divided by the actual PCP panel size].

Source: Adapted from Apaydin (2022).⁵

FIGURE 2. Mediation of Effect of Workload Satisfaction on PCP Turnover*



IE, indirect effect; PCP, primary care physician.

*Figure 2 illustrates the results of the mediation analysis, showing the direct effect of average workload satisfaction on PCP turnover and the indirect effects of 7 workplace climate factors (measure descriptions included in eAppendix Table 1).

characteristics not in CDW. Fourth, to determine county-level health care supply, we linked the VA facility data to geocoded data from the Health Resources and Services Administration Area Health Resources Files.¹⁸

Study Sample

The VA delivers primary care through a patient-centered medical home model in which patients using VA care are assigned to a primary care team.¹⁹ We defined PCPs as physicians (MD or DO degree) who were assigned a primary care panel at any time during the study period. We identified 41,120 PCPs from October 1, 2008, through September 30, 2016 (fiscal years [FYs] 2008-2016). Next, we excluded 2235 physicians employed at contract VA primary care clinics that function relatively independently from the VA. We subsequently

excluded physicians with minimal exposure to primary care, defined as a clinical full-time equivalent (FTE) of less than 0.25 (n=13,832) or a panel size of fewer than 25 patients (n=4574). These exclusions largely captured medical residents. We then excluded 12,117 physicians who were not classified as PCPs, as defined in previous research.²⁰ The final study sample consisted of 8362 unique PCPs employed at 787 distinct VA primary care clinics over the 9-year study period.

Outcome Measure

PCP turnover was measured as a binary variable defined as whether employment was terminated in a given quarter. Separation from the VA was determined through administrative data. Turnover included those who left the VA system and those who transitioned to a different VA facility.

Variables

The main explanatory variable for PCP turnover in our study was primary care teams' workload satisfaction. For each FY, we used responses to the AES question, "How satisfied are you with the amount of work that you currently do?" Satisfaction was ascertained on a 5-point scale (1, very unsatisfied; 5, very satisfied) (eAppendix Table [eAppendix available at ajmc.com]). We then calculated parent facility-level measures by averaging responses from all primary care team members working in that facility who completed the survey. Additionally, we evaluated mediating effects from survey measures of workplace climate: (1) supervisor goal setting, (2) direction by senior managers, (3) quality of direct supervision, (4) progress evaluation, (5) psychological safety, (6) appropriate work resources, and (7) a composite measure of all domains (Figure 2). Workplace climate factors were selected through a comprehensive review by the study team of all AES measures that, a priori, were associated with both workload perceptions and turnover. Each workplace climate measure was similarly defined at the facility level. We treated workload satisfaction and all workplace climate measures as continuous variables—an approach substantiated by prior research and used in other studies.^{6,21}

Characteristics of PCPs measured include PCP years of experience (years since graduating from medical school), age, gender, veteran status, full-time status ($\geq 80\%$ clinical FTE), physician type (family practice, internal medicine, or "other" [eg, general practice]), and permanent ("Plan J") vs temporary employment. Age was excluded

in models due to concerns of collinearity with years of experience. We calculated average hourly wage inclusive of benefits inflation adjusted to 2016 US\$ using the Personal Consumption Expenditures Price Index.²²

Clinic characteristics included urban vs rural geography using rural-urban commuting area codes (codes 1 to 3 designate urban geography), number of physicians per 10,000 in clinic region (to measure labor market competitiveness), community-based clinic (vs hospital-based clinic), and “empanelment gap.”^{23,24} The empanelment gap was calculated as an aggregate ratio of the expected PCP panel size (1200 multiplied by the clinical FTE) divided by the actual PCP panel size.²⁴ An empanelment gap of less than 1 indicates the clinic is over capacity. By including the empanelment gap as a covariate, we adjusted for the potential influence of inadequate staffing when measuring the impact of workload satisfaction and turnover. This adjustment helps isolate the effect of workload satisfaction that stems from the composition of work.

Statistical Analysis

We used a discrete hazard model to analyze primary care team satisfaction with workload in each fiscal year on PCP turnover with physician-quarter as the unit of analysis.^{25,26} The index quarter was set at FY 2008–quarter 1 (Q1) (October to December 2007) or the initial quarter of employment for PCPs who joined the VA after FY 2008–Q1. Each PCP was observed until either a turnover event (ie, separation from the VA) or the end of the study period (FY 2016–Q4 [July to September 2016]). After including the index quarter as a continuous explanatory variable, the discrete hazard model is analogous to a standard logistic regression model. We calculated average marginal effect for satisfaction with workload, which measures the change in turnover probability associated with a 1-point (or incremental) increase in workload satisfaction, holding all other variables constant. We calculated cluster-robust standard errors at the PCP level. There were no missing data for PCP turnover or primary care team satisfaction; missing covariate data were handled by conducting complete case analysis.

In secondary analysis, we examined whether several workplace climate factors were mediators in the relationship between workload satisfaction and physician turnover. To conduct mediation analysis, we applied the product method proposed in prior research.^{27,28} Specifically, we estimated a logistic regression model with the binary measure of turnover as the outcome and including 3 sets of explanatory variables: (1) workload satisfaction, (2) mediator variables, and (3) covariates. We then estimated a linear regression model with the mediator variable as the outcome and with workload satisfaction and covariates as explanatory variables. The coefficient on the mediator variable in the first-stage logistic regression model multiplied by the coefficient on workload satisfaction in the second-stage linear regression represents the indirect effect. We estimated standard errors for the indirect effect using a bootstrap procedure.

We estimated indirect effects for 6 workplace climate factors measured using AES data described above. Indirect effects were

TABLE 1. Characteristics of PCPs: Satisfaction With Amount of Work Analysis^a

	FY 2008–Q1 n=3044	FY 2012–Q2 n=4092	FY 2016–Q4 n=4709
Experience in years	20.1 (10.0)	22.3 (9.9)	23.4 (10.2)
Age in years	47.8 (9.7)	51.3 (9.6)	52.7 (9.8)
Female	44.0%	46.4%	49.1%
Veteran	14.3%	13.0%	11.1%
Employed full time	88.8%	89.3%	89.4%
Permanent status	76.7%	82.6%	86.8%
Physician type			
Internal medicine	77.3%	72.9%	68.5%
Family practice	14.3%	18.7%	23.2%
Other	8.4%	8.4%	8.3%
Mean hourly wage (2016 US\$)	104.7 (15.6)	113.0 (14.5)	120.4 (13.5)
Empanelment gap ^b	1.1 (0.7)	1.1 (0.3)	1.0 (0.3)
CBOC	37.0%	41.7%	43.3%
Rural	8.1%	9.8%	9.6%
Physicians per 10,000 residents	9.5 (4.3)	3.6 (0.2)	3.6 (0.2)
Satisfaction with workload	3.7 (0.2)	3.6 (0.2)	3.6 (0.2)
Turnover rate	1.5%	1.4%	2.0%

CBOC, community-based outpatient clinic; FY, fiscal year; PCP, primary care physician; Q, quarter.

^aContinuous variables expressed as mean (SD).

^bEmpanelment gap: aggregate ratio at the clinic level of the expected PCP panel size (1200 multiplied by the clinical full-time equivalent) divided by the actual PCP panel size.

estimated separately for each workplace climate factor and simultaneously for the 6 factors entered jointly. Like workload satisfaction, each measure was captured using a 5-point Likert scale in AES. Each measure was aggregated to the VA facility level by taking the mean of all respondents within each facility-year combination. To account for the effect of multiple comparisons, we calculated a Bonferroni adjustment to α ($\alpha = .007$).²⁹

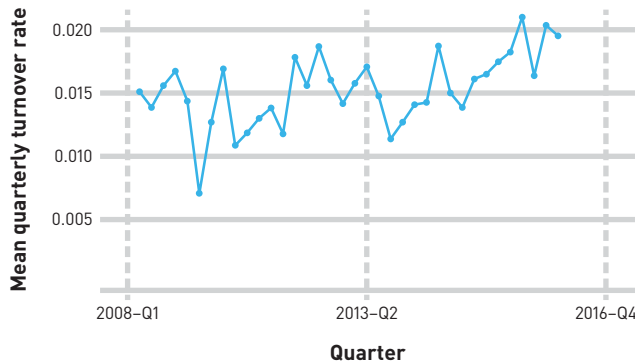
All statistical analyses were performed using Stata/MP 16 (StataCorp LLC). The VA Puget Sound Health Care System Institutional Review Board approved this study. This study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology reporting guidelines.³⁰

RESULTS

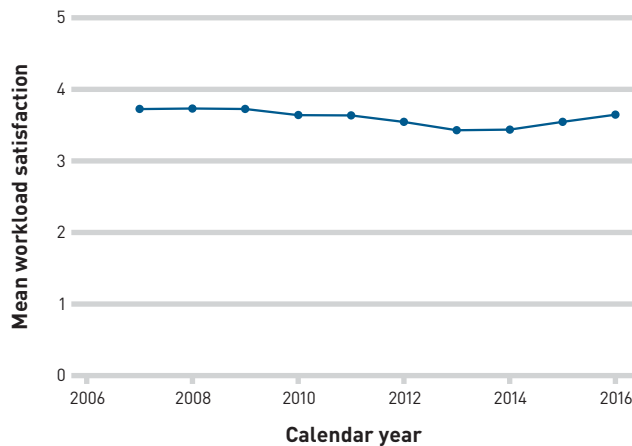
Primary care team members in approximately 787 VA facilities representing 8362 unique PCPs completed the survey, and aggregated responses were analyzed at the facility level. Across the study period, PCPs were increasingly women, nonveteran, family practice, nonacademic, permanent employees with more years of experience (Table 1). The mean inflation-adjusted hourly wage increased during the study period. The unadjusted mean quarterly turnover rate during the study period was 1.83%. PCP turnover

FIGURE 3. Turnover and Satisfaction^a

A. Mean quarterly turnover rate



B. Mean annual workload satisfaction



^aFigure 3 (A) shows the mean quarterly primary care physician turnover rate during the study period, and (B) shows the mean annual workload satisfaction score of primary care teams over the study period.

TABLE 2. Change in Employment Outcomes Associated Unit Increase in Workload Satisfaction Score

Domain	Average marginal effect	P
Median employment duration (SE)	0.35 (0.09) quarters	< .001
Quarterly turnover probability (SE)	0.73 (0.19) percentage points	< .001

was relatively stable throughout the study period, with a period of increased turnover between 2014 and 2016 (Figure 3 [A]). The mean (SD) workload satisfaction score was 3.58 (0.24) on a 5-point Likert scale over the study period. Workload satisfaction annually during the study period was stable (Figure 3 [B]). Using Cronbach α , we estimated reliability of responses at the facility level; all estimates were near or greater than 0.7, which is considered a threshold for good reliability.³¹

Probability of turnover was inversely associated with the facility workload satisfaction score (Table 2). Adjusting for physician type, salary, panel size, market competition, rural setting, community-based setting, and permanent employment, PCPs were 0.73 (95% CI, 0.36-1.10) percentage points less likely per quarter to leave their position for every unit increase in primary care team workload satisfaction.

In the mediation analysis, there was a direct effect of -0.49 in the association between mean workload satisfaction and PCP turnover (Figure 2). Of the individual workplace climate domains, only satisfaction with direction by senior managers resulted in a statistically significant indirect effect using the Bonferroni adjustment for α (-0.37 ; $P < .001$).

DISCUSSION

We found PCP turnover to be inversely associated with clinic workload satisfaction in a longitudinal analysis, and of the workplace domains evaluated, satisfaction with direction by senior managers had statistically significant indirect mediating effects. The mean PCP turnover rate during the study period was similar to national means for primary care.³² Our findings quantify effects of workload satisfaction on VA physician turnover over an extended period, adding to existing literature and pointing to specific opportunities for VA and other health systems to promote PCP retention.

Our findings suggest that improving workload satisfaction could have a meaningful impact on PCP turnover. We found a 0.7-percentage-point lower probability in quarterly turnover rate with 1-point increase in Likert scale workload satisfaction. Given that the mean quarterly turnover rate was 1.83%, the 0.7-percentage-point difference equates to 38% of the quarterly turnover rate. In the mediation analysis, we found workload satisfaction to have a substantial direct effect on PCP turnover. This suggests dissatisfaction with workload by itself is a strong motivator for separation decisions when accounting for PCP characteristics, salary, and organizational climate factors.

Our study extends prior research demonstrating an association between workload satisfaction and clinician morale, underscoring the importance of implementing solutions to curtail excessive workload.^{6,33} PCPs continue to face insurmountable expectations for in-visit and between-visit patient care, even in team-based care models.³⁴⁻³⁶ The association between dissatisfaction with team workload and PCP turnover points to the importance of fully staffed primary care teams as essential to ensuring patient access to care³⁷ and, conversely, to the risk of workload dissatisfaction increasing PCP turnover and subsequent team workload. These findings underscore the unsustainability of increasing levels of work in primary care and how important it is for VA and other health systems to address workload in the interest of PCP retention.

In prior literature, workload is measured at the individual provider level and often gauged using patient volume.^{15,16,38} As others have posited, the impact of patient volume could be overcome by

adequate primary care team support and efficient workflows.³⁸ Assessing workload perceptions among primary care team members addresses limitations in using patient volumes and is appropriate in team-based primary care settings in which patient care needs (and therefore workload) are distributed across team members.

The only significant indirect mediation effect between climate and turnover in our study was satisfaction with direction by senior managers. This result is consistent with economics literature demonstrating an inverse association between management skills and employee turnover.³⁹ Importantly, satisfaction with direction by senior managers as a mediator of workload satisfaction points to potential interventions (eg, managerial coaching) apart from increasing primary care team members and/or budget. Additional qualitative analysis could explore this finding further, including how primary care team members define senior managers, which is not further specified in the AES survey.

Understanding mediators of workload satisfaction is particularly important with the anticipated increase in VA patient volumes because of the Honoring Our PACT Act of 2022 and a major system change in transitioning the VA electronic health record. Our findings introduce the possibility that other organizational characteristics that contribute to a desirable work environment could affect team satisfaction with workload without necessarily decreasing the volume of work. Elucidating what modifies perception of workload is an important area for future research.

Our study has several strengths. We were able to use combined administrative and survey data responses to analyze factors associated with PCP turnover with advantages over prior studies that typically use self-reported data for turnover (which could be subject to, for example, recall and social desirability biases). We were able to comprehensively measure employment experiences longitudinally over a long period of time in contrast to many studies that are cross-sectional. Finally, we were able to use data from the AES, an employee survey administered annually since 2006 that has a relatively high response rate and reflects the largest integrated health system in the US.

Limitations

The study design was observational; therefore, we were limited in causal inference regarding the association between workload and PCP turnover. However, a randomized experimental design would be neither feasible nor ethical. Our data extend through 2016; however, we believe these findings are still relevant and valuable to current VA primary care delivery, particularly given persistent staffing shortages. The AES was developed to operationally evaluate workforce satisfaction and organizational climate and not for research purposes. Although there is a large precedent for using the AES for research, we appreciate this is a practical limitation. Due to a data use agreement, we could only evaluate survey responses aggregated at the facility level rather than the individual level. We were not able to differentiate between types of turnover, including turnover motivated by retirement or relocation, which may be less

likely to be associated with job dissatisfaction; however, given that decisions to leave a position are often multifactorial and that all turnover impacts primary care teams, we think an inclusive measure of turnover is meaningful and appropriate. We would expect that including all types of turnover would bias our results toward the null. Also, our study is limited to physicians with unique professional labor market dynamics and motivators; the association between perceptions of workload and turnover among advanced practice providers is an important question and area for future research. Although survey question stems and the number and direction of Likert scale response options did not change over the study period, the wording of the Likert scale responses changed slightly (eg, “neither agree nor disagree” to “neutral”), and this could have influenced responses. In addition, we appreciate that conducting this study among VA PCPs may limit generalizability to other primary care settings given unique incentives in federal employment (eg, benefits, pension, salary structure) and a team-based primary care model. However, the experience of high workload in primary care is shared, so we believe these results can be valuable to health care systems outside the VA as well.

CONCLUSIONS

Our study findings highlight the key role that achieving primary care team workload satisfaction can play in reducing PCP turnover. Findings also point to the importance of senior managers in determining workload satisfaction and, ultimately, turnover. These findings provide critical insights that can guide future research and strategic decisions to mitigate turnover and address a growing crisis of physician shortages. ■

Acknowledgments

The authors thank Sarah Shirley for her work on manuscript editing and preparation.

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Source of Funding: This study was funded by US Department of Veterans Affairs Health Services Research and Development (VA HSRD) Investigator-Initiated Research (IIR) award No. 15-363. Dr Marcotte was supported by grant number K12HS026369 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Veterans Health Administration or the Agency for Healthcare Research and Quality.

Author Disclosures: Dr Marcotte reports receiving a grant to fund her time on the study and is a member of the editorial board for *The American Journal of Accountable Care*. Dr Rinne has a grant pending as a co-principal investigator on a VA HSRD IIR award on burnout and turnover and has attended the AcademyHealth Annual Research Meeting. The remaining authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (STR, ESW); acquisition of data (CM, RS, ESW); analysis and interpretation of data (LMM, CM, AR, STR, RS, PJK, ESW); drafting of the manuscript (LMM, AR, STR, PJK); critical revision of the manuscript for important intellectual content (LMM, CM, AR, RS, PJK, ESW); statistical analysis (CM); obtaining funding (ESW); administrative, technical, or logistic support (LMM, AR, ESW); and supervision (AR, ESW).

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eAppendix Table. Questions used in the All Employee Survey (AES)

Question Code	Question Text	Response
S01	How satisfied are you with the amount of work that you currently do?	2006-2012: 1=Not at all satisfied 2=Not very satisfied 3=Neither satisfied nor dissatisfied 4=Somewhat satisfied 5=Very satisfied 2013-2016: 1=Very Dissatisfied 2=Dissatisfied 3=Neither Satisfied nor Dissatisfied 4=Satisfied 5=Very satisfied
S02	How satisfied are you with the quality of direct supervision you receive?	2006-2012: 1=Not at all satisfied 2=Not very satisfied 3=Neither satisfied nor dissatisfied 4=Somewhat satisfied 5=Very satisfied 2013-2016: 1=Very Dissatisfied 2=Dissatisfied 3=Neither Satisfied nor Dissatisfied 4=Satisfied 5=Very satisfied
S03	How satisfied are you with the direction provided by senior managers at your facility?	2006-2012: 1=Not at all satisfied 2=Not very satisfied 3=Neither satisfied nor dissatisfied 4=Somewhat satisfied 5=Very satisfied 2013-2016: 1=Very Dissatisfied 2=Dissatisfied 3=Neither Satisfied nor Dissatisfied 4=Satisfied 5=Very satisfied
S18	Supervisors set challenging and yet attainable performance goals for my work group.	2006-2013: 1=Strongly Disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly Agree 6=Do Not Know

		<p>2014-2016: 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree 6=Do Not Know</p>
S19	My supervisor reviews and evaluates the progress toward meeting goals and objectives of the organization.	<p>2006-2013: 1=Strongly Disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly Agree 6=Do Not Know</p> <p>2014-2016: 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree 6=Do Not Know</p>
S28	I have the appropriate supplies, materials, and equipment to perform my job well.	<p>2006-2013: 1=Strongly Disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly Agree 6=Do Not Know</p> <p>2014-2016: 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree 6=Do Not Know</p>
S43	My supervisor encourages people to speak up when they disagree with a decision.	<p>2006-2013: 1=Strongly Disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly Agree 6=Do Not Know</p> <p>2014-2016: 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree</p>

		5=Strongly Agree 6=Do Not Know
Composite		S02, S03, S18, S19, S28, S23