

University of St. Thomas, Minnesota

UST Research Online

Social Work Faculty/Staff Publications

School of Social Work

2017

Clinician Burnout and Satisfaction with Resources in Caring for Complex Patients

Robin R. Whitebird

University of St. Thomas, Minnesota

Leif I. Solberg

A. L. Crain

Rebecca C. Rossom

Arne Beck

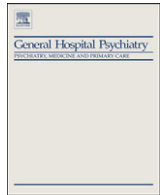
See next page for additional authors

Follow this and additional works at: https://ir.stthomas.edu/ssw_pub

This Article is brought to you for free and open access by the School of Social Work at UST Research Online. It has been accepted for inclusion in Social Work Faculty/Staff Publications by an authorized administrator of UST Research Online. For more information, please contact asle4660@stthomas.edu.

Author

Robin R. Whitebird, Leif I. Solberg, A. L. Crain, Rebecca C. Rossom, Arne Beck, Claire Neely, Mark Dreskin, and Karen J. Coleman



Clinician burnout and satisfaction with resources in caring for complex patients[☆]



Robin R. Whitebird, Ph.D., M.S.W.^{a,b,*}, Leif I. Solberg, M.D.^a, A. Lauren Crain, Ph.D.^a,
Rebecca C. Rossom, M.D., M.S.^a, Arne Beck, Ph.D.^c, Claire Neely, M.D.^d,
Mark Dreskin, M.D.^e, Karen J. Coleman, Ph.D.^e

^a HealthPartners Institute for Education and Research, Minneapolis, MN, USA

^b School of Social Work, University of St. Thomas, St. Paul, MN, USA

^c Kaiser Permanente Colorado Institute for Health Research, Denver, CO, USA

^d Institute for Clinical Systems Improvement, Minneapolis, MN, USA

^e Kaiser Permanente Southern California, Pasadena, CA, USA

ARTICLE INFO

Article history:

Received 22 October 2015

Revised 21 March 2016

Accepted 25 March 2016

Keywords:

Collaborative care

Job satisfaction

Burnout

Depression

ABSTRACT

Objective: To describe primary care clinicians' self-reported satisfaction, burnout and barriers for treating complex patients.

Methods: We conducted a survey of 1554 primary care clinicians in 172 primary care clinics in 18 health care systems across 8 states prior to the implementation of a collaborative model of care for patients with depression and diabetes and/or cardiovascular disease.

Results: Of the clinicians who responded to the survey ($n=709$; 46%), we found that a substantial minority (31%) were experiencing burnout that was associated with lower career satisfaction ($P<.0001$) and lower satisfaction with resources to treat complex patients ($P<.0001$). Less than 50% of clinicians rated their ability to treat complex patients as very good to excellent with 21% rating their ability as fair to poor. The majority of clinicians (72%) thought that a collaborative model of care would be very helpful for treating complex patients.

Conclusions: Burnout remains a problem for primary care clinicians and is associated with low job satisfaction and low satisfaction with resources to treat complex patients. A collaborative care model for patients with mental and physical health problems may provide the resources needed to improve the quality of care for these patients.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

The care of complex patients with both mental health conditions such as depression and chronic medical problems such as diabetes and/or cardiovascular disease is of increasing importance as the number of patients with these conditions continues to rise [1]. Physicians are being pressed to provide more complex care in increasingly fast-paced primary care clinics, often without adequate resources to meet growing patient needs. The resulting stress creates the potential for job dissatisfaction and burnout [2]. Medical care for complex patients that emphasizes a collaborative model of care, including both mental

and physical health conditions, has a substantial evidence base as a more effective and efficient way to care for these patients [3–7]. This type of team-based care may also decrease the stress inherent to caring for complex patients and thus reduce the resulting decreased job satisfaction and burnout [8,9].

Symptoms of burnout, characterized by emotional exhaustion, depersonalization, and loss of meaning in work, affect up to one in three physicians and can have significant negative consequences for both physicians and the patients they treat [10–12]. Studies of physician burnout have found increased substance use and medical errors along with decreased satisfaction among their patients [13–15]. Physician burnout and decreasing job satisfaction are also of growing concern given their strong association with staff turnover and intent to leave medical practice [16]. The literature in this area has a number of limitations including small samples of primary care practitioners from single practices or practices concentrated in specific areas of the United States, the focus on MD/DOs only as survey respondents, and very little information about how burnout and dissatisfaction are related to the complexity of the patients they treat.

The purpose of this paper is to address some of these limitations by describing job satisfaction, burnout and satisfaction with resources to

[☆] The project described was supported by Grant Number 1C1CMS331048-01-00 from the Department of Health and Human Services, Centers for Medicare & Medicaid Services. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the U.S. Department of Health and Human Services or any of its agencies. The research presented here was conducted by the awardee. Findings might or might not be consistent with or confirmed by the independent evaluation contractor.

* Corresponding author at: School of Social Work, University of St. Thomas/St. Catherine University, Office: SCB #106, 2115 Summit Ave, St. Paul, St. Paul, MN 55105, USA. Tel.: +1 651 962 5867.

E-mail address: rwhitebird@stthomas.edu (R.R. Whitebird).

treat complex patients for primary care clinicians in 18 medical groups with 172 clinics across 8 states prior to the implementation of a collaborative model of care for patients having depression and diabetes and/or cardiovascular disease. Clinicians were also questioned about their perceptions regarding the use of a collaborative care model to help in the management of such complex patients.

2. Methods

2.1. Background

This study was part of a larger U.S. initiative to improve health outcomes in patients with depression and diabetes and/or cardiovascular disease through collaborative care: COMPASS (Care of Mental, Physical, and Substance-use Syndromes). This initiative was implemented across 8 partner organizations and 18 medical groups with 172 clinics in 8 geographically diverse states from 2012 to 2015. The details of the initiative have recently been published [17]. The project was reviewed and approved by the institutional review board at each participating organization.

2.2. Participants and settings

Prior to the implementation of COMPASS, surveys were sent to all physicians, nurse practitioners (NPs), and physician's assistants (PAs) ($n=1554$) who were providing primary care to COMPASS patients in Minnesota, Colorado, Southern California, Washington, Michigan, Pennsylvania, Florida and Massachusetts. The number of primary care clinics within participating medical groups ranged from 1 to 21, with 1–81 primary care clinicians in each clinic ($M=10.9$, median=6). Consent was obtained at the time of the survey.

2.3. Clinician survey

The survey consisted of 12 questions that asked about satisfaction with current resources, perception of ability to provide quality treatment for complex patients and barriers to improving care, burnout, satisfaction with their careers and their attitude about the potential helpfulness of a collaborative care model for treating complex patients. Satisfaction with career was measured by the single item, "How satisfied are you with your career in medicine" that was used in the Health Tracking Physician Survey [18] using a 5-point Likert scale ranging from very dissatisfied to very satisfied. Satisfaction with resources for caring for complex patients was measured using the single-item question: "How satisfied or dissatisfied are you with the resources currently available to treat patients with both depression and chronic medical conditions (diabetes or heart disease) in your practice?"

Burnout was measured using a single-item from the *Minimizing Error, Maximizing Outcomes* (MEMO) provider survey [19]. The five response categories included the following: (1) I enjoy my work, I have no symptoms of burnout; (2) occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out; (3) I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion; (4) the symptoms of burnout that I'm experiencing won't go away, I think about frustration at work a lot; and (5) I feel completely burned out and often wonder if I can go on, I am at the point where I may need some changes or may need to seek some sort of help.

Primary care clinicians were also asked about barriers to improving care for complex patients. There were four categories of barriers: limited clinic resources, accessing specialty care, patient attitudes and "other." Clinicians were also asked about their view of the potential helpfulness of a collaborative care model for complex patients using the question "How helpful would you find a chronic disease management model where another primary care team member (e.g., a nurse, NP, mental health consultant) would help you co-manage patients with both

depression and chronic medical conditions?" Although patient attitudes were not defined explicitly for the respondents, this barrier was meant to reflect patient-related beliefs and attitudes about their chronic conditions (such as not accepting the diagnosis of depression or not wanting to take a medication because of the side effects) [20].

2.4. Procedures

A central data collection center provided an online data tool to gather information (names, e-mails and phone numbers) about all clinicians who were caring for COMPASS patients in primary care settings at each of the participating sites. An introductory e-mail was sent to these clinicians 1 week before the electronic survey. Following this initial introductory e-mail, another e-mail was sent to the targeted clinicians with a link to the electronic survey. To insure that clinicians read these e-mails, they were sent directly by each of the health care organization's senior leadership. If clinicians did not respond, a follow-up reminder e-mail was sent twice 8 days apart with telephone follow-up for nonrespondents to encourage survey completion. This is a standard practice used to improve response rates in challenging populations. As soon as the response rate from any clinic reached 60%, further attempts at follow-up were discontinued. Local COMPASS implementation teams were also encouraged to notify their primary care teams of the web-based survey.

2.5. Analyses

Sample characteristics and responses were described using frequencies and percentages. Spearman correlation coefficients described linear relationships among ordinal variables. Clinician ratings were dichotomized into the categories per question: moderate or very satisfied with career in medicine and with resources to treat complex patients vs. not; very good or excellent quality care provided to complex patients vs. not; any perceptions of burnout vs. none; and a co-management model for chronic disease perceived as very helpful vs. not. Chi-square statistics were used to quantify bivariate relationships between clinician ratings and respondent characteristics.

3. Results

3.1. Survey respondents

Of the 1554 surveys clinicians who were outreached to complete the survey, 709 completed the survey for a response rate of 45.6% ($M=57.3\%$, median=62.9% across COMPASS groups). Respondents were 50% male with 82% having an MD/DO degree. Sixty-five percent were family physicians and 57% of respondents had 11 years or greater of medical practice experience (see Table 1).

3.2. Satisfaction

The majority of primary care clinicians (85%) were moderately to very satisfied with their career in medicine and health care (see Table 2), with a higher percentage of PAs/NPs moderately to very satisfied (95%) relative to MD/DOs (82%) ($\chi^2(1) = 10.66$, $P<.002$). Across all clinician respondents, a large percentage (65%) were somewhat or very satisfied with their current resources for treating complex patients. The more satisfied clinicians were in their careers, the more satisfied they were with their resources to treat complex patients ($r=0.22$, $P<.001$). When specifically asked about providing care for complex patients with depression and other chronic conditions, less than half (41%) of clinicians rated their ability to provide care as very good or excellent, and 21% said it was only fair to poor. MDs/DOs (43%) and male clinicians (45%) rated their ability to provide quality care for complex patients higher than did NPs/PAs (31%) ($\chi^2(1) = 4.94$, $P<.03$) and female clinicians (35%) ($\chi^2(1) = 8.01$, $P<.005$). Clinicians who were more satisfied with their careers were more likely to rate their ability to treat complex

Table 1
Participant demographics (n=709)

Characteristic	% (n)
Gender	
Male	50.5 (358)
Female	46.5 (330)
Degree	
MD/DO	81.5 (578)
NP	7.9 (56)
PA	8.0 (57)
Length of time in practice	
<1 year	5.9 (42)
1–5 years	18.1 (128)
6–10 years	17.2 (122)
>11 years	57.4 (407)
Medical specialty	
Family practice	64.7 (459)
Internal medicine	27.6 (196)
Other	4.4 (31)

Note: Total number of respondents to the survey is 709; numbers in Table 1 reflect missing data on items presented.

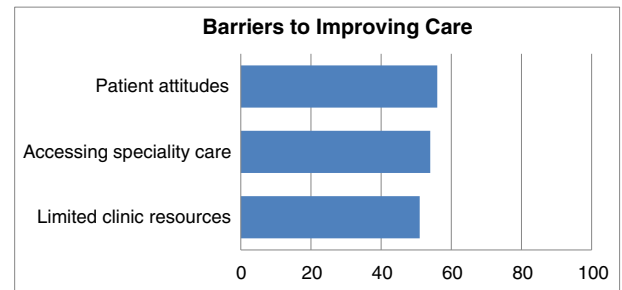
patient highly ($r=0.19$, $P<.001$). Those who rated their ability to treat complex patients more highly were also more satisfied with the resources available to them for treating these patients ($r=0.60$, $P<.001$).

3.3. Barriers to care of complex patients

When asked about barriers to improving care for complex patients, over half of clinicians identified patient attitudes (56%), being able to access specialty care (54%) and/or limited clinic resources for these patients (51%) as barriers to improving care (see Fig. 1). Clinicians who were more satisfied with the resources available to them for treating complex patients were more likely to see patient attitudes as barriers to care improvement (59%) than those who were not satisfied with the resources available to them (51%) ($\chi^2(1) = 4.40$, $P<.04$). Clinicians who were less satisfied with resources to treat complex patients were

Table 2
Satisfaction and burnout among primary care clinicians (n=709)

Satisfaction and burnout	% (n)
Satisfaction with career in medicine	
Very satisfied	36.3 (252)
Somewhat/moderately satisfied	48.4 (336)
Neither satisfied nor dissatisfied	7.6 (53)
Somewhat dissatisfied	7.1 (49)
Very dissatisfied	0.7 (5)
Satisfaction with resources to treat patients with depression and chronic conditions	
Very satisfied	17.4 (123)
Somewhat/moderately satisfied	47.7 (338)
Neither satisfied nor dissatisfied	13.3 (94)
Somewhat dissatisfied	17.4 (123)
Very dissatisfied	4.4 (31)
Ability to provide quality treatment for complex patients	
Excellent	8.9 (63)
Very good	31.9 (225)
Good	38.0 (268)
Fair	17.1 (121)
Poor	4.1 (29)
Perceived level of burnout	
I feel completely burned out and wonder if I can go on	1.3 (9)
The symptoms of burnout that I am experiencing won't go away	6.3 (44)
I am burning out and have one or more symptoms of burnout	23.3 (162)
Occasionally I am under stress, and I don't have as much energy as I once did	53.2 (370)
I enjoy my work. I have no symptoms of burnout	15.8 (110)
Perceived helpfulness of a co-management model of care for complex patients	
Very helpful	72.5 (509)
Somewhat helpful	24.5 (172)
Not at all helpful	3.0 (21)

**Fig. 1.** Perceived barriers to improving patient care.

more likely to rate access to subspecialty care (65%) and limited clinic resources (67%) as barriers to improving care for these patients than those who were satisfied with the resources available to them [48% ($P<.001$) and 43% ($P<.001$), respectively]. Clinicians who rated their ability to treat complex patients less highly were more likely to indicate that subspecialty care (62%) and limited clinic resources (62%) were barriers to improving care for these patients when compared to clinicians who rated their ability more highly [42% ($P<.001$) and 37% ($P<.001$), respectively].

3.4. Clinician burnout

In rating their level of burnout, the majority of clinicians expressed either no symptoms of burnout (16%) or that they experienced stress, but did not feel burned out (53%). However, almost a third of clinicians (31%) said they were experiencing symptoms of burnout (see Table 2). Expressing burnout did not differ by gender, but more years of medical practice was associated with higher ratings of burnout ($r=0.09$, $P<.02$). Clinicians who were less satisfied with their careers were also more likely to report symptoms of burnout ($r=0.56$, $P<.001$). Lower satisfaction with resources for treating complex patients and lower clinician ratings of ability to provide care for them were both associated with more symptoms of burnout [$r=0.24$ ($P<.001$) and $r=0.18$ ($P<.001$)].

3.5. Clinician perceptions of collaborative care

Fewer years of practice were associated with an indication that co-management of complex patients would be very helpful ($r=0.15$, $P<.001$). In addition, female clinicians were more likely to see co-management as very helpful (76%) compared to male clinicians (69%) ($\chi^2(1) = 4.67$, $P<.03$). Clinicians who rated limited clinic resources as a barrier to improving care were also more likely to see a co-management care model as very helpful (79% vs. 66%) ($\chi^2(1) = 15.46$, $P<.001$).

3.6. Survey differences by medical group

With one exception, survey responses did not vary across medical groups participating in COMPASS. Although a majority (73%) of clinicians reported that they would find collaborative care for patients with depression and other chronic diseases very helpful, there were differences among the 18 medical groups regarding these perceptions ($\chi^2(17) = 48.5$, $P<.001$), with average ratings ranging from 46% to 100%.

4. Discussion

The majority of the primary care clinicians surveyed as part of the national COMPASS initiative were not experiencing burnout and were satisfied with their jobs and the resources they had for treating complex patients. However, a substantial minority (31%) did report symptoms of burnout. Those reporting more symptoms of burnout had more years of medical practice, reported their ability to care for complex patients lower than practitioners not experiencing burnout, and had lower career satisfaction and lower satisfaction with the resources available

to them in providing quality care for complex patients. Clinicians who were more satisfied with their careers rated their ability to treat complex patients more highly and were more satisfied with available resources. Importantly, regardless of symptoms of burnout or satisfaction ratings, 21% of clinicians rated their ability to care for complex patients as fair or poor.

Our rates of self-reported burnout (31%) are some of the lowest reported in the literature, although reports vary widely. Shanafelt and colleagues [21] conducted a national survey of burnout in U.S. physicians from all specialties and found 45.8% reported at least one symptom of burnout, with the highest rates among primary care physicians. Another study reported levels of burnout among physicians across medical specialties from 30% to 65%, with the highest rates experienced by those at the front line of care [22]. Female physicians reported 60% higher rates of burnout than their male counterparts [22]. The highest rates reported in the literature are for medical residents (74%) [14]. It is likely that differences in measurement and the population studied (specialty, residents) account in part for the variation in rates, as well as differences in organizational size and geographic location. As in other studies [23–25], we also found an association between burnout and low job satisfaction.

Many factors that have been shown to contribute to burnout including decreased work autonomy/control, low levels of support and increased work quantity/pace [23,26–28]. The association between burnout and the complexity of the patients a clinician cares for has not received much attention [2,28]. Patients who have both mental and physical health problems present a challenge to the increasingly fast-paced world of primary care and contribute to the potential for stress and burnout among clinicians. Clinicians in our study reporting more symptoms of burnout were less likely to think they could provide quality care for complex patients when compared to clinicians who did not have symptoms of burnout. Whether burnout leads to a perceived inability to provide care for complex patients, or is a result of this perceived inability, deserves future study and could be an important component in interventions designed to prevent burnout. Regardless of their ratings of burnout, 21% of our clinicians rated their ability to care for complex patients as fair to poor. Due to recent legislative changes, there will be increasing numbers of patients with complex conditions accessing care. Improving skills to manage these patients will be important to the future success of primary care in meeting their needs and achieving the quadruple aim: to improve clinical outcomes, patient satisfaction, and clinician satisfaction while reducing the total health care costs [29].

Over half of the physicians in our study identified patient attitudes, limited clinic resources and lack of access to subspecialty care as barriers to care improvement for complex patients. Interestingly, this varied somewhat by whether or not clinicians rated their ability to care for these patients more highly. Those who rated their ability more highly were more likely to see patient attitudes as a barrier to care rather than limited clinic resources and/or access to specialty care. Those clinicians who rated their ability to care for complex patients less highly were more likely to see limited clinic resources and/or access to specialty care as the most important barriers to quality care for these patients. In a prior study we conducted on barriers to improving primary care of depression [20], most providers said that patient resistance to care was a major barrier. Primary care physicians noted that patients felt stigmatized when depression was the diagnosis and were subsequently resistant to treatment and non-compliant with medications and follow-up. In combination with our current findings, when physicians feel competent and that they have the resources they need to care for complex patients, it may be patient-level factors, such as not accepting depression as their diagnosis, that are more likely responsible for care gaps.

With the aging of the population, the complexity of patient care is likely to increase, especially among patients with co-occurring mental and physical health problems. Because the majority of patients with mild to moderate depression are likely to be treated in primary care,

and many of these patients also have comorbid diabetes and/or cardiovascular disease, newer models of collaborative care such as COMPASS will be needed [20]. These models not only improve patient outcomes [3,6] but also have the potential to improve provider satisfaction and reduce burnout [30,31].

The importance for reducing burnout and improving career satisfaction among primary care clinicians cannot be overstated. High burnout and lower career satisfaction may lead to higher rates of staff turnover and greater intent to leave medical practice, potentially increasing patient access problems and decreasing quality of care for these patients [16,32–34]. There is also concern that decreased career satisfaction may lead to a decline in medical student interest in careers in primary care. This is an important consideration given that the Affordable Care Act has created a large surge in patient enrollment for primary care services [16,35].

A number of strategies have been suggested to improve job satisfaction and decrease burnout. These include improving workflows and communication, creating manageable patient panel sizes, lengthening visits and enhancing staffing ratios [22,36]. Based on our study findings, we would also add improving clinic resources to treat complex patients with co-morbid mental and physical health conditions. Implementation of collaborative or team-based care models for these patients has been shown to improve job satisfaction for primary care clinicians [8,30,37].

There are a number of limitations to this study. The study is observational, providing a single snapshot in time, and while the sample size is one of the largest in the literature, it was somewhat limited by the modest response rate (46%). It should be noted, however, that this is comparable to response rates in the literature of physician reported burnout and satisfaction which have ranged from 34% [38] to 62% [39]. Despite these limitations, there are also important strengths to the study. Primary care clinicians, including practitioners other than physicians, were sampled from eight states, with very diverse medical group practice sizes and types of care systems. Continued study of geographic diversity, health care organizational culture and patient diversity will be important for improving the ability of primary care clinicians to provide quality care for their complex patients. Our findings revealed relationships that had not been reported previously such as the association between higher burnout and lower rating of ability to provide care to complex patients and the difference in reported barriers to care for these patients depending upon whether a provider thought they had the resources and ability to care for them. These findings deserve further study and elaboration. Future research should also include exploration of what primary care clinicians consider when asked about “patient attitudes” as barriers to care, and surveys of other team members involved in primary care such as medical assistants and registered nurses. In addition, it would be important to relate physician burnout, satisfaction and perceptions of barriers to care to the health outcomes of their complex patients.

5. Conclusions

As the U.S. population ages and the access to health care increases for more diverse patient populations, the needs of patients with complex co-morbid mental health and chronic care needs will continue to grow. This will place an ever-greater burden on an already stressed and pressured primary care system. If we are to have a robust and healthy primary care workforce, improving job satisfaction and decreasing burnout among all primary care clinicians will need to become a priority. Changing the landscape of primary care delivery to include support for both the physical and mental health needs of patients may provide one piece of an expanding puzzle for how primary care can thrive and grow while meeting the needs of larger numbers of complex patients. It would also address what Bodenheimer and Sinsky [29] have defined as the Quadruple Aim — adding the goal of improving the work life of health care providers to the Triple Aim of enhancing patient experience, improving population health and reducing costs. This would

meet the end goal of optimizing our health care systems to thrive in a new era of health care delivery.

Acknowledgments

The authors would like to thank all of the staff at each COMPASS partner for making this work possible.

References

- [1] Bower P, Macdonald W, Harkness E, Gask L, Kendrick T, Valderas JM, et al. Multimorbidity, service organization and clinical decision making in primary care: a qualitative study. *Fam Pract* 2011;28:579–87.
- [2] An PG, Manwell LB, Williams ES, Laiteerapong N, Brown RL, Rabatin JS, et al. Does a higher frequency of difficult patient encounters lead to lower quality care? *J Fam Pract* 2013;62:24–9.
- [3] Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Intern Med* 2006;166:2314–21.
- [4] Williams Jr JW, Gerrity M, Holsinger T, Dobscha S, Gaynes B, Dietrich A. Systematic review of multifaceted interventions to improve depression care. *Gen Hosp Psychiatry* 2007;29:91–116.
- [5] Christensen H, Griffiths KM, Gulliver A, Clack D, Kjakovic M, Wells L. Models in the delivery of depression care: a systematic review of randomised and controlled intervention trials. *BMC Fam Pract* 2008;9:25.
- [6] Thota AB, Sipe TA, Byard GJ, Zometa CS, Hahn RA, McKnight-Eily LR, et al. Collaborative care to improve the management of depressive disorders: a community guide systematic review and meta-analysis. *Am J Prev Med* 2012;42:525–38.
- [7] Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. *Am J Psychiatry* 2012;169:790–804.
- [8] Tubbesing G, Chen FM. Insights from exemplar practices on achieving organizational structures in primary care. *J Am Board Fam Med* 2015;28:190–4.
- [9] Scammon DL, Tabler J, Brunisholz K, Gren LH, Kim J, Tomoia-Cotisel A, et al. Organizational culture associated with provider satisfaction. *J Am Board Fam Med* 2014;27:219–28.
- [10] Dyrbye LN, Shanafelt TD. Physician burnout: a potential threat to successful health care reform. *JAMA* 2011;305:2009–10.
- [11] Shanafelt TD. Enhancing meaning in work: a prescription for preventing physician burnout and promoting patient-centered care. *JAMA* 2009;302:1338–40.
- [12] Siedsma M, Emler L. Physician burnout: can we make a difference together? *Crit Care* 2015;19:273.
- [13] Brown SD, Goske MJ, Johnson CM. Beyond substance abuse: stress, burnout, and depression as causes of physician impairment and disruptive behavior. *J Am Coll Radiol* 2009;6:479–85.
- [14] Fahrenkopf AM, Sectish TC, Barger LK, Sharek PJ, Lewin D, Chiang VW, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. *BMJ* 2008;336:488–91.
- [15] Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. *Ann Surg* 2010;251:995–1000.
- [16] Linzer M, Manwell LB, Williams ES, Bobula JA, Brown RL, Varkey AB, et al. Working conditions in primary care: physician reactions and care quality. *Ann Intern Med* 2009;151:28–36 [W6–9].
- [17] Coleman KJ, Magnan S, Neely C, Solberg LI, Beck A, Trevis J, et al. The COMPASS initiative: Description of a nationwide collaborative approach to the care of patients with depression and/or cardiovascular disease. *Gen Hosp Psychiatry* 2017;44C:69–76.
- [18] Center for Studying Health System Change. CTS Physician Surveys and the HSC 2008. Health tracking physician survey; 2015.
- [19] Linzer M, Manwell LB, Mundt JM, Williams E, Maguire E, McMurray J, et al. Organizational climate, stress, and error in primary care: the MEMO study. *Advances in patient safety*, vol 1; 2015.
- [20] Whitebird RR, Solberg LI, Margolis KL, Asche SE, Trangle MA, Wineman AP. Barriers to improving primary care of depression: perspectives of medical group leaders. *Qual Health Res* 2013.
- [21] Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med* 2012;172:1377–85.
- [22] Linzer M, Levine R, Meltzer D, Poplau S, Warde C, West CP. 10 bold steps to prevent burnout in general internal medicine. *J Gen Intern Med* 2014;29:18–20.
- [23] Scheurer D, McKean S, Miller J, Wetterneck T. U.S. physician satisfaction: a systematic review. *J Hosp Med* 2009;4:560–8.
- [24] Keeton K, Fenner DE, Johnson TR, Hayward RA. Predictors of physician career satisfaction, work-life balance, and burnout. *Obstet Gynecol* 2007;109:949–55.
- [25] Linzer M, Visser MR, Oort FJ, Smets EM, McMurray JE, de Haes HC. Predicting and preventing physician burnout: results from the United States and the Netherlands. *Am J Med* 2001;111:170–5.
- [26] Friedberg MW, Chen GC, Van Busum KR, Aunon FM, Pham C, Caloyer JP, et al. Factors affecting physician professional satisfaction and their implications for patients care, health systems, and health policy. Santa Monica, CA: RAND Corporation; 2013 1–152.
- [27] Babbott S, Manwell LB, Brown R, Montague E, Williams E, Schwartz M, et al. Electronic medical records and physician stress in primary care: results from the MEMO study. *J Am Med Inform Assoc* 2014;21:e100–6.
- [28] Katerndahl D, Parchman M, Wood R. Perceived complexity of care, perceived autonomy, and career satisfaction among primary care physicians. *J Am Board Fam Med* 2009;22:24–33.
- [29] Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med* 2014;12:573–6.
- [30] Vickers KS, Ridgeway JL, Hathaway JC, Egginton JS, Kaderlik AB, Katzelnick DJ. Integration of mental health resources in a primary care setting leads to increased provider satisfaction and patient access. *Gen Hosp Psychiatry* 2013; 35:461–7.
- [31] Levine S, Unutzer J, Yip JY, Hoffing M, Leung M, Fan MY, et al. Physicians' satisfaction with a collaborative disease management program for late-life depression in primary care. *Gen Hosp Psychiatry* 2005;27:383–91.
- [32] Konrad TR, Williams ES, Linzer M, McMurray J, Pathman DE, Gerrity M, et al. Measuring physician job satisfaction in a changing workplace and a challenging environment. SGIM Career Satisfaction Study Group. *Society of General Internal Medicine. Med Care* 1999;37:1174–82.
- [33] Pathman DE, Konrad TR, Williams ES, Scheckler WE, Linzer M, Douglas J. Physician job satisfaction, dissatisfaction, and turnover. *J Fam Pract* 2002;51:593.
- [34] Gomez-Gascon T, Martin-Fernandez J, Galvez-Herrer M, Tapias-Merino E, Beamud-Lagos M, Mingote-Adan JC. Effectiveness of an intervention for prevention and treatment of burnout in primary health care professionals. *BMC Fam Pract* 2013;14:173.
- [35] Hauer KE, Durning SJ, Kernan WN, Fagan MJ, Mintz M, O'Sullivan PS, et al. Factors associated with medical students' career choices regarding internal medicine. *JAMA* 2008;300:1154–64.
- [36] Linzer M, Poplau S, Grossman E, Varkey A, Yale S, Williams E, et al. A cluster randomized trial of interventions to improve work conditions and clinician burnout in primary care: results from the Healthy Work Place (HWP) study. *J Gen Intern Med* 2015.
- [37] Bentham WD, Ratzliff A, Harrison D, Chan YF, Vannoy S, Unutzer J. The experience of primary care providers with an integrated mental health care program in safety-net clinics. *Fam Community Health* 2015;38:158–68.
- [38] Behmann M, Schmiemann G, Lingner H, Kuhne F, Hummers-Pradier E, Schneider N. Job satisfaction among primary care physicians: results of a survey. *Dtsch Arztebl Int* 2012;109:193–200.
- [39] Mazurenko O, Menachemi N. Environmental market factors associated with physician career satisfaction. *J Healthc Manag* 2012;57:307–22 [discussion 323–4].