Primary Care Productivity and Patient Satisfaction Community Practice: What is the Relationship?

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RESEARCH

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ABSTRACT

Research has shown a consistent positive association between patient and provider experience and improved patient outcomes and safety. There is a belief that patient satisfaction and physician productivity are competing interests. The relationship for primary care physicians, in a Midwest Health system was evaluated as part of this project. Data from Press Ganey patient satisfaction surveys on likelihood of recommending the practice and the physician were compared between primary care physicians in the top quartile of average monthly patient visits and those that were in the three lower quartiles. A secondary analysis of patient satisfaction scores related to continuous years of service was also performed. Results of a multi-level logistic regression analysis showed a statistically significant difference between quartiles on average monthly visits and the likelihood of receiving a top box score on recommendation of the practice, but not the provider. The odds ratio was 0.7 for lower quartiles compared to highest quartile of visits. There was not a statistically significant difference for the categories of continuous years of service. On the question of recommending the physician, the odds ratios were not different, although there was a significant difference for the categories of years of service, with those between 0–5 years having a 0.62 odds ratio of a top box score compared to greater than 10 years. The results would tend to refute the belief that patient satisfaction must be sacrificed for physician productivity.

Keywords: Physician, Productivity, Patient satisfaction, Years of service, Primary care

1. Background

The concept of patient satisfaction emerged as part of a patient advocacy movement in the 1970s. To Err is Human increased the scrutiny on safety in the system reporting that as many as 98,000 people die in hospital every year as a result of preventable medical errors. Shortly thereafter, Crossing the Quality Chasm proposed a roadmap for improving health care quality in the United States. Part of this roadmap was to improve the experience of care. The Centers for Medicare and Medicaid Services (CMS) and Agency for Healthcare Research and Quality partnered, starting in 2002, to develop the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS).

Objectively, patient's perception of their experience has improved, with a percent top box response on HCAHPS that would have ranked at the 50th percentile in 2013 ranking at only the 33rd percentile in 2017. As the system moves from fee for service towards pay for performance, patient experience has become more important. Private insurance as well as government reimbursement is increasingly linked to performance. In 2015 alone, there were over $1.4 billion dollars of direct performance-based incentives, with 30% based on HCAHPS performance. In addition, patients have increased out-of-pocket expenses, and therefore have more at stake in their healthcare choices. The influence of ratings sites and social media make the perception that they have of their experience even more important.
Experience can be thought of as a more holistic viewpoint compared to satisfaction. There are, however, concerns with the measurement of patient satisfaction and experience, i.e. do patients have the expertise and background to make assessments on the quality of their care? One study showed that certain patient characteristics had a larger role on satisfaction scores than did the influence of providers in an academic practice. Especially for individual providers, there is a concern with getting adequate survey returns to be able to reliably differentiate performance. In addition, there are questions about the right level of reliability. Is it necessary that statistics be based on research standards or should trends, with less statistical rigor, be acceptable in order to help drive improvement?

The need to improve quality has been reinforced by multiple studies. Nolte and McKee showed that although the United States improved mortality by five deaths per 100,000 citizens annually, 18 other industrialized nations improved more, such that the United States went from a ranking of 15/19 to 19/19 in the same group from 1997–98 to 2002–03.

Noting that the United states was performing poorly by almost any metric, and that the United States was predicted to spend far more than any other nation at nearly 20% of GDP by 2026, Don Berwick, MD led a group that called for what came to be known as the Triple Aim: Improving the health of populations, improving the experience of care, and reducing per capita costs. As awareness of the impact of burnout in health care grew, some proposed that the Triple Aim should evolve to the Quadruple Aim, to include improving the experience of providers in the definition.

Is improved experience related to improved quality? A study analyzing the association between Medicare summary star ratings for patient experience and clinical outcomes in US hospitals showed that for risk-adjusted data on more than 3000 hospitals, higher star ratings were associated with lower hospital complications and better outcomes across all studied diagnoses; however, the authors do note that association cannot prove causation.

A systematic review encompassing a wide range of care settings and patient demographics, using only validated tools to measure satisfaction as well as clinical safety and effectiveness, found a consistently positive link. They concluded that “overall, the evidence indicates associations between patient experience, clinical effectiveness and patient safety across a wide range of disease areas, study designs and settings . . . and support the case for inclusion of patient experience as one of the central pillars of quality in healthcare”. Positive associations were found in 429 instances, with no associations found in 127, and only one instance of a negative association.

Raising the idea that satisfaction is only one part of the more holistic concept of experience, Berkowitz notes that multiple quality dynamics influence experience. In fact, the authors note that patient and staff satisfaction, quality, safety, burnout and productivity are all linked. The missing connection is between that of productivity and patient satisfaction.

Some metrics focusing on the Triple Aim may be aggravating provider burnout and conversely current stressors on staff and providers may limit success on the Triple Aim. Burnout may be associated with early retirement, alcohol use and suicidal ideation and may be aggravating the physician shortage. Dissatisfied physicians may be associated with dissatisfied patients. In a direct observational study in primary care, it was shown that patients of high-volume physicians were less likely to receive recommended preventative services, and had lower satisfaction scores. However, this study did not use a nationally validated or benchmarked patient satisfaction survey.

Much of the research does not provide a direct link between productivity and patient satisfaction; however, there is some interesting data. A study conducted with 22 physicians in orthopedics, podiatry, GI, general and vascular surgery evaluated acceptance of quality improvement efforts in the clinic and what differences there were in practice between high and low performers. There was no significant pattern to the data, helping to dispel the myth that one could not be a high performer on both metrics. There also was a reference to physician’s response to the patient satisfaction data that parallels the Kubler-Ross stages of death and dying. The small number of providers and the narrow procedural specialty focus limited the study.

A much larger study sought to correlate patient satisfaction and physician productivity directly, as measured by work relative value units (RVUs). Using data from 427 physicians, and over 136,000 Press Ganey satisfaction surveys, the authors hypothesized that patient satisfaction would be inversely related to physician productivity. Multiple demographics were evaluated. The results showed that increased RVUs were associated with increased confidence in the physician and decreased time spent with the patient.
There was not a consistent relationship between productivity and overall patient satisfaction. Length of employment was positively related to patient satisfaction. However, this study used data from January 2002 through July 2004, predicting the current use of electronic health records (HER) as well as the Affordable Care Act. Both have had a profound impact on practices.

Other authors have noted the implementation of electronic health records effect on physician practices. Computerized physician order entry (CPOE) was correlated with increased door to doctor time and a decrease in patient satisfaction in a large suburban emergency department. Time spent on diversion was also increased. Patient satisfaction decreased for both the department and physicians. The study design has a potential flaw since its sequential nature may have allowed for other factors besides CPOE to influence the outcomes.

Burnout may be influencing patient experience and productivity measures. A study in an academic practice compared burnout in 2014 to 2017 with 1774 respondents in 2014 and 1882 respondents in 2017, and corresponding response rates of 95.9% and 92.7%. Burnout increased from 40.6% to 45.6%, with both emotional exhaustion and cynicism showing significant increases. When evaluated based on career stage, early-career physicians (0–10 years post-training) were more likely to experience burnout than mid-career (11–20 years). Late career physicians were the least likely to experience burnout. Among specialties, primary care had a higher rate of burnout than average. Among work-related factors that were associated with lower burnout were satisfaction with workflow, relationships with colleagues, resources for CME, workload, and having a trusted advisor. The top three duties that had increased between 2014 and 2017 were: time spent on prior authorizations, recertification, and opioid prescribing compliance, and none of these was likely to be perceived as a valuable use of physician time.

A time-motion study in primary care showed that for every hour of patient care physicians spend nearly two hours on EHR and deskwork. Additionally, self-reported diaries, validated by EHR audits showed physicians spent one-two hours nightly of personal time doing clerical work, mostly on the EHR. This is the equivalent of an extra 40-hour workweek each month. As Edward Ellison, CEO of Kaiser California noted in an editorial, “Physicians find practicing medicine harder than ever because it is harder than ever.”

John Noseworthy, MD, CEO and President of Mayo Clinic, and nine other chief executives from leading American organizations called burnout a public health crisis related to increasing measurement pressures on physicians with regards to cost, quality and patient experience. Replacing a burned-out physician costs between $500,000 and $1 million. A mathematical model recently suggested the annual direct cost to the United States system is $4.6 billion. There is a negative relationship between burnout and physician productivity, according to a systematic review of five databases. Pangiotis, et al., in an extensive meta-analysis showed decreased quality outcomes and patient satisfaction with increasing burnout, especially in the domain of depersonalization. Depersonalization was highest in younger tenured physicians.

Professional burnout among physicians was shown to markedly increase between 2011 and 2014, and be twice that of the general United States. Follow up data from 2017 showed a decrease in burnout to approximately 2011 levels. However, satisfaction with work life integration was little improved, and results of a depression screen showed a modest consistent increase between 2011 and 2017 from 38.2% to 41.7%. An InCrowd internet survey found that a startling 79% of primary care physicians have experienced some symptom of burnout. Recent studies have suggested that burnout markedly decreases physician work effort and that depersonalization burnout affects younger physicians the most. Depersonalization, as previously noted, had the most effect on decreasing patient satisfaction.

Tom Lee, MD, Chief Medical Officer for Press Ganey posited:

“I believe that physicians have a suspicion that there is a conflict between patient experience and the performance measures they think of as real quality. And I think business people in healthcare have a concern that there is a tension between patient experience and financial performance” (personal communication, August 10, 2019).

2. Significance

Patient experience is positively associated with improved quality outcomes. Burnout is negatively associated with outcomes and productivity. Providers feel that there must be a choice between improving productivity and improving experience. While there is much research to support improved outcomes, safety
and provider satisfaction with improved patient satisfaction, there is little direct evidence on the link between productivity and satisfaction. Previous research suggests a limited trade-off between quality and productivity. Research seeking to link productivity and patient satisfaction has been limited by small numbers or older data.

In the organization that was evaluated, there has been a significant effort to increase productivity to expected minimum levels of the 40th percentile by specialty. There has also been a goal to elevate patient satisfaction in the community practice settings. Elevation of the experience of patients, families, and staff is one of the four key practice priorities. However, there has been minimal data to reinforce and modify improvement efforts. The Organizations patient experience team espouses a concept that is leveraged to engage the practice: “present no data without stories and no stories that are not supported by the data”. Data is needed to support the story that improving all parts of the quadruple aim can be done simultaneously and in symbiosis. The data piece that is missing is between productivity and patient experience.

3. Hypothesis and design

The hypothesis of the project was that physician productivity and patient experience are not inversely related such that more productive primary care physicians will have similar patient satisfaction to less productive physicians. A second hypothesis was that there might be a difference based on tenure and that this would favor longer tenure. This project is a cross-sectional stratified research study on the relationship between productivity and patient satisfaction.

The project focused on primary care physicians employed by the organization. This included General Internal Medicine, Pediatrics, and Family Medicine. Physicians must have been employed on January 1, 2018 and December 31, 2018 to be eligible for the project. The project was initially designed to use all providers, including advanced practice providers. However, further analysis showed that the differences in productivity were substantial and the project was limited to physicians.

Provider productivity can be evaluated by a variety of metrics using billing data from the Unified Data Platform. Three potential options are work relative value units, patient panel size, and patient clinic visits. Patient satisfaction data are from the Press Ganey patient satisfaction surveys that are attributed to individual providers and based on clinic schedules. All data are from total year 2018. Top box percent or mean score are the two most commonly used patient satisfaction metrics.

4. Regulatory/accreditation/funding requirements

The research project was approved by Organizations IRB, #19-004321, July 2, 2019.

5. Organization background

The health system (MCHS) is a network spread across 1000 square miles and 70 communities in the Upper Midwest of the United States, focusing on community-based medicine. It provides care in the states of Minnesota, Wisconsin and Iowa, employing approximately 2000 providers of which 1000 are physicians. Management is divided into four regional structures with hubs in Mankato, MN; La Crosse, WI; Eau Claire, WI; and Rochester, MN.

6. Implementation

There were enough providers to have a robust number of providers and survey returns. For primary care, both the patient demographics and physician characteristics have nothing notable that would put them outside of a relatively average rural practice. The project was limited to the outpatient clinic medical practice; both the emergency department and inpatient hospital had data attribution issues. The clinic medical practice uses provider schedules and reliably attributes surveys to individual providers. Press Ganey has a dedicated survey for the outpatient medical clinic practice, known as the “medical practice survey” (Appendix A). Both paper and electronic surveys are used. All four regions of MCHS have comparable numbers of returns for analysis. Patient characteristics for those returning surveys have been validated to be representative of the overall practice by Press Ganey methodology, and the return rates for the organization are in the upper half of the overall database.

6.1. Metrics selection

Two primary methodologies are available from Press Ganey to report patient satisfaction scores: mean scores and top box scores. Both use results from the balanced Likert scale with possible answers of very poor, poor, fair, good, very good. To convert scores
to a mean, very poor = 0, poor = 25, fair = 50, good = 75, and very good = 100. This allows the reporting of mean score to be on a 100-point scale. It also allows for “partial credit”. As a result, scores are tightly bunched. The 25th percentile rank score for the overall provider section in 2018 was 93.1 and the 75th percentile rank score was 95.4, only a difference of 2.3 on a 100-point scale. Therefore, many organizations, including CMS, use a top box methodology to report patient satisfaction. Only the highest possible score, in this case very good, counts as a positive response. This binary system, in effect a “true-false” test leads to more variation. The organization uses top box percent as the preferred metric on internal scorecards/dashboards. Top box percent was chosen as the patient satisfaction metric in this project.

The project started with all 2000 providers. However, national data shows wide variation in average productivity across physician specialties. 2018 data from a report by Sullivan Cotter and the Medicare Payment Advisory Committee showed that the average RVU number for radiology was 8862 annually, and for primary care, which includes internal medicine, pediatrics, and family medicine, was 4833. Additionally, the average top box percent for various specialties has significant variation. As shown below, while there is wide variation across specialties in top box percent scores, the three primary care specialties are homogenous enough to be a valid group, Table 1. The scheduling templates in primary care are also very similar.

There were a number of physicians who have administrative positions. There is some evidence that higher administrative FTE may be associated with increased patient satisfaction, and with less physician burnout. Inclusion therefore was limited to those with at least 0.8 clinical calendars and at least five patient satisfaction returns. Initial analysis showed no difference between those with 0.2 or less administrative FTE and those with zero administrative FTE.

Several studies have reported that burnout rates and its effects are different based on years in practice, with those practicing longest having less burnout than others. Depersonalization is the aspect of burnout that is most associated with decreased patient satisfaction. Those closest to training seem to be most at risk for depersonalization.

There were, as previously stated, three options available to measure productivity: relative value units (RVU), physician assigned patients (aka panel size), and number of visits. RVUs have been used in the past and are meant to normalize physician work effort. Three issues affected this as the productivity metric: (1) getting data out of the unified data platform with CRM technology was more difficult than anticipated; (2) although meant to normalize work and account for cognitive work equally to procedural work, there is still a skew toward proceduralists, which could be a potential confounder; and (3) the future relevance as primary care moves away from fee-for-service to pay-for-value. Physician-assigned patients, or panel size, was not consistently applied across the four regions as of 2018, making this metric unreliable. Clinic visits were found to be the best option as visit data by specific physician was readily available. Primary care templates across the regions are roughly equivalent and standardized. In the clinic, productivity is largely pushed through the scheduling process. Clinic visits measure actual encounters, and do not weight procedures or complexity of encounters, removing some confounders. Lastly, the distribution of encounters approximated a conventional bell-shaped curve.

There was consideration given to using a continuous analysis of the variable of average monthly visits. This was judged to be overly complex. Rather than use the mean or median as the cut-off for the independent variable, quartiles were selected; the top quartile was greater than or equal to 241 average visits per month. In 2018, approximately 30–40 percent of primary care physicians were producing at higher than the 40th percentile of RVUs based on Medical Group Management Association (MGMA) data. The top quartile of the data set comprises physicians who would be at or above this productivity goal.

There are many options for specific questions or composites of questions to use to evaluate the dependent variable in the Press Ganey medical practice survey. The organization uses likelihood of recommending the practice. Likely to recommend, versus an overall composite was chosen for three reasons. First, it is mathematically more defined than composites, which end up being an overall average of the averages from the survey sections. Secondly, it represents an action or attitude that the organization wants patients to

<table>
<thead>
<tr>
<th>Mean top box percent</th>
<th>Composite care provider</th>
<th>Composite overall survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest specialty</td>
<td>86.7</td>
<td>81.3</td>
</tr>
<tr>
<td>Lowest specialty</td>
<td>69.2</td>
<td>62.7</td>
</tr>
<tr>
<td>Family medicine</td>
<td>80.8</td>
<td>73.4</td>
</tr>
<tr>
<td>General internal medicine</td>
<td>81.0</td>
<td>73.7</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>81.5</td>
<td>71.6</td>
</tr>
</tbody>
</table>

Table 1. Medical practice top box percent scores for April 2018–March 2019. (Courtesy Press Ganey.)
have. Lastly, key drivers of likely to recommend that are consistent with core values have been identified: confidence in care, perception of teamwork, and response to concerns.

Statistically, it was noted that there were two significant confounders: regional differences and variation in individual physician’s numbers of survey returns. As seen in the table below, one region, SEMN, significantly underperformed the other regions. This is consistent with that region’s performance in 2018 on other quality measures. This regional variation could skew the results of individuals in SEMN compared to the other three regions. Another confounder, the variation in number of returns, could bias the data towards those with a higher number of returns. Since all physicians who met criteria and had at least five annual returns were included, and there were over 15,000 returns for 168 physicians, this variation could be significant. In order to adjust for these two issues, a two-level nested strategy was utilized in the logistic regression model.

With over 15,000 data points, it was also possible that nearly any difference could be statistically significant. To decrease that likelihood, a random sample of 20 percent of the returns were used for the final analysis.

### 7. Results

Physicians were grouped by years of continuous service. Although most reports previously noted have used 0–10, 10–20, and over 20 years as the groups, this analysis used a different breakdown. Due to the organization having a more rural practice, with many younger providers, the breakpoints were 0–5, 5–10, and >10 years of continuous service. All providers have mandatory communication and professionalism training in the first two to three years of employment, so any improvement ideas and education have an already existing venue for implementation. All physicians were on a fully employed model with salary based almost exclusively on productivity. However, in the first two years of employment physicians have a guaranteed minimum. The following table shows the demographic breakdown of included physicians by years of employment and geographic region, Table 2.

Overall results are displayed in the table below. There was a significant difference between those physicians in the top quartile of visits and those who were in the three lower quartiles on the medical practice survey question on likely to recommend the practice overall. Those who had less than 241 average visits per month had an odds ratio for a top box score of 0.7. There was not a significant difference based on years of continuous service, Table 3.

Data analysis about physician service, specifically about recommending “this care provider to others”, showed that there was not a significant difference based on being in the top quartile of visits vs the three lower quartiles. However, there was a significant difference between those with less than five years of continuous service and others, Tables 4 and 5.

### 8. Discussion

The original hypothesis, physician productivity and patient experience are not inversely related and higher productive primary care physicians will have similar patient satisfaction as less productive
Table 5. Relative risk of achieving top box score for likelihood to recommend the practice and the provider based on average monthly visits at or above 75th percentile (241). Similar analysis based on years of service.

<table>
<thead>
<tr>
<th>Visits percentile</th>
<th>LTR overall RR</th>
<th>LTR physician RR</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than 240</td>
<td>1.0</td>
<td>1.0</td>
<td>reference</td>
</tr>
<tr>
<td>Less than 241</td>
<td>0.7</td>
<td>0.8</td>
<td>overall yes, physician no</td>
</tr>
<tr>
<td>Years of service</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Greater than 10</td>
<td>1.0</td>
<td>1.0</td>
<td>reference</td>
</tr>
<tr>
<td>5–10</td>
<td>0.9</td>
<td>0.9</td>
<td>both not</td>
</tr>
<tr>
<td>0–5</td>
<td>0.9</td>
<td>0.6</td>
<td>Overall no, physician yes</td>
</tr>
</tbody>
</table>

physicians was shown to be supported. Those in the top quartile of productivity, as measured by average monthly visits, were actually more likely to have patients recommend the practice. An added analysis showed that this was not true when the question was specifically about the physician. The secondary hypothesis, that the results would vary based on tenure, was not supported for likely to recommend the practice overall, but was supported for likely to recommend the individual physician.

The results suggest that it is possible to perform well in both productivity and patient satisfaction. Physicians at the top quartile may benefit from better functioning systems and logistics. These results are consistent with some past research, particularly the study of a large health system between 2002 and 2004 with over 136,000 Press Ganey responses. The results contradict some research that showed higher productivity practices were associated with lower patient satisfaction. There are several limitations to the study. The data is pre-pandemic, but that probably more closely approximates current reality than data obtained from the years 2020–2023. By using number of average visits, there is no adjustment for complexity of patients. While using primary care has a strength of relative homogeneity, it limits generalizability. In addition, the top quartile of physicians based on the productivity measure might be more closely representative to average in the MGMA database. It is also unclear what the relationship is when a more discrete breakdown of productivity is used, e.g., is there a continuous slope?

The breakdown of years of service is different from what is conventionally used, for reasons previously noted. However, using years of service does not necessarily equate with years since finishing training. It may not measure actual experience or career stage versus years since graduating from training. This specific information was more difficult to obtain. Finally, a patient’s willingness to recommend the practice is only one, limited measure of experience.

There are unanswered questions. Are patients more satisfied because physicians are busier or are physicians busier because patients are more satisfied? This may be a “chicken or egg” question. Are the results applicable to other specialties? Are they even relevant to more procedural-based ones? In patient experience, there is a difference between using data for research and for improvement. While the results are presented in a research framework, there were trends that may be worthy of consideration although not statistically significant.

More holistically, how does this fit into current discussions and concerns around the quadruple aim and physician burnout? There is still a relative paucity of data on the relationship between provider productivity, even as the relationship between improved satisfaction and improved safety, outcomes, and staff engagement is strongly supported by research. Some aspects are interesting however. Depersonalization and career satisfaction have been found to be lowest in younger physicians. This study reports that patient satisfaction was lower with this group also. In the midst of impending provider shortages in primary care, it is especially problematic that the newest physicians appear to be struggling in many aspects. Clearly, this merits some attention.

Some have suggested that it will be impossible to achieve the quadruple aim if all four aspects are not approached together rather than viewed as competing interests. Garton, notes that “burnout is a problem with the company, not the person”. Other research by the author has suggested that patient satisfaction and physician burnout are only significantly correlated when related to system issues, such as ease of access or appointment waits. Mylod suggest that those things that frustrate patients also frustrate providers and that there are inherent rewards and stressors in clinical care that clinicians accept. Accentuating inherent rewards, and alleviating the non-inherent stressors such as inefficiency, clerical burdens, and concerns regarding perceived competing interests, is one important way to help with burnout. People are most fulfilled when they feel competent, purposeful, and have some autonomy at work. These are intrinsically related to physician work with patients. This data may, in a small way, help eliminate one of the perceptions that keep healthcare from achieving the quadruple aim. In particular, there need not be a choice made, there must be a belief that all four aspects; improved population
outcomes, experience of care and experience of care providers at a decreased cost over time, can be achieved simultaneously.

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Conflict of interest

The authors declare no conflict of interest.

References