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Contextual factors that influence quality improvement implementation in primary care: the role of organizations, teams, and individuals

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Abstract

Background—Recent emphasis on value-based healthcare has highlighted the importance of quality improvement (QI) in primary care settings. QI efforts, which require providers and staff to work in cross-functional teams, may be implemented with varying levels of success, with implementation being affected by factors at the organizational, teamwork, and individual levels.

Purpose—The purpose of our study was to (1) identify contextual factors (organizational, teamwork, and individual) that affect implementation effectiveness of QI interventions in primary care settings; and (2) compare perspectives about these factors across roles (healthcare administrators, physician and non-physician clinicians, and administrative staff).

Methods/Approach—We conducted semi-structured interviews with 24 healthcare administrators, physician and non-physician primary care providers, and administrative staff representing 10 primary care practices affiliated with one integrated delivery system.

Results—Participants across all roles identified similar organizational- and team- level factors that influence QI implementation including organizational capacity to take on new initiatives (e.g., time availability of physicians), technical capability for QI (e.g. data analysis skills), and team climate (e.g., how well staff work together). There was greater variation in terms of individual-level factors, particularly perceived meaning and purpose of QI. Perceptions about value of QI ranged from positive impacts on patient care and practice competitiveness to decreased efficiency and distractions from patient care, but differences did not appear attributable to role.

Conclusions—Successful QI implementation requires effective collaboration within cross-functional teams. Additional research is needed to assess how best to employ implementation strategies that promote cross-understanding of QI among team members and, ultimately, effective implementation of QI programs.

Practice Implications—Healthcare managers in primary care settings should strive to create a strong teamwork climate, reinforced by opportunities for staff in various roles to discuss QI as a collective.

Keywords

quality improvement; primary care; organizational innovation; healthcare teams

Introduction

To improve quality of care and reduce health care costs, public and private payers are using alternative payment models in a variety of health care settings (Drake, Gevorgyan, & Hetterich, 2016; Rajkumar, Conway, & Tavenner, 2014). Primary care practices, in particular, are a target for many alternative payment models such as the Comprehensive Primary Care Plus Model and patient-centered medical homes (PCMH) (Basu, Phillips, Song, Landon, & Bitton, 2016), which require systematic approaches to improving quality and safety (Fries Taylor et al., 2014). In response, many primary care practices have employed quality improvement (QI) methods (Kaplan et al., 2010), such as root cause analysis and plan-do-study-act cycles (Langley et al., 2009; M. J. Taylor et al., 2014). Such methods require collective effort among members of cross-functional teams to define quality problems, identify and evaluate changes that have the potential to address the identified problems, and promote adherence to process improvements (Berwick, Godfrey, & Roessner, 1991; Lemieux-Charles et al., 2002; McLaughlin, McLaughlin, & Kaluzny, 2004). The importance of teams is reflected in the following operational definition of QI: “use of cross-functional teams to identify and solve quality problems, use of scientific methods and statistical tools by these teams to monitor and analyze work processes, and use of process-management tools...” (Weiner et al., 2006, p. 310). In primary care, these cross-functional teams include administrators (e.g., practice managers), clinicians (both physician and non-physician), and administrative staff (e.g., billing coordinator, administrative assistant).

Despite widespread interest in QI in primary care, benefits from QI vary across organizations and projects (Auerbach, Landefeld, & Shojania, 2007; Nadeem, Olin, Hill, Hoagwood, & Horwitz, 2013). Examples of QI initiatives include using clinical decision-support tools, conducting performance measurement and improvement, measuring and responding to patient experiences and patient satisfaction, and practicing population health management (AHRQ, 2017). Previous efforts have been funded by the Agency for Healthcare Research and Quality (AHRQ) to support QI in primary care, such as providing practice coaching, expert consultation and learning collaboratives (Fries Taylor et al., 2014). However, additional research is needed to determine how contextual factors affect the implementation and, ultimately, the outcomes of QI efforts (Grooms, Froehle, Provost, Handyside, & Kaplan, 2017; Kaplan et al., 2010). Without such an understanding, the cross-functional teams leading QI in primary care may struggle to develop and maintain effective QI programs.

The purpose of our study was to (1) identify the contextual factors—at the organizational, teamwork, and individual levels—that affect implementation effectiveness of QI

interventions in primary care and (2) compare perspectives about these factors across staff roles (healthcare administrators, physician and non-physician primary care providers, and administrative staff). Our goal was to illustrate not only ways in which collective- and individual-level factors may affect QI processes and outcomes but also how these factors may be perceived differently across members within the same provider organization. We believe that our findings suggest ways primary care practices can (1) clarify for providers and staff what QI is and why it is important and (2) develop the organizational and team capabilities necessary to implement effective QI programs.

Conceptual Framework

Brennan and colleagues developed the InQuIRE (Informing Quality Improvement Research) framework to categorize contextual factors that influence the effectiveness of primary care QI programs into organizational, team, and individual levels (Brennan, Bosch, Buchan, & Green, 2012, 2013). Organizational-level contextual factors include capabilities related to organizational change in general, capabilities related to QI specifically, and leadership support (Brennan et al., 2012). These organizational-level factors represent the organization's infrastructure for innovation and the extent to which the organization prioritizes and supports improvement (Damschroder et al., 2009). Team-level factors include team composition, organizational climate for teamwork, and attitudes toward teamwork (Brennan et al., 2013). Such factors indicate the presence of cross-functional teams (Chesluk & Holmboe, 2010) as well as the extent to which the organization promotes teamwork, and members of the team have a shared sense of purpose (Carson, Tesluk, & Marrone, 2007) and understanding of each other's perspectives and mental models (Huber & Lewis, 2010; Price, Fitzgerald, & Kinsman, 2007). Individual-level factors include beliefs about the value of QI, QI-related knowledge and skills, as well as self-efficacy (Brennan et al., 2013). These individual factors, when lacking, create barriers to effective QI implementation in the form of insufficient awareness, knowledge, and/or acceptance of QI (Grol & Wensing, 2013). Each of these levels of contextual factors could influence whether a cross-function QI team is "on the same page" in terms of what QI is, why it is important, and what activities are necessary to implement it—all of which are critical to establishing and sustaining a productive QI program (Weiner, Belden, Bergmire, & Johnston, 2011).

Methods

Study Design and Sample

Our study employed a descriptive qualitative design. We conducted telephone-based, semi-structured interviews with individuals working in primary care practices within a physician network that is affiliated with an integrated delivery system, and with individuals working as regional managers for the physician network. We chose telephone-based interviews so that we could interview participants regardless of where they were located in the state. Semi-structured interviews were chosen to allow participants to share unique experiences with QI based on their role and experiences with QI in their practice setting (B. Taylor & Francis, 2013). We used the Standards for Reporting Qualitative Research (O'Brien, Harris,

Beckman, Reed, & Cook, 2014) checklist to ensure thorough reporting of our methods and results.

We selected 10 out of 25 primary care practices affiliated with an integrated delivery system in the southeastern United States that had previously participated in an internal survey assessing QI implementation. Two practices that we contacted initially did not respond to any of our three recruitment emails (spaced one week apart), so we contacted two additional practices to get to the total of 10 practices. We then used purposive sampling methods to select interview participants ($n = 24$) from various roles and with varying leadership experiences within the 10 practices. Only individuals who had been in their role for one year or more were eligible. Roles included healthcare administrators (e.g., regional managers, practice managers, and medical directors), physician and non-physician primary care providers (e.g., physicians, physician assistants, nurses, and certified medical assistants), and administrative staff (e.g., billing coordinators, medical record coordinators, and administrative assistants). We had between two and four participants per practice. No individuals refused to participate, but eleven individuals from our participating practices did not respond to our recruitment emails. All participants received a gift card for their participation. The Institutional Review Board at the authors' institution approved this study (IRB # 13-3545).

Data collection

Interviews were conducted in April and May of 2015. Each interview was conducted by two members of the research team (CS, KT, JA), with one interviewer taking the lead role. Both CS and KT had substantial previous experience conducting interviews. Prior to beginning any interviews, the research team members collaboratively developed the interview guide and discussed the interview process. After each interview, the interviewers debriefed about the process. The semi-structured interview guide was developed based on a literature review of contextual factors (e.g., organizational, teamwork, and individual) that influence implementation effectiveness of QI. Additionally, interviewers asked probing questions to encourage participants to elaborate and clarify responses as needed. Each interview lasted approximately 30 minutes. We continued to recruit for interviews until we had reached saturation on the contextual factors of interest (Guest, Bunce, & Johnson). We reached saturation with some factors sooner than others, depending on how much variation we observed across sites and roles.

Analysis

Interviews were audio-recorded and transcribed verbatim. We used the interview guide to generate a list of topical codes to apply to each transcript (Miles & Huberman, 1994). Two members of the research team (KT and JA) independently coded three transcripts using Dedoose qualitative software (version 4.12). The research team then reviewed discrepancies in coding and refined topical code definitions. Five additional transcripts were coded to identify and reconcile potential discrepancies in the application of topical codes. After the coding was complete, members of the research team created and reviewed summary reports to develop interpretative codes based on the qualitative data (Miles & Huberman, 1994). Research team members then came to consensus on the interpretative code definitions used

to analyze the summary reports. The code definitions are organized around the InQuIRE framework (see Table 1). After the themes were identified, we followed up with two participants to confirm that the themes generated from the analysis were consistent with the experiences of the study participants (Creswell & Miller, 2000).

Results

Our study included 24 participants representing three groups of primary care staff: healthcare administrators (n=10), physician and non-physician primary care providers (n=11), and administrative staff (n=3) (see Table 2). Participants in the sample varied in terms of their job tenure ranging from one year to 12 years of experience. The sample contained more female participants (n=20) than male participants (n=4). We did not collect data on age, race, or ethnicity.

In terms of roles in QI efforts, practice managers tended to be the implementation leaders of QI activities, often setting expectations, conducting data analysis, and providing feedback to staff. Regional managers provided implementation support and technical assistance. Non-physician providers in some cases were the QI champions, commonly performing many of the administratively oriented QI activities (e.g., creating new forms) and patient-care activities (e.g., asking patients if they had a particular vaccine). Physicians generally focused on delivering patient care activities. Administrative staff sometimes supported non-physician provider staff in doing the administrative QI tasks. These QI roles were the most common arrangement, as QI efforts tended to be top-down (lead by the practice manager). However, there were a few outlier practices in which QI efforts were derived from the bottom-up, with non-physician providers taking the lead.

Organizational Context

Capability for organizational change—Participants across all roles described how primary care practices are undergoing numerous healthcare reforms and face competing demands that make implementing organizational change difficult due to perceived time constraints and feelings of being physically and psychologically overextended. Examples of such changes include preparing for patient-centered medical homes, changing electronic health record (EHR) systems, and participating in numerous performance measurement initiatives. Physicians, in particular, described having very little time available to take on new quality initiatives as more of their time is being spent on entering data into EHRs and delivering more services to more patients to meet performance requirements. One physician stated, “I think, again, the day-to-day, everyday grind of getting all the stuff done, not having overtime, being aware that, you know, physicians [have] eleven- [or] twelve-hour days here, it’s just hard to implement that [QI].” Similarly, one CMA described how the start of a new QI initiative created tension between performing her routine job duties well and feeling obligated to participate in QI:

I can multi-task two or three things, but when you’re talking five and six, and you’re running clinic and phone calls and faxes, it’s a lot. And I would hate for something careless to happen that I feel could have been prevented.

In addition to time, the prevalence of change can be overwhelming because each change requires focused attention. According to one practice manager:

You have all these people who went through this enormous change [EHR implementation] and we keep asking them to take on more change and there's never a plateau and people can't get adjusted. So you have all these people in all these different roles that are very overwhelmed ...

Technical capability for QI—In addition to concerns about time and the ability to focus attention on multiple changes, providers and staff expressed uncertainty about their practice's QI-specific, technical capabilities, such as collecting and analyzing data to support QI efforts. A practice manager explained, "They [providers and staff] need to know what data to gather, what data is important, and they are not used to thinking like that." Even after receiving some QI training, some participants expressed doubts about their QI-specific capabilities. For example, a regional manager for the physician network explained, "I can say that I'm a Yellow Belt, but I could not tell you how I would start up a project in my practice, especially now with the volume of people." Such concerns illustrate the complexity of developing and using QI capability. Learning about QI-related methods is only part of the challenge. Also, important is knowing when and how to use the methods.

Organizational leadership support for QI—Practices varied in the amount of leadership support available for QI. Some practices described how their organizational leadership used active strategies to promote QI implementation, such as identifying QI implementation leaders, getting staff input about implementation, communicating the goals and purpose of QI, and sharing feedback with staff about QI progress. For these practices, medical directors or practice managers typically served as the leader of QI initiatives. As an example, a practice manager described "Everybody had input in it from the very beginning. It was decided together as a group, you know, what our [QI] project was going to be. And so that keeps them motivated." At other practices, participants described how there was not an individual responsible for leading QI efforts, which negatively impacted implementation. One administrative assistant explained, "We need a good leader but we all have so many responsibilities already. We have our meetings and discuss the issues and solutions but nothing ever happens with it." Clinical and administrative staff, in particular, pointed out how their practice's leadership failed to communicate the purpose and goals of QI initiatives, causing confusion and frustration among employees. A certified medical assistant explained, "They [non-physician clinical staff] are told the goals but they are not told this is the reason why we do this or what the end goal is." In summary, participants described how organizational leadership support for QI influenced clarity around who was in charge of QI efforts, the purpose and goals of QI in the practice, and how effectively the providers and staff throughout the practice were engaged in the planning and implementation of QI.

Teamwork Context

Climate for teamwork—Some participants indicated that their primary care practices had a strong climate for teamwork, whereas other participants reported that there was little-to-no collaboration across staff roles, which affected QI implementation. In practices with a strong teamwork climate, participants explained that employees were motivated to help other care

team members because there was a shared understanding of the goals that were set for QI initiatives. One certified medical assistant remarked, “We keep the goals posted on a whiteboard in the break room and everyone feels like they are contributing to the greater good. ‘We’re doing a good job because I’m doing a good job.’” Additionally, practices with a strong team climate described how staff members had an understanding of other staff members’ roles, which facilitated collaboration. Practices that reported a weak team climate described a lack of structure for sharing information and a general lack of communication about QI initiatives across roles. For example, a physician’s assistant stated:

I do think that the nurses sometimes do have meetings with the office manager, but I have no idea what’s discussed in that. I would assume they are discussing quality improvement and stuff with that, but we don’t get any of that information. It would be helpful if there was one meeting where everyone could discuss QI together.

In summary, the climate for teamwork is made evident, at least in part, through the structures and processes that facilitate shared understanding of expectations and communication across roles.

Individual Context

Meaning of QI—Perceptions about the meaning of QI commonly varied between roles. When defining QI, practice managers and medical directors commonly emphasized QI in terms of internal processes for setting goals and tracking improvements. One practice manager said, “Quality improvement would mean to me, having set goals, creating a standard that is explained to everyone, measurements, reporting back to everyone on a regular basis so everyone knows how we are meeting those standards.” Clinicians (physician and non-physician) generally defined QI in terms of specific QI initiatives, typically those driven by the physician practice network, insurers, and professional associations. Administrative staff commonly defined QI as initiatives aimed at improving employee job satisfaction, customer service, or job performance, or indicated that they were not sure what QI is. When asked how she would define QI, one administrative staff member explained, “I don’t know. That’s a good question. I guess, just, doing some of our different roles and being rewarded for what we do.” Differences across roles in terms of perceived meaning of QI may be due, at least in part, to the level of previous QI training (e.g., Six Sigma), with providers and practice managers being more commonly exposed to QI training and terminology as compared to administrative staff.

Perceived value of QI—We found that perceptions about the value of QI varied substantively between participants. For example, one nurse said, “Without quality improvement, you don’t know if what you’re doing is actually getting the results that you intend for it to get.” Practice managers and medical directors described how QI can position practices to be more competitive in the marketplace. For example, one practice manager explained, “In today’s market where there’s doctors just down the street, people will go elsewhere if they’re not happy or getting the results with their healthcare.”

More commonly, however, interviewees reported concern about potential negative impacts of QI. For example, physicians explained how QI efforts can require more time spent with

each patient, which is at odds with pressure that physicians face to see more patients within a day: “They’re [physicians] gonna have a difficult time adjusting to this and being able to meet the criteria of getting all this information and getting all this stuff done and also seeing all the patients they’re seeing.” Nurses and CMAs commonly described concerns about QI efforts not aligning with their patients’ priorities and, ultimately, negatively affecting patient care and satisfaction. One CMA explained that QI initiatives in her practice have led to an increase in the amount of paperwork patients have to complete, which has decreased patient satisfaction: “The patients complain because they have so many papers they have to fill out. They complain about those. The patient’s like, ‘I’ve been coming here for 10 years. Why do I have to fill all this out?’” Another concern involved QI initiatives negatively affecting the quality of communication between patients and physician. One participant described this concern from a patient’s perspective:

I came in here with a list of three things that I’ve noticed since my last appointment that I need to discuss, but my providers are not hearing me because they want to know when the last eye exam was, when my mammogram [was].

In summary, interviewees’ perceptions about QI value appeared to be shaped, at least somewhat, by their prior experiences with specific QI projects. Clinicians (physicians and non-physicians) expressed concerns about QI efforts being at odds with patient-centered care. For physicians, these concerns centered on how time is spent during the patient encounter. Nursing staff and CMAs commonly expressed concerns about administrative burden (e.g., paperwork) for patients and patient perceptions that their priorities and questions were not the focus attention during their visit.

Discussion

In this study, we interviewed representatives from primary care practices to (1) identify the contextual factors—at the organizational, teamwork, and individual levels—that affect implementation effectiveness of QI interventions and (2) compare perspectives across staff roles. Our study revealed variation between respondents’ views on individual contextual factors (e.g., perceptions of the meaning and value of QI) based on staff role. At the organizational- and team-level, respondents from all roles reported similar challenges including lack of clear communication about QI, differences between stated leadership priorities and leadership support for QI (e.g., time and resources), and differences in top-down versus bottom-up QI priorities. Below we outline the key contributions and implications of our findings and recommendations for creating a more supportive context for QI initiatives.

Differences across staff roles in perceptions about the meaning and value of QI may lead to problems with QI implementation. Primary care practices appear to struggle with developing the structures and processes that facilitate such discussions about how and why individual perspectives about QI vary. Establishing these structures and processes (e.g., cross-functional meetings, cross-functional workflow analysis) could facilitate cross-understanding within teams by enabling team members to convey explicit interpretations of change efforts, clarify other team members’ interpretations, and adjust their understanding based on the perspectives of the team (Huber & Lewis, 2010). Ultimately, achieving a cross-

understanding of QI requires a holistic approach to training that enables individuals to learn not only QI methods but also how QI fits within the care process and activities of individual care team members. Future studies should test training methods and other strategies that facilitate information sharing and cross-understanding between roles, for example, having team meetings with designated time to reflect on QI implementation (Farr & Cressey, 2015), or creating a glossary that defines key terms of the QI initiative (Powell et al., 2015).

Our study also highlights various implications for health care organization leaders who want effective QI activities to support priorities for care quality and reimbursement. Consistent with previous research, clear communication from health care system or organizational leadership about the purpose of QI, who is leading QI efforts, and how each member of the practice will be involved in QI is important, as insufficient communication about organizational change can create uncertainty about and resistance to change (Allen et al., 2007; Bordia, Hunt, Paulsen, Tourish, & DiFonzo, 2004; Elving, 2005). Although clear communication directly from leadership is important, senior leadership may not be the best channel of communication for all types of change-related information (Allen et al., 2007; Cobb & Wooten, 1998). For example, middle managers may be preferred for communication about implementation and how it impacts an individual's job role (Elving, 2005). Future studies should test how communication channels (e.g., senior leadership, middle managers) affect staff acceptability of QI initiatives. Ultimately, effective communication is a core teamwork behavior within the QI process that contributes to important organizational-level QI outcomes, such as QI climate and team cohesion (Brennan et al., 2013).

Our study also highlighted the tension between top-down decisions about QI priorities versus priorities developed from the bottom up (i.e., from within the practice). When top-down priorities are not communicated effectively, the staff may interpret these priorities as being out of touch with the needs of the practice and patients and in conflict with internally derived priorities. Similarly, without support from leadership (e.g., additional time for QI planning), providers and staff may struggle to find time to lead the internally derived projects, while balancing the demands of day-to-day operations and requirements of top-down QI projects. A key challenge for practices is to find synergy between the top-down mandates and the internally derived priorities. Future research could examine ways in which leadership priority setting and leadership support affect practice's ability to balance external mandates and internal priorities. Finally, additional research is needed on how to tailor communication about QI programs, as initiatives that are externally driven (e.g., in response to national programs) may require a different approach to communication as compared to internally developed initiatives.

Limitations

This study included practices in one physician network located in one state in the US; therefore, our findings may not be generalizable to all practices. Furthermore, this network is engaged in a number of QI initiatives being implemented simultaneously in response to health reform. Employee perceptions of QI may be different in settings that are undertaking less QI activity. However, capturing the perspective of employees embedded in organizations

undergoing transformation seems most appropriate, given that QI is a priority in many health care systems.

Practice Implications

Effective QI programs require a supportive organizational context including leadership support and a climate for teamwork so that staff can work collaboratively across professions. Our study identifies factors at the organizational, teamwork, and individual levels that can affect such efforts, either positively or negatively. At the individual-level, where we found perceptions to vary most across roles, a shared understanding of what QI is, why its valuable, and what activities are necessary to implement it is important for staff members to collaborate effectively on QI activities (Huber & Lewis, 2010). Findings from this study also suggest that individual perceptions about QI are affected by the primary care practice's capability for change in general, and for QI specifically, as well as the organization's climate for teamwork. Past studies have acknowledged that there is limited research available on the contextual factors that affect QI implementation or how organizations can create a context that is more supportive of QI (Grooms et al., 2017; Kaplan et al., 2010). Health organization leaders can use our findings as a source of information about barriers to—and strategies for promoting—an organizational context that supports, rather than undermines, QI initiatives.

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Table 1**Key Themes and Code Definitions**

Topical Codes	Code Definition	Interpretive Codes	Code Definition
Organizational Context			
Capacity for organizational change	Apply this code when participants describe how their organization's context affects their capacity for organizational change in general (e.g., external funding, competing priorities).	Other healthcare reform priorities	Apply when participants describe how other healthcare reforms such as meaningful use incentive programs, patient-centered medical homes, and performance measurement initiatives create competing priorities for QI initiatives.
Capacity for QI	Apply this code when participants describe engaging in activities to develop a practice's capacity for QI implementation (e.g., redefining job roles and responsibilities to include QI activities).	Quality improvement training	Apply when participants discuss receiving training for QI such as Yellow Belt training.
Leadership support	Apply this code when participants describe leadership support for QI including setting goals, motivating staff, and communicating feedback about progress on QI activities.	QI goals and feedback	Apply this code when participants describe goals for QI initiatives, process for setting goals, monitoring or evaluating progress, and the impact of goals on motivation.
Teamwork Context			
Organizational climate for teamwork	Apply this code when participants discuss putting together a team for QI activities, feeling like they are apart of a team, and communication that occurs within the team.	Team cohesion	Apply this code when participants discuss feeling like they are a part of a team in their primary care practice including a desire to contribute to the team or expectations from leadership to work together as a team.
Individual Context			
Meaning of QI	Apply this code when participants describe how they would define QI or how they believe their practice or network would define QI.	Individual definition of QI	Apply this code when participants describe how they would define QI as opposed to how their practice or network would define QI.
Value of QI	Apply this code when participants share their attitudes and beliefs about QI, the perceived value of QI, the relative importance of QI, or the actual impact of QI.	Positive value of QI	Apply this code when participants describe positive perceptions about the impact of QI on healthcare quality, efficiency, safety, and patient outcomes.

Table 2

Job Roles and Average Job Tenure of Interview Participants (N = 24)

Staff Role	Job Tenure Mean (SD) years	Number of Interviewees
Healthcare Administrators		
Regional Managers	1.67 (0.58)	3
Practice Managers	5.4 (3.58)	5
Medical Director	2.5 (2.12)	2
Clinicians		
Physician	4.0 (0.71)	2
Physician's Assistant	2.5 (--)	1
Nurse	4.5 (2.12)	2
Certified Medical Assistant	8.0 (3.77)	6
Administrative Staff		
Billing Coordinator	12.0 (--)	1
Medical Record Coordinator	9.0 (--)	1
Administrative Assistant	5.0 (--)	1