JOURNAL OF HEALTH CARE FINANCE

Summer 2020

Does It Pay?
An Examination of Interorganizational Relationships in Federally Qualified Health Centers

Ganisher Davlyatov, PhD. (Corresponding Author)
Assistant Professor
Department of Health Administration and Policy
Hudson School of Public Health
University of Oklahoma Health Sciences Center

Justin Lord, PhD, CMA, FHFMA
Assistant Professor
James. K. Elrod Department of Health Administration
College of Business
Louisiana State University Shreveport

Neeraj Puro, PhD
Assistant Professor
Department of Health Administration
College of Business
Florida Atlantic University

Nancy Borkowski, DBA, FACHE, FHFMA
Distinguished Professor
Department of Health Services Administration
School of Health Professions
University of Alabama at Birmingham

Abstract

Introduction: Due to financial and competitive pressures, Federally Qualified Health Centers (FQHC) have implemented various strategies to increase their financial well-being and improve the quality of care delivered. One promising strategy is the establishment of interorganizational relationships (IOR). The purpose of this study was to examine the association between IOR strategies and FQHCs' clinical and financial performances.

Methods: We used a national sample of 1,015 FQHCs from the Uniform Data System (UDS) and the Internal Revenue Service (IRS) Form 990 for the periods 2009-2016. The dependent variables were clinical performance measures – diabetes and hypertension management, and the financial performance measure – total margin. The independent variable was the interorganizational relationship (IOR) status of the FQHCs, reported as horizontal, vertical, hybrid (both horizontal and vertical), or none – those that chose not to participate in any type of IORs. We ran generalized estimating equations models with year and state fixed effects where we regressed the IOR status on the clinical and financial performance measures.

Results: FQHC participation in organizational networks varied from a high of 21% in a horizontal network to a low of 4% in a vertical network, and 9% reporting that they participated in both (i.e., hybrid). FQHCs participating in a vertical network or a hybrid network reported better quality of care measures, compared to the ones reporting no network participation. However, FQHCs' financial performance showed no association with any type of IOR.

Discussion: FQHCs are located in resource-constrained areas and serve low income and uninsured populations. Vertical and hybrid IORs assist FQHCs connect with other local providers expanding care access and resources for their patient base. FQHC administrators should consider collaborating with local providers in order to improve their quality of health care.

Federally Qualified Health Centers (FQHCs) play an essential role in the U.S. healthcare delivery system (Prosser & Shin, 2008). FQHCs are community-based, not-for-profit, outpatient health centers with a mission to provide comprehensive primary care services in medically underserved areas (Shi *et al.*, 2017; Terranova, Tsoi, Laraque, Washburn, & Fuld, 2016). A critical component of the nation's safety net system, FQHCs provide care to approximately 28 million people at over 12,000 service sites (HRSA, 2019). In addition to clinical care, FQHCs also provide a variety of other services, such as transportation, translation, and health education to vulnerable populations that include the poor, uninsured and Medicaid beneficiaries (Shi *et al*., 2017). FQHCs have been recognized by both the Institute of Medicine (IOM) and the Government Accountability Office (GAO) for their efforts to screen, diagnose, and manage chronic conditions such as diabetes, cardiovascular disease, asthma, depression, cancer, and HIV (U.S. General Accounting Office, 2000; IOM, 2001). The ability of FQHCs to provide and coordinate a broad range of services in a clinically integrated manner assists them with delivering care effectively and efficiently (Lewis, Colla, Schoenherr, Shortell, & Fisher, 2014; Shin, Sharac, Barber, Rosenbaum, & Paradise, 2015).

However, FQHCs face various competitive and financial pressures such as increased competition from for-profit primary care settings, primary care provider shortages, uncertainty in future federal funding, and increased quality reporting requirements from the Health Resources and Services Administration (HRSA) (Luthi, 2018; Sage Growth Partners, 2017). In order to provide affordable care, FQHCs rely on funding from federal and state governments. FQCHs' annual quality of care measures are used in reviewing FQHCs' grant applications. Therefore, FQHCs are encouraged to continuously improve their quality of care in order to maintain their funding.

To better address those challenges, FQHCs have pursued various strategies to improve their quality of care while remaining financially viable. One of the strategies employed to potentially improve the quality of care of FQHCs is to establish interorganizational relationships (IOR) with other stakeholders. IORs are defined as any joint activity between two or more parties that work towards a common goal to increases public value by working together rather than independently (Najafian & Colabi, 2014). In addition, IORs can be viewed as an opportunity for organizations, such as FQHCs, to build and sustain competitive advantage (Dutta, 2012; Smith, Carroll, & Ashford, 1995). IOR benefits have been explored and supported via a number of theoretical perspectives, such as, resource dependence perspective (the ability of the organizations to better acquire resources and manage uncertainty); ecological perspective (help the organizations survive and grow); institutional theory (acquire legitimacy), along with several others (Dutta, 2012; McAlearney & McAlearney, 2006; Barringer & Harrison, 2000). FQHCs may pursue inter-organization relationships with each other and/or other healthcare providers for the purpose of improving access at the community level; efficiency and profitability at the organizational level, and health outcomes at the patient level. FQHCs have been awarded for increased integration activity by the Bureau of Primary Health Care (BPHC), which provided financial and technical support to encourage and promote the development of integrated delivery systems and practice management networks through its Integrated Services Development Initiative (McAlearney & McAlearney, 2006; U.S. General Accounting Office, 2000). However, limited previous research has found that the performance of these integrated facilities can vary widely depending on the members and structure of the collaboration (Miller, Kessler, Peek, & Kallenberg, 2011).

The benefits of IOR collaboration have been well studied in various segments of the healthcare industry, however there remains a gap relating to collaboration benefit research for FQHCs. For example, one qualitative study suggested that some types of IOR among FQHCs can improve access to subspecialty care for the patients (Neuhausen, Grumbach, Bazemore, & Phillips, 2012). Another qualitative study found that FQHCs with some IORs were associated with better visibility in the marketplace, and consequently had increased purchasing power and improved efficiencies (Baxter, Levin, Legaspi, & Bailey, 2002). However, beyond observational evidence on their efforts on access and efficiency, there is limited quantitative evidence to support associations between various FQHCs' IORs and patient health outcomes and/or financial well-being of the organization.

Organizations have a multitude of different IOR strategies that they can adopt; however, for this study, we will only examine the IOR strategies that are defined in the UDS. We focus on four strategies that we believe broadly capture the different configurations of IORs and that may be of particular importance for FQHCs. First, FQHCs may choose to collaborate with different types of providers, such as health centers, specialists, and hospitals, or engage in relationships with non-FQHC organizations. This is a vertical IOR strategy and can potentially provide the FQHC organization with greater access for resources/services that the FQHC does not offer. The second strategy is horizontal integration, where the FQHC may choose to engage in relationships with other FQHCs or other similar entities. Horizontal IORs are argued to provide a number of benefits for healthcare providers, such as, lower costs through economies of scale, greater leverage in negotiations, and increased access to capital and management and clinical expertise (Burns & Pauly, 2002; Cuellar & Gertler, 2003). Third, FQHC participate in both horizontal and vertical IOR or a combined (i.e., hybrid) IOR strategy. Lastly, a FQHC may choose not to participate in either type of IOR (Hearld, Carroll, Hearld, & Opoku-Agyeman, 2018).

The purpose of this study was to investigate the association between IOR strategy and clinical and financial performances of FQHCs.

Methods

Sample

We used two secondary data sources including the UDS and the IRS Form 990 for the periods 2009-2016. FQHCs usually operate multiple service sites (median=9, ranging from 1 to 116); however, UDS data is submitted at the organizational level and lacks specific site information. Collected by HRSA annually, UDS contains data on FQHC patient and provider aggregate characteristics. FQHC financial performance data in UDS is considered proprietary information, so we extracted financial information from another data source – IRS Form 990. This study's sample included only those FQHCs that met both federal requirements and received grants under Section 330 and had non-missing data on both UDS and IRS Forms 990. The FQHCs that are owned/operated by either local tribes or government agencies are not required to submit IRS Form 990, hence, they were not included in this study. Further, observations with total margin ±5 standard deviations from the mean per year were dropped. The final analytical sample had 1015 FQHCs per year.

Variables

The dependent variables were clinical performance measures – diabetes and hypertension management, and a financial performance measure – total margin. Patient health outcomes such as diabetic and hypertension management measures focus on intermediate health outcomes such as how well a patient's hypertension or diabetes is maintained. For example, if higher proportion of FQHC's hypertensive patients can maintain their blood pressures within optimal range, it is believed that there will be fewer heart attacks in the long run. We used hypertension and diabetes management as those two are the most common purposes of outpatient visits (Chobanian et al., 2003). They are also the predominant risk factors for cardiovascular diseases that can be managed (Shelley et al., 2011). Moreover, diabetes mellitus is a risk factor for future complications, such as retinopathy and end-stage renal disease (Emanuele *et al*., 2005; Leung, Vargas-Bustamante, Martinez, Chen, & Rodriguez, 2018). Specifically, clinical performance measures included percentage of patients, 18 years and older, with diagnosed diabetes who had hemoglobin A1c lower than 9 percent and percentage of patients, 18 years and older, with diagnosed hypertension whose blood pressure was less than 140/90 during the measurement year.

Total margin, an indicator of financial performance, was generated by dividing net income to total revenue ($\frac{\text{total revenue} - \text{total expense}}{\text{total revenue}}$).

The independent variable was the IOR status of FQHCs, such as none – those that chose not to participate in any type of IORs (0), horizontal (1), vertical (2), and hybrid (3) those that reported both horizontal and vertical IOR types.

Control variables were aggregate patient-level and organizational-level characteristics. The patient-level characteristics were comprised of patient payer mix (Medicare, Medicaid, private pay, or uninsured), percentages of race/ethnicities (White, Black, Hispanic), and percentage of patients who live below the 100% federal poverty level. Organizational characteristics were location (1=urban, 0=rural), number of total patients, and number of service sites.

Analysis

Generalized estimating equation model with year and state fixed effect was performed with two clinical measures and one financial measure, separately. Year fixed effects were included to control for any temporal effects, and state fixed effects to control for different state funding sources and governance structures. Significance level of 0.05 was used in evaluating the statistical tests. Stata 16 was used for data management and statistical analyses.

Results

In this national sample of federally qualified health center patients, nearly 80% of the patients with a reported diagnosed of diabetes maintained their hemoglobin A1c level lower than 9 percent (see Table 1). However, only 38% of the patients with a reported diagnosed of hypertension showed maintained blood pressure level less than 140/90 (adequate control). Overall percentage of patients without any health coverage averaged around 34% during the study period. During the same period, majority of the patients were insured by Medicaid (35%). While racial

mix varied based on FQHCs in different states, Whites represented a high minority of the patient population at 43%. Almost half of the FQHCs' patients lived below the poverty line.

As reflected in Table 2, around 21% of FQHCs participated in horizontal networks, whereas only 4% of FQHCs participated in a vertical network. FQHCs that participated in both were around 9%. FQHCs that reported vertical network participation compared to those with no participation were associated with higher levels of diabetic control (4.6%). Likewise, FQHCs that reported participation in hybrid networks, compared to those with no participation were associated with higher levels of diabetic control (3%). Similarly, management of hypertension yielded partial association with vertical network participation of FQHCs compared to the ones with no participation (5%). Total margin was not associated with any type of IOR strategies.

Among control variables, FQHCs located in urban areas compared to rural areas showed high levels of diabetic control (3.4%). Further, FQHC size (operationalized by number of delivery sites) was associated with improved diabetic management and hypertensive control.

Discussion

The purpose of this study was to examine whether IOR strategies were associated with FQHCs' clinical and financial performances. Our analysis found that the specific type of IOR strategy was significant in regard to FQHC's clinical performance measures. However, none of the IOR strategies were associated with the FQHCs' financial performance. Vertical integration of FQHCs was found to improve clinical performance as it related to diabetes and hypertension. A vertical IOR strategy involves working with other healthcare providers like hospitals and nursing homes to provide greater care, support, and resources to the patients. This collaboration can help improve care transition and coordination for the FQHCs' patient population, which supports why FQHCs who were engaged in an IOR vertical strategy reported better clinical performance. Furthermore, while the hybrid IOR strategy (vertical and horizontal) was associated with outcome improvements for patients with diabetes, the horizontal IOR strategy alone was not associated with improved clinical performance. A potential explanation could be how these relationships are typically formed. Vertical relationships are more likely to include provider organizations from the local community, whereas horizontal relationships are more likely to include entities outside of a community (Hearld *et al.*, 2018). For FQHCs, community orientation is important for identifying local needs and resources, which may explain why vertical IORs are associated with improved patient outcomes and horizontal IORs are not.

We found no significant relationship as it related to the FQHCs' financial performance (i.e., total margin) and any of the IOR strategies. This may be due to that over the time of this study, FQHCs benefited from two major changes that affected approximately two-thirds of the FQHCs' funding (Rosenbaum, Sharac, Shin, & Tolbert, 2019). The first was Medicaid's special payment rules to support health centers and second the establishment in 2010 of the Community Health Center Fund (CHCF) under Section 330 of the Public Health Service Act. According to Rosenbaum, *et al.* (2019), from 2010 to 2017, FQHCs' Medicaid revenue increased 97%, adjusted for inflation, which was the result of an increase in Medicaid patients served following implementation of Medicaid expansion and not per-patient cost escalation. Second, the creation of the CHCF is used to supplement FQHCs' Section 330 annual appropriation funding. These two

revenue streams increased Section 330 health center grant funding from $2.2 billion in 2010 to $5.6 billion in 2019 (Rosembaum, *et al*. (2019) providing FQHCs with additional financial security that had previously been lacking. As such, FQHCs may have been less likely to engage in IOR strategies to maximize financial performance but instead focused on IOR strategies to further their mission of providing care and advancing health policy priorities.

Regarding the organizational variables, FQHCs located in urban areas were found to be associated with improved diabetes care. This may relate to the abundance and munificence of the other urban community partners providing for more opportunities and resources for developing and maintaining partnerships and collaborations. The second organizational variable that was significantly associated with improved clinical performance (diabetes and hypertension) was the prevalence or total number of FQHC delivery sites. It is the presence of FQHCs and their ability to interact with the community that can make an impact for population health.

There are several limitations related to this study. First, our analysis was limited to FQHCs and their reported IOR strategies which may not be generalizable to other types of healthcare providers. Future research could build on our findings by examining these IOR strategies among other healthcare providers, such as, critical access hospitals. Second, we only assessed the types of IORs that were available in the UDS and there may be other types of IORs that are available to FQHCs (e.g., hospitals, home health agencies, accountable care organizations) in recent years. Likewise, our measures of these relationships were limited to dichotomous indicators and do not fully reflect the depth and breathe of these relationships within each strategy type. Third, the UDS data was self-reported, and its accuracy cannot be confirmed. Despite these limitations, this study reflects the most comprehensive data available on FQHCs and their IORs.

Conclusion

The Bureau of Primary Health Care (BPHC), which administers the FQHC program, has specifically encouraged FQHC integration with other entities in the hope that these efforts will be helpful in FQHCs' efforts to maximize service value and reduce costs, consistent with the benefits of integration found in other areas of the health care industry (Conrad & Shortell, 1996; Kaluzny, Zuckerman, & Rickets, 1995; Goldsmith, 1994; McAlearney & McAlearney, 2006; Robinson & Casalino, 1996). The purpose of this research was to examine if associations existed between FQHCs' IOR strategic decisions and their reported clinical and financial performances. While we found no significant relationship as it related to financial performance, we did find positive associations between specific IOR strategies and better reported patient outcomes.

The problematic environmental threats, such as funding uncertainties, cost containment pressures, and demands for improving quality are going to continue to grow and force health care organizations to examine new ways of doing business. In other words, organizations, such as FQHCs will need to explore and implement strategies to more efficiently and effectively deliver patient care. FQHCs play a critical role in delivering care to medically underserved populations (Forrest & Whelan, 2000; Politzer, Regan, Shi, Starfield, & Xu, 2003), and are on the front line for providing primary care, preventive services, and chronic disease management to low-income individuals (Sharac, Shin, & Rosenbaum, 2015). IORs provide an opportunity for FQHCs to best

use their limited resources to improve care for the patient population they serve (Doz & Hamel, 1998; McAlearney & McAlearney, 2006; Weiner, Savitz, Bernard, & Pucci, 2004).

This study's findings provide insight into how FQHCs can effectively use IORs to improve population health. Regardless of the IOR form, the general goals of collaboration remain the same and include improved patient outcomes, increased patient satisfaction, more efficient use of resources, and increased access to appropriate services by reducing treatment seeking barriers (Blount, 2003; James & O'Donohue, 2009). This study contributes to the existing FQHC IOR literature by showing that specific IOR strategies are associated with improved clinical performance.

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Table 1. Descriptive analysis of the sample (N=1,015 organization)

Variables	Mean / Percent	Std Dev
Clinical performance		
Diabetes (%)	79.09	18.39
Hypertension (%)	36.53	29.25
Financial performance		
Total margin (%)	4.92	10.94
Interorganizational relationship status		
Horizontal	1,672	20.58
Vertical	344	4.23
Both	719	8.85
None	5,390	66.34
Organizational-level characteristics		
Total number of patient visits	58,771	79,373
FQHC service sites	7.18	8.40
Location		
Urban	9,072	92.61
Rural	724	7.39
Patient-level characteristics		
Patients with Medicare (%)	9.23	6.59
Patients with Medicaid (%)	35.26	19.45
Patients with private insurance (%)	16.72	12.99
Patients without insurance (%)	33.69	20.22
White patients (%)	42.46	30.22
Black patients (%)	19.44	24.35
Hispanic patients (%)	15.46	22.57
Patients below 100% FPL (%)	49.90	24.10

Abbreviations: FQHC – Federally Qualified Health Center; FPL – Federal Poverty level

Table 2. IOR status and clinical/financial performances in FQHCs

Variable	Clinical performance		Financial performance
	Diabetes	Hypertension	Total margin
Independent variables			
Interorganizational relationship status			
None	ref	ref	ref
Horizontal	1.208	1.021	-0.285
Vertical	4.571***	5.371*	-0.760
Both	2.895**	2.180	-0.043
Organizational characteristics			
Location (administrative)			
Rural	ref	ref	ref
Urban	3.414**	4.030	0.060
Total number of patient visits	0.001	0.001	0.001
FQHC service sites	0.074**	0.111**	0.005
Patient characteristics			
Patients without insurance (%)	ref	ref	ref
Patients with Medicare (%)	-0.076	-0.250*	0.066***
Patients with Medicaid (%)	0.013	-0.033	0.024
Patients with private insurance (%)	-0.050	-0.115**	0.021
White patients (%)	ref	ref	ref
Black patients (%)	-0.032*	0.040	-0.031**
Hispanic patients (%)	-0.008	-0.062**	-0.008
Patients below 100% FPL (%)	0.021	0.028	0.009

Abbreviations: FQHC – Federally Qualified Health Center; FPL – Federal Poverty level
* p <0.1, ** p <0.05, *** p <0.01