

Health centres and social determinants of health: an analysis of enabling services provision and clinical quality

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ABSTRACT

Objective It is well known that social determinants of health (SDOH), including poverty, education, transportation and housing, are important predictors of health outcomes. Health Resources and Services Administration (HRSA)-funded health centres serve a patient population with high vulnerability to barriers posed by SDOH and are required to provide services that enable health centre service utilisation and assist patients in navigating barriers to care. This study explores whether health centres with higher percentages of patients using these enabling services experience better clinical performance and outcomes.

Design and setting The analysis uses organisational characteristics, patient demographics and clinical quality measures from HRSA's 2018 Uniform Data System. Health centres (n=875) were sorted into quartiles with quartile 1 (Q1) representing the lowest utilisation of enabling services and quartile 4 (Q4) representing the highest. The researchers calculated a service area social deprivation score weighted by the number of patients for each health centre and used ordinary least squares to create adjusted values for each of the clinical quality process and outcome measures. Analysis of variance was used to test differences across enabling services quartiles.

Results After adjusting for patient characteristics, health centre size and social deprivation, authors found statistically significant differences for all clinical quality process measures across enabling services quartiles, with Q4 health centres performing significantly better than Q1 health centres for several clinical process measures. However, these Q4 health centres performed poorer in outcome measures, including blood pressure and haemoglobin A1c control.

Conclusion These findings emphasise the importance of how enabling services (eg, translation services, transportation) can address unmet social needs, improve utilisation of health services and reaffirm the challenges inherent in overcoming SDOH to improve health outcomes.

INTRODUCTION

It is well known that social determinants of health (SDOH) such as poverty, education, transportation and housing are more important predictors of health outcomes than biology, genes, behaviour or medical care.^{1–3} Further, these determinants are complex and often co-occur among populations and

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Health centres offer enabling services, which seek to address non-clinical barriers to care and increase use of health centre services.
- ⇒ Patients of health centres in areas of higher deprivation use more enabling services, and health centres in areas of higher deprivation have better clinical quality process performance for some measures.

WHAT THIS STUDY ADDS

- ⇒ After adjusting for service area deprivation and other patient and organisational differences, health centres with higher patient use of enabling services perform significantly better on most clinical process measures but not the clinical quality outcomes.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Better clinical process performance by health centres with higher utilisation of enabling services shows that enabling services can help health centres address cold spots and mitigate some effects of social determinants of health.
- ⇒ More research is needed to determine why increased use of enabling services improves process quality measures but not outcome quality measures and how staffing, funding and organisational capabilities, along with service area deprivation, influence these findings.

within neighbourhoods previously referred to as 'cold spots', defined as communities 'that do not provide the essential opportunities for health: safe sidewalks, good air quality, social integration, grocery stores, education, employment, public health'.⁴ Improving health outcomes in these cold spots requires population health interventions (both clinical and non-clinical) that address issues such as housing and food insecurity, language translation and transportation.^{5–7} One successful care delivery model that addresses social determinants and their role in the health of populations living in cold spots is Community Oriented Primary Care (COPC). This model, wherein providers consider themselves



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responsible for the health of the community as a whole, was first introduced in the USA in the 1940s. Current COPC models integrate concepts from both public health and primary care and focus on addressing community-level determinants such as education, employment and housing to improve the health of the community.⁸ Full implementation of the COPC model requires data-driven identification of a community-level problem, intervention implementation and ongoing evaluation.⁹ The potential of effectively delivering this care model, particularly in a standardised way, has evolved with the advent of the electronic health record, readily available and accessible data, and innovative geospatial tools.^{9 10}

The health centre movement in the USA, embodied by the Health Resources and Services Administration's (HRSA) Health Centre Programme, is built on the same principles that guide the COPC model. HRSA-funded health centres (henceforth referred to as health centres) are Federally Qualified Health Centres (FQHCs) receiving HRSA funding through Section 330 of the Public Health Service Act. Health centres serve the most vulnerable populations regardless of patients' ability to pay and, in 2018, were nested in communities with higher proportions of racial/ethnic minorities (63%), poverty (91% at or below 200% federal poverty guideline, FPG) and Medicaid (49%) or uninsured (23%) patients. Nationwide in 2018, nearly 1400 health centre organisations served over 28 million patients at approximately 12 000 service delivery sites.¹¹ This programme further exemplifies the COPC model by focusing on SDOH and community-oriented care, including their use of community and patient governing boards.^{12 13}

One way that health centres address potential barriers posed by SDOH is by providing enabling services. Enabling services are non-clinical supports, including transportation, interpretation, case management, home visits, benefit counselling, health education and community outreach, intended to increase access to care and improve health outcomes.¹⁴ Each health centre offers enabling services to best address specific SDOH needs within a community, and these vary by health centre.¹³ While the services mentioned above, as well as food and housing supports, are among those offered, most health centre enabling services staff deliver case management and community education and outreach. Although health centres are required to provide enabling services,¹² they are often not reimbursed fully and funding for these services is often precarious.^{15 16} In fact, a recent survey showed that enabling services are among the first services health centres consider cutting when faced with budget issues.¹⁷ Having sustainable financial support for health centre enabling services is important, as research shows that addressing SDOH with enabling services further improves access to care and health outcomes as well as patient satisfaction across various healthcare settings.^{18 19}

Multiple studies have illustrated that providing access to transportation¹⁹ and translation services¹⁸ increases utilisation of preventive care and improves outcomes.

Wright *et al* found that screening for and subsequently providing housing for people experiencing homelessness reduced healthcare spending, increased primary care visits, reduced emergency department visits and even increased subjective well-being.²⁰ Research also shows that screening for food insecurity and making appropriate referrals improves health outcomes in children²¹ and adults.²²

Specific to health centres, researchers have found that patients who use enabling services are more likely to make visits, obtain routine checkups and receive influenza vaccinations.²³ Additionally, research shows that pregnant health centre patients receive prenatal care earlier and have better perinatal outcomes when they have access to enabling services.²⁴ Lastly, research shows that enabling services help reduce racial and ethnic disparities in healthcare access by removing the barriers these populations are most likely to face.²⁵

While research has shown the effectiveness of enabling services in terms of increased utilisation, better health outcomes and increased satisfaction, little is known about the relationship between enabling services and health centre clinical quality performance as it pertains to chronic condition management and preventive services. Our previous research found that health centres with higher levels of service area-level social deprivation, measured using an index composed of education, housing, poverty and race,²⁶ provided more enabling services and had better clinical quality process performance for some measures.²⁷ This led us to question whether enabling services have a mitigating effect on community-level social deprivation. Thus, we explore whether health centres with higher percentages of patients using enabling services have better clinical quality outcomes. More specifically, we test whether health centres with higher percentages of patients using enabling services perform better than expected for clinical quality measures after adjusting for patient, health centre and service area characteristics.

METHODS

Data

We used 2018 Uniform Data System (UDS) data for Health Centre Programme awardees.²⁸ Variables included two clinical quality outcome measures, including the percentage of hypertensive patients ages 18–84 with high blood pressure (BP) that is controlled (BP < 140/90 mm Hg) and the percentage of diabetic patients ages 18–74 with poor haemoglobin A1c control (>9%). We also explored ten process measures, including the percentage of patients 18 years and older with body mass index (BMI) documented and follow-up plan documented if BMI is outside normal parameters (BMI screening and follow-up plan for adults), the percentage of women ages 23–64 who were screened for cervical cancer (cervical cancer screening), the percentage of children 2 years of age who received age appropriate vaccines by their second birthday (childhood immunisation status), the

percentage of patients 50–74 years of age who had appropriate screening for colorectal cancer (colorectal cancer screening), the percentage of patients ages 21 and older at high risk of cardiovascular events who were prescribed or were on statin therapy (statin therapy), the percentage of patients ages 18 and older with diagnosis of ischaemic vascular disease (IVD) or acute myocardial infarction with aspirin or another platelet (IVD: use of aspirin or another platelet), the percentage of patients ages 12 and older who were screened positive for depression and had follow-up plan documented (screening for depression and follow-up plan), the percentage of patients ages 18 and older who were screened for yes tobacco and received cessation counselling intervention, the percentage of patients 5–64 identified as having persistent asthma and were appropriately ordered medication (use of appropriate medications for asthma), and the percentage of patients ages 3–16 with BMI percentile and counselling on nutrition and physical activity documented (weight assessment and counselling for nutrition and physical activity for children and adolescents). We controlled for variables reflecting differences in the patient population (the percentage of uninsured patients, the percentage of ethnic and racial minority patients, the percentage of patients ages 65 and older and the percentage of patients with hypertension), variations in health centre size (a categorical variable for ‘large’ health centres defined by health centres with greater than the median number of patients), and disparity of the surrounding community (weighted service area-level social deprivation, an index composed of education, housing, poverty and race variables, previously used by researchers to identify cold spots).²⁶ We selected performance and control variables and constructs based on previous research, and created a correlation matrix consisting of several variables that have been shown to influence health centre performance. Health centres were also stratified by quartile based on the percentage of patients using enabling services, which are defined as ‘non-clinical services that aim to increase access to healthcare, and improve health outcomes’.²⁵ Enabling services include visits for services such as language interpretation or translation, food and housing assistance, transportation, programme eligibility assistance, child care and case management.

Analysis

First, we calculated a service area social deprivation score for each health centre organisation, weighted by the number of patients (see online supplemental file for detailed methods²⁷). Next, we removed all health centres that were missing data for clinical quality measures (n=184). We removed health centres that received homeless funding (n=272) as they have significantly different patient characteristics than other health centres and many of these health centres had outlier values for clinical quality measures. Next, we used ordinary least squares to calculate adjusted clinical quality measures controlling for health centre patient characteristics, size and service

area characteristics. Finally, we performed an analysis of variance to compare clinical quality outcome and process measures across enabling services quartiles to determine whether health centres providing more enabling services had better performance for clinical quality measures.

RESULTS

Table 1 shows patient and organisational characteristics of 875 health centres sorted by utilisation of enabling services with quartile 1 (Q1) representing the quartile of health centres with lowest utilisation of enabling services and quartile 4 (Q4) representing the highest. Health centres with higher utilisation tended to be larger with more patients (22 462 patients in Q4 vs 13 557 in Q1), more full-time equivalents (63.8 medical FTEs vs 40.2 medical FTEs), and received larger grants through HRSA (US\$3.3M vs US\$2.4M). Social Deprivation Index (SDI) service area scores were also higher among health centres with higher utilisation of enabling services. When comparing patients in health centres with more utilisation of enabling services, patients were more likely to be between ages of 18–64 years old (compared with less than 18 or over 65), and most were racial/ethnic minorities (64.8% in Q4 vs 42.9% in Q1). More specifically, patients in health centres with high utilisation of enabling services were more likely to be (non-Hispanic) black (23.7% in Q4 vs 16.8% in Q1), (non-Hispanic) Asian (6.7% vs 2.8%), (non-Hispanic) Native Hawaiian/Other Pacific Islander (1.6% vs 1.1%) and Hispanic/Latino (36% vs 18.9%). Health centres with high utilisation of enabling services also had more patients who are best served in a language other than English (11.8% in Q1 vs 26.6% in Q4). Health centres with higher utilisation of enabling services had more patients that were uninsured (29.0% in Q4 vs 22.5% in Q1) or were on Medicaid (41.8% vs 39.3%) and were more likely to be serving patients of lower income with 64.8% at or below 100% FPG in Q4 vs 58.4% in Q1.

Table 2 displays health centre unadjusted clinical quality measures by enabling service quartile. For most of the clinical quality process measures, the unadjusted results show a linear relationship across enabling services quartiles—meaning that the health centres providing more enabling services performed better than health centres providing fewer enabling services. However, while health centres in the lowest quartile (Q1) for enabling services provision had the worst quality scores for all measures, health centres in the second or third quartile (Q3) for enabling services performed better than health centres in the fourth quartile (Q4) for several process measures, including lipid therapy for patients with coronary artery disease patients and use of appropriate medications for asthma, and for both outcome measures. The largest differences between the fourth and first quartile were seen in cervical cancer screening (9.0% difference between Q4 and Q1), child/adolescent weight assessment and counselling (8.5% difference), and childhood immunisations (8.1% difference). Taking a closer look

Table 1 Characteristics by enabling services quartile

	Q1 (lowest ES utilisation)	Q2	Q3	Q4 (highest ES utilisation)	All
# Health centres	219	219	219	218	875
Service area SDI	59.2	62.9	64.6	67.7	63.6
# Patients	13557	21884	23333	22462	20307
% Patients using enabling services	0	1.7	6.7	31.4	9.9
Age					
% Under age 18	26.9	28.4	28.3	25.8	27.3
% Ages 18–64	61.1	59.8	61.2	64.8	61.8
% Ages 65 +	11.9	11.8	10.4	9.4	10.9
Race/ethnicity and language					
% Racial/ethnic minority	42.9	52.3	55.4	64.8	53.8
% Non-Hispanic black	16.8	21.8	23.2	23.7	21.3
% Asian	2.8	3.4	2.4	6.7	3.9
% American Indian/Alaskan Native	3.8	3.5	3.6	1.9	3.2
% Native Hawaiian/Other Pacific Islander	1.1	0.7	0.8	1.6	1.1
% Hispanic/Latino	18.9	24.8	28.8	36.0	27.1
% Non-Hispanic white	59.3	49.0	46.6	36.9	48.0
% Best served in language other than English	11.8	14.8	19.3	26.6	17.6
Insurance status					
% Uninsured	22.5	21.9	23.6	29.0	24.2
% Medicaid/CHIP	39.3	42.8	42.3	41.8	41.5
% Medicare	12.6	12.2	11.0	9.9	8.8
% Other public (non-CHIP) and private insurance	26.4	22.9	22.7	19.0	22.8
Income					
% Below 100% FPG	58.4	61.3	62.9	64.8	61.9
% Below 200% FPG	86.9	87.7	89.0	90.0	88.4
Health centre costs, revenue and staffing					
Total costs per patient	US\$1049	US\$1050	US\$1083	US\$1256	US\$1109
Health centre service grant	US\$2 440 087	US\$3 438 692	US\$3 792 223	US\$3 459 671	US\$3 282 466
Medical FTEs	40.2	61.9	69.3	63.8	58.2
Enabling services FTEs	1.2	4.6	3.5	9.1	4.2

CHIP, Children's Health Insurance Program; ES, enabling services; FPG, federal poverty guideline; FTE, full-time equivalent; SDI, Social Deprivation Index.

at outcome measures, there were statistically significant differences across enabling services quartiles where health centres in the lowest quartile for enabling services performed the worst for both outcome measures.

Table 3 displays the adjusted values for clinical quality measures. After adjusting for patient characteristics (the percentage of uninsured patients, the percentage of ethnic and racial minority patients, the percentage of patients ages 65 and older and the percentage of patients with hypertension), health centre size and social deprivation, we found significant differences across enabling services quartiles for all process measures, with health centres in the highest enabling services quartile performing significantly better than health centres in

the lowest enabling services quartile for all measures except IVD patients use of aspirin or another antiplatelet. Similar to the unadjusted results, clinical quality process scores were mostly linear across health centre enabling services quartiles—though health centres in the second (Q2) or third (Q3) quartile performed better than health centres in the fourth quartile (Q4) for colorectal cancer screening, IVD patients use of aspirin or another antiplatelet, and tobacco use screening and cessation. While results were statistically significant for outcome measures, health centres with highest utilisation of enabling services did worse in controlling high BP (1.3% lower) and had more (2.2%) patients with uncontrolled diabetes. As in the unadjusted measures, the biggest differences across

Table 2 Quality measures by enabling services quartile

	Q1 (lower ES utilisation)	Q2	Q3	Q4 (higher ES utilisation)	Overall
Process measures (%)					
Body mass index screening and follow-up plan (adults)*	64.9	66.8	70.6	71.2	68.1
Cervical cancer screening***	46.8	52.3	55.1	55.8	52.2
Childhood immunisation status***	33.0	35.9	37.5	41.1	36.6
Colorectal cancer screening***	37.8	43.3	43.1	42.8	41.6
Coronary artery disease: lipid therapy*	79.4	80.7	82.1	81.9	80.9
Ischaemic vascular disease: use of aspirin or another antiplatelet**	78.6	80.9	81.1	81.8	80.5
Screening for depression and follow-up plan	68.5	68.8	71.4	71.9	70.0
Tobacco use screening and cessation intervention*	84.8	87.3	87.0	86.5	86.4
Use of appropriate medications for asthma**	83.9	86.4	87.0	86.6	85.9
Weight assessment and counselling for nutrition and physical activity for children and adolescents**	59.2	61.1	64.2	67.7	62.5
Outcome measures (%)					
Controlling high blood pressure (<140/90 mm Hg)*	61.7	62.8	64.2	63.1	63.0
Diabetes: haemoglobin A1c poor control† (HbA1c>9%)**	34.3	31.7	31.6	32.1	32.5

*p<0.05, **p<0.01; ***p<0.001.
 †Note that lower values for diabetes: haemoglobin A1c poor control (HbA1c>9%) indicate better outcomes.
 ES, enabling services.

Table 3 Adjusted quality measures by enabling services quartile

	Q1 (lower ES utilisation)	Q2	Q3	Q4 (higher ES utilisation)	Overall
Process measures (%)					
Body mass index screening and follow-up plan (adults)**	67.4	68.2	68.5	68.5	68.1
Cervical cancer screening***	50.5	52.6	52.7	53.1	52.2
Childhood immunisation status***	35.2	37.0	36.7	37.9	36.6
Colorectal cancer screening***	41.6	43.1	43.1	42.8	41.6
Coronary artery disease: lipid therapy**	80.6	80.8	81.0	81.3	80.9
Ischaemic vascular disease: use of aspirin or another antiplatelet**	80.6	80.7	80.5	80.1	80.5
Screening for depression and follow-up plan**	69.5	69.8	70.2	70.6	70.0
Tobacco use screening and cessation intervention**	86.3	86.7	86.4	86.0	86.4
Use of appropriate medications for asthma**	85.6	85.9	86.0	86.2	85.9
Weight assessment and counselling for nutrition and physical activity for children and adolescents***	61.0	62.8	63.3	63.8	62.5
Outcome measures (%)					
Controlling high blood pressure (<140/90 mm Hg)***	63.4	63.3	63.0	62.1	63.0
Diabetes: haemoglobin A1c poor control (>9%)***	31.7	31.6	32.5	33.9	32.5

***p<0.01; ***p<0.001.
 ES, enabling services.

quartiles are seen in child/adolescent weight assessment and counselling (2.8%), childhood immunisations (2.7%) and cervical cancer screening (2.6%).

DISCUSSION

The patient characteristics associated with health centres providing more enabling services suggest these health centres serve racially and ethnically diverse communities and serve larger percentages of medically underserved populations as indicated by higher SDI, rates of uninsured or Medicaid patients, and proportion of patients with incomes below FPGs. Despite this, health centres with highest utilisation of enabling services indicated statistically significant improvements in clinical quality measures. These measures can be grouped by preventive screening measures (adult BMI screening and counselling, child/adolescent weight screening and counselling), adherence to clinical guidelines for treatment (lipid therapy, appropriate use for aspirin, appropriate medications for asthma, childhood immunisation) and cancer screening (cervical and colorectal). Improvements in clinical diabetes outcomes were significant in bivariate and multivariate analyses. After adjusting for characteristics that may be attributed to economies of scale such as the size of health centres and controlling for patient characteristics and community factors reflected in SDI, health centres with high utilisation of enabling services demonstrated statistically better performance in 8 of the 10 process measures but worse performance in outcome measures.

Previous research on process measures²³ suggests that health centres are mitigating some effects of SDOH and contributing to health equity by using enabling services.²⁵ Enabling services focus on a community's unique assets and vulnerabilities and can help address cold spots, as exemplified by the COPC model.⁸ Addressing these cold spots, rather than individual high-risk patients, has been shown to better improve health outcomes. These findings emphasise the importance of how enabling services (eg, translation services, transportation) can address unmet social needs and improve utilisation of health services. While health centres have been offering enabling services for decades, an increasing number of other types of organisations are also offering non-clinical supports.^{15 29} These programmes, which currently have limited research on clinical outcomes,²⁹ could look to the Health Centre Programme as a model which successfully offers services to address non-clinical barriers to care. Further, this research supports a broader view of clinical care that includes non-clinical solutions (ie, enabling services that address SDOH) for addressing self-management if true improvements in clinical outcomes are to be achieved.³⁰

As mentioned above, even when controlling for size differences, disproportionate representation of certain conditions, and sociodemographic differences in the patient population and surrounding communities across health centres, health centres with high

utilisation of enabling services showed worse performance in controlling hypertension and diabetes. These findings suggest enabling services may have a stronger positive correlation with process measures than with outcome measures. It is unlikely that enabling services have a detrimental effect on outcome measures, and more plausible that enabling services are unable to attenuate the poorer outcomes in more vulnerable populations.²⁷ This is not surprising, as health centres are intentionally nested in communities of greatest need. Furthermore, we were unable to account for the temporal aspects of the dynamic relationship between enabling services provision and measures of health outcomes given the cross-sectional nature of the UDS. More research is needed to better understand how structural measures such as staffing mix or organisational capabilities, clinical process measures and clinical outcome measures are related.

There were a few limitations in this study. While data on FTEs in enabling services were available, we did not have data on patient utilisation of enabling services, meaning that we know if patients were using some type of enabling service but do not have details on the type of enabling service being provided. Improving data granularity to capture utilisation (patients or visits) of specific types of enabling services provided would allow researchers to measure the mitigation efforts of providing enabling services on SDOH. This research was limited to less than 80% of all health centres due to missing data and elimination of health centres with only homeless funding. Future research ideas include examining which enabling services have the most impact on quality, whether the provision of enabling services impacts quality in health centres in or next to public housing facilities, and what geographical variation, if any, exists in the impact of enabling services on quality. Further, exploring the impact of enabling services for health centres with homeless funding is an area of future inquiry. An additional limitation is related to how enabling services utilisation are defined as patients receiving care from enabling services providers, which in some cases are referrals for housing or food assistance. There are no data related to whether patients followed through on the referral and received those services.

This research provides further evidence on the effectiveness of enabling services, both in addressing SDOH and in improving health outcomes. Yet, health centres face many difficulties in funding these services. While research shows that the provision of enabling services saves money long term,²⁰ enabling services are not adequately funded.^{12 13 15 31} In fact, enabling services are the first programmes cut during financially difficult times.^{17 32-34} This study provides insights to address the importance of enabling services and their financial sustainability.

HRSA currently supplements the provision of enabling services through the HRSA National Training and Technical Assistance Partners programme, which supports health centres in several areas including working with individuals and families experiencing housing insecurity and targeted support for underserved populations and

the social insecurities they may encounter. Beyond this, while some health centres were primarily established as community supports, others have turned to creative ways to fund enabling services, including cross-sector collaborations.³⁵ Health centres are successfully partnering with food banks, grocery stores,³⁶ supportive housing providers³⁷ and local transit systems³⁸ to deliver enabling services. Enabling services can continue to assist health centres in serving the most vulnerable populations, addressing cold spots and delivering community-oriented primary care, all of which reduce overall healthcare spending and contribute to the overarching goal of health equity.^{23 39}

CONCLUSION

As demonstrated, health centres with higher utilisation of enabling services demonstrate statistically significant improvements in process measures. The higher utilisation of enabling services also allows health centres to address cold spots and mitigate some effects of SDOH by promoting health equity. These key findings underscore the importance of enabling services, especially in communities with the highest need.

Even though current reimbursement policy for providing enabling services is lacking, health centres understand the value of providing enabling services due to their ability to positively influence patient health outcomes. Financial support provided to FQHCs in the form of 330 grant dollars are particularly important to help offset the cost of enabling services for health centres with less financial support and less profit.

By using the Health Centre Programme as a model, the case for long-term, sustainable financial support of enabling service programmes is one of the many elements needed in order to improve the health of the most vulnerable populations and start addressing health inequities. Future research is needed on the influence of staffing, funding and organisational capabilities on clinical outcomes in the most vulnerable communities.

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