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Strategies to Improve Chronic Disease Management in Seven Metro Boston Community Health Centers

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Abstract

Background—The Community, Health Center, and Academic Medicine Partnership Project (CHAMPP) is a partnership between medical researchers, community health centers (CHCs), and a community advisory committee focused on reducing cardiovascular morbidity related to hypertension and diabetes for non-Hispanic Black and Hispanic populations in Boston, Massachusetts.

Objective—We conducted site visits at seven participating CHCs, located in Boston. The visits were to solicit health center staff opinions about site-specific barriers and enabling factors for optimum preventative cardiovascular care for racial/ethnic minority patients receiving hypertension and diabetes care at their centers.

Methods—Site visits included a tour of each health center and a series of directed interviews with center personnel. Site visit notes were reviewed to identify themes that emerged during the course of each site visit. A summary matrix was developed for each health center, which included information regarding the most salient and persistent themes of the visit.

Results—Site visits uncovered several patient-, provider-, CHC-, and community-based factors that either facilitate or hinder optimal care of chronic disease patients. Commonly referenced barriers included the need for improved patient adherence to provider recommendations; insufficient time for providers to address complex health issues presented by patients and the need for a broader range of healthier food options in surrounding communities. Interactive patient groups and community health workers (CHWs) have been well received when implemented.

Conclusion—Recommendations included adopting case management as a part of usual care for chronic disease patients; additionally, widespread implementation of CHWs may provide a platform for more comprehensive care for patients.

Keywords

Community-based participatory research; health disparities; health outcomes; cardiovascular diseases; diabetes mellitus; endocrine system diseases

Nationally, a higher proportion of patients from racial and ethnic minority groups suffer from hypertension or diabetes.^{1,2} Further compounding this disparity, existing cases of these chronic diseases are less likely to be adequately controlled among these groups relative to non-Hispanic

whites.³ For example, African-Americans and Hispanics are less likely to be aware that they are hypertensive, are more likely to have target organ damage, and have significantly higher diabetes and hypertension-related mortality compared with whites.^{2,4,5}

These issues are of particular concern for patients receiving care in publicly supported CHCs. Currently, CHCs are responsible for providing care for a substantial proportion of the more than 40 million uninsured Americans, many of whom are members of immigrant or minority groups that have been previously documented to receive poorer care and to have worse health outcomes.⁶⁻⁸

CHAMPP was developed in response to the persistent problem of disparities in health outcomes for racial minority groups relative to whites. CHAMPP is a collaborative initiative led by research staff of the Center for Community Health Education Research and Service (CCHERS) and investigators from Harvard Medical School's Department of Health Care Policy and Brigham and Women's Hospital. CHAMPP, a project guided by the principles of community-based participatory research (CBPR), also involves a close partnership between the academic medical research team, CHCs, and a community advisory committee that includes health center medical directors, nurses, and community stakeholders from the neighborhoods served by those health centers. In addition to investigating the reasons why these disparities persist, the goal of CHAMPP is to develop pragmatic approaches to reducing the heavier burden in prevalence and severity of these conditions within Boston's minority neighborhoods. In an effort to better facilitate this process, we conducted site visits at seven participating health centers located in four metro Boston neighborhoods.

Site visits were used to foster a more open channel of communication between academic researchers and CHCs and to create a greater understanding of the challenges faced by health centers in reducing disparities in cardiovascular care and outcomes. Additionally, these visits allowed the research team and advisory committee to learn firsthand about the neighborhood in which each center is located, and to examine the physical plant and the organizational structure of the centers, gathering information that will serve as a basis for tailored future interventions within participating communities. This paper aims to describe the patient, provider, health center, and community factors identified as either improving or hindering the proper care of patients with hypertension and/or diabetes within these communities. From the information gleaned from our site visits, we offer specific recommendations regarding potential strategies that may help to enhance care of health center patients in these communities.

Methods

Advisory Committee and Key stakeholders

One of the strategies used to ensure community input within CHAMPP was the formation of an advisory committee. This committee is composed of health professionals with personal knowledge of these communities and their specific health-related challenges. Advisory committee members were identified most commonly via recommendation from CCHERS and selected based on their interest in developing strategies to reduce racial and ethnic disparities in hypertension and diabetes within their communities and their willingness to commit the time necessary to meet at least biweekly during the planning phases for year 1 of the grant and bimonthly during the steady states of the project period. All members of the advisory committee reviewed and helped to develop the project's aims and methods.

At the beginning of the funding period, members of the advisory committee were asked to identify members of community-based advocacy organizations and community-based health organizations with the four Boston neighborhoods that are key stakeholders in improving the outcomes of diabetes and hypertension within these communities. At the end of each 3-month

period throughout the course of the project, information regarding the development of CHAMPP initiatives is formatted into the quarterly reports. Each key stakeholder, identified by the advisory committee, is sent a copy of the most recent quarterly report along with a self-addressed, return envelope, and is asked to return written comments about results reported in the quarterly report and their thoughts about additional activities that should be conducted by our collaborators. To date, however, only two individual community key informants (more than sixty quarterly reports have been mailed) returned mailings and one other spoke with investigators via phone. The majority of community-level input obtained for this project has been from representatives on the advisory committee, including input instrumental in helping CHAMPP to identify sites appropriate for study, as well as offering interval feedback regarding the feasibility of the potential recommendations that have emerged from several sources of information gathered during CHAMPP initiatives, including site visits.

Site Visits

Site visits were informal, information-gathering sessions conducted at health centers in which key personnel (e.g., administrative staff, nurses, physicians) gave their perspectives on the state of their center with regard to overall management of diabetes and hypertension among their patients. Based on feedback from the CHAMPP advisory committee, we determined that conducting a series of half-day site visits to each CHAMPP-participating CHC would be the most practical method of obtaining information regarding each center's barriers and enabling factors to providing optimal preventative care for patients with hypertension and diabetes. The structure and goals of each site visit were decided upon during a series of meetings between research staff and advisory committee members before scheduling the first site visit. The primary goal of our site visits was to determine whether the most salient barriers to chronic disease management in each center were a function of internal or external factors. Additionally, we sought to identify resources currently available to centers that could potentially reduce these barriers.

Site visits were conducted over a 9-month period between April 2007 and January 2008. Table 1 compares key socio-demographic variables for each of the participating health centers. Each CHC appointed a primary contact responsible for coordinating with the CHAMPP research team to schedule a visit. Site visits were completed over the course of 1 day and had an average duration of 3 hours. Each site visit included a tour of the center and a series of directed interviews with key center personnel identified by the primary contact. The format of each set of interviews was determined by the center's primary contact to meet the daily work flow needs of each center, with five of seven centers opting for a series of 20-minute individual interviews between center staff and administrators and the CHAMPP representatives. In the remaining centers, CHAMPP representatives conducted group interviews with physicians and medical directors during a designated physician conference, in addition to individual interviews with the executive directors and the nonphysician staff members.

For each CHC, we requested an interview with the executive director, an adult medicine physician, the individual(s) most intimately involved with case management of chronic disease patients, a social worker involved with these patients, a representative from patient billing or appointment scheduling, and the person(s) responsible for coordinating patient referrals. In addition, some health centers provided additional employees including nutritionists, nursing supervisors, medical directors, and pediatric physicians to give a more comprehensive view of center practices; each participating center provided the requested personnel. Site visit interviews were designed to encourage free-flowing dialogue and structured interview guides were not used; however, targeted questions were asked of each executive director. All executive directors were questioned regarding the department(s) most responsible for each center's care of hypertensive and diabetic patients, as well as internal and external logistical challenges

facing each of these departments. Subsequent interviews with health center personnel were used to confirm and add further detail to information presented by executive directors. In the vast majority of cases, barriers presented by staff were consistent with those mentioned by executive directors. CHAMPP representatives present for each site visit included one of the academic co-investigators, a representative from CCHERS, the project director, and at least one member from our community advisory committee. This study was approved by the Harvard Medical School Human Subjects Committee as well as the internal review boards of each of the participating CHCs.

Analysis

At each visit, the CHAMPP project coordinator and a CCHERS representative took separate, detailed notes of all directed interviews. After each site visit, the site visit team reviewed notes until a consensus statement regarding information from each set of directed interviews was reached.⁹ Site visit notes were then electronically reviewed by advisory committee members and discussed during biweekly meetings to determine recurrent themes. Special emphasis was given to factors mentioned in more than one interview at a health center. Advisory committee members were particularly helpful in using their knowledge of the centers and surrounding neighborhoods to develop individualized summary matrices for each participating health center, categorizing themes as falling in one or more of the following areas: patient based, provider based, health center based, or community based. Table 2 provides a summary of the relative frequencies of the most prevalent hypertension- and diabetes-related disease management barriers and enabling factors identified during site visits.

Findings

Patient-Based Factors

Site visits suggest that our participating CHCs are experiencing rapid growth in their patient populations; consequently, they are attempting to increase resources to appropriately provide for these patients. However, this growth brings a higher volume of patients with complex lists of both health issues and habits that can serve as challenges to improving care and outcomes.

Health professionals mentioned several patient-based factors that affect care. Each center acknowledged that their patients struggle with adherence to prescribed therapies from their physicians. Problems with adhering to recommended care that were discussed ranged from spotty medication and dietary adherence to high “no show” rates for scheduled appointments.

Providers at many centers also identified low patient health literacy as an issue that plagued each of the communities. Several providers stated that a lack of understanding regarding the true nature of their chronic disease has in part contributed to adherence patterns discussed. In specific reference to dietary adherence, six of the seven centers suggested that their patients' incomes could not keep up with the rising prices of healthier foods; therefore, even when patients want to make positive dietary changes, these changes would be difficult to afford. At least half of the centers noted that patients, particularly immigrant populations, adhere to cultural beliefs about management of their chronic illnesses that are often incongruent with their prescribed regimens. At times, patients are reluctant to work with providers to find a regimen that would not be in conflict with their cultural beliefs, choosing instead not to follow clinicians' recommendations.

Other patient-based factors affecting care that were mentioned in site visits include an overwhelming sense of depression among some patients when they were diagnosed with a chronic disease, a lack of health insurance, unresolved social issues, inadequate family supports, and unreasonable expectations of provider capabilities and limitations. Despite these

challenges, centers have identified strategies that seem to be effective in improving patient care.

Centers reported that interactive patient groups seem to promote increased patient awareness about their chronic disease and strategies to improve their health outcomes and that promoting existing groups aggressively to patients newly diagnosed with a chronic disease may serve to increase understanding and interest earlier, further improving chances for proper maintenance habits. One center stated that making a point of focusing on teaching strategies to help patients with their self-management—primarily supervised supermarket visits and culturally sensitive cooking classes—between visits has really shown promise in improving the productivity of patient visits.

Provider-Based Factors

Patients with low health literacy in a CHC can reduce the effectiveness of the entire system. Thus, in addition to existing efforts to increase patient knowledge and awareness, several interviewed providers recognized the need for innovative educational techniques more appropriately tailored for their population. However, providers also noted that their ability to serve as effective educators is hindered by the diversity of the patient population with regard to languages and cultural norms with which providers are often unfamiliar. Although some participating CHCs have sought to reduce language barriers by hiring a more diverse staff, none mentioned training to improve the cultural competency of current staff.

Interviews also suggested that providers are often overwhelmed and have a difficult time keeping up with the complexity of individual patients' needs given the relatively short time available to spend with each patient. To address this issue, several participating CHCs (five of the seven) have employed one or more elements of a team for chronic disease patients, commonly consisting of a nutritionist or dietitian and in some instances a dedicated case manager. However, four of the centers suggested that communication between members of these teams is suboptimal.

Providers have also noted a need for an increased focus on the blood pressure control of their patients. Owing to time constraints, providers are forced to deal primarily with the presenting physical complaints of their patients, leaving little time to address and optimize management of chronic conditions such as hypertension and diabetes. In addition to employing a team model of care, two of the participating centers were able to obtain funding to hire and train CHWs to facilitate communication between provider and patient and to conduct visits with patients outside of the CHC to address patient barriers to adherence to therapy and provider recommendations, including reviewing appropriate dietary habits. Both centers reported, however, that the funding was limited to address only diabetic patients and were not currently aware of mechanisms to maintain the CHWs beyond the immediate funding period.

Health Center–Related Factors

The most common barrier to care reported in our site visits was a lack of sufficient staff (clinicians, nurses, and administrative support staff). All seven centers referred to difficulties attracting new employees, many suggesting that the salaries offered often do not compare favorably with those at other health institutions. Centers reported that being understaffed often leaves existing staff overburdened. Two centers reported temporarily close their panels to new patients because of this burden, coupled with increasing patient populations.

Several providers agreed that the lack of a pharmacy in some of the centers, or inadequate resources available in on-site pharmacies contribute to suboptimal medication adherence for some patients. In addition to sending some patients elsewhere to purchase their medication,

patients also have to be referred to larger hospitals to receive specialty treatments. Centers reported that, for some referrals, patients often have tremendously long wait times for these services, sometimes as a function of patients' insurance status. Nonetheless, participants agreed that these specialty services are almost always available for their patients.

Each of the centers has reported implementing a number of innovative programs to assist patients with chronic disease, ranging from supervised supermarket visits for interested patients to exercise programs for younger, at-risk patients. Many of these initiatives reflect an increased focus on community outreach, which was a common thread during site visit interviews. Other encouraging practices commonly found in centers include the existence of quality improvement committees and a community advisory board at one center, both structures that offer formative evaluation of ongoing projects and initiatives.

Community-Based Factors

CHCs reported that communities surrounding them play a large role in either promoting or hindering optimal health habits for patients. Center staff in three out of four participating neighborhoods suggested that patients often do not feel safe coming to the center for visits in the evening or that patients do not feel safe exercising in available neighborhood parks. Respondents in two of the participating CHCs reported that gunshots have been fired in the immediate environments of their centers and felt such events can be detrimental to workforce retention and scares patients from coming to the center.

Clinicians and dietitians repeatedly stated that, despite their best efforts at increasing patient knowledge surrounding proper nutritional choices, the lack of availability of fresh fruits, vegetables, and other healthy options in local neighborhood markets frequented by health center patients undermines their efforts. Access to high-quality food is also hindered by the lack of efficient public transportation. Furthermore, the high accessibility of low-cost fast food chains in surrounding areas also competes with the recommendations of many providers.

Discussion

We used semistructured directed interviews of health professionals at seven metro Boston CHCs to provide insight regarding barriers to optimal care for hypertensive and diabetic patients. Additionally, we sought to identify strategies perceived to be most effective in addressing those barriers. Among the list of obstacles to proper disease management most commonly mentioned were patient struggles with adherence to recommended therapies, insufficient time for providers to spend with patients, and the lack of readily available, healthy food options in the areas surrounding CHCs.

Participants across centers suggested that patient non-adherence was the largest patient-centered challenge to improved management of hypertension and diabetes at their CHCs. Similarly, a recent study of providers within 72 Midwestern CHCs discovered that successfully adopting the overall lifestyle modifications associated with optimal management of hypertension was consistently a problem for their patients.¹⁰ Some strategies have shown promise in reference to improving hypertensive/diabetic patients' adherence to recommended therapies in the setting of CHCs; among the most successful of these has been the introduction of CHWs to assist patients.^{11,12}

In specific reference to diabetic patients, documented literature suggests that CHWs were particularly effective at demonstrating how to make diabetes self-management pragmatic.¹³ Two of our participating centers have employed and applauded the efforts of trained CHWs with well-controlled diabetes, to serve as liaisons between diabetic patients and health center personnel, identifying and voicing patient suggestions regarding practices that would improve

diabetic care within centers. To date, these suggestions have been in large part related to improving availability of helpful services, such as patient-based group sessions, clinic sessions, and the adoption of innovative nutritional strategies. However, in these centers, CHWs lack information regarding the clinical interaction with either patients or providers. Whether an expansion of the role of these workers to include reinforcement of clinical recommendations would have a positive effect on outcomes of patients in these centers is unclear, but plausible considering the effectiveness of workers in their current role in addition to the effectiveness of similar programs in the literature.

Several providers interviewed described feeling overwhelmed by the combination of patients with several complex health issues and insufficient time to address all of those issues adequately. Time constraints among providers in primary care are not a new phenomenon in health care nor are they unique to CHCs. One study determined that to fully satisfy the US Preventive Services Task Force recommendations, 7.4 hours per working day are needed for the provision of preventive services.¹⁴ In an additional study of management of ten common chronic diseases including hypertension and diabetes, they estimated that if diseases were poorly controlled proper management could require up to 10.6 hours per day.¹⁵ These studies cumulatively suggest that optimal prevention and management of patients with poorly controlled chronic disease would take up to 18 hours a day. Further compounding this issue for CHC providers is the burden of fewer resources, which may be manifest in the form of less available support staff.¹⁶

Clinicians at some of these CHCs reported having a team of workers that can offer a comprehensive set of services to patients and ease the burden placed on physicians, provided that all members of the team are valued equally and communicate effectively. Many of the core functions of case management—assessment, planning, linking, monitoring, advocacy—have proven to be effective in improving outcomes for chronic disease patients in addition to improving the effectiveness of patient–provider communication.^{17,18}

The final of the most commonly mentioned factors affecting care of patients referenced within our directed interviews concerned the lack of readily available food options for chronic disease patients in the areas surrounding the communities in which patients live. This assertion is supported by a previous study that determined that low-income and minority neighborhoods are significantly less likely to have supermarkets within them relative to middle income or nonminority neighborhoods.¹⁹ Furthermore, even in minority communities where supermarkets were available, the selection, quality, availability, and price of fresh fruit and vegetables were less desirable than in nonminority communities.²⁰ Interventions aimed toward improving the quality of nutritional intake within these communities have encountered varied levels of success; however, the most successful among these seemed to focus on increasing the availability of fruits and vegetables to patients.^{21,22}

Additionally, health center professionals consistently spoke of their lack of resources as being the primary barrier in the process of implementing new programs aimed more toward primary and secondary prevention of chronic disease. Although we acknowledge that rectifying this issue is a complicated matter, aggressively pursuing research partnerships with organizations with more established infrastructure may assist CHCs in the continued expansion of their services.

CBPR, and in particular this study, is not without limitations. Chiefly, there is a level of recall bias that is inherent in any type of retrospective interview; health care professionals may feel compelled to portray their CHC in a positive light. Furthermore, more recent interactions with patients may have a greater impact on the recollection of providers. However, we feel that the risks of this bias having a significant effect on the results of this study are relatively low and

that our study design was the most appropriate method of capturing the perceptions of our targeted groups. Additionally, because the nature of CBPR involves a partnership aimed toward improving outcomes in a specific community, it is difficult to know whether the results extracted from these site visits can be generalized to the larger population.

Principles of CBPR, in particular, front-end and continued advisement from community stakeholders, have shown significant promise in addressing incompletely understood health disparities in chronic disease. The use of individuals invested in the community and trusted by community members provided the CHAMPP group with insight that proved invaluable in the planning stages of this project and continue to be helpful during the implementation of targeted interventions. Although CBPR is not without its drawbacks, most notably, frustration associated with expanding timelines, there is no doubt that it provides a clearer link between community needs and research initiatives. We hope that this partnership can ultimately lead to improved health outcomes within our communities.

Recommendations

Based on the benefits several centers reported from programs either currently or previously in place, we report the following recommendations that may be reasonable starting points for health center-level interventions:

1. CHWs should be integrated into the community health care system as a means of augmenting usual care and providing additional feedback for chronic disease management teams.
2. When implementing case management teams, health centers should place special emphasis on encouraging open communication between team members.
3. Centers should consider supporting/sponsoring healthy food stalls/farmer's market and group exercise activities. If possible, centers should seek partnership with other community-based organizations with expertise in obtaining state and federal funding to set up such activities.

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Table 1
Characteristics of Health Center and Health Center Patients According to Site for Fiscal 2006*

Health Center Characteristic	CHC 1	CHC 2	CHC 3	CHC 4	CHC 5	CHC 6	CHC 7
No. of site visit interviews conducted	9	10	8	7	8	7	7
Center with electronic medical record	Yes	Yes	Yes	No	Partial	No	Yes
Center trains medical or nursing students	Yes	No	No	No	Yes	No	No
Total patient population (<i>n</i>)	8,000	10,000	12,000	11,000	15,400	7,000	8,000
Patients identified as Black (%)	10	10	42	80	45	90	97
Patients identified as Hispanic (%)	50	70	43	12	50	5	3
Patients with Medicaid (%)	40	60	50	75	49	†	†
Population of patients with high school diploma (%)	82.2	82.2	75.0	68.1	69.4	75.8	71.0

* Information gathered from site visit transcripts and confirmed via center annual reports when available.

† Information not available from health center annual reports.

Table 2
Summary of Prevalent Factors Mentioned During Site Visit Tours*

	CHC 1	CHC 2	CHC 3	CHC 4	CHC 5	CHC 6	CHC 7
Patient-Based Barriers							
Patients struggle with adherence	x	x	x	x	x	x	x
Patients cannot afford healthier food options	x	x	x	x	x	x	x
Patients exhibit a poor understanding of their chronic illness	x	x	x	x	x	x	x
Cultural habits of patients incongruent with provider recommendations	x	x	x	x	x	x	x
Psychosocial issues accompanying diagnosis are difficult for patients to overcome	x	x	x	x	x	x	x
Patient-Based Strategies							
Interactive, patient-run diabetes groups	x	x	x	x	x	x	x
Innovative self-management strategies [†]	x	x	x	x	x	x	x
Provider-Based Barriers							
Need for new strategies to reach patients	x	x	x	x	x	x	x
Overburdened with paperwork	x	x	x	x	x	x	x
Suboptimal communication between providers	x	x	x	x	x	x	x
Not enough focus on prevention	x	x	x	x	x	x	x
Provider-Based Strategies							
Significant effort made for patients to see same provider mentioned	x	x	x	x	x	x	x
Case management team	x	x	x	x	x	x	x
Health center-based barriers	x	x	x	x	x	x	x
Difficulty recruiting and retaining providers	x	x	x	x	x	x	x
Difficulty having referred patients seen in a timely fashion	x	x	x	x	x	x	x
Closed to new patients	x	x	x	x	x	x	x
No pharmacy or inadequate resources in pharmacy	x	x	x	x	x	x	x
Health Center-Based Strategies							
Community outreach program	x	x	x	x	x	x	x
Quality improvement committee	x	x	x	x	x	x	x

	CHC 1	CHC 2	CHC 3	CHC 4	CHC 5	CHC 6	CHC 7
Community-Based Barriers							
Violence in surrounding community		×	×		×		
Low availability of healthy food options in community		×	×		×	×	

* Table only represents factors mentioned during site visits, factors not mentioned may still be in place at centers.

[†]These self-management tools include providing patients with pill minders, supervising supermarket visits, and culturally sensitive cooking classes.