Evaluating the Effectiveness of a Patient-Centered, Nonphysician Led Self-Monitoring Blood Pressure Program in a Rural Federally Qualified Health Center

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ABSTRACT

Context: Uncontrolled hypertension can lead to an increased risk of cardiovascular disease, myocardial infarction, stroke, or death. Self-monitoring blood pressure (SMBP) programs have been associated with blood pressure (BP) reduction, particularly among rural, minority, and low-income individuals. There is limited literature about nonphysician SMBP programs.

Objectives: To evaluate the effectiveness of an SMBP program designed to engage nonphysician team members in hypertension management within a federally qualified health center (FQHC).

Design: Self-monitoring blood pressure program activities were implemented using a Plan, Do, Study, Act model. The University of Washington Health Promotion Research Center evaluated processes and patient-level outcomes in a mixed-methods design. Quantitative analysis examined clinical outcomes related to hypertension, and qualitative analysis relied on interviews with clinical staff examining program implementation, adoption, and sustainability.

Setting: Family Health Centers (FHCs), a FQHC located in rural Washington, serving medically underserved populations.

Participants: Two hundred five active SMBP patients out of 2600 adult patients (over 18 years old) who had a diagnosis of hypertension within the last 12 months.

Intervention: Patients with uncontrolled hypertension were given a BP cuff to log their daily BP. Patients met with community health workers (CHWs) and medical staff to review logs and set self-management goals over 3 to 4 months.

Main Outcome Measure: Controlled BP measurements and factors to implementation and sustainment.

Results: Facilitators to implementation included expanded telehealth reimbursement during the COVID-19 pandemic, integration of CHWs, and linguistically adapted resources. Barriers included a lack of reimbursement for nonphysician time and BP monitors. Quantitative results demonstrated an effort to reach minoritized populations but did not show an improvement in BP outcomes.

Conclusions: Family Health Center implemented an SMBP program adapted to meet the linguistic and social needs of their patients. The successful integration of CHWs and the need for reimbursement policies to support SMBP programs were key factors for implementation and sustainability.

KEY WORDS: community health workers, federally qualified health centers, hypertension management, self-monitoring blood pressure

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In 2018, 1 in 4 adults living in Washington state were diagnosed with hypertension.[1] Uncontrolled hypertension can lead to deadly or debilitating complications, including an increased risk of cardiovascular disease, myocardial infarction, stroke, or death.[2] The percentage of adults who reported having coronary heart disease was significantly higher among those who lived in rural Washington compared to urban areas.[3] Higher mortality rates due to cardiovascular disease in rural areas are attributed to the clustering of individual risk factors and adverse social and structural determinants of health, such as socioeconomic status, poverty, limited access to primary care, and environmental conditions.[4] Innovative strategies that can be implemented in rural and low-resource settings are needed to control hypertension and curb mortality rates due to cardiovascular disease.

Self-monitoring blood pressure (SMBP) programs improve patients' health by improving patients' ability to control their hypertension.[5-7] Self-monitoring blood pressure programs may alleviate health disparities as blood pressure (BP) monitoring is associated with BP reduction, specifically among rural, minority, and low-income individuals with hypertension.[8] At-home BP measurement has cost-effective advantages, such as improving medication adherence and minimizing errors in measurement, like those caused by white coat hypertension.[9] Studies suggest that home measurements lead to less intensive drug treatment and improved control compared to office measurements and are successful when paired with other interventions, namely medication titration, health education, or lifestyle counseling.[9] Implementing an SMBP program is especially important in rural areas due to increased patient convenience, better clinical measurement, and increased access to hypertension management overall.

Community and federally qualified health centers (FQHCs) are essential settings to implement SMBP programs. These programs can alleviate high health care costs in resource-constrained settings by developing collaborative partnerships, integrating nonclinician staff, and leveraging community resources.[10] Federally qualified health centers provide care to all populations regardless of their ability to pay and can reduce barriers to care. They are also primed to incorporate nonclinical staff, such as community health workers (CHWs), to build community capacity and improve health outcomes in underserved communities.[11] Studying the effectiveness of an SMBP program, especially in rural areas, is crucial due to limited resources and high demand for hypertension management.

Family Health Centers (FHC), located in north-central Washington state, serve approximately 44 000 rural-dwelling patients across multiple medical and dental clinics, pharmacies, and mobile units. With support from the Washington Department of Health (DOH) and the University of Washington Health Promotion Research Center (UW HPRC), Family Health Centers adapted and implemented an SMBP program between 2020 and 2023. The UW HPRC research team conducted a mixed-methods study to assess the feasibility and effectiveness of the program. This article presents the findings, highlighting FHCs' implementation to engage nonphysician team members in hypertension management within a clinical setting serving medically underserved populations. Clinical staff and leadership and health care policymakers can use these findings to inform the implementation of SMBP programs with nonphysician staff and advocate for sustainability, particularly in rural areas.

Methods

Clinical setting

Family Health Centers has six medical clinics, two pharmacies, four dental clinics, and two mobile units serving Okanogan County populations. The majority of Okanogan County is considered rural, with large non-Hispanic White, Hispanic, and American Indian & Alaska Native populations.[12] Okanogan County is also ranked among the least healthy counties for health outcomes and health factors in Washington and is home to medically underserved communities with higher social vulnerability indexes.[13] Table 1 compares the demographic and socioeconomic characteristics of Okanogan County and Washington state.

Program description

Family Health Centers aimed to improve cardiovascular health outcomes using population health strategies, enhanced team-based care, and the implementation of an SMBP program. Patients were seen by a provider to establish a care plan, and patients diagnosed with uncontrolled hypertension were invited to join an SMBP program. Patients were given a BP machine and an appropriately sized cuff and encouraged to log their daily BP. Only BP machines validated for use in in-home settings were provided to patients. Active SMBP patients met with both physician and nonphysician staff (eg, medical assistants, nurses, pharmacists, and CHWs) to manage their hypertension over three to four months. Staff received standardized training to help patients set self-management goals for diet, exercise, and smoking. Furthermore, bilingual CHWs,

TABLE 1
Demographic and Socioeconomic Characteristics of Okanogan County and Washington State[12,15]

	Okanogan County	Washington State
Population size	42 700	7.8 million
Rural	80.0%	16.0%
Life expectancy	78.1 y	80.2 y
Median household income	$49 000	$80 300
Social Vulnerability Index	0.9255	-
Cardiovascular disease mortality	182.6/100 000	-
Race/Ethnicity		
Non-Hispanic White	64.4%	77.5%
Non-Hispanic Black	0.7%	4.5%
Hispanic	21.1%	13.7%
Asian	1.1%	10.0%
American Indian & Alaska Native	12.9%	2.0%

proficient in both English and Spanish, played a crucial role in establishing and expanding the SMBP program. Community health workers were responsible for recruiting potential patients, developing educational materials, providing culturally appropriate staff trainings, and assisting with follow-up appointments and reminders.

Family Health Centers utilized the Plan-Do-Study-Act (PDSA) method to guide their implementation of a program that fits their context, patient population, and resources.[15] The PDSA method is a systematic approach used in health care quality improvement processes and is a continuous and iterative process across four stages: Plan, Do, Study, and Act. Family Health Center conducted the PDSA process over 13 months, with the first three phases lasting up to three months each. The PDSA team consisted of quality improvement staff and two clinical staff: a nurse and a physician. The UW HPRC provided additional support, including coaching, technical assistance, education, and resources on planning, implementing, and evaluating. Supplemental Digital Content 1 is available at http://links.lww.com/JPHMP/B316 includes assessed activities and outcomes.

Evaluation

The UW HPRC research team used a mixed-methods approach to evaluate processes and patient-level outcomes in a quasi-experimental design to evaluate the effectiveness of FHC's SMBP program. For the quantitative analysis, researchers compared clinical outcomes between patients with a confirmed diagnosis of hypertension who enrolled in an SMBP cohort and hypertensive patients who were not enrolled. Qualitative interviews with two quality improvement staff and one CHW evaluated the implementation, adoption, and sustainability of the SMBP program.

Quantitative analysis

Family Health Center utilized analytics software to extract deidentified patient electronic health records (EHR). The UW HPRC research team applied a retrospective cohort study design to analyze EHR data, such as the total count of hypertensive patients and most recent BP measurements. Researchers evaluated descriptive statistics between active SMBP patients and nonactive patients. We conducted univariate and multivariate logistic regressions to calculate the odds ratio (OR) between patients' enrollment in an SMBP program (active vs inactive enrollment) and three binary BP outcomes (controlled vs uncontrolled). BP outcomes were defined in three ways based on the American Heart Association's criteria: controlled systolic BP (<80 mmHg), controlled diastolic BP (<130 mmHg), and overall controlled BP (<80/130 mmHg).[14] Systolic, diastolic, and overall BP measures were included in separate models. Multivariate models were adjusted for key covariates (age, sex, language, and a diagnosis of hyperlipidemia, pre-diabetes, and diabetes) and were selected based on prior research demonstrating associations with hypertension outcomes.[9,16,17] Reference groups were selected based on the largest categories in the overall study population. Patients with missing last recorded BP measurements were excluded from the analysis. Statistical significance was set at an α value of .05. RStudio (version 2021.09.1) was used to conduct these analyses.[18] The Institutional Review Board through the University of Washington reviewed the study and was deemed exempt (STUDY00016143).

Qualitative methods

The UW HPRC research team conducted semi-structured interviews with the FHC PDSA team and staff to determine the facilitators and barriers to SMBP program implementation, adoption and sustainability, and communication and coordination between internal key informants, clinic staff, and external partners. Interviews were conducted with two quality improvement staff and one CHW in August 2022. Participants consented to be interviewed via Zoom, and audio recordings of the interviews were transcribed for analysis. The research

TABLE 2
Demographic Characteristics by SMBP Program Participation

	Active	Inactive	Overall
n, %	205 (7.9)	2405 (92.1)	2610
Age, mean (SD)[a,b]	56.99 (12.6)	64.53 (13.2)	63.94 (13.4)
Sex, male[c] (%)	104 (50.7)	1322 (55.0)	1426 (54.6)
Sex, female[c] (%)	101 (49.3)	1083 (45.0)	1184 (45.4)
Race (%)[b]			
American Indian/ Alaska Native	2 (1.0)	94 (3.9)	96 (3.7)
Asian	0 (0.0)	11 (0.5)	11 (0.4)
Black/African American	2 (1.0)	21 (0.9)	23 (0.9)
More than 1 race	0 (0.0)	2 (0.1)	2 (0.1)
Native Hawaiian	0 (0.0)	6 (0.2)	6 (0.2)
Pacific Islander	1 (0.5)	3 (0.1)	4 (0.2)
White	150 (73.2)	1971 (82.0)	2121 (81.3)
Unreported/Refused to report race	50 (24.4)	297 (12.3)	347 (13.3)
Ethnicity (%)[b]			
Hispanic/Latino	133 (64.9)	596 (24.8)	729 (27.9)
Non-Hispanic/ Latino	62 (30.2)	1619 (67.3)	1681 (64.4)
Unreported/Refused to report	10 (4.9)	190 (7.9)	200 (7.7)
Language (%)[b]			
English	79 (38.5)	1861 (77.4)	1940 (74.3)
Spanish	122 (59.5)	504 (21.0)	626 (24.0)
Other/Unreported	4 (2.0)	40 (1.6)	44 (1.7)
Comorbidities			
Hyperlipidemia, No Dx (%)[a]	72 (35.1)	945 (39.3)	1017 (39.0)
Pre-diabetes, No Dx (%)[a,b]	174 (84.9)	2211 (91.9)	2385 (91.4)
Diabetes, No Dx (%)[a,b]	132 (64.4)	1814 (75.4)	1946 (74.6)
Last recorded blood pressure			
Systolic, mean (SD)	136.26 (17.5)	134.29 (17.0)	134.44 (17.1)
Diastolic, mean (SD)	79.95 (11.0)	78.77 (12.9)	78.89 (12.7)

[a] *Standard deviation (SD), Diagnosis (Dx).*

[b] *Group comparison* P *-value less than .05 are denoted.*

[c] *We are limited by the demographic options, which conflated sex and gender and limited responses to male and female.*

team also reviewed clinic meeting minutes and reports to supplement descriptions of the implementation process. Researchers identified emergent themes to better understand how the SMBP programs supported hypertension management.

Qualitative analysis

The UW HPRC research staff transcribed interviews and redacted identifying information. Interviews were coded with Dedoose by two researchers (M. S. and K.H.-H.) using a mix of deductive and inductive techniques.[19] An initial codebook was developed based on existing knowledge about facilitators and barriers to program implementation, and research team members finalized the coding scheme together. Researchers individually coded two transcripts and updated the codebook as needed. Researchers met to ensure intercoder reliability and independently coded the remaining transcripts upon agreement.

Results

Quantitative results

There were 2610 patients; 205 (7.9%) were enrolled in an SMBP program, while the remaining 2405 (92.1%) were not. Table 2 demonstrates the demographic characteristics of patients by SMBP program participation. On average, active SMBP program patients tended to be younger, Hispanic/Latino, and spoke Spanish. A lower percentage of active patients were diagnosed with diabetes or pre-diabetes. The last recorded average systolic BP among active patients was 136 mmHg, while the average diastolic BP was approximately 80 mmHg. Similarly, the values were recorded among inactive SMBP patients as 134 mmHg for average systolic BP and 79 mmHg for diastolic BP.

The output for the univariate (Table 3) and multivariate (Table 4) models are presented separately. Being an active SMBP program patient was not associated with having controlled systolic BP after adjusting for the following covariates: age, language, sex, and history of hyperlipidemia, pre-diabetes, and diabetes (OR = 0.73, P = .06). Being older was the only patient factor associated with controlled systolic BP (OR = 0.99, P = .04). Similarly, having controlled diastolic BP was not associated with being an active SMBP patient after adjusting for the covariates (OR = 0.77, P = .10). Being older was associated with

TABLE 3
Univariate Odds Ratios of Controlled Blood Pressure Outcomes for SMBP Participation

	Odds Ratio (95% CI)	*P* [a]
Controlled systolic blood pressure	0.80 (0.59-1.07)	.14
Controlled diastolic blood pressure	0.73 (0.55-0.98)	**.03**
Controlled blood pressure	0.77 (0.55-1.07)	.13

Abbreviation: CI, confidence interval.

[a] *Significant* P *values (<.05) are bolded.*

TABLE 4
Multivariate Odds Ratios of Controlled Blood Pressure Outcomes for SMBP Participation

		Odds Ratio (95% CI)	P[a]
Controlled systolic blood pressure			
SMBP program participation	Inactive	1.00 *(Reference)*	
	Active	0.73 (0.63-1.87)	.06
Age, y		0.99 (0.99-1.00)	**.04**
Sex	Female	1.00 *(Reference)*	
	Male	0.94 (0.80-1.10)	.42
Language	English	1.00 *(Reference)*	
	Spanish	1.03 (0.85-1.26)	.75
Comorbidities			
No diagnosis		1.00 *(Reference)*	
Diagnosis	Hyperlipidemia	0.86 (0.73-1.02)	.09
	Pre-diabetes	1.10 (0.82-1.48)	.52
	Diabetes	0.84 (0.69-1.02)	.08
Controlled diastolic blood pressure			
SMBP program participation	Inactive	1.00 *(Reference)*	
	Active	0.77 (0.56-1.05)	.10
Age, y		1.03 (1.03-1.04)	**<.001**
Sex	Female	1.00 *(Reference)*	
	Male	0.78 (0.66-0.91)	**.002**
Language	English	1.00 *(Reference)*	
	Spanish	1.26 (1.03-1.54)	**.03**
Comorbidities			
No diagnosis		1.00 *(Reference)*	
Diagnosis	Hyperlipidemia	0.72 (0.61-0.86)	**<.001**
	Pre-diabetes	0.99 (0.74-1.33)	.97
	Diabetes	0.61 (0.50-0.74)	**<.001**
Controlled blood pressure			
SMBP program participation	Inactive	1.00 *(Reference)*	
	Active	0.76 (0.53-1.07)	.12
Age		1.01 (1.00-1.01)	**.04**
Sex	Female	1.00 *(Reference)*	
	Male	0.86 (0.72-1.02)	.08
Language	English	1.00 *(Reference)*	
	Spanish	1.09 (0.88-1.35)	.44
Comorbidities			
Diagnosis		1.00 *(Reference)*	
No diagnosis	Hyperlipidemia	0.85 (0.71-1.02)	.09
	Pre-diabetes	1.09 (0.80-1.51)	.59
	Diabetes	0.78 (0.64-0.95)	**.02**

Abbreviation: CI, confidence interval; SMBP, self-monitoring blood pressure.
[a]*Significant P-values (<.05) are bolded.*

higher odds of controlled diastolic BP (OR = 1.03, $P < .001$). Spanish speakers also had higher odds of controlled diastolic BP than English speakers (OR = 1.26, $P = .03$). Patient factors associated with having lower odds of controlled diastolic BP included being male (OR = 0.78, $P = .002$), not having a diagnosis of hyperlipidemia (OR = 0.72, $P < .001$), and not having a diagnosis of diabetes (OR = 0.61, $P < .001$).

Qualitative results

The UW HPRC research team conducted three interviews and reviewed documents that outlined the implementation process. The interview guide and codebook are included in Supplemental Digital Content 2 and 3 is available at http://links.lww.com/JPHMP/B317 and http://links.lww.com/JPHMP/B318 respectively. Facilitators and barriers to implementation of an SMBP program were organized into five key areas after coding: COVID-19 Pandemic: A Catalyst for Change; SMBP Program Adaptation for Rural and Spanish-Speaking Populations; Reimbursement Barriers to Sustainability; Electronic Health Record Data Utilization for Reimbursement and Population Health Management; and Inter-Organizational Collaboration.

COVID-19 pandemic: A catalyst for change

In 2020, FHC staff faced two issues troubling their patient population: uncontrollable hypertension and COVID-19. Per program documents, staff began SMBP work as they witnessed higher rates of hypertension but lower numbers of in-patient appointments, leading to a need for in-home BP management. Staff agreed that the approval of telehealth visits for reimbursement and investment in CHWs that came due to the COVID pandemic was timely for the program's success. Family Health Center tripled their CHWs, empowering them to identify patients with uncontrolled hypertension, schedule appointments, address social determinants of health, and serve as coaches. This streamlined clinical processes, optimizing patient time with medical assistants and providers. One staff member noted the implementation of an SMBP program "drove everyone to a higher level of management of diseases across the board," while another staff stated implementation "helps make it more reasonable to deliver high-quality care, [when] the volume of visits you have, makes it hard to do so." Overall, staff were confident that the integration of the program helped provide high-quality health care.

Self-monitoring blood pressure program adaptation for rural and Spanish-speaking populations

The success and expansion of an SMBP program were attributed to FHC's dedication to adapting the program to fit the needs of their patient population. Okanogan County is home to migrant farmworkers dependent on the agricultural seasons who face barriers to health care access, such as limited hours and transportation. The program's success relied on incorporating bilingual staff and CHWs, who focused on helping patients overcome barriers and ensuring regular check-ins. One staff noted that although "a provider recommends '30 minutes of exercise three times a week', the support staff can help explore with the patient options to make this happen that fits their social resources and physical abilities." Family Health Center also implemented several clinical-based activities as part of the SMBP program. Staff created an SMBP program terminology flipbook in Spanish for patients and staff. The clinical team incorporated Great 8, a visual-based tool developed by Washington DOH, to enhance communication regarding cardiovascular health, especially with patients with low health literacy and limited English proficiency. These tools contributed to the development of a model program, which will be used for other chronic conditions. Lastly, CHWs attended community events to provide education on hypertension and hosted radio shorts to talk about the SMBP program in the hope of reaching more patients. Family Health Center implemented several activities to meet the needs of their patient population and ensure patients were receiving cardiovascular education in conjunction with the SMBP program activities.

Reimbursement barriers to sustainability

Although the SMBP program was found to improve health care, staff raised concerns about its financial sustainability. Providers and clinical teams spent more time with patients, but comprehensive appointments were not reimbursed to reflect this increased time and staff effort. PDSA staff noted that Washington state had a restricted definition of a billable encounter, causing them to only bill encounters that met the pre-determined definition for a meaningful encounter and made it difficult to sustain nonbillable visits with ancillary staff. Further expansion of the program was limited by financial resources to pay for monitors that are approved for at-home hypertension monitoring and correct cuff sizes. Family Health Center paid for the monitors and cuffs through grants and agency funding, which would cause programs to be dependent on this type of funding. As one staff mentioned, "I'm just hoping that someone comes up with something to make this sustainable, but I don't see any real pathway for us to make it sustainable on our own."

Reimbursement was also difficult to achieve, as noted by another staff member: "None of the pharmacies or durable medical equipment supply contractors are able or willing to bill Medicaid for monitors or cuffs. Some patients receive a wrist monitor as an incentive, but they are not approved devices for monitoring hypertension." Another alternative to acquiring monitors was to request prior authorization. However, this would also pose several limitations. Prior authorization requires patients to have insurance, leading to a loss of time and motivation. The process takes weeks to complete, does not guarantee approval, and is an additional administrative burden and paperwork for providers. One staff member summarized the team's sentiments and takeaways well: "Regardless of financial burdens, I recommend this program due to increased staff and patient satisfaction. This type of program fits perfectly with a value-based reimbursement as long as the costs of self-management is built into the cost of patient care. What is the 'value' when a patient self-monitors their BP and notices that when they exercise their results improve?" Though systems are not in place to recognize the value of SMBP programs, staff and physicians see the importance of continuing these programs, even at a monetary loss to their health system. Despite various reimbursement possibilities, no options fully cover staff time and equipment costs, jeopardizing the program's long-term sustainability.

Electronic health record data utilization for reimbursement and population health management

Leveraging EHR data is a potential avenue for securing long-term sustainability and improving patient outcomes. To track reimbursement for staff time and equipment, staff used Z-codes to demonstrate resource allocation. Z-codes are a subset of diagnostic codes used to document societal factors and were used to document time and work invested in patients for future reimbursement justification to managed care organizations (MCOs). One sustainable SMBP program funding source would be through a state mandate in MCO contracts, which was not in place. Electronic health records were also central to improving team communication. Staff utilized reminders in the care plan section, emphasizing BP management as the focus of the care plan and follow-up. As one staff member stated, "Everyone has a different view of what a care plan looks like whether it's a clinical care plan or the patient-centered care plan, but one

thing we have agreed upon is that the BP program is part of the care plan." Various team members, including medical assistants, nurses, and CHWs, successfully added SMBP updates to the care plan to allow providers and patients to track progress. On the other hand, evaluating individual and population-level hypertensive outcomes was difficult due to high costs. As one staff member noted, "It's super pricey but we got the money, so we will be able to get data on our cardiovascular health. If you want something to do [with community] health workers, that's not a standard report; we can pay extra and get that report all the time." Limitations in additional reports hindered the assessment of staff impact and the early identification of undiagnosed hypertension in patients. Staff optimized their EHR for improved team communication and set the foundation for future reporting but faced financial limitations.

Inter-organizational collaboration

Lastly, funding of an SMBP program provided a unique opportunity to collaborate across sectors and organizations. Family Health Center received support and recognition from Washington DOH and UW HPRC that bolstered buy-in, with one staff saying, "I think that's been helpful when we go to the providers and say look, 'We've got these patients, we're doing this and not only the State Department of Health but the University of Washington, [are] behind us. They feel that this is a good project' . . . I think that builds a program like this, as well as just recognition at a higher level." The program's success was bolstered by staff's awareness of the partnerships, as it instilled support and recognition from other organizations. In addition, Washington DOH provided training on Great 8 to ensure the tool was used in conversations with patients for self-management goal setting. Family Health Center staff also attended monthly calls with Washington DOH and other FQHCs to brainstorm billing and coding best practices and maximize SMBP reimbursement. Department of Health and UW HPRC engaged in bimonthly collaborative calls to offer technical guidance and review patient data for the program's advancement. The collaboration between the three entities fostered greater engagement by FHC and led to the bidirectional exchange of ideas that improved the program over time.

Discussion and Conclusion

Self-monitoring blood pressure programs are ideal programs to implement in FQHCs as they extend services and allow patients to take an active role in managing hypertension. It is urgent to conduct studies on the effectiveness of SMBP programs, especially in rural areas that involve CHWs, as there is a high need for hypertension management but limited resources. Interviews with FHC staff revealed barriers to program implementation, successes, and adaptations to serve their rural and migrant patient populations. Family Health Center implemented a multisite SMBP program adapted to fit linguistic and social needs. Their ability to do so during the COVID-19 pandemic demonstrated dedication to providing exceptional care during a time when appointments were limited and medical resources and staff were scarce. At the same time, the pandemic presented a unique situation as the need for an SMBP program arose to provide chronic care continuation that did not rely on in-person appointments or physicians and met patients' social needs, such as overcoming transportation barriers with at-home measurements. The top concerns identified were the lack of reimbursement for services and BP monitors and optimal EHR utilization. Funding and reimbursement are critical for the sustainability and success of SMBP and chronic disease programs.

Though staff highlighted the successes in implementation, the quantitative results are inconsistent with previous evidence. The analysis seemed to indicate the program lacked effectiveness among SMBP program patients and individuals with comorbidities, despite our awareness of its success in FQHC settings.[9,20,21] It is clear that clinics made a concerted effort to recruit Spanish speakers as almost 60% of active SMBP patients spoke Spanish as their primary language, compared to 21% of inactive patients. This recruitment was due to bilingual CHWs' efforts to connect with patients at the clinic and in the community, demonstrating their success in recruiting minoritized populations. Additionally, once patients were recruited, they were met with a linguistically adapted program and staff ready to support their progression through the program.

This study had several limitations. There were limitations with individual-level data as additional software was needed for the data extraction. It was not possible to assess how long patients had been in the SMBP program, as data included all active patients, regardless of when they enrolled. It would have been ideal to assess how the length of the program could affect patient outcomes. Individuals who had graduated from the program were included in the inactive population, thus potentially minimizing the impact of the program.

Clinical staff and leadership and policymakers can use these findings to inform the implementation of SMBP programs and advocate for improved reimbursement policies. First, CHWs integrated well into the SMBP program and were essential for recruiting minoritized patients and providing a linguistically adapted program.

Despite being overburdened and having lower resources due to the COVID-19 pandemic, opportunities such as expanded telehealth reimbursement and investment in CHWs allowed FHC to expand its SMBP program. However, reimbursement policies for supplies and nonphysician time must be addressed to secure funding, sustain the foundation required to provide equitable SMBP programs, and allow programs in FQHC settings to reach their maximum potential.

Implications for Policy & Practice

- Expand the definition of billable and meaningful encounters to accommodate and encourage nonbillable but essential patient encounters, especially those involving ancillary staff such as CHWs. This expansion would support the financial sustainability of SMBP programs.
- Allocate additional funding resources or explore alternative financial mechanisms to address the high costs associated with BP machines and cuffs, ensuring consistent access and reducing reliance on grants and agency funding.
  - Collaborate with health care providers, pharmacies, and durable medical equipment suppliers to establish a clear reimbursement process for BP monitors and cuffs under Medicaid, enabling easier access for patients and ensuring program sustainability.
  - Streamline reimbursement processes by minimizing administrative hurdles, reducing prior authorization requirements, and shortening approval time lines to enhance patient motivation and health care provider efficiency.
- Address financial constraints related to individual patient and population-level evaluations by exploring policy options that reduce EHR costs and enhance reporting capabilities, allowing for a more comprehensive assessment of the impact of SMBP programs.

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