Original Research

Community-based approaches to reduce chronic disease disparities in Georgia

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ABSTRACT

Background:
Among underserved and racial/ethnic minority populations in Georgia, there are profound health disparities and a burden of chronic diseases. Such diseases, which are preventable, are influenced by risk factors, including poor nutrition, physical inactivity, lack of quality health care, and tobacco use and exposure. Awardees of the Racial and Ethnic Approaches to Community Health (REACH) and Partnerships to Improve Community Health (PICH) are implementing community-based initiatives using evidence-based, policy, systems, and environmental approaches to reduce racial and ethnic health disparities and the chronic disease burden in underserved urban and rural Georgia communities.

Methods: Within the context of a social ecological framework, the REACH and PICH awardees selected interventions. Their impact in the areas of tobacco use and exposure, chronic disease prevention and management, and nutrition are described.

Results: To date, the interventions of Georgia's PICH and REACH awardees have reached approximately 805,000 Georgia residents.

Conclusions: By implementing strategies for community-based policy, systems, and environmental improvement, Georgia's PICH and REACH awardees are reducing tobacco use and exposure; increasing access to healthy foods; and providing chronic disease prevention, risk reduction, and management opportunities for underserved communities in urban and rural Georgia communities. Their efforts to address chronic disease risk factors at various social and ecological levels are contributing to a reduction in racial/ethnic health disparities and the chronic disease burden in Georgia.

Key words: community-based participatory approach, community health, health disparities, community-clinical linkages, tobacco prevention, farmer's markets, corner stores

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INTRODUCTION

For the health of minorities, there are profound health disparities relative to the general population (Meyer et al., 2013). On a national basis and in Georgia, chronic diseases, such as cardiovascular diseases (CVDs), diabetes, and cancer and their related risk factors are more prevalent in African-American populations (Heidenreich et al., 2011; Valderrama et al., 2011; Desantis et al., 2016; Henry Akintobi et al., 2017). The risk of developing chronic diseases is influenced by behavior, including physical inactivity, unhealthy eating, and use of tobacco and by policy, system, and environmental (PSE) determinants, including lack of access to healthy foods and ready access to relatively cheaper and convenient fast foods (Centers for Disease Control and Prevention (CDC), 2015; Kegler et al., 2015; Timperio, 2008; Institute of Medicine, 2005; The Food Trust, 2011). Although chronic diseases are preventable and controllable, they affect the entire nation in lives lost and related healthcare costs. For Georgia, there are estimates of annual losses of $40 billion dollars and 200,000 years of life (Georgia Department of Public Health (GDPH), 2017).

Cardiovascular Disease

CVDs include heart attack, stroke, atherosclerosis, congestive heart failure, and hypertension (CDC, 2015). In Georgia, CVD, the leading cause of mortality, is responsible annually for more than 20,000 premature and preventable deaths (GDPH, 2017). The CVD death rate in Georgia, at 179.74 per 100,000 is higher than the national average of 166.99 per 100,000 (World Life Expectancy, 2017). Further, African American women are more likely to experience a stroke due to related risk factors, including high blood pressure, obesity, and diabetes (GDPH, 2017).

Diabetes

Diabetes, the 7th leading cause of death in the US, is linked to other health problems, including heart disease, stroke, and high blood pressure (CDC, 2017). Each year, approximately 60,000 adults in Georgia are diagnosed with diabetes, and the state's death rate due to this disease (22.27 per 100,000) is higher than the national average (20.95 per 100,000)

(World Life Expectancy, 2017). More than a million people in Georgia (14%) have been diagnosed with diabetes, and an even higher proportion are pre-diabetic (36.1%) (GDPH, 2017; World Life Expectancy, 2017). The relative costs associated with diabetes are substantial; medical expenses for those who are diagnosed are more than 2 times higher than for those who do not have diabetes (GDPH, 2015). With respect to its sociodemographic profile, non-Hispanic Blacks, people aged 65 and older, those with annual incomes less than $15,000 a year, and those who have attained less than a high school education are more likely to be diagnosed with diabetes (GDPH, 2017).

Tobacco Use

Tobacco use, which is among the leading causes of death and the number one cause of cancer deaths in the nation and in Georgia (GDPH, 2016), is linked to respiratory diseases (i.e., COPD) and to CVD (i.e., heart attack and stroke) (Hunninghake, 2005). In Georgia, its use accounts for more than 12,000 deaths per year, with about 10% of the state's deaths attributed to smoking (GDPH, 2016). In Georgia, tobacco use is the leading preventable cause of death, and nearly $9 billion dollars are spent each year in related direct and indirect healthcare (GDPH, 2016). Further, second-hand smoke is associated with CVD, lung cancer, and sudden death syndrome and it harms children by, for example, triggering asthma attacks (GDPH, 2016).

METHODS

To improve health and reduce the burden of chronic diseases, the Centers for Disease Control and Prevention (CDC) established, in 2014, Partnerships to Improve Community Health (PICH) and Racial and Ethnic Approaches to Community Health (REACH). These programs support community, healthcare, and service organizational initiatives designed to address risk factors for leading chronic diseases and reduce their racial and ethnic disparities (CDC, 2015). These efforts include population-based, PSE strategies for which gaps in implementation and effectiveness have been identified. Community-based participatory approaches, including a previously conducted community health needs assessment and a history of collaboration, through community representatives and coalitions, were also precursors for funded projects. All awardees were required to reach at least 75% of the population within target communities.

Table 1. Description of Partnerships to Improve Community Health Funding Opportunity

Component	Description
Purpose as Stated in Funding Opportunity Announcement	To support implementation of evidence- and practice-based strategies that address previously identified gaps and needs within a defined jurisdiction in order to reduce the prevalence of chronic disease and related risk factors
Total Funding	$150,000,000 for 39 awardees
Funding Period	36 months
Project Requirements	Contribute to area-wide health improvements and reductions in health disparities. Reach a minimum of 75% of the population within a jurisdiction Target special efforts toward priority populations at disproportionate risk for chronic diseases or conditions
Chronic Disease Risk Factors Addressed	Must address at least two of the following: Tobacco use and exposure Poor nutrition Physical inactivity Lack of access to chronic disease prevention, risk reduction, and management opportunities
Community Involvement	Maintain a functioning multi-sectoral community coalition Communicate routinely to partners, the public, decision makers, and key stakeholders about the work Disseminate the results of work to decision makers and the public, as appropriate

Source: Grants.gov, CDC-RFA-DP14-1417, Partnership to Improve Community Health Department of Health and Human Services Centers for Disease Control – NCCDPHP, https://www.grants.gov/web/grants/view-opportunity.html?oppId=255772

Table 2. Description of Racial and Ethnic Approaches to Community Health Funding Opportunity

Component	Description
Purpose as Stated in Funding Opportunity Announcement	To create healthier communities by: Strengthening existing capacity to implement locally tailored evidence-, practice-, and based population-based policy, system, or environmental improvement strategies in priority populations experiencing chronic disease disparities and associated risk factors Supporting implementation, evaluation, and dissemination of these strategies Supporting implementation of existing population-wide PSE improvements, leading to reducing or eliminating health disparities in racial and ethnic communities
Total Funding	$105,000,000 for 49 awardees
Funding Period	36 months
Community Requirements	Support communities: With existing, strong infrastructure components

Component	Description
	Having recently active coalitions and partnerships with a history of successfully working together on issues relating to health or other disparities Selecting strategies that are based upon a community health needs assessment that has been completed since 2010 Having an infrastructure, a coalition, and partnership network, and an existing work plan that allow the funded community to immediately implement locally tailored evidence- and practice-based, policy, systems, and environmental improvements Addressing at least two risk factors with one or two racial / ethnic priority population groups
Chronic Disease Risk Factors Addressed	Physical inactivity Poor nutrition Poor linkages to quality health care services Tobacco use and exposure
Community Involvement	Must have a multi-sectoral coalition that has been actively engaged for at least two consecutive years since 2010 and has capacity to conduct the work of this funding opportunity Must include representatives with two years of experience in serving the priority population in the tribe or community

Source: Grants.gov, CDC-RFA-DP14-1419PPHF14, PPHF 2014 Racial and Ethnic Approaches to Community Health Department of Health and Human Services Centers for Disease Control – NCCDPHP, https://www.grants.gov/web/grants/view-opportunity.html?oppId=257868

In 2014, CDC awarded PICH awards to the Fulton County Department of Health and Wellness and to the Tanner Medical Center, which serves Carroll, Haralson, and Heard counties. Additionally, REACH grants were awarded to Morehouse School of Medicine (MSM) in Atlanta (Fulton County) and to the DeKalb County Board of Health. These programs present opportunities for community, agency, and academic leaders to develop or scale-up intervention strategies designed to respond to the chronic disease disparities among their constituencies in the State of Georgia.

Chronic Disease Disparities in Georgia PICH and REACH Communities

In Georgia, PICH and REACH awardees are focusing on reducing chronic disease disparities in the underserved urban and rural Georgia counties of DeKalb, Fulton, Carroll, Haralson, and Heard. Table 3 presents a summary of demographic characteristics of residents of these counties.

DeKalb County, with a population of more than 700,000 people (US Census, 2017), is the third largest and the most culturally diverse county in Georgia; 16% of its residents are foreign-born, and 18% speak a language other than English at home. African Americans in DeKalb are at a disadvantage for healthy nutrition and physical activity, compared to other racial and ethnic groups in the county (US Census, 2017). Of DeKalb County residents, 13.6% live more than a mile from a grocery store; most who live in food deserts, defined as areas where there is a dearth of healthful foods (e.g., fresh fruits, vegetables, and other whole foods), are African Americans (USDA, 2017). DeKalb County is among the counties with the highest rates for obesity (38.7%) and diabetes (27.1%) (GDPH, 2017). Compared to other racial and ethnic groups, African Americans in DeKalb disproportionately experience death from obstructive heart disease and stroke and hypertensive heart disease. Further, a greater percentage of African Americans (46%) have insufficient physical activity, compared to non-Hispanic whites and Hispanic residents (40.9% and 33.3%, respectively).

With more than 900,000 residents, Fulton County is Georgia's most populous county. It mirrors the state in that the leading causes of death are associated with CVD and cancer (Fulton County, 2015). Cancer death are mostly due to cancers of the pancreas, prostate, colon, breast, and lung. For some of these cancers, tobacco use and secondhand smoke serve as risk factors. The adult smoking rate in Georgia is 17.4% and 13% in Fulton County. Among certain population groups, such as those who are less-educated and those who live below the poverty line, smoking rates are higher (Chung, 2015). In Fulton County, 38% of adults are exposed to secondhand smoke, for smoking is still allowed in public areas, including bars and restaurants, parks, recreational areas, and within multi-unit housing structures (Fulton, 2015).

Carroll, Haralson, and Heard counties, which are predominately rural, have a total of 151,462 residents (US Census, 2017). The leading cause of death is heart disease, at 226.78 per 100,000, which exceeds the state average of 185.6 per 100,000. The rate for diabetes (11.11%), also exceeds state and national averages. In the region, obesity, defined as having a body mass index > 30, affects 29.41% of the adult population, exceeding state and national averages. Tobacco use (23.2%) is also higher than state and national averages. Cancer incidences in each of the three counties (481.0, 500.5, and 475.7) exceed the state rate of 461.1 per 100,000 population.

Table 3. Demographic Characteristics of Select Georgia Communities

	DeKalb County	Fulton County	Carroll, Haralson, and Heard Counties
Population	700,000	900,000	150,00
Race/Ethnicity*			

	DeKalb County	Fulton County	Carroll, Haralson, and Heard Counties
African American/Black	55%	45%	11%
Asian	6%	7%	1%
Hispanic	10%	8%	3%
Other	2%	<1%	2%
White	36%	46%	83%
Percent Living Below Poverty Line	18%	16%	22%

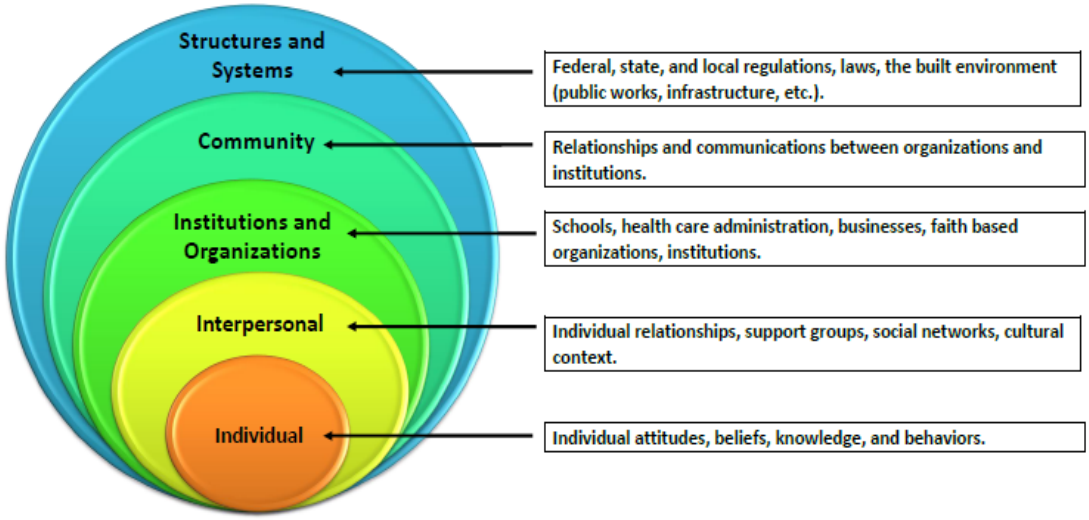
*Multiple races could be selected, therefore the total does not sum to 100%.

By use of the social ecological model (SEM), the present report describes the four Georgia PICH and REACH grantees' respective efforts to reduce the chronic disease burden and racial/ethnic health disparities in their respective communities. Described are strategies of each grantee to address chronic disease risk factors such as physical inactivity, lack of access to chronic disease prevention and management opportunities, poor nutrition, and tobacco use and exposure.

Theoretical Framework

The SEM, which assumes multiple levels of influence on health behaviors (Figure 1), is a prevention-based framework of social ecology that focuses on multi-level influences and theoretical principles to explain the interrelations of social systems (Stokols, 1996). Georgia PICH and REACH awardees are implementing PSE improvement strategies that address varying levels of the framework. The following section details the approaches of each awardee and a reflection on the contributions of awardees within the spheres of the SEM.

Figure 1. Social Ecological Model



Source: Centers for Disease Control and Prevention; Division of Nutrition, Physical Activity, and Obesity. Available at https://www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity/framing-the-issue.html

RESULTS

Dekalb County REACH program

The REACH Program of the DeKalb County Board of Health is working to improve nutrition and physical activity opportunities throughout the county by implementing community-based nutrition and physical activity initiatives through its "Fresh on DeK" mobile farmer's market. This project addresses environmental strategies to increase access, affordability, and availability of fresh fruits and vegetables in low-income African American communities.

Central Implementation Processes and Next Steps

Since 2015, Fresh on DeK, in partnership with the University of Georgia Extension, has operated for 16 weeks each year, with approximately 10 weekly stops in high-need, low-access parts of DeKalb County. The market offers a variety of fruits and vegetables priced competitively with supermarkets, and customers can use Supplemental Nutrition Assistance Program (SNAP) benefits as payment. The market also provides opportunities for nutrition education through hands-on recipe demonstrations and tastings as well as written information and handouts for customers. During its first two seasons, the mobile market has reached approximately 135,000 African American residents in target areas. Nearly half of the customers surveyed indicated that, as a result of shopping at the market, they were eating more servings of fruits and vegetables. From season one to season two, the market experienced a 50% increase in customer volume and a 40% increase in sales, due at least in part to an increase in the number of weekly stops in year two. A strength of the program is the partnership between the DeKalb County Board of Health and the DeKalb Extension; each brings skills and resources

to the partnership in support of the market. During the second season, the market created a frequent shopper program to track customer shopping habits. In addition to providing information about these habits, this program has the potential to be used to maintain contact with customers via regular email or postal mail newsletters about the market. A third strength is the established market and its potential to become a source of produce for the priority population. Challenges for Fresh on DeK center on the difficulty of reaching the priority population in terms of demographics and customer volume. Customer survey data from the first two seasons suggest that most customers are middle-aged African American women who do not receive SNAP benefits. The partners continue to make special efforts to attract SNAP recipients, men, and younger adults to the market, as well as those living in the immediate areas surrounding the stops. At present, the partners are planning for the third season, from June to September 2017. Possible changes to the market include the creation of a new stop near the office of the local Division of Family and Children Services, which issues SNAP benefits. In addition, the market is exploring the possibility of incorporating the sale of local produce. This could lead to the market becoming eligible for the Double Value Coupon Program of Wholesome Wave Georgia, which doubles SNAP benefits at participating markets, and may attract more SNAP recipients.

Fulton County PICH program

A focus for the PICH Program of the Fulton County Department of Health and Wellness is tobacco-free living, aimed at increasing tobacco- and smoke-free environments in bar and restaurant establishments and in public places, such as park and recreation facilities. Through efforts of this program , about 400,000 Fulton residents are experiencing the benefits of reduced tobacco use and exposure to secondhand smoke due to voluntary adoption of smoke-free policies by 44 bar and restaurant establishments and recent passage of a smoke-free ordinance for Fulton County park and recreation areas.

Central Implementation Processes and Next Steps

Achieving success requires solid partnership-building, completion of tobacco environmental scans, assessments, and opinion polling of residents; promotion of smoke-free efforts through education outreach and media campaigns; champion-building; and tobacco cessation referrals. Georgia State University, through its PICH partnership, conducted opinion polling of 940 Fulton residents, assessed more than 700 bars and restaurants, and completed air quality assessments in bar and restaurant establishments, resulting in evidence that second-hand smoke is harmful and that 76% of Fulton residents favored smoke-free environments. Results of these assessments were used to target prevention and outreach strategies segmented by populations and program areas. An extensive media campaign, including billboards, television, radio, digital media, and key informant interviews on the dangers of smoking and the benefits of tobacco/smoke-free living resulted in millions of media impressions across the state. The launch of the "*Proud to be Smoke-free Fulton"* campaign raised awareness on the dangers of tobacco use and exposure to second-hand smoke. Further, the PICH Program offered training strategies in tobacco- and smoke-free conversions; trained champion force representatives of community, interfaith, coalition, and national and local organizational partners; and provided resources to facilitate smoke-free transitions with targeted groups. In September 2016, the Fulton County Board of Commissioners voted unanimously to make all Fulton County Parks and Recreational areas smoke-free zones, including cigarettes, cigars, pipes, hookahs, and e-cigarette devices. As part of its efforts for sustainability, the Fulton PICH Program is working with partners who will continue promoting tobacco and smoke-free zones and to create a culture that embraces being tobacco and smoke-free as a healthy way to live.

Morehouse School of Medicine REACH program

Identified by the REACH program of MSM, corner stores in urban communities have been partners in improving access to healthy foods. This program focuses on African American residents in 31 census tracts within Metropolitan Atlanta Neighborhood Planning Units (NPUs) V, X, Y, Z, and T. Its prioritized communities are characterized as food deserts, largely due to the presence of few or quality grocery stores or farmer markets (American Nutrition Association, 2010). This problem is exacerbated by the relative costs and convenience associated with fast-food restaurants, which are widely available in low-income communities. MSM, in partnership with Georgia State University, implemented the Healthy Corner Store Initiative in five Atlanta neighborhood planning units, affecting at least 120,000 residents.

Central Implementation Processes and Next Steps

In 2015, corner stores were identified by mapping, canvassing the community, and conducting an ethnographic investigation. The Food Trust, a nationally recognized nonprofit organization dedicated to ensuring that everyone has access to affordable, nutritious food and information to make healthy decisions, guided this work through communication and site visits to witness, learn, and discuss process and implementation strategies toward their adaptation in Metropolitan Atlanta (The Food Trust, 2011). Partnerships with the Community Coalition Board of the MSM Prevention Research Center, which conducted a community health needs assessment in 2013 to prioritize CVD and diabetes for the REACH grant application and proposed implementation approaches, were involved in formative evaluation and ongoing constituent (e.g., community agency and academic leaders) engagement (Akintobi et. al., 2017). Community health workers hired from partner communities facilitated the engagement of owners of corner stores. Partnership agreements were obtained from 11 stores, including program requirements and expectations. Prior to joining the Healthy Corner Store Initiative, survey data collected from 100 African American customers at five corner stores in 2016 revealed that 69% resided less than one mile from the participating stores and that 63% shopped at the stores daily. Although most of these customers purchased snacks on the day of the survey, more than 80% of the customers stated that they would

purchase healthy items from the corner store if they were available.

Beginning in November 2016, these stores were provided with exterior signage, indicating that they were a part of the Healthy Corner Store Initiative; interior shelving signage, with information adjacent to healthy products; and display kiosks featuring health and nutrition information and budget-friendly recipes. Community outreach and national and local media coverage of the initiative assisted in informing residents of the availability of healthy items in the neighborhoods and garnering attention of policymakers. In summer 2017, customers will be surveyed, and inventories of corner stores will be reviewed to determine if there has been an increase in purchases of healthy foods and beverages.

Tanner PICH program

In Carroll, Haralson, and Heard Counties, the Tanner Get Health Live Well (GHLW) program has implemented community-clinical linkages with the Tanner Medical Group. This person-centered medical home created a referral system for patients to be "prescribed" to attend one of the five evidence-based programs offered by Tanner GHLW: (a) the Diabetes Prevention Program (DPP), CDC; (b) the Diabetes Self-Management Program (DSMP), Stanford University; (c) the Chronic Disease Self-Management Program (CDSMP), Stanford University; (d) FreshStart, American Cancer Society; and (e) Kids N Fitness © (KNF), Los Angeles Children's Hospital.

Central Implementation Processes and Next Steps

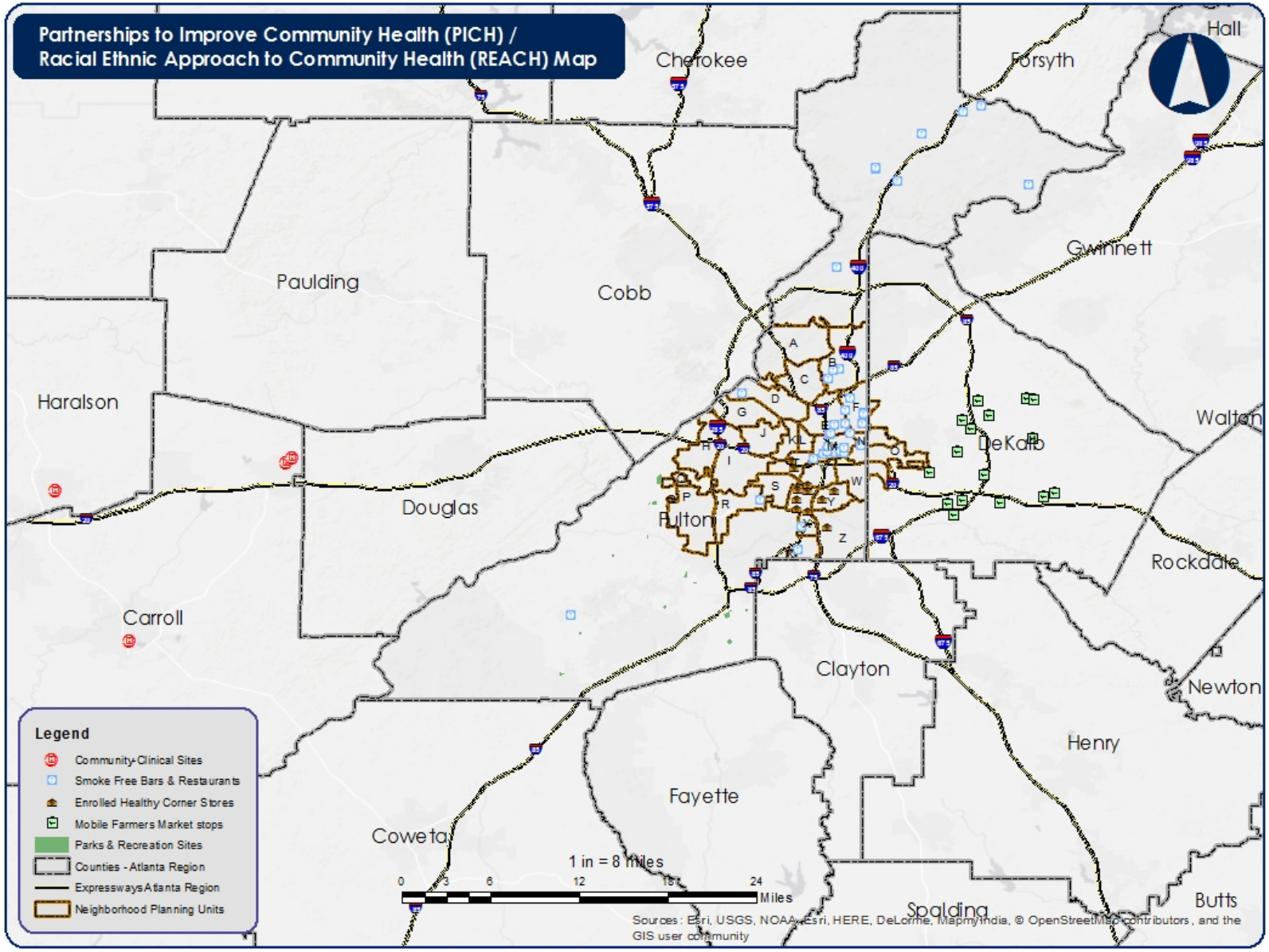
At present, 40 physicians are making referrals to GHLW programs. With a 73.5% patient completion rate in the DSMP and the CDMP, the cost savings for health care utilization is calculated to be $117,888 in reduced emergency department visits and hospitalizations. Outcome data from patient participants who complete the program demonstrated a 79% decrease in forgetfulness to take prescribed medication, a 70% increase in the consumption of 3-4 servings of fruits and vegetables a day, and a 51% increase in patient confidence in self-care related to their health conditions. DPP program participants lost on average 5-7% of their body weight, reducing their risk of developing diabetes by 53%, and, as part of the program, participants increased their physical activity minutes by 35%. Children who completed the KNF program showed an average reduction of body mass index Z-score of 1.5%. Currently, the referral process is adopting electronic health records to increase efficiency and further connect the population health with the clinical team work at Tanner.

DISCUSSION

Georgia REACH and PICH Awardee Alignment with the Socioecological Model

The approaches described above demonstrate the effects that each awardee demonstrates through addressing spheres of influence necessary for the reduction of chronic diseases in Georgia communities (see Figure 2).

Figure 2. Map of PICH and REACH Program Sites, by Initiative



With regard to the SEM framework, all awardees are positively affecting attitudes, beliefs, knowledge, and behaviors about healthy eating and tobacco-free living through targeted mass-, small-, and social-media campaigns. The PICH intervention of the Tanner Medical Center entails provision of education to individuals supporting chronic disease prevention and management (see Table 4).

To address interpersonal relationships, DeKalb's REACH program hosts a mobile farmers market where interactive recipe demonstrations allow customers to experience healthy dishes, ask questions, and socialize. The PICH program of the Tanner Medical Center provides classes on management of chronic diseases in a group setting where classmates can learn from one another and help hold each other accountable. Various strategies by awardees have been implemented in institutional or organizational settings, such as smoke-free policies in bars and restaurants, corner stores participating in a Healthy Corner Store initiative, and healthcare providers referring patients to lifestyle management classes.

All four awardees are addressing community-level influences on health through interdisciplinary partnerships among local governments, health departments, universities, healthcare organizations, private businesses, and community groups. Finally, the PICH program of Fulton County has addressed structures and systems through the enactment of a smoke-free policy in parks and recreation areas county-wide, and the Tanner Medical Center has integrated a new referral process into its health system.

Table 4. Description of GA PICH and REACH Awardees and Social Ecological Model Components

Georgia Awardee and Type	Priority Population and Number Reached to Date	Selected Project Component	Chronic Disease Risk Factor Addressed	Social Ecological Model Levels Addressed			
				Individual	Interpersonal	Community	Structures/ Systems
DeKalb County-REACH	135,000 African American, DeKalb County Residents	Fresh on Dek Mobile Farmer's Market	Poor Nutrition	X	X	X	
Fulton County-PICH	400,000 Fulton County Residents	Tobacco and smoke-free environments in bars, restaurants, parks and recreation facilities	Tobacco Use and Exposure	X	X	X	X
Tanner Medical Group-PICH	150,000 Carrol, Haralson, & Heard County Residents	Community-clinical referral system	Lack of Access to Chronic Disease Prevention, Risk Reduction, And Management Opportunities	X	X	X	X
MSM REACH	120,000 Primarily African American, Atlanta Residents	Healthy Corner Store Initiative	Poor Nutrition	X	X	X	

CONCLUSIONS

In Georgia, chronic disease disparities for racial/ethnic populations are prevalent. The types of interventions designed and implemented by Georgia PICH and REACH awardees reflect input by communities and multi-sector partners interested in reducing these disparities. Guided by SEM, the Georgia PICH and REACH awardees enlist an array of informed PSE strategies that will help to sustain the development and implementation of the healthy behavioral and environmental changes.

Preliminary data on their effectiveness provides evidence for community-based participatory approaches to increase access to healthy foods, smoke-free environments, and healthcare for racial/ethnic minorities in the Georgia communities. The present report demonstrates the emergence of evidence-based approaches that apply complex webs of influence to address chronic disease

disparities and thereby advance health equity. The work implemented by Georgia PICH and REACH awardees has promise to reduce the burden of chronic disease in Georgia by promoting community engagement toward addressing racial/ethnic health disparities.

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