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Mobilizing Cross-Sector Collaborations to Improve Population Health in Rural Communities: A Qualitative Study

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Mobilizing Cross-Sector Collaborations to Improve Population Health in Rural Communities: A Qualitative Study

ABSTRACT

Objectives: This study examines types and forms of cross-sector collaborations employed by rural communities to address community health issues and identifies factors facilitating or inhibiting such collaborations.

Design: We conducted case studies of four rural communities that have demonstrated progress in creating healthier communities. Key-informant interviews and archival data were analyzed using thematic analysis to identify key themes related to the research questions.

Setting: Rural communities in the United States.

Participants: Key informants from local public health departments, hospitals, and other health-promoting organizations and groups.

Results: Rural communities used different forms of collaborations, including cross-sector partnership, cross-sector interaction, and cross-sector exploration, to address community health issues. Stakeholders from public health, healthcare, social services, education, and business sectors were involved. Factors facilitating cross-sector collaborations include health-promoting local contexts, seed initiatives that mobilize communities, hospital vision that embrace broad views of health, and shared collaboration leadership and governance. Challenges to developing and sustaining cross-sector collaborations include different institutional logics, financial and human resources constraints, and geographic dispersion.

Conclusions: Rural communities use cross-sector collaborations to address community health issues in the form of interaction and exploration, but real and lasting partnerships are rare. The development, operation, and sustainment of cross-sector collaborations are influenced by a set of

contextual and practical factors. Practical strategies and policy interventions may be used to enhance cross-sector collaborations in rural communities.

Keywords: Cross-sector collaborations, population health, social determinants of health, rural health

ARTICLE SUMMARY

- This is the first study to examine cross-sector collaborations employed by U.S. rural communities to improve population health, focusing on rural-specific practices, facilitators, and challenges.
- This study uses an explanatory sequential design and multiple data sources including County Health Rankings, community health needs assessments, interviews, and archives to develop an in-depth understanding of the issue.
- The use of qualitative methods and a small number of cases limits our ability to generalize our findings.
- We only selected rural communities that demonstrated progress towards creating healthy communities, and did not include communities lagging in such progress in our study. Thus, the findings may be particular to those similar to the selected communities.

INTRODUCTION

There is long-standing recognition that where people live greatly influence their chances of being healthy. Schools, workplaces, neighborhoods, and the broader community influence the values that people place on health and their opportunities to make healthy choices.[1-3] Accumulating evidence supports that upstream social factors (e.g., educational attainment, income, and occupation) have wide-ranging effects on health across the life course by shaping daily living conditions and influencing downstream determinants of health including health behaviors.[4-6] Therefore, addressing social determinants of health is critical for any systematic effort aiming to improve population health and health equity.[3] Building on such evidence and a vision to build a Culture of Health in the U.S., the Robert Wood Johnson Foundation (RWJF) developed a framework highlighting four action areas that include making health a shared value, fostering cross-sector collaboration, creating healthier, more equitable communities, and strengthening integration of health systems and services.[7,8]

The focus on fostering cross-sector collaborations to improve well-being reflects a confluence of several motives. First, health is more than the absence of disease, and medical care alone cannot improve health without addressing social determinants of health. Second, while the health sectors (e.g., health care and public health) play a key role in promoting health, they cannot address many social conditions that affect health and health behaviors (e.g., access to healthy food, affordable housing, and safe environment) by themselves. Cross-sector collaborations have the potential to align resources and contributions of multiple sectors to address these issues. Third, there are numerous examples of cross-sector collaboration that have successfully improved health and well-being at organizational or community level.[9]

The use of cross-sector collaborations to address public issues has gained increasing acceptance in recent years.[10,11] In the public administration literature, cross-sector collaboration refers to "the linking or sharing of information, resources, activities, and capabilities by organizations in two or more sectors to achieve jointly an outcome that could not be achieved by organizations in one sector separately."[12] Previous studies documented that cross-sector collaboration has been employed in efforts to prevent infectious diseases, address obesity and noncommunicable diseases, promote healthy eating and active living, improve early child care and education, and advance health-promoting policy.[11,13,14] Research showed that urban communities that engaged a broad array of sectors in population health activities gained sizable improvement in health outcomes measured as decline in deaths due to preventable causes, including cardiovascular disease, diabetes, and influenza.[15] However, our understanding of cross-sector collaborations and their impact draws largely on the experience of urban communities. There is a dearth of research examining the types and forms of cross-sector collaborations employed by rural communities to address community health issues.

To address this knowledge gap, we conducted a multisite case study of four rural communities in a Midwest state in the U.S. that have demonstrated progress in engaging stakeholders from multiple sectors to create healthier communities. We analyzed interview and archival data to examine the types and forms of cross-sector collaborations in these communities and factors facilitating or inhibiting collaborations.

METHODS

This study used an explanatory sequential design in which County Health Rankings[16] and other secondary data were analyzed to guide case selection, data collection and analysis.[17] We focused on rural communities in a Midwest state of the U.S. to leverage our knowledge of the

community contexts and policies that might influence cross-sector practices. The study was approved by the Institutional Review Board of the authors' institution.

Case Selection

We selected cases based on two criteria. First, we used County Health Rankings to identify rural counties that either have consistently ranked among the top quartile or have shown significant improvement in their rankings between 2010 and 2016. The County Health Rankings rank counties or county equivalents within each state using over 30 population-health indicators that are standardized, weighted, and summed to measure health outcomes and health factors. Second, we reviewed community health needs assessments and health improvement plans from county health departments and hospitals to evaluate whether a broad definition of health (i.e., including well-being, quality of life, and social determinants of health) and cross-sector approaches for improving health (i.e., including non-health partners) were evident in these documents.

Data Collection

We used RWJF's Culture of Health Action Framework to develop an interview guide. The interview guide included questions related to local activities and experiences in the four action areas, including cross-sector collaborations to improve well-being, integration of health services, promoting health as a shared value, and addressing health equity. We conducted 22 semi-structured interviews (19 individual and 3 group interviews) with key informants during site visits to the communities. We identified interviewees through a snowball sampling process in which the hospital and public health leaders served as our initial subjects. The interviews represented perspectives of local hospitals, public health departments, and other health-promoting organizations and groups. All interviews were recorded and transcribed after

obtaining interviewees' verbal consent. We collected additional archival data on relevant cross-sector programs and initiatives based on the interviews, which included webpages, newsletters, reports, and publications.

Analysis

We developed a coding template based on the Culture of Health Action Framework and preliminary themes identified during site visits. The coding template included the following *a priori* codes related to cross-sector collaborations: 1) the type and focus of the collaboration; 2) organizations involved and their roles; 3) coordination between organizations; 4) facilitators for collaboration; 5) barriers to collaboration; and 6) salient contextual or historical factors. Two members of the research team read the transcripts and archival data, and independently coded relevant segments into the coding template. Emergent codes were used for coding relevant information that did not fall into the prescribed codes. For this analysis, a pertinent emergent code concerned the perceived impact of cross-sector collaborations. Coding team meetings were held to refine the coding template and ensure inter-coder reliability.[18]

Four investigators independently reviewed the coded data to identify themes. First, we categorized each cross-sector collaboration's type by the health issues it addressed and the form of collaboration by its organizing and governance structure. Second, we identified common factors across cases that facilitated or inhibited cross-sector collaborations in the rural communities. Third, we derived themes that interviewees used to explain the impact of cross-sector collaborations on community health and culture. The team discussed the definitions and significance of the identified themes until we reached agreement.[19]

Patient and Public Involvement

Patients or public were not involved in this study. Patients' and the public's priorities and preferences reflected in the community health needs assessments informed the development of the interview questions.

RESULTS

Key characteristics of the four communities are summarized in Table 1. At the county level, total populations range from 12,000 to 25,000, and are greater than 96 percent white. Poverty rates range between 6.2 percent and 9.5 percent. Uninsured rates in these counties range between 3.7 percent and 9.1 percent. More than 50 percent of all employment in the counties are in four major categories: educational services, manufacturing, health care and social assistance, and retail trade. Two of the four communities are home to small liberal arts colleges.

[Insert Table 1 about here]

Types and Forms of Cross-Sector Collaborations

We identified 49 collaborative initiatives in these rural communities, which addressed five common types of health issues: physical activity and fitness, nutrition and healthy food access, outdoor environment, public and occupational safety, and health care access. Table 2 summarizes the types and forms of cross-sector initiatives the four communities used to promote health and the collaborators involved in these initiatives. Various organizations and individuals were involved, representing both health and non-health sectors. These included hospitals, public health departments, businesses, K-12 schools, higher education, local government, faith organizations, charity organizations, and community activists. A statewide cooperative extension from a land-grant university had local offices in two communities and was active in health-related collaborations.

[Insert Table 2 about here]

Three unique collaboration forms emerged from our analysis: cross-sector partnership, cross-sector interaction, and cross-sector exploration. *Cross-sector partnership* refers to collaborations in which all participants were fully and equally engaged. Participants could clearly describe a shared leadership and governance structure, and they emphasized joint mission, intense interaction, shared decision-making, and collective impact as organizing principles. *Cross-sector interaction* refers to collaborations in which one participant played a leading role with limited or infrequent interactions with other participants. There was no clear evidence of formal governance structure or shared decision-making. An example of a cross-sector interaction is local hospitals sponsoring nutrition education programs at local schools. *Cross-sector exploration* refers to organizations working across sectoral boundaries and investing in activities not within their traditional scope of work. One hospital, for example, invested in and operated the only fitness center in the community. We labeled this form of collaboration cross-sector exploration because there typically was minimum involvement from other collaborators.

Factors Facilitating Cross-Sector Collaborations

We identified four facilitating factors for mobilizing cross-sector collaborations in rural communities (see Table 3).

Health-promoting context: Interviewees from three communities stated that their communities have historically had a strong and visible culture valuing health and well-being. In the fourth community, interviewees described people's views and expectations about health as rapidly improving. Community members recognized the role of local hospitals, activists, and small colleges in fostering health-promoting cultures. Outdoor environment was another

contributing factor in one of the communities. Interviewees stated that having a health-promoting context attracted people with similar mindsets to move into the area, which consequently resulted in a stronger sense of community and health consciousness. Such community context facilitated further communitywide dialogue, activism, and collaborations for improving health.

Seed initiative: The lasting impact of seed initiatives was evident in all four communities. One community started a Food and Fitness Initiative for children with the support of a foundation grant. Community activists formed work groups to create policies and practices supporting healthy eating and active living for children, families, and community members. The Initiative continued to build partnerships with local schools, businesses, government agencies, colleges, and foundations to sustain its programs for more than seven years.

All four communities pursued the Blue Zones Project in the early 2010s. The Blue Zones Project was a community improvement initiative, focusing on improving well-being by prompting communities to make environment, policy, and social changes to enable healthy choices. In pursuing the Blue Zones certification, the communities developed and implemented health-promoting programs such as community gardens, safe walking and biking routes, and improvement of outdoor environment. More importantly, the initial effort established a cross-sector committee in each of the four communities that served as a communitywide forum for addressing health issues. Although none of the four communities were certified as Blue Zones, the committees continued to play a central role in promoting health and well-being. One community formalized its Blue Zones committee, which became a non-profit organization and secured grant funding for additional health initiatives. The other three communities used their committees to coordinate further health initiatives developed by different organizations and groups.

Hospital vision: Almost all interviewees stated that the hospital in their community was leading the way on key health and wellness initiatives. This recognition is understandable considering that hospitals are often the largest employer in rural counties and possess resources and expertise to catalyze health programs. In all four communities, hospital leaders embraced a broad view of health and developed similar visions to be "the hub for improving health and well-being." The vision included an expansion of the hospitals' role in each community, and prompted hospitals to initiate collaborations with other sectors. Hospital executives indicated that the vision changed the mindsets of hospital leaders and staff, which paved the way to make investment decisions in initiatives that had a positive, long-term impact on community health despite financial burdens on the institution.

Cross-sector leadership and governance: The interviews indicated that not all cross-sector collaborations operated effectively. One differentiating factor was the leadership and governance structure. Our results show that cross-sector partnerships in which a shared leadership and governance structure was established were rare. Most initiatives employed a cross-sector interaction form where one participant took the leadership role with little shared governance structure or shared decision-making. Organizations participating in cross-sector partnerships indicated that shared leadership helped them create common aims and measures among core partners, mutually reinforce activities, and reduce redundancy and competition. It was important for fostering communication and trust. One hospital administrator explained that shared leadership helped to engage partners over time. Beyond the perceived benefits, we observed that collaborations with a shared leadership form tended to make more evident impact because they often developed formal evaluation plans to hold all parties accountable.

[Insert Table 3 about here]

Challenges Inhibiting Cross-Sector Collaborations

Three inhibiting factors for mobilizing cross-sector collaborations in rural communities emerged in our analysis (see Table 3).

Different institutional logics: Because potential contributors to cross-sector collaborations come from different sectoral and professional backgrounds, they have developed different norms and practices for framing, prioritizing, and addressing health issues. These differences inhibited collaborations in two ways. First, organizations with different stakeholders and institutional logics found establishing connections with other sectors challenging. This challenge often manifested as difficulties in coordinating different priorities, performance measures, and reporting structures. As a result, organizations were reluctant to cooperate with potential partners from other sectors. This was more evident between key institutional players in healthcare and public health sectors. Second, when one collaborator spearheaded projects and framed them narrowly using sectoral or unilateral narratives, it was often difficult to recruit or engage other collaborators. These issues led to missed collaboration opportunities, and sometimes resulted in redundancy and competition in programming.

Financial and human resources constraints: Financial and human resources constraints often inhibited the creation, operation, and sustainment of cross-sector collaborations in rural communities. In all four communities, interviewees discussed the limited funding to support services and programs, particularly the public health services, which constrained organizations from engaging in collaborations. Moreover, external funding sources such as federal grants were not accessible to most rural communities because of eligibility issues or lack of skilled staff to pursue them. The four communities typically relied on local funding sources such as community foundations, donations, and tax dollars to support collaborative initiatives. Furthermore, all four

communities had difficulty in recruiting volunteers for some programs, which undermined their sustainability.

Geographic dispersion: Dispersion of rural populations created unique challenges for spreading gains from collaborative efforts to communities on the edge of geographic boundaries. All four case sites acknowledged that their core communities, which were county seats, benefited the most from health initiatives. Distances between rural towns inhibited communication and interaction between potential collaborators, and limited the reach of existing collaborations. Members of the geographically dispersed communities often had increased difficulties accessing the services and programs offered. The lack of public and private transportation options was a significant barrier for certain populations, such as seniors and people who live in poverty.

Perceived Impact

We identified three themes related to the perceptions of collaborative health initiatives' impact on community, collaborators, and culture. First, interviewees observed changes in behaviors and practices within communities as a result of nutrition education or fitness initiatives. For example, interviewees commented on an increased demand from community members for healthy options that eventually changed menus in certain restaurants. Second, collaborators started to see advantages of working together. One commonly discussed collaborative advantage was better coordination, which led to better use of available resources, less duplication, and improved programming. Third, collaborative health initiatives were perceived to lead to a gradual improvement in culture. Interviewees described examples of people in their communities valuing health more highly and influencing others to lead healthier lives.

Formal evaluation was rarely used in the four communities to assess the impact of specific initiatives. However, two initiatives, both focusing on physical activities and nutrition for K-12 children, routinely collect data on body mass index (BMI), perceptions of fruits and vegetables, and perceptions of physical activities. One initiative' evaluation results showed that students with more initiative exposure had slower BMI growth.

DISCUSSION

This research contributes an understanding of the context, forms, and impact of cross-sector collaborations in rural communities. Our findings highlight several important patterns and factors that policymakers and rural communities need to address to enable effective cross-sector collaborations for improving population health.

First, many organizations from different sectors expressed strong interests and initiated actions towards improving population health. Most of them, however, have not been able to establish real and lasting partnerships to address broader community-wide issues or address issues in a systematic way. Institutional differences and resource constraints may play a role in inhibiting cross-sector partnerships. The lack of practical knowledge or a framework for developing cross-sector partnerships in a rural context is another challenge faced by rural communities. Several participants stressed the importance of shared leadership, governance, and decision-making in their collaboration experience. Consistent with recommendations from public administration experts, the timing of shared structure formation is critical.[10,20] Collaborations that are initiated by joint effort and that develop a shared governance structure early will have more opportunities to bring together diverse viewpoints, reconcile institutional differences, and develop shared action plans. One possible strategy is to encourage healthcare and public health

organizations to collaborate with non-health sectors in conducting community health needs assessment and strategic planning.

Second, culture change is a slow process. Although we cannot pinpoint the origin of this process in the four communities, their experiences suggest that actions taken and the culture experienced by community members can mutually reinforce each other. Both community context and seed initiatives facilitated the development of cross-sector collaborations, which in turn strengthened a perception of community and culture of health.

Third, some challenges are magnified by the rural context. Specifically, public health departments are often underfunded, which constrains public health professionals to narrowly defined tasks such as vaccination and emergency preparedness while missing opportunities to lead or participate in initiatives for improving broader population health and well-being. Geographic dispersion of communities in conjunction with a lack of transportation options limits the impact of health initiatives in rural communities and subpopulations. Yet no organization or systematic approach was identified as appropriate for addressing this challenge. Community development organizations, which play an important role in urban settings to address transportation, housing, and other community projects,[13] were entirely absent in the four rural communities that we studied.

Our analysis had several limitations. First, we are limited in our ability to generalize the findings to other rural communities based on only four cases. Local context might significantly influence the types of collaborations and factors contributing to their success. Our findings may not capture the diversity in rural experiences. Second, our data on cross-sector activities were reported by key informants. Although we used snowball sampling to increase the pool of informants, because of recall bias, we may have underreported the number and extensiveness of

cross-sector activities in these communities and missed important historical factors that could influence the development of cross-sector collaborations. Third, we focused on rural communities that demonstrated progress towards creating healthy communities to generate knowledge about their experience with cross-sector collaborations. We did not include communities lagging in such progress in our study. Thus, we do not know whether rural communities that rank significantly differently on County Health Rankings face different challenges in mobilizing cross-sector collaborations to address health issues or they face similar challenges to a different degree.

IMPLICATIONS FOR POLICY AND PRACTICE

Our research offers several practice and policy implications. For rural communities, initiating local actions and changes is imperative for creating healthier communities. Such actions or seed initiatives have the potential to improve local context and culture with lasting impact. Reconciling institutional differences and developing shared leadership and governance in cross-sector collaborations early helps build partnerships, establish common goals, coordinate resources and actions, engage collaborators over time, and achieve collective impact. Defining and measuring outcomes early helps all partners see objectives clearly, and thus engage in the collaborative effort in such a way that contributes to goal achievement.

For policymakers, broadening the scope of work of local public health departments and supporting them with funding and staff will strengthen the role of the public health sector and facilitate cross-sector collaborations. Special investments are needed to attenuate the resource and infrastructure barriers in rural communities. For example, funders from both the government and private sectors should consider designing special funding opportunities to support cross-sector collaborations in rural communities, making information more accessible, and providing

guidelines or technical support to assist rural communities in pursuing such opportunities. Stakeholders at the local, regional, and national levels should consider developing policies and incentives to encourage community development organizations to engage in rural community development projects in order to improve key aspects of the community infrastructure.

CONCLUSIONS

This study shows that rural communities use cross-sector collaborations to address community health issues in the form of interaction and exploration, but real and lasting partnerships are rare. The development, operation, and sustainment of cross-sector collaborations are influenced by a set of contextual and practical factors. Practical strategies and policy interventions may be used to enhance cross-sector collaborations in rural communities.

Author Contributions: XZ and KM designed the study. XZ, MN, NG, and KM collected interview and archival data. XZ, PW, JB, MN, and NG analyzed the data and produced the tables. XZ prepared the initial draft of the manuscript. All authors critically revised the manuscript and approved the final version of the manuscript.

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Data Sharing Statement: County Health Rankings data are available at http://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation. Interview and archival data were collected by the authors, and are not released to the public.

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Table 1. Community profile

	Community D	Community G	Community I	Community W
Demographics				
Population	21 000	12 000	21 000	25 000
Median Age	40.6	42.2	38.4	38.6
Age ≥ 65	17.7%	19.4%	16.2%	18.0%
White	96.7%	98.3%	97.7%	96.7%
Socio-economics				
Median Household Income	$54 000	$57 000	$56 000	$62 000
Median Property Value	$158 000	$126 000	$127 000	$152 000
In Poverty	8.1%	6.2%	9.5%	8.3%
Uninsured	5.1%	4.3%	9.1%	3.7%
Bachelor's Degree or Higher	27.7%	22.7%	16.8%	28.6%
In Civilian Labor Force	72.4%	65.6%	67.5%	67.3%
County Health Rankings				
Health Factors	Maintained high rank	Maintained high rank	Improved rank from 60-65 to 40-45	Maintained high rank
Health Outcomes	Maintained high rank	Improved rank from 25-30 to 5-10	Improved rank from 45-50 to 20-25	Maintained high rank
Health Needs & Priorities				
Priority Areas	• Mental and behavioral health • Healthy behaviors • Active living • Prevention and management of chronic diseases	• Access to healthcare services • Chronic disease management • Disease prevention & wellness	• Healthy behaviors • Substance abuse • Chronic disease management	• Chronic disease management • Cancer prevention and treatment • Wellness services • Access to mental health services • Substance abuse

Table 2. Types and forms of cross-sector collaborations for improving population health

	Community D	Community G	Community I	Community W
Physical Activity and Fitness	**Sectors involved:** community activist, public health **Form**: cross-sector interaction	**Sectors involved:** hospital, fitness facility, faith organization, cooperative extension, local government, K-12 school **Form**: cross-sector partnership	**Sectors involved:** hospital **Form**: cross-sector exploration	**Sectors involved:** hospital, business, K-12 school, fitness facility **Form**: cross-sector interaction
Nutrition and Healthy Food Access	**Sectors involved:** community activist, K-12 school, higher education **Form**: cross-sector partnership	**Sectors involved:** hospital, K-12 school, fitness facility **Form**: cross-sector interaction	**Sectors involved:** hospital, business, K-12 school, local government, faith organization, cooperative extension **Form**: cross-sector interaction	**Sectors involved:** hospital, K-12 school **Form**: cross-sector interaction
Outdoor Environment	**Sectors involved:** local government, higher education, faith organization, public health, hospital **Form**: cross-sector interaction		**Sectors involved:** business, K-12 school **Form**: cross-sector interaction	
Public and Occupational Safety			**Sectors involved:** cooperative extension, K-12 school **Form**: cross-sector interaction	**Sectors involved:** hospital, business **Form**: cross-sector exploration
Healthcare Access	**Sectors involved:** hospital, local government **Form**: cross-sector interaction		**Sectors involved:** hospital, business, faith organization, cooperative extension, K-12 school, local government **Form**: cross-sector interaction	**Sectors involved:** hospital, K-12 school, charity organization **Form**: cross-sector interaction

Table 3. Factors facilitating and inhibiting cross-sector collaborations in rural communities

Facilitating Factors	Impact
Health-Promoting Context	Promotes shared value and consciousness; facilitates community-wide dialogue, activism, and collaboration
Seed Initiative	Motivates people; mobilizes collective actions; establishes structures that last beyond the original initiative
Hospital Vision	Expands hospital's role; transforms mindsets; creates a hub for improving health and wellbeing; provides resources
Cross-Sector Leadership and Governance	Creates and updates shared aims; coordinates resources and actions; reduces redundancy and competition; facilitates communication and trust
Inhibiting Factors	**Impact**
Different Institutional Logics	Disconnects potential collaborators with different institutional norms and practices; leads to missed collaboration opportunities; creates redundancy and competition.
Financial and Human Resources Constraints	Limits support for establishing programs and facilities; hinders provision of certain services and participation in joint efforts; hinders volunteering
Geographic Dispersion	Obstructs efforts to mobilize potential collaborators and spread progress beyond the core communities; upholds geographic disparities

Reporting checklist for qualitative study.

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O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

		Reporting Item	Page Number
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	4-5
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	1
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	3-4
Purpose or research question	#4	Purpose of the study and specific objectives or questions	1,4
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research	4

		paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	
Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	4
Context	#7	Setting / site and salient contextual factors; rationale	5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	5
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	5
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	5-6
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5,19

Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	6
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	6
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	6
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	n/a
Limitations	#19	Trustworthiness and limitations of findings	14
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	Title page
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	Title page

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Mobilizing Cross-Sector Collaborations to Improve Population Health in U.S. Rural Communities: A Qualitative Study

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Mobilizing Cross-Sector Collaborations to Improve Population Health in U.S. Rural Communities: A Qualitative Study

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Data Statement: County Health Rankings data are available at http://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation. Interview and archival data were collected by the authors, and are not released to the public.

Mobilizing Cross-Sector Collaborations to Improve Population Health in U.S. Rural Communities: A Qualitative Study

ABSTRACT

Objectives: This study examines types and forms of cross-sector collaborations employed by rural communities to address community health issues and identifies factors facilitating or inhibiting such collaborations.

Setting: We conducted case studies of four rural communities in the U.S. state of Iowa that have demonstrated progress in creating healthier communities.

Participants: Key informants from local public health departments, hospitals, and other health-promoting organizations and groups participated in this study. Twenty-two key-informant interviews were conducted. Participants were selected based on their organization's involvement in community health initiatives.

Results: Rural communities used different forms of collaborations, including cross-sector partnership, cross-sector interaction, and cross-sector exploration, to address community health issues. Stakeholders from public health, healthcare, social services, education, and business sectors were involved. Factors facilitating cross-sector collaborations include health-promoting local contexts, seed initiatives that mobilize communities, hospital vision that embrace broad views of health, and shared collaboration leadership and governance. Challenges to developing and sustaining cross-sector collaborations include different institutional logics, financial and human resources constraints, and geographic dispersion.

Conclusions: Rural communities use cross-sector collaborations to address community health issues in the form of interaction and exploration, but real and lasting partnerships are rare. The development, operation, and sustainment of cross-sector collaborations are influenced by a set of

contextual and practical factors. Practical strategies and policy interventions may be used to enhance cross-sector collaborations in rural communities.

Keywords: Cross-sector collaborations, population health, social determinants of health, rural health

ARTICLE SUMMARY

- This is the first study to examine cross-sector collaborations employed by U.S. rural communities to improve population health, focusing on rural-specific practices, facilitators, and challenges.
- This study uses an explanatory sequential design and multiple data sources including County Health Rankings, community health needs assessments, interviews, and archives to develop an in-depth understanding of the issue.
- The use of qualitative methods and a small number of cases limits our ability to generalize our findings.
- We only selected rural communities that demonstrated progress towards creating healthy communities, and did not include communities lagging in such progress in our study. Thus, the findings may be particular to those similar to the selected communities.

INTRODUCTION

There is long-standing recognition that where people live greatly influence their chances of being healthy. Schools, workplaces, neighborhoods, and the broader community influence the values that people place on health and their opportunities to make healthy choices.[1-3] Accumulating evidence supports that upstream social factors (e.g., educational attainment, income, and occupation) have wide-ranging effects on health across the life course by shaping daily living conditions and influencing downstream determinants of health including health behaviors.[4-6] Therefore, addressing social determinants of health is critical for any systematic effort aiming to improve population health and health equity.[3] Building on such evidence and a vision to build a Culture of Health in the U.S., the Robert Wood Johnson Foundation (RWJF) developed a framework highlighting four action areas that include making health a shared value, fostering cross-sector collaboration, creating healthier, more equitable communities, and strengthening integration of health systems and services.[7,8]

The focus on fostering cross-sector collaborations to improve well-being reflects a confluence of several motives. First, health is more than the absence of disease, and medical care alone cannot improve health without addressing social determinants of health. Second, while the health sectors (e.g., health care and public health) play a key role in promoting health, they cannot address many social conditions that affect health and health behaviors (e.g., access to healthy food, affordable housing, and safe environment) by themselves. Cross-sector collaborations have the potential to align resources and contributions of multiple sectors to address these issues. Third, there are numerous examples of cross-sector collaboration that have successfully improved health and well-being at organizational or community level.[9]

The use of cross-sector collaborations to address public issues has gained increasing acceptance in recent years.[10,11] In the public administration literature, cross-sector collaboration refers to "the linking or sharing of information, resources, activities, and capabilities by organizations in two or more sectors to achieve jointly an outcome that could not be achieved by organizations in one sector separately."[12] Previous studies documented that cross-sector collaboration has been employed in efforts to prevent infectious diseases, address obesity and noncommunicable diseases, promote healthy eating and active living, improve early child care and education, and advance health-promoting policy.[11,13,14] Research showed that urban communities that engaged a broad array of sectors in population health activities gained sizable improvement in health outcomes measured as decline in deaths due to preventable causes, including cardiovascular disease, diabetes, and influenza.[15] However, our understanding of cross-sector collaborations and their impact draws largely on the experience of urban communities. There is a dearth of research examining the types and forms of cross-sector collaborations employed by rural communities to address community health issues.

To address this knowledge gap, we conducted a multisite case study of four rural communities in a Midwest state in the U.S. that have demonstrated progress in engaging stakeholders from multiple sectors to create healthier communities. We analyzed interview and archival data to examine the types and forms of cross-sector collaborations in these communities and factors facilitating or inhibiting collaborations.

METHODS

This study used an explanatory sequential design in which County Health Rankings[16] and other secondary data were analyzed to guide case selection, data collection and analysis.[17] We focused on rural communities in a Midwest state of the U.S. to leverage our knowledge of the

community contexts and policies that might influence cross-sector practices. The study was approved by the Institutional Review Board of the University of Iowa.

Case Selection

We selected cases based on two criteria. First, we used County Health Rankings to identify rural counties that either have consistently ranked among the top quartile or have shown significant improvement in their rankings between 2010 and 2016. Based on U.S. Department of Agriculture's definitions, counties with an Urban Influence Code higher than two (i.e., nonmetropolitan counties) were considered as rural counties.[18] The County Health Rankings rank counties or county equivalents within each state using over 30 population-health indicators that are standardized, weighted, and summed to measure health outcomes and health factors. Second, we reviewed community health needs assessments and health improvement plans from county health departments and hospitals to evaluate whether a broad definition of health (i.e., including well-being, quality of life, and social determinants of health) and cross-sector approaches for improving health (i.e., including non-health partners) were evident in these documents.

Patient and Public Involvement

No patient was involved.

Data Collection

We used RWJF's Culture of Health Action Framework to develop an interview guide. The interview guide included questions related to local activities and experiences in the four action areas, including cross-sector collaborations to improve well-being, integration of health services, promoting health as a shared value, and addressing health equity. We conducted 22 semi-structured interviews (19 individual and 3 group interviews) with key informants during site visits to the communities. We identified interviewees through a snowball sampling process

in which the hospital and public health leaders served as our initial subjects. The interviews represented perspectives of local hospitals, public health departments, and other health-promoting organizations and groups. All interviews were recorded and transcribed after obtaining interviewees' verbal consent. This study was exempted from written consent requirements because it did not involve collection of personal information or physical interactions with the participants. We collected additional archival data on relevant cross-sector programs and initiatives based on the interviews, which included webpages, newsletters, reports, and publications.

Analysis

We developed a coding template based on the Culture of Health Action Framework and preliminary themes identified during site visits. The coding template included the following *a priori* codes related to cross-sector collaborations: 1) the type and focus of the collaboration; 2) organizations involved and their roles; 3) coordination between organizations; 4) facilitators for collaboration; 5) barriers to collaboration; and 6) salient contextual or historical factors.

Two members of the research team read the transcripts and archival data, and independently coded relevant segments into the coding template. Emergent codes were used for coding relevant information that did not fall into the prescribed codes. For this analysis, a pertinent emergent code concerned the perceived impact of cross-sector collaborations. Coding team meetings were held to refine the coding template and ensure inter-coder reliability.[19]

Four investigators independently reviewed the coded data to identify themes. First, we categorized each cross-sector collaboration's type by the health issues it addressed and the form of collaboration by its organizing and governance structure. Second, we identified common factors across cases that facilitated or inhibited cross-sector collaborations in the rural

communities. Third, we derived themes that interviewees used to explain the impact of cross-sector collaborations on community health and culture. The team discussed the definitions and significance of the identified themes until we reached agreement.[20]

RESULTS

Key characteristics of the four communities are summarized in Table 1. At the county level, total populations range from 12,000 to 25,000, and are greater than 96 percent white. Poverty rates range between 6.2 percent and 9.5 percent. Uninsured rates in these counties range between 3.7 percent and 9.1 percent. More than 50 percent of all employment in the counties are in four major categories: educational services, manufacturing, health care and social assistance, and retail trade. Two of the four communities are home to small liberal arts colleges.

[Insert Table 1 about here]

Types and Forms of Cross-Sector Collaborations

We identified 49 collaborative initiatives in these rural communities, which addressed five common types of health issues: physical activity and fitness, nutrition and healthy food access, outdoor environment, public and occupational safety, and health care access. Table 2 summarizes the types and forms of cross-sector initiatives the four communities used to promote health and the collaborators involved in these initiatives. Various organizations and individuals were involved, representing both health and non-health sectors. These included hospitals, public health departments, businesses, K-12 schools, higher education, local government, faith organizations, charity organizations, and community activists. A statewide cooperative extension from a land-grant university had local offices in two communities and was active in health-related collaborations.

[Insert Table 2 about here]

Three unique collaboration forms emerged from our analysis: cross-sector partnership, cross-sector interaction, and cross-sector exploration. *Cross-sector partnership* refers to collaborations in which all participants were fully and equally engaged. Participants could clearly describe a shared leadership and governance structure, and they emphasized joint mission, intense interaction, shared decision-making, and collective impact as organizing principles. *Cross-sector interaction* refers to collaborations in which one participant played a leading role with limited or infrequent interactions with other participants. There was no clear evidence of formal governance structure or shared decision-making. An example of a cross-sector interaction is local hospitals sponsoring nutrition education programs at local schools. *Cross-sector exploration* refers to organizations working across sectoral boundaries and investing in activities not within their traditional scope of work. One hospital, for example, invested in and operated the only fitness center in the community. We labeled this form of collaboration cross-sector exploration because there typically was minimum involvement from other collaborators.

Factors Facilitating Cross-Sector Collaborations

We identified four facilitating factors for mobilizing cross-sector collaborations in rural communities (see Table 3).

Health-promoting context: Interviewees from three communities stated that their communities have historically had a strong and visible culture valuing health and well-being. In the fourth community, interviewees described people's views and expectations about health as rapidly improving. Community members recognized the role of local hospitals, activists, and small colleges in fostering health-promoting cultures. Outdoor environment was another contributing factor in one of the communities. Interviewees stated that having a health-promoting

context attracted people with similar mindsets to move into the area, which consequently resulted in a stronger sense of community and health consciousness. Such community context facilitated further communitywide dialogue, activism, and collaborations for improving health.

Seed initiative: The lasting impact of seed initiatives was evident in all four communities. One community started a Food and Fitness Initiative for children with the support of a foundation grant. Community activists formed work groups to create policies and practices supporting healthy eating and active living for children, families, and community members. The Initiative continued to build partnerships with local schools, businesses, government agencies, colleges, and foundations to sustain its programs for more than seven years.

All four communities pursued the Blue Zones Project in the early 2010s. The Blue Zones Project was a community improvement initiative, focusing on improving well-being by prompting communities to make environment, policy, and social changes to enable healthy choices. In pursuing the Blue Zones certification, the communities developed and implemented health-promoting programs such as community gardens, safe walking and biking routes, and improvement of outdoor environment. More importantly, the initial effort established a cross-sector committee in each of the four communities that served as a communitywide forum for addressing health issues. Although none of the four communities were certified as Blue Zones, the committees continued to play a central role in promoting health and well-being. One community formalized its Blue Zones committee, which became a non-profit organization and secured grant funding for additional health initiatives. The other three communities used their committees to coordinate further health initiatives developed by different organizations and groups.

Hospital vision: Almost all interviewees stated that the hospital in their community was leading the way on key health and wellness initiatives. This recognition is understandable considering that hospitals are often the largest employer in rural counties and possess resources and expertise to catalyze health programs. In all four communities, hospital leaders embraced a broad view of health and developed similar visions to be "the hub for improving health and well-being." The vision included an expansion of the hospitals' role in each community, and prompted hospitals to initiate collaborations with other sectors. Hospital executives indicated that the vision changed the mindsets of hospital leaders and staff, which paved the way to make investment decisions in initiatives that had a positive, long-term impact on community health despite financial burdens on the institution.

Cross-sector leadership and governance: The interviews indicated that not all cross-sector collaborations operated effectively. One differentiating factor was the leadership and governance structure. Our results show that cross-sector partnerships in which a shared leadership and governance structure was established were rare. Most initiatives employed a cross-sector interaction form where one participant took the leadership role with little shared governance structure or shared decision-making. Organizations participating in cross-sector partnerships indicated that shared leadership helped them create common aims and measures among core partners, mutually reinforce activities, and reduce redundancy and competition. It was important for fostering communication and trust. One hospital administrator explained that shared leadership helped to engage partners over time. Beyond the perceived benefits, we observed that collaborations with a shared leadership form tended to make more evident impact because they often developed formal evaluation plans to hold all parties accountable.

[Insert Table 3 about here]

Challenges Inhibiting Cross-Sector Collaborations

Three inhibiting factors for mobilizing cross-sector collaborations in rural communities emerged in our analysis (see Table 3).

Different institutional logics: Because potential contributors to cross-sector collaborations come from different sectoral and professional backgrounds, they have developed different norms and practices for framing, prioritizing, and addressing health issues. These differences inhibited collaborations in two ways. First, organizations with different stakeholders and institutional logics found establishing connections with other sectors challenging. This challenge often manifested as difficulties in coordinating different priorities, performance measures, and reporting structures. As a result, organizations were reluctant to cooperate with potential partners from other sectors. This was more evident between key institutional players in healthcare and public health sectors. Second, when one collaborator spearheaded projects and framed them narrowly using sectoral or unilateral narratives, it was often difficult to recruit or engage other collaborators. These issues led to missed collaboration opportunities, and sometimes resulted in redundancy and competition in programming.

Financial and human resources constraints: Financial and human resources constraints often inhibited the creation, operation, and sustainment of cross-sector collaborations in rural communities. In all four communities, interviewees discussed the limited funding to support services and programs, particularly the public health services, which constrained organizations from engaging in collaborations. Moreover, external funding sources such as federal grants were not accessible to most rural communities because of eligibility issues or lack of skilled staff to pursue them. The four communities typically relied on local funding sources such as community foundations, donations, and tax dollars to support collaborative initiatives. Furthermore, all four

communities had difficulty in recruiting volunteers for some programs, which undermined their sustainability.

Geographic dispersion: Dispersion of rural populations created unique challenges for spreading gains from collaborative efforts to communities on the edge of geographic boundaries. All four case sites acknowledged that their core communities, which were county seats, benefited the most from health initiatives. Distances between rural towns inhibited communication and interaction between potential collaborators, and limited the reach of existing collaborations. Members of the geographically dispersed communities often had increased difficulties accessing the services and programs offered. The lack of public and private transportation options was a significant barrier for certain populations, such as seniors and people who live in poverty.

Perceived Impact

We identified three themes related to the perceptions of collaborative health initiatives' impact on community, collaborators, and culture. First, interviewees observed changes in behaviors and practices within communities as a result of nutrition education or fitness initiatives. For example, interviewees commented on an increased demand from community members for healthy options that eventually changed menus in certain restaurants. Second, collaborators started to see advantages of working together. One commonly discussed collaborative advantage was better coordination, which led to better use of available resources, less duplication, and improved programming. Third, collaborative health initiatives were perceived to lead to a gradual improvement in culture. Interviewees described examples of people in their communities valuing health more highly and influencing others to lead healthier lives.

Formal evaluation was rarely used in the four communities to assess the impact of specific initiatives. However, two initiatives, both focusing on physical activities and nutrition for K-12 children, routinely collect data on body mass index (BMI), perceptions of fruits and vegetables, and perceptions of physical activities. One initiative' evaluation results showed that students with more initiative exposure had slower BMI growth.

DISCUSSION

This research contributes an understanding of the context, forms, and impact of cross-sector collaborations in rural communities. Our findings highlight several important patterns and factors that policymakers and rural communities need to address to enable effective cross-sector collaborations for improving population health.

First, many organizations from different sectors expressed strong interests and initiated actions towards improving population health. Most of them, however, have not been able to establish real and lasting partnerships to address broader community-wide issues or address issues in a systematic way. Institutional differences and resource constraints may play a role in inhibiting cross-sector partnerships. The lack of practical knowledge or a framework for developing cross-sector partnerships in a rural context is another challenge faced by rural communities. Several participants stressed the importance of shared leadership, governance, and decision-making in their collaboration experience. Consistent with recommendations from public administration experts, the timing of shared structure formation is critical.[10,21] Collaborations that are initiated by joint effort and that develop a shared governance structure early will have more opportunities to bring together diverse viewpoints, reconcile institutional differences, and develop shared action plans. One possible strategy is to encourage healthcare and public health

organizations to collaborate with non-health sectors in conducting community health needs assessment and strategic planning.

Second, culture change is a slow process. Although we cannot pinpoint the origin of this process in the four communities, their experiences suggest that actions taken and the culture experienced by community members can mutually reinforce each other. Both community context and seed initiatives facilitated the development of cross-sector collaborations, which in turn strengthened a perception of community and culture of health.

Third, some challenges are magnified by the rural context. Specifically, public health departments are often underfunded, which constrains public health professionals to narrowly defined tasks such as vaccination and emergency preparedness while missing opportunities to lead or participate in initiatives for improving broader population health and well-being. Geographic dispersion of communities in conjunction with a lack of transportation options limits the impact of health initiatives in rural communities and subpopulations. Yet no organization or systematic approach was identified as appropriate for addressing this challenge. Community development organizations, which play an important role in urban settings to address transportation, housing, and other community projects,[13] were entirely absent in the four rural communities that we studied.

This study extends the existing literature on the increasingly use of cross-sector collaborations in addressing social determinants of health and health promotion[11,14,22,23] by documenting such practices in rural communities. Our findings highlight rural-specific challenges in implementing cross-sector strategies, which require future research and policy interventions to address. Specifically, a collaborative approach to gathering and applying evidence is crucial to implementing effective cross-sector strategies.[24] Thus, the development of

an evidence base for rural-specific facilitators, challenges, and effective strategies is in demand. Further, many conditions inhibiting rural communities from making progress in closing the rural-urban gap in population health outcomes are impracticable to change with local resources and actions. Such conditions require policy attention and resource commitment to improving social determinants of health in the rural context.[25]

Our analysis had several limitations. First, we are limited in our ability to generalize the findings to other rural communities based on only four cases. Local context might significantly influence the types of collaborations and factors contributing to their success. Our findings may not capture the diversity in rural experiences. Second, our data on cross-sector activities were reported by key informants. Although we used snowball sampling to increase the pool of informants, because of recall bias, we may have underreported the number and extensiveness of cross-sector activities in these communities and missed important historical factors that could influence the development of cross-sector collaborations. Third, we focused on rural communities that demonstrated progress towards creating healthy communities to generate knowledge about their experience with cross-sector collaborations. We did not include communities lagging in such progress in our study. Thus, we do not know whether rural communities that rank significantly differently on County Health Rankings face different challenges in mobilizing cross-sector collaborations to address health issues or they face similar challenges to a different degree.

IMPLICATIONS FOR POLICY AND PRACTICE

Our research offers several practice and policy implications. For rural communities, initiating local actions and changes is imperative for creating healthier communities. Such actions or seed initiatives have the potential to improve local context and culture with lasting

impact. Reconciling institutional differences and developing shared leadership and governance in cross-sector collaborations early helps build partnerships, establish common goals, coordinate resources and actions, engage collaborators over time, and achieve collective impact. Defining and measuring outcomes early helps all partners see objectives clearly, and thus engage in the collaborative effort in such a way that contributes to goal achievement.

For policymakers, broadening the scope of work of local public health departments and supporting them with funding and staff will strengthen the role of the public health sector and facilitate cross-sector collaborations. Special investments are needed to attenuate the resource and infrastructure barriers in rural communities. For example, funders from both the government and private sectors should consider designing special funding opportunities to support cross-sector collaborations in rural communities, making information more accessible, and providing guidelines or technical support to assist rural communities in pursuing such opportunities. Stakeholders at the local, regional, and national levels should consider developing policies and incentives to encourage community development organizations to engage in rural community development projects in order to improve key aspects of the community infrastructure.

CONCLUSIONS

This study shows that rural communities use cross-sector collaborations to address community health issues in the form of interaction and exploration, but real and lasting partnerships are rare. The development, operation, and sustainment of cross-sector collaborations are influenced by a set of contextual and practical factors. Practical strategies and policy interventions may be used to enhance cross-sector collaborations in rural communities.

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Table 1. Community profile

	Community D	Community G	Community I	Community W
Demographics				
Population	21 000	12 000	21 000	25 000
Median Age	40.6	42.2	38.4	38.6
Age ≥ 65	17.7%	19.4%	16.2%	18.0%
White	96.7%	98.3%	97.7%	96.7%
Socio-economics				
Median Household Income	$54 000	$57 000	$56 000	$62 000
Median Property Value	$158 000	$126 000	$127 000	$152 000
In Poverty	8.1%	6.2%	9.5%	8.3%
Uninsured	5.1%	4.3%	9.1%	3.7%
Bachelor's Degree or Higher	27.7%	22.7%	16.8%	28.6%
In Civilian Labor Force	72.4%	65.6%	67.5%	67.3%
County Health Rankings				
Health Factors	Maintained high rank	Maintained high rank	Improved rank from 60-65 to 40-45	Maintained high rank
Health Outcomes	Maintained high rank	Improved rank from 25-30 to 5-10	Improved rank from 45-50 to 20-25	Maintained high rank
Health Needs & Priorities				
Priority Areas	• Mental and behavioral health • Healthy behaviors • Active living • Prevention and management of chronic diseases	• Access to healthcare services • Chronic disease management • Disease prevention & wellness	• Healthy behaviors • Substance abuse • Chronic disease management	• Chronic disease management • Cancer prevention and treatment • Wellness services • Access to mental health services • Substance abuse

Table 2. Types and forms of cross-sector collaborations for improving population health

	Community D	Community G	Community I	Community W
Physical Activity and Fitness	**Sectors involved:** community activist, public health **Form**: cross-sector interaction	**Sectors involved:** hospital, fitness facility, faith organization, cooperative extension, local government, K-12 school **Form**: cross-sector partnership	**Sectors involved:** hospital **Form**: cross-sector exploration	**Sectors involved:** hospital, business, K-12 school, fitness facility **Form**: cross-sector interaction
Nutrition and Healthy Food Access	**Sectors involved:** community activist, K-12 school, higher education **Form**: cross-sector partnership	**Sectors involved:** hospital, K-12 school, fitness facility **Form**: cross-sector interaction	**Sectors involved:** hospital, business, K-12 school, local government, faith organization, cooperative extension **Form**: cross-sector interaction	**Sectors involved:** hospital, K-12 school **Form**: cross-sector interaction
Outdoor Environment	**Sectors involved:** local government, higher education, faith organization, public health, hospital **Form**: cross-sector interaction		**Sectors involved:** business, K-12 school **Form**: cross-sector interaction	
Public and Occupational Safety			**Sectors involved:** cooperative extension, K-12 school **Form**: cross-sector interaction	**Sectors involved:** hospital, business **Form**: cross-sector exploration
Healthcare Access	**Sectors involved:** hospital, local government **Form**: cross-sector interaction		**Sectors involved:** hospital, business, faith organization, cooperative extension, K-12 school, local government **Form**: cross-sector interaction	**Sectors involved:** hospital, K-12 school, charity organization **Form**: cross-sector interaction

Table 3. Factors facilitating and inhibiting cross-sector collaborations in rural communities

Facilitating Factors	Impact
Health-Promoting Context	Promotes shared value and consciousness; facilitates community-wide dialogue, activism, and collaboration
Seed Initiative	Motivates people; mobilizes collective actions; establishes structures that last beyond the original initiative
Hospital Vision	Expands hospital's role; transforms mindsets; creates a hub for improving health and wellbeing; provides resources
Cross-Sector Leadership and Governance	Creates and updates shared aims; coordinates resources and actions; reduces redundancy and competition; facilitates communication and trust
Inhibiting Factors	**Impact**
Different Institutional Logics	Disconnects potential collaborators with different institutional norms and practices; leads to missed collaboration opportunities; creates redundancy and competition.
Financial and Human Resources Constraints	Limits support for establishing programs and facilities; hinders provision of certain services and participation in joint efforts; hinders volunteering
Geographic Dispersion	Obstructs efforts to mobilize potential collaborators and spread progress beyond the core communities; upholds geographic disparities

Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

		Reporting Item	Page Number
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	4-5
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	1
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	3-4
Purpose or research question	#4	Purpose of the study and specific objectives or questions	1,4
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research	4

		paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.	
Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	4
Context	#7	Setting / site and salient contextual factors; rationale	5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	5
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	5
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	5-6
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5,19

Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	6
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	6
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	6
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	n/a
Limitations	#19	Trustworthiness and limitations of findings	14
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	Title page
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	Title page