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Community Health Policy Assessment of a Rural Northeast Missouri County using the Centers for Disease Control and Prevention's CHANGE Tool

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ABSTRACT

Background: In order to build a framework to address policy gaps and needs, community's risk factors were identified and the extent to which current policies were in place to address the risk factors were compared.
Methods: Face-to-face interviews, using the US Centers for Disease Control and Prevention's *CHANGE* tool were conducted in a rural Northeast Missouri county possessing exceptionally high chronic disease rates to assess the factor(s) had the greatest influence on the rates in each sector of the community.
Results: The Health Care Agency sector possessed the most factors categorized as environmental and policy assets, and the Community-at-Large and Business/Worksite sectors seemed to possess the least environmental and policy factors categorized as assets.
Conclusions: Because organizational policies can strongly influence community health practices and behaviors, collaborative leadership from the Health Care Agency sector, comprehensive worksite health promotion programs in the Business/Worksite and Community Institutions/Organizations sectors, and tobacco-free school policies are recommended. Multiple community sectors must work together to change not only behaviors but also environments in this county.

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Introduction

Chronic disease is viewed by the United Nations as a global crisis and an obstacle to development goals[1]. With increases in technology and globalization, many countries now battle both communicable and chronic disease challenges[2]. Although a serious burden globally, chronic diseases such as heart diseases, cancers, and pulmonary diseases are generally neglected as national priorities[3]. In the United States, chronic diseases, especially those caused by obesity and tobacco, are preventable burdens that are straining the health care system[4]. A community's chronic disease health status is affected by multiple conditions and factors. The lifestyle behavioral risk factors or causes for chronic disease are well established and

modifiable, which may include unhealthy diet, sedentary lifestyle, and tobacco use[5]. These lifestyle behavioral risks are strongly related to a community's living conditions, culture, economics, and social networks. Health-related policies, systems, and environments in numerous sectors of the community heavily influence lifestyle behavioral risks, individual health decisions, and chronic disease rates[6].

Policies (legislative or organizational) can mandate institutionalized and sustainable environment as well as systems change in order to guide or influence individuals' health practices and behaviors[7]. The Socio-Ecological Model suggests that policies trickle-down from higher administrative levels to the organizational and individual levels[8]. Health policy, including laws, regulations, and ordinances; profoundly affects a community's health status. Quantitative information such as systematic reviews of research as well as qualitative information like interviews and observations provides evidence to inform the policy-making process[9]. When interventions focused on policy and environments were implemented in communities around the United States, priority population reach, and health objectives were advanced[4].

Sustained multi-sectoral commitments are required to change not only lifestyle behaviors but also systems and environments[6]. In order to position chronic disease higher on the global health and development priority list, a collaborative approach is recommended[3]. The most recent initiatives undertaken for population health improvement involve multiple community sectors pooling their resources as they recognize the socio-ecological connection between health and the environment. The focus has shifted from individuals to systems and policies in order to more positively affect lifestyle-related health outcomes[10]. In addition, numerous sectors of the community share responsibility for public health outcomes such as chronic disease prevention. Collaborative action is necessary to foster change and improvement. To meet a global goal of reducing chronic disease mortality by 2% per year, priority actions must include not only prevention and treatment but also monitoring and accountability[1]. Multi-sectoral collaboration for chronic disease prevention must, therefore, start with a community needs and resources, or assets, assessment. The needs assessment examines individual, environmental, and policy factors that influence health in order to give attention to priority concerns. Representatives from those systems and sectors affected by the health problem, as well as those with the power to make change, collaborate to establish goals and outcomes. Multi-sectoral collaboration enhances organizational capacity for behavior change and improvements in population health[11]. Seven of the 10 leading causes of death in the United States are chronic diseases; and almost half of the country is affected by at least one of these conditions[7]. Major chronic diseases such as cardiovascular disease, cancer, lung disease, arthritis, and diabetes are characterized by multiple health risk factors and long latency periods[6].

The leading cause of morbidity and mortality in the Midwest state of Missouri, chronic disease, accounts for 70% of all deaths in the state as well as 75% of total health care costs each year. Missouri also has higher cardiovascular disease rates than the national average; the state's diabetes rates are on the rise; cancer affects 75% of Missouri families; and almost one-third of Missourians have been diagnosed with arthritis[6].In particular, the Northeast region of Missouri possesses high chronic disease rates and a higher prevalence of 'poor' or 'fair' general health status than the rest of the state[12]. One county located in rural Northeast Missouri possesses some of the highest chronic disease rates in the region for emergency room visits for heart disease and stroke, deaths and hospitalizations for chronic obstructive pulmonary disease, and emergency room visits for arthritis[6]. This county includes almost 5000 residents in over 2000 households (median house value =

$44,500.00) served by one hospital, one rural health clinic, and no federally qualified health centers. Most adults are employed in the farming sector (27%), possess a high school diploma (45%), and earn, on average, $25,000 per year. The rate of low birth weight infants in the county as well as the proportion of children enrolled in MC+/Medicaid are higher than the state average[13].

The purpose of the study was to determine the specific environmental and policy risk factors influencing the region's exceptionally high chronic disease rates. To do so, the United States' Centers for Disease Control and Prevention's (CDC) *CHANGE* tool was employed to collect and analyze local-level environmental and policy data from county schools, work sites, community organizations, and health care facilities.

Materials and Methods

Sample

During summer 2012, fourteen of the county's community leaders and community members at 14 strategically selected sites in the following sectors: *Community-at-Large, Community Institution/Organization, Health Care Agency, School,* and *Business/Worksite* represented the community team, the participants in the face-to-face interviews.

The *Community-at-Large* sector includes community-wide efforts that outline the social and policy built environments such as food access, transportation, tobacco-free policies, and safety. The *Community-at-Large* sector site selected for this study was the City Hall. A face-to-face interview was conducted with the City Hall's Administrative Assistant.

The *Community Institution/Organization* sector includes providers within the community that deliver a variety of human services and access to facilities such as daycare, faith-based organizations, senior centers, wellness organizations, and service clubs. The *Community Institution/Organization* sites selected for this study included a local senior citizen center, a Christian church, and a daycare facility. At the three sites, face-to-face interviews with the center manager, pastor, and manager were conducted.

The *Health Care* sector includes sites available for individuals to receive preventive care or treatment or emergency health care services such as hospitals, clinics, and health departments. The *Health Care* sites selected for this study were a rural health clinic, a county hospital, and a local health department. For the clinic and hospital, the hospital administrator and an on-staff nurse completed the face-to-face interviews jointly. While the sites were technically separate entities, the two operated in a single building and received management and staffing from the same personnel. For the health department, the administrator completed the face-to-face interview.

The *School* sector includes primary and secondary learning institutions. Three schools within the county limits were selected for the study. Face-to-face interviews were conducted with the schools' three principals as well as an afterschool program administrator.

The *Business/Work Site* sector includes places of employment such as businesses, manufacturers, restaurants, and retail establishments. The *Work* sites selected for the study were a grocery store, a printing business, and a bank. Face-to-face interviews were conducted with the store manager, business administrator, and vice president of the bank.

Instrument

The Healthy Communities Program within the Division of Adult and Community Health, at the National Center for Chronic Disease Prevention and Health Promotion of the Centers for Disease Control and Prevention developed an assessment instrument called the Community Health Assessment and Group Evaluation *CHANGE* tool. Based on the Socio-Ecological Model[14], and supporting data collected from a variety of sources, the *CHANGE* tool measures multiple influences on a community's health to aid in developing

actionable health improvement strategies needed to transform communities into those that support healthy living[7]. The *CHANGE* tool provided a snapshot of community health indicators and systems currently in place. It was divided into five sectors for assessment: *Community-at-Large*, *Community Institution/ Organization*, *Health Care*, *School*, and *Business/Worksite*. Within each sector, there were modules (i.e., leadership, chronic disease management, physical activity, tobacco, and nutrition) that contained the specific behavior and environment/systems questions, which were asked of the study participants. In addition, the tool assisted in identifying how sectors compared to each other in order to build a framework to address gaps and needs[7].

Procedure

From the interpretive perspective, human interactions are mediated by the local environment and organizational policy surrounding those[15]. Therefore, qualitative research methods, including face-to-face interviews and observations, have been used extensively in health policy research since the late 1980's to understand the complexity of implementing health behavior change interventions[16]. Recognized as a valuable tool to gather specific information necessary to make actionable policy decisions, qualitative research methods can explore a health problem in a natural setting. The in-depth data gathered from interviews or observations are generated in the form of text or tables and describe behaviors and beliefs of those experiencing the health problem or circumstance[17]. A structured interview was used as the qualitative research method in this study to minimize non-response and maximize data quality. CHANGE tool data (local-level behavior, policy, systems, and environment data), were collected using face-to-face interviews. The same information was collected from each participant by the researchers following recommendations from the literature such as researchers' extensive practice and preparation for conducting the interviews, asking only one question at a time, remaining neutral and providing transition between sections[18].

After Institutional Review Board approval and obtaining informed consent from the participants, both face-to-face interviews, using the appropriate sector's of *CHANGE* tool questions and walkability audits (assess pedestrian facilities and surroundings along and near a walking route to identify possible improvements) were conducted by two researchers in summer 2012. Specifically, the researchers asked a series of questions pertaining to the following topics: physical activity, nutrition, chronic disease management, tobacco use, afterschool (for the *School* sector only), and leadership. Following the surveys, the researchers, if applicable, conducted a walkability audit of the facility and took photographs.

Analysis

Framework analysis, a qualitative research method for applied policy research, was used to describe and interpret participants' ratings for the questions in each of the *CHANGE* tool sections. This flexible analysis approach is best used for specific questions about policy issues, for pre-selected samples, and for studies with a limited period. Researchers familiarize themselves with the data collected, recognize and index data themes, arrange the data into charts, analyze key points, and make recommendations reflecting participants' beliefs[17]. The data analysis included reviewing and scoring the responses to describe the specific risk factors influencing chronic disease rates. The researchers collaborated with each other on scoring the survey responses, using a 5-point scaling provided in the CHANGE tool instrument (Table 1). The results were synthesized to draw conclusions. Scoring and risk factor analysis was based on previously established standard methods from the *CHANGE* tool Action Guide.

Table 1: Policy and Environment Rating Scale

Response #	Policy	Environment
1	Not identified as problem	Elements not in place
2	Problem identification/gaining agenda status	Few elements in place
3	Policy formulation and adoption	Some elements are in place
4	Policy implementation	Most elements are in place
5	Policy evaluation and enforcement	All elements in place
99	Not applicable	Not applicable

The purpose of the Action Guide is to provide guidance, supplemental resources, and steps to support and promote the use of the *CHANGE* tool. It especially supports the consistent, accessible implementation of the process across different communities[7]. The Guide also presents the list of items and definitions for each sector to gather data and organize areas for improvement. Specifically, the *Community-at-Large Sector* has seven demographics questions, 14 physical activity questions, 14 nutrition questions, 11 tobacco questions, nine chronic disease management questions, and 11 leadership questions; the *Community Institution/Organization Sector* has six demographic questions, 13 physical activity questions, 13 nutrition questions, eight tobacco questions, eight chronic disease management questions, and 10 leadership questions; the *Health Care Sector* has 5 demographic questions, four physical activity questions, 14 nutrition questions, 10 tobacco questions, 10 chronic disease management questions, and 12 leadership questions; the *School Sector* has 26 demographic questions, five physical activity questions, 10 nutrition questions, one tobacco question, six chronic disease management questions, and 17 leadership questions; and the *Business/Worksite Sector* has four demographic questions, 13 physical activity questions, 15 nutrition questions, 10 tobacco questions, 11 chronic disease management questions, and 13 leadership questions[7]. Items from each sector module (physical activity, nutrition, tobacco, chronic disease management, and leadership) were scored 1 – 5, with low scores indicating that the risk factor was not identified as a threat, and policies to address the issue were not in place. A summated-ratings scale, whereby items in each module was compiled, was used to identify the extent to which the module was identified as a risk factor and the extent to which current policies were in place to address the risk factor. The summated ratings score was divided by the total possible score in each module to generate a percentage. This percentage was compared to previously established *CHANGE* tool benchmarks to determine if it were to be considered a low, moderate, or high priority area. A series of descriptive statistics (frequencies and percentages) were used to assess and describe the various risk factors. In addition, risk factors rated at below 61% (low-medium priority) were identified as needs/ liabilities, and risk factors rated 61% or above (above medium to high) were identified as assets.

Results

As seen in Table 2, for the *Community-at-Large* organization, environmental and policy factors in all modules (physical activity, nutrition, tobacco, chronic disease management, and leadership) were categorized as liabilities. For both environmental and policy factors, the tobacco module was categorized as an asset in all three *Community Institution/Organization* participants (Table 3). For environmental factors, leadership was categorized as a liability in all three; however, nutrition was categorized as an asset in all three. In only one of the participating sites was physical

activity and chronic disease management categorized as an asset. For both environmental and policy factors, physical activity, leadership, and afterschool modules were categorized as assets in all four *Schools* (Table 4). For environmental factors, chronic disease management and nutrition were categorized as assets in all but one *School*; however, tobacco was categorized as a liability in all but one *School*.

Table 2: Community-at-Large Sector

		LOW		MED		HIGH
		0-20%	21-40%	41-60%	61-80%	81-100%
Community-At-Large	Physical Activity			CALP1, CALE1		
	Nutrition		CALP1, CALE1			
	Tobacco		CALP1, CALE1			
	Chronic Disease Mgt.		CALP1, CALE1			
	Leadership			CALP1, CALE1		

Note: CALP1 – Community-at-Large organization #1 Policy factors/ CALE1 - Community-at-Large organization #1 Environmental factors

Table 3: Community Institution/Organization Sector

		LOW		MED		HIGH
		0-20%	21-40%	41-60%	61-80%	81-100%
Community Institution/ Organization (CIO)	Physical Activity		CIOP1	CIOE1, CIOP3, CIOE3	CIOP2, CIOE2	
	Nutrition			CIOP1	CIOE1, CIOP2, CIOP3	CIOE2, CIOE3
	Tobacco				CIOP1, CIOP3, CIOE3	CIOE1, CIOP2, CIOE2
	Chronic Disease Mgt.		CIOP1, CIOE1, CIOP2	CIOE2	CIOP3, CIOE3	
	Leadership	CIOP1	CIOE1, CIOP2	CIOE2, CIOP3, CIOE3		

Note: CIOP1 – Community Institution/Organization #1 Policy factors/ CIOE1 - Community Institution/Organization #1 Environmental factors/ CIOP2 – Community Institution/Organization #2 Policy factors/ CIOE2 - Community Institution/Organization #2 Environmental factors/ CIOP3 – Community Institution/Organization #3 Policy factors/ CIOE3 - Community Institution/Organization #3 Environmental factors

For policy factors, tobacco was categorized as an asset in only one *School*, and nutrition was categorized as a liability in only one *School*. As seen in Table 5, for environmental factors, physical activity, chronic disease management, and leadership modules were categorized as liabilities in all three *Business/Worksite* organizations. In two, the modules of nutrition and tobacco were categorized as assets. For policy factors, tobacco was categorized as an

asset in two organizations, but physical activity, nutrition, chronic disease management, and leadership were categorized as liabilities in all three *Business/Worksite* organizations.

With respect to *Health Care* sector, (Table 6), for both environmental and policy factors, nutrition, tobacco, chronic disease management, and leadership modules were categorized as assets. In all but one, for both environmental and policy factors, physical activity was categorized as an asset.

Table 4: School Sector

		LOW		**MED**		**HIGH**
		0-20%	**21-40%**	**41-60%**	**61-80%**	**81-100%**
School	Physical Activity				SP1, SE1, SP2, SE2, SP4, SE4	SP3, SE3
	Nutrition			SP2, SE2	SE1, SP4	SP1, SP3, SE3, SE4
	Tobacco	SE4	SP3, SP4	SE2, SE3	SP2	SP1, SE1
	Chronic Disease Mgt.			SE2	SP1, SE1, SP2, SP3, SE3, SP4, SE4	
	Leadership				SP1, SE1, SP2, SE2, SP4, SE4	
	After-School					SP1, SE1, SP2, SE2, SP3, SE3, SP4, SE4

Note: SP1-School #1 Policy factor; SE1 – School #1 Environmental factorsSP2-School #2 Policy factor; SE2 – School #2 Environmental factors/ SP3-School #3 Policy factor; SE3 – School #3 Environmental factors/ SP4-School #4 Policy factor; S41 – School #4 Environmental factors

Table 5: Worksite Sector

		LOW		**MED**		**HIGH**
		0-20%	**21-40%**	**41-60%**	**61-80%**	**81-100%**
Worksite	Physical Activity		WP1, WE1, WP2, WE2, WP3, WE3			
	Nutrition		WP1, WP2	WP3, WE3	WE1, WE2	
	Tobacco			WE1, WP3, WE3	WP1, WP2	WE2
	Chronic Disease Mgt.			WP1, WE1, WP2, WE2, WP3, WE3		
	Leadership		WP1, WE1, WP2, WE2	WP3, WE3		

Note: WP1 – Worksite #1 Policy factors/ WE1 – Worksite #1 Environmental factors/ WP2 – Worksite #2 Policy factors/ WE2 – Worksite #2 Environmental factors/ WP3 – Worksite #3 Policy factors/ W31 – Worksite #3 Environmental factors

Table 6: Health Care Sector

		LOW		MED		HIGH
		0-20%	21-40%	41-60%	61-80%	81-100%
Health Care	Physical Activity		HP3	HE3	HE1, HP2, HE2	HP1
	Nutrition				HP2, HE2, HP3, HE3	HP1, HE1
	Tobacco				HP3, HE3	HP1, HE1, HP2, HE2
	Chronic Disease Mgt.				HP1, HE1, HP2, HE2, HP3, HE3	
	Leadership				HP1, HE1	HP2, HE2, HP3, HE3

Note:
HP1 – Health Care organization #1 Policy factors
HE1 – Health care organization #1 Environmental factors
HP2 – Health Care organization 2 Policy factors
HE2 – Health care organization #2 Environmental factors
HP3 – Health Care organization #3 Policy factors
HE3 – Health care organization #3 Environmental factors

Discussion

Face-to-face surveys, using the CDC *CHANGE* tool*,* were conducted in a rural Northeast Missouri county possessing exceptionally high chronic disease rates to assess which factor(s) had the greatest influence on those rates in each sector of the community. Once risk factors were identified and the extent to which current policies was in place to address them, the sectors were compared to each other in order to build a framework to address gaps and needs[7]. Because health policy heavily influences community health status[6], any community can use this tool, or a modified version of it, to assess their health policy status. This type of information can assist in policy development or change in order to meet a community's health objectives. In addition, recommendations for global chronic disease reduction include monitoring and surveillance, and this tool can assist communities in tracking health policy efforts to prioritize health-related programming and policy actions. In the five sectors of the community studied (*Community-at-Large, Community Institution/Organization, School, Business/Worksite, and Health Care Agency*), the *Health Care Agency* sector seemed to possess the most environmental and policy factors categorized as assets. Only the factor of physical activity was categorized as an environmental and policy liability in one of three sites, which participated in the study. In spite of the area being served by only one hospital, one rural health clinic, and no federally qualified health centers, positive environmental and policy factors that promote healthy behaviors were noted. County health care agencies can play a key leadership role and influence health behaviors by modeling health and wellness. The *Health Care Agency* sector seemed to have the most potential to reach the people who are in need of chronic disease management programs.

The *Community-at-Large* organization was followed by the *Business/Worksite* sector in possessing the least environmental and policy factors categorized as assets. The *Community-at-Large* organization possessed no factors categorized as assets, and only the factors of nutrition and tobacco were categorized as environmental and policy assets in two of the

three *Business/Worksite* sector organizations. Worksite health promotion programs are recommended that especially target physical activity promotion, as sedentary lifestyle is a modifiable risk factor for chronic disease[5]. Comprehensive worksite health promotion programs can address these multiple health risk factors for chronic disease on many intervention levels[6]. With leadership noted as a liability, though, it may be difficult to implement comprehensive worksite health promotion programs in this county. Formal collaboration with leaders in the *Health Care Agency* sector, the organizations' health plans representatives, as well as staff and trainers from other community sectors may assist the *Business/Worksite* sector in improving health promotion leadership skills. Multi-sectoral commitments can help strengthen systems and environments[6], and in this case, possibly move the leadership factor from a liability to an asset. The *School* and *Community Institution/Organization* sectors possessed a mix of environmental and policy factors categorized as assets and liabilities. In the *School* sector, both tobacco environmental and policy factors need improvement in most of the schools surveyed. In the *Community Institution/Organization* sector, physical activity and chronic disease management environmental and policy factors needed improvement. In addition, no organizations were noted as possessing environmental and policy factors characterized as assets in the leadership module. In the schools, with the proportion of children enrolled in MC+/Medicaid higher than the state average[13], tobacco-free school policies are recommended, because organizational policies can strongly influence health practices and behaviors[7]. In the *Community Institution/Organization* sector, with state diabetes rates on the rise[6] and the region possessing exceptionally high rates for emergency room visits for arthritis[6], chronic disease management, including physical activity programming interventions, are recommended. The leadership factor module was noted as a liability in this sector. Through collaboration with leaders in sectors with more environmental and policy factors characterized as assets as well as through more training in health promotion programming and policy change, the *Community Institution/Organization* sector can put policies in place to address these risk factors.

Although the study used the CDC *CHANGE* tool to illustrate community health indicators and systems currently in place, the small sample size, low participant knowledge of health-related factors, and the subjectivity of the ranking system, must be acknowledged. In addition, a limitation inherent in all qualitative studies is the subjectivity of the study. When researchers returned from data collection, they encountered varying degrees of difficulty in reaching a consensus for ranking policy and environment responses.

The study was deliberately confined to certain representatives from specific community sectors with limited amounts of available personal time. Each face-to-face survey took between 30 to 60 min; therefore, there was time to collect only a limited amount of data. In addition, because the score of each sector was mostly dependent on the responses to the questions, different interviewees answered differently.

Conclusion

Overall, in a comparison of sectors, it seemed that the *Health Care Agency* sector possessed the most factors categorized as environmental, policy assets; the Community-at-Large and Business/Worksite sectors possessed the least environmental, and policy factors categorized as assets. The next step for this county is to develop actionable health improvement strategies in order to create a more health-promoting community[7]. Therefore, collaborative leadership from the *Health Care Agency* sector, comprehensive worksite health promotion programs to address multiple health risk factors for chronic disease in the

Business/Worksite and *Community Institution/ Organization* sectors, and tobacco-free school policies are recommended as organizational policies that can strongly influence community health practices and behaviors[7]. Multiple community sectors must work together to change not only behaviors but also environments in this county.

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Competing interests

The authors declare that there is no conflict of interests.

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