Assessing opinions in community leadership networks to address health inequalities: a case study from Project IMPACT

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Abstract

This study demonstrates a novel approach that those engaged in promoting social change in health can use to analyze community power, mobilize it and enhance community capacity to reduce health inequalities. We used community reconnaissance methods to select and interview 33 participants from six leadership sectors in ‘Milltown’, the New England city where the study was conducted. We used UCINET network analysis software to assess the structure of local leadership and NVivo qualitative software to analyze leaders’ views on public health and health inequalities. Our main analyses showed that community power is distributed unequally in Milltown, with our network of 33 divided into an older, largely male and more powerful group, and a younger, largely female group with many ‘grassroots’ sector leaders who focus on reducing health inequalities. Ancillary network analyses showed that grassroots leaders comprise a self-referential cluster that could benefit from greater affiliation with leaders from other sectors and identified leaders who may serve as leverage points in our overall program of public agenda change to address health inequalities. Our innovative approach provides public health practitioners with a method for assessing community leaders’ views, understanding subgroup divides and mobilizing leaders who may be helpful in reducing health inequalities.

Introduction

In most countries, it is well established that people of low socioeconomic position (SEP) have a higher risk of suffering from morbidity and mortality stemming from a variety of chronic diseases compared with people of higher SEP [1]. In general, marginalized groups also have worse access to healthcare facilities and to professionals who can diagnose and treat preventable illness in a competent and timely way [2, 3]. An emerging consensus finds that these health inequalities (HI) cannot be eased by simply providing better medical care or by stimulating health-related knowledge, attitudes and behaviors. Instead, they must be addressed at multiple levels, with special focus on upstream determinants such as healthy (or unhealthy) conditions at home, environmental and workplace conditions, and the prevailing distribution of social and economic resources in a community [4–6].

One method for identifying and addressing HI is community health assessment (CHA)—the collection and analysis of data on the health status, risk factors, disease outcomes and overall needs of local residents [7, 8]. CHAs have been a staple of public health practice in the United States for more than 20 years [9] and experts have developed a variety of CHA tools to identify and describe community strengths, gaps and health problems, as well as interventions to improve community health [10, 11]. Yet the typical CHA does little to suggest how local officials can assess the dynamics of community
power—in the power of leaders in a community to
make policies and control the distribution of important
material, informational and health resources
[6, 12]—that often constrain organized efforts to
work for the common good. To make the best use
of CHA data, so a critical mass of people, organiza-
tions and resources can be mobilized to effectively
address local health problems [13], practitioners
also need a simple, effective way to understand
and assess community power. Health promotion
campaign planners have used community power
analysis in a variety of ways: to assess prevailing
leadership resources in Midwestern communities
taking part in a heart health intervention [6]; to
gauge leadership perceptions about a proposed
teen alcohol use intervention [14]; to develop lead-
ership and peer education programs to reduce HI in
Harlem and Southeast Chicago [15, 16]; and to im-
prove community readiness and mobilize leaders to
address obesity and other HI in Latino communities
[17, 18]. No study, to our knowledge, has explicitly
examined the ways in which community power can
be mobilized to change the local public agenda
about HI, with an eye toward developing an
intervention.

Project IMPACT

In the pages that follow, we describe our efforts to
assess community power through Project IMPACT,
a multilevel research effort to examine and influence
the public agenda on HI in ‘Milltown’, a pseudonym
for the aging Massachusetts textile mill town where
our research was conducted. In 2011, when data for
the present study were gathered, Milltown was home
to more than 75 000 people, nearly three quarters of
whom were of Hispanic/Latino descent (compared
with 9.6% for all Massachusetts communities).
Almost two-thirds of adults age 25+ have the
equivalent of a high school degree or less [19] and
nearly 30% of residents live with incomes below the
federal poverty level [20]. Compared with other
parts of Massachusetts, most population subgroups
in Milltown experience HI related to obesity and
hypertension, and to mortality from heart disease
and certain cancers. In addition, Latinos experience
inequalities related to high cholesterol levels and
excess mortality from diabetes [21]. Given the
nature of these inequalities, it is likely that both
race/ethnicity and SEP are contributing factors; or,
more specifically, that differences in SEP across
racial groups are a major contributor to racial
inequalities in health [22].

Mindful of the limits of individual level behavior
change interventions [5, 23–25], the Project
IMPACT team has collaborated with partners from
local community-based organizations (CBOs) to
study certain upstream or community level factors,
with special emphasis on influencing the public
agenda and political will to address the HI noted
above. Project IMPACT’s two original data gather-
ing arms included a door-to-door public opinion
survey in Milltown and a systematic analysis of
local newspaper content. Preliminary, unpublished
results from our content analysis show that local
newspapers provide little or no coverage of HI,
and preliminary survey results show that local resi-
dents are familiar with these inequalities—and more
inclined, than not, to attribute their causes to indi-
vidual behaviors. These results offer important in-
sights about the explicit public discourse on HI in
Milltown, yet they are not sufficient for assessing the
informal or implicit information flows that are ger-
mane to the study of community power. To address
this issue, we developed a third data gathering
arm—the Community Leadership Study (CLS)—
featuring methods that probe for implicit communi-
cation flows, including information about public
health that circulates among community leaders.
The CLS, whose initial results are reported in this
article, is based on the data gathering traditions of
community reconnaissance [26, 27], including in
depth, semi-structured interviews with people who
occupy various leadership roles in Milltown. In add-
ition, we developed an innovative method for using
network analysis software to visually depict the re-
sults of community reconnaissance. Overall, our
methods are designed to help CBO partners identify
other community leaders who could become allies in
an effort to leverage the local media to promote
greater awareness about HI.
**Research questions**

RQ1: How is community power distributed in Milltown, and how do our CBO partners interact with other influential community leaders?

RQ2: What do influential leaders from various community sectors think about HI?

(a) To what extent do these leaders perceive that HI exist in Milltown?

(b) Which causal attributions do they make regarding HI?

(c) How well do they think local media cover HI?

(d) To what extent do they think other community leaders talk about HI?

RQ3: Which community leaders should our CBO partners approach to raise awareness about HI?

Through the process of answering these questions, we hope to identify individuals who likely have the best access to important resources that flow through the overall network of community leadership in Milltown, as these leaders would be the best targets for a campaign to raise overall awareness about HI. The results of the present study have also helped our team to develop an effective community-based intervention through which our CBO partners are beginning to influence the public agenda on HI (see Conclusions). Details about the execution of this intervention, and the changes that may result from it, are beyond the purview of this study—though the results of these efforts will be reported in future publications.

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**Materials and methods**

**Study design and data collection**

First, we developed a community profile with details about demographics, social structure and community power, including a list of key actors who should be involved in community-based decision making [6, 12]. This was accomplished through community reconnaissance [26, 27], a strategy for uncovering ‘some of all kinds of leaders’, including those from traditionally underrepresented population groups. Community reconnaissance offers an efficient way to gather data from a small sample or ersatz network [28] for the purpose of modeling the overall distribution of power among a wider collection of community leaders. Once leaders are identified in this manner, researchers can determine the extent of their power and influence, the interconnections that exist between them, and the perceptions they hold about community-wide decision making [6].

Briefly, community reconnaissance involves determining the geopolitical area of study, developing interview questions, selecting and interviewing leaders from a variety of community sectors, and analyzing and externally validating the findings [12]. Having already selected Milltown as our area of study—with interview questions designed to answer the research questions noted above—we recruited initial interview participants through a positional panel approach ‘in which leader-respondents are selected on the basis of their formal authority in critical community sectors’ [6]. We began this process by interviewing five members of Project IMPACT’s Community Projects Advisory Committee (C-PAC). Regarding our main ‘network’ question, we asked each participant to nominate at least six other influential leaders; using a snowball sampling technique, these other leaders were then considered as potential interview participants based on their reputations in the community. Very soon, it became clear that the nominations of our initial participants were leading us to a broader collection of influential figures in Milltown from six sectors commonly involved in community-wide decision making: business, education, government/policy, grassroots community groups, healthcare/public health and media [27, 14]. In all, we obtained the names of 130 leaders. As we were most interested in the views and relationships embodied by those mentioned most often, we narrowed our list to 33...
influential community leaders, almost all of whom were nominated three times or more. We conducted face-to-face, semi-structured interviews with each of these leaders between July and December 2011; interview times varied, but our sessions generally lasted for about 1 h. For details about our interview schedule, see Supplementary Data, Appendix A. We used UCINET network analysis software [29] to graphically depict our final network of 33 (Fig. 1). Interview transcripts were also uploaded to NVivo 9, a qualitative data analysis program [30], to perform the content analysis described later in the Materials and methods section.

RQ1: Analysis of leadership subgroups and community power

Interview data alone do not produce sufficient evidence for evaluating the dynamics of community power, an important precursor to the assessment of information flows and the design of community-wide interventions. But when combined with network analysis we have enough information to analyze community power [31]. For our purposes, network analysis allows for the study of shared perceptions or interactions among community leaders, and of the ways in which these patterns may drive outcomes of interest [13]—i.e. the views that certain leaders hold about HI. We conducted this analysis by transferring data from NVivo to UCINET and NetDraw [32], a companion program for the visual depiction of networks. In our network diagrams, the positions of nodes (representing individual leaders) were determined by a spring embedding algorithm, which uses an iterative fitting process to put leaders with many connections in the center of the diagram and those who connect directly to each other, or with few intermediaries, closer together [29, 33, 34]. We

Fig. 1. Diagram of the 33 leaders in our final sample.
did not collect data from a ‘closed’ network, in which our 33 leaders engaged strictly in nominations among themselves—the most common scenario in whole network analysis. But UCINET and NetDraw offer many ways to graphically represent the relations between groups of people, and in crafting our network diagrams, we drew upon the experience of other scholars who have used these diagrams in similar fashion [35].

We utilized a special algorithm within UCINET to look for cohesive subgroups in our network of community leaders [36]. This decision was based on our analysis of media reports and other evidence, which suggest that prevailing social divides in Milltown may become manifest in a division of community leaders into two subgroups: a less influential group that contains many of the grassroots, activist leaders that our research team works with, and another group consisting of more traditional ‘top-down’ leaders, especially from the business, government/policy and media sectors. UCINET’s factions algorithm allowed us to test this a priori assumption by using the relational properties of our 33 community leaders to partition the whole network into a predetermined number of cohesive groups. Unlike other clique or subgroup detecting algorithms (which allow that certain actors can belong to more than one group) the factions algorithm requires that every actor in the network be assigned to one and only one group. By using this algorithm, then, we were able to demonstrate ‘internal cohesion between group members and a separation or distancing from members outside the group’ [36].

Next, we assessed the relative power of our 33 leaders by developing a summary measure of four distinctive evaluations of their perceived influence. First, we developed an index of hierarchical (top, mid or low level) community power (Supplementary Data, Appendix B), based on leadership categories developed by sociologist Harold Nix in his formulation of community reconnaissance methods [26, 27]. Armed with a deep, ongoing sense of familiarity with Milltown, and the data our 33 interviews provided about community leadership, the study team used this hierarchical power index as an initial means of categorizing study participants.

Second, we examined the number of seats that each influential community leader held on boards of directors. We did this by compiling an exhaustive list of influential local organizations and examining the composition of each board to see whether one or more of our leaders held a seat; in addition, we checked the available biographical information on each of our 33 leaders to ensure that we did not miss any of their board affiliations. Third, we used a popular classification scheme [37, 38] to sort participants into five functional categories: official leaders, civic leaders, catalysts, connectors and ground level ‘experts’ (Supplementary Data, Appendix C). Fourth, we made a list of community leaders who received six nominations or more. The results of this four-pronged analysis appear in Supplementary Data, Appendix D, which describes a list of the Top 8 community leaders in Milltown—each of whom ranked highly on at least two of the four dimensions listed above. This list provided external corroboration of the results obtained through our earlier analysis of leadership subgroups (see Results).

**RQ2: Content analysis**

In addition to the basic ‘network’ question we posed during interviews, we asked participants for their views about Milltown’s overall image, including its current needs and problems. We also posed a series of questions to learn what our leaders thought about public health, specific health concerns and HI in Milltown, possible solutions for HI, and the role of local media in promoting public discourse on these matters (RQ2). During structural coding with NVivo, we created documents that contained the answers all 33 respondents gave to each interview question. Then, we performed thematic coding on selected portions of these files to answer our research questions. Specifically, we coded for: ‘Perceptions about the Existence of HI in Milltown’ (yes, no, maybe/not sure); ‘Perceptions about the Causes of HI’ (structural level, individual level, both); ‘Perceptions about Local Media Coverage of HI’ (good, poor/no coverage, mixed/neutral/not sure, no answer); and ‘Perceptions of HI
as a Discussion Topic for Community Leaders’ (adequate discussion, not enough). Sociodemographic variables include ‘gender’ (male/female); ‘age’ (30–44, 45–54, 55–64, 65–74); ‘race/ethnicity’ (Hispanic, Non-Hispanic White, Non-Hispanic Other); ‘education’ (some college, bachelor’s degree, graduate degree, other); and ‘community sector’ (business, education, government/policy, grassroots, healthcare/public health, media).

RQ3: Ego network, radar chart, in-degree centrality and key player analysis

We used a variety of methods to examine RQ3, regarding which community leaders our CBO partners should approach to raise awareness about HI in Milltown. First, we used ego network analysis, a technique through which researchers can examine the world of one particular study participant (ego) in terms of who that person is connected to (alters) and with what consequences. An egocentric network represents a field of relations the ego can draw upon; a set of resources that may include access to information and support, material resources, or knowledge about localized norms and influences [39, 40]. We analyzed the ego nets of CLS interview participants by tallying the connections each participant reported to other people in the sample when they nominated these people as influential leaders. Working in this manner, we sought to describe the ‘perceived influence networks’ [41, 42] of each of our 33 participants; i.e. self-reported conceptions about the degree to which their alters function as significant leaders, and as colleagues who could provide access to key resources for community mobilization. We have no systematic way of determining the bidirectionality of ties, or of ascertaining the precise nature of power and other resources that our 33 leaders may be sharing. But by stratifying participants’ responses to our research questions according to their community sectors, we developed profiles of the ways in which leaders from each sector perceive HI, their causes and the ways in which the local news media help to circulate information about them.

Second, we used egocentric network data to construct ‘composite’ ego nets for each of our six community sectors. In other words, we grouped the collection of alters that each of our 33 leaders listed in accordance with the community sector of each nominating ego. Working in this manner, we can see the kinds of people that business leaders consider to be influential in community affairs and compare this with the kinds of people that education, government/policy and grassroots leaders consider to be influential. As alters can potentially exert a powerful influence on the attitudes and behaviors of egos, these composite ego nets can shed further light on the reasons why different kinds of leaders hold different views when it comes to HI, and to the role of local media in circulating information about them. By using this technique in conjunction with our interview data, we found leverage points in the structure of local leadership—pockets of leaders who hold certain perceptions or behave in certain ways that are important to our CBO partners.

Third, we created images of these composite ego nets by using the data to make radar charts [43], which are widely used in the public policy and healthcare arenas as a visual tool for benchmarking [44, 45]. Because they are scaled in similar fashion, they allow for the simple, intuitive interpretation of comparable data across relevant units of analysis [46], like the community leadership sectors in our study. Fourth, we explored the roles of certain leaders through UCINET diagrams that depicted varying levels of in-degree centrality—the degree to which each of our leaders is likely (or not) to ‘embody’ the social and material resources that typically flow through leadership networks. Finally, we used KeyPlayer, a software package that identifies non-redundant nodes in UCINET datasets [47], to find leaders we might utilize because they are well connected, possess a great deal of information or other resources, and may be helpful in diffusing certain desirable practices or attitudes.

Ethical considerations

Before each interview, we read a statement about the purposes of the study including informed consent. Participants were assured that all details would remain confidential, and the interviewer then
gained verbal consent. Each interview, including the granting of verbal consent, was captured verbatim with a digital audio recorder and data were de-identified by replacing participant names with interview numbers. Interviews were fully transcribed and reviewed for accuracy by the interviewer, and all transcripts were subsequently reviewed by each member of the Project IMPACT research team. Our study design was approved by the Institutional Review Board at the Harvard School of Public Health.

Results

Characteristics of the sample

Again, Figure 1 (see Materials and methods) represents the final network of 33 influential community leaders in Milltown.

As Table I indicates, the sample included 33 community leaders who were generally well educated, more male than female and more likely to be of non-Hispanic origin—an interesting circumstance since Hispanics comprise more than 70% of Milltown’s population. Nearly one-third of our leaders were from the grassroots sector. The study team pursued certain strategies to ensure the inclusion of leaders from other sectors; in the end, we feel our sampling scheme fostered participation from a fair collection of leaders from all six sectors. Further details about our sample are available in Supplementary Data, Appendix E.

CBO partners and community power (RQ1)

Again, we proceeded on a working hypothesis that our community leadership network could be roughly partitioned into two distinctive subgroups; Fig. 2 shows these subgroups in their most basic form.

To investigate the notion of differential power between these two groups, we began by constructing other color-coded diagrams to see how the socio-demographic characteristics of our leaders were distributed across the topography of our basic network diagram. These analyses supported our original conception of the two subgroups that appear in Fig. 2: a somewhat older and largely male group (blue nodes) whose members come from more powerful community sectors such as business, government/policy, healthcare administration and media; and another group (red nodes) that largely includes the younger female CBOs leaders, mostly from the grassroots sector, with whom we work most closely. To further verify the distribution of power across, and between, these two groups, we took the Top 8 leaders in Milltown, as identified in our community power analysis (see Materials and Methods, ‘RQ1: Analysis of Leadership Subgroups and Community Power’ and Supplementary Data, Appendices B–D) and made their nodes larger. Figure 3 shows the results of this second, corroborative phase of our subgroup analysis.

The Top 8 leaders in Milltown appear as large squares on the left side of Fig. 3, in the more

| Table I. General characteristics of Community Leadership Study interview participants |
|-----------------------------------|---|---|
| Gender                           | n | % |
| Male                             | 19 | 57.6 |
| Female                           | 14 | 42.4 |
| Age (years)                      |   |   |
| 30–44                            | 11 | 33.3 |
| 45–54                            | 6  | 18.2 |
| 55–64                            | 11 | 33.3 |
| 65–74                            | 5  | 15.2 |
| Race/ethnicity                   |   |   |
| Hispanic                         | 11 | 33.3 |
| Non-Hispanic—White               | 21 | 63.7 |
| Non-Hispanic—Other               | 1  | 3.0 |
| Nativity status                  |   |   |
| Born in the United States        | 25 | 75.8 |
| Born elsewhere                   | 8  | 24.2 |
| Education                        |   |   |
| Some college                     | 3  | 9.1 |
| Bachelor’s degree                | 9  | 27.3 |
| Graduate degree                  | 20 | 60.6 |
| Other                            | 1  | 3.0 |
| Community sector                 |   |   |
| Business                         | 6  | 18.2 |
| Education                        | 4  | 12.1 |
| Government/policy                | 4  | 12.1 |
| Grassroots                       | 10 | 30.3 |
| Healthcare/public health         | 7  | 21.2 |
| Media                            | 2  | 6.1 |
powerful ‘blue’ group. This diagram also suggests a relatively close set of ties among our CBO partners in the ‘red’ group who, with two prominent exceptions (i.e. connections to Nodes 33 and 11), may not have a large number of close ties with Top 8 leaders.

What community leaders think about HI (RQ2a and b)

Regarding RQ2a, almost all of our community leaders acknowledged the presence of HI in Milltown. In terms of causal attributions (RQ2b), about 40% of leaders attribute HI to structural level causes (e.g. social, community and environmental influences on health) whereas about 60% attribute them to both structural and individual level causes, with the latter category including individual biological and lifestyle factors that influence health. None of our leaders indicated that individual level factors are likely the sole cause of HI (see Supplementary Data, Appendix F).

Leadership discussions and media coverage about HI (RQ2c and d)

Two portions of data provide evidence about the ways in which interview participants assessed the centrality of HI in local discourse. First, we asked participants about the role that local media play in publicizing this topic (RQ2c). Almost two-thirds feel there is ‘poor’ or ‘no’ media coverage of HI in Milltown. A similar fraction of participants believe this topic is not discussed enough in community leadership circles (RQ2d) (see Supplementary Data, Appendix F).
Intersectoral leadership and public agenda change (RQ3)

Regarding our third research question—about which community leaders our CBO partners should approach to raise awareness of HI—we first turn to the radar charts we developed to visually depict the composite ego networks of leaders from the six community sectors.

Each chart in Fig. 4 represents the composite ego network of one community sector. In the diagram for the grassroots sector, for example, the six rays that radiate outward from the center represent nominations by grassroots leaders of other leaders from the six community sectors. The blue arrow pointing directly upward demonstrates the self-referential focus of grassroots leaders; nearly 40% of the alters (other influential leaders) nominated by these leaders are also from the grassroots sector. In comparison, a little more than 20% of grassroots sector alters come from the government/policy sector, whereas a similar fraction come from the business sector.

In effect, the surface area of these radar charts illustrates the ‘performance’ of leaders from each community sector [48]. The greater the colored surface area of a particular chart, the broader the conception that leaders from that sector have about the overall distribution of community power in Milltown. For example, business leaders in our sample have a fairly narrow conception of the overall loci of community power, one that largely focuses on leaders from the business and
government/policy sectors. In theory, leaders from sectors with broader composite ego nets (e.g. healthcare/public health)—those with a broader conception of community power—may enjoy certain advantages over other leaders in terms of their overall potential for catalyzing community-wide change. We offer more details about the interpretation of these radar charts in the Discussion section.

Figure 5 suggests ways in which our CBO partners can better understand the dynamics of power that exist between individual leaders. Specifically, leaders represented by larger nodes have higher levels of in-degree centrality, a network measure that represents the likelihood that power-based resources (e.g. information, access to policymakers) actually ‘flow through’ any given leader [36].

Fig. 4. The ‘composite ego networks’ of each community leadership sector. For example, the grassroots sector diagram depicts the percentage of alters (A) from each community sector that grassroots leaders nominated when asked for the names of other influential leaders.
We also explored the role of certain leaders depicted in Fig. 5 with KeyPlayer, a software package that allowed us to look at leaders we might utilize because they are well connected, possess a great deal of information or other resources, and may be helpful in diffusing certain desirable practices or attitudes. This program helped us to see more clearly that the largest nodes in Fig. 5 represent interview respondents who are likely to be ‘opinion leaders’, influential figures who can be enlisted to promote behavior changes that may help to reduce HI [49, 50].

**Fig. 5.** The Community Leadership Study network of 33 coded by leadership sector (color) and in-degree centrality (size).

We also explored the role of certain leaders depicted in Fig. 5 with KeyPlayer, a software package that allowed us to look at leaders we might utilize because they are well connected, possess a great deal of information or other resources, and may be helpful in diffusing certain desirable practices or attitudes. This program helped us to see more clearly that the largest nodes in Fig. 5 represent interview respondents who are likely to be ‘opinion leaders’, influential figures who can be enlisted to promote behavior changes that may help to reduce HI [49, 50].

**Discussion**

This study demonstrates how an innovative blend of community reconnaissance and network analysis methods can help researchers and CBO partners enhance the effectiveness of community health assessments, especially in communities where health inequalities are prevalent and improved dialogue seems essential. Specifically, we have shown how these methods can help research partners get a fairly quick read on community power, including who has it, how these people can be reached, and how they might be mobilized for change. By asking questions about community leadership and local health issues, our research team developed a solid, organic picture of community power and the ways in which influential leaders think about public health. This is important, as community leaders often act as gatekeepers in the formation of the overall public agenda by legitimizing certain issues, minimizing others and allocating resources to address the issues they consider most important [14].

Regarding our first research question, it seems that community power is distributed rather unequally in Milltown. Our analysis of leadership
subgroups pinpointed two groups whose professional trajectories are somewhat distinct: an older, largely male group with strong representation from the business, government/policy, healthcare administration and media sectors, and another group that contains many of our CBO partners from the grassroots sector and the mid-to-lower level strata of the healthcare/public health sector. Fortunately, our interview analysis demonstrates a broad, intersectoral sense of understanding that socio-cultural factors play an important role in local health outcomes. Almost all of our leaders acknowledge the presence of HI in Milltown, most of them say that both individual and structural level causes are to blame, and about two-thirds of them feel these topics are not adequately discussed in the media or in the intersectoral discussions of community leaders.

Given these circumstances, it seems important to suggest ways in which our CBO partners from the ‘red’ leadership group (Fig. 2) can access the informational and material forms of social capital that flow through the overall network of 33 leaders—capital that may be controlled by leaders in the more powerful ‘blue’ group. One goal of Project IMPACT is to help our partners in Milltown identify the best leaders to approach in all community sectors, so they can forge new partnerships that amplify their ability to change the public agenda on HI. Most CBO partners are from the grassroots sector, and radar chart analysis suggests these leaders—who tend to perceive each other as having broad influence in the community—could further their cause by modifying and deepening their alliance with healthcare/public health leaders. Comparatively speaking, healthcare/public health leaders have a more balanced array of perceptions about the overall influence of leaders from other sectors; presumably, this would give them greater access to information and other resources that flow through the entire network. Grassroots leaders could benefit from greater access to these resources and, in turn, they could offer at least one reciprocal benefit. Despite the breadth of the composite healthcare/public health ego network, leaders from this sector may be somewhat constrained in their ability to act and speak openly about HI. Indeed, our data show that healthcare/public health leaders—who depend, in part, on maintaining secure relationships with media and government/policy leaders—tend to underplay the problem of poor media coverage of HI, and to overestimate the extent to which these inequalities are openly discussed in leadership circles (Supplementary Data, Appendix F).

The overall breadth of our composite ego nets, depicted by the surface area of each diagram in Fig. 4, is not the only dimension that must be taken into account when analyzing these radar charts. For example, the four education sector leaders in our study have nominated a fair number of other influential leaders from the grassroots and healthcare/public health sectors, yielding an overall composite ego net that is fairly broad. This would seem to suggest that education leaders may have greater access to the social capital that flows through influential leaders from other sectors; but very few of those other leaders deemed their colleagues from the education sector to be worthy of reciprocal consideration (more on this in a moment). And although the ego-nets for the business, government/policy and media sectors are comparatively thin, leaders from these sectors may hold a disproportionate amount of community power by virtue of their connections to material and policymaking resources. In analyzing the radar charts depicted in Fig. 4, we had a keen interest in the perceptions of the grassroots and healthcare/public health leaders who serve as our community partners in this study and other research efforts. Given the self-referential focus of grassroots leaders, and the broader perceived influence network of healthcare/public health leaders, it seems obvious that these two sectors must collaborate in any effort to change the public agenda about HI in Milltown.

Finally, the in-degree centrality analysis shown in Fig. 5 provides further clues about which particular leaders our CBO partners may want to focus on in their efforts to raise awareness about HI. Specifically, the leaders depicted by Nodes 33 (a prominent politician), 2 (a well-connected Latina leader from the grassroots sector) and 11 (a Latino businessman who sits on a local hospital board) are of special note. KeyPlayer analysis suggests that
these leaders—two of them among the ‘Top 8’ depicted in Fig. 3—are people our CBO partners may want to target to leverage the entire network for our stated goals. KeyPlayer also allowed us to examine network fragility by finding the leaders who are so essential that the overall network would be crippled if we ‘removed’ them. Nodes 33 and 11 are also important in this regard. In comparison, the person represented by Node 13, a central figure in the local Puerto Rican community, is less important to the larger Dominican community in Milltown. This leader should naturally be included in any public opinion intervention, but would not be an essential leverage point for disseminating this sort of intervention throughout the community.

How can our CBO partners make use of these results? First, they should realize that most influential community leaders seem to understand that social, cultural and economic factors are likely contributing to, and perpetuating, certain HI in Milltown. These results stand in contrast to the preliminary results of our public opinion survey, which show that local residents are more likely to think that individual level factors, such as poor diet, lack of exercise and lack of willpower, are to blame. This points to a perceptual gap between community leaders and citizens, a gap that must be closed as part of any effort to change public opinion about HI. Our partners from the grassroots and healthcare/public health sectors—many of whom reside in the less powerful ‘red’ group that emerged from our analysis of prevailing leadership subgroups (Fig. 2)—would seem to be natural allies in this effort. But they would clearly benefit from stronger relationships with leaders from other community sectors, especially those who inhabit the more powerful ‘blue’ group. For example, our CBO (i.e. grassroots and healthcare/public health) partners could form alliances with sympathetic business leaders when it comes to designing and launching public communication campaigns to increase knowledge about HI. Leaders from these three sectors may not be ideally suited for the task of sustaining this sort of campaign over time. But if their initial efforts are well designed and received, they may encourage more leaders from the government/policy sector to become involved. If these leaders buy into the campaign, they could help to ensure its long-term viability. And if this comes to pass, it would increase the odds that our CBO partners can encourage steady, long-term changes in key health behaviors—and ease the HI that now exist in Milltown.

Our analysis also suggests that our CBO partners should deepen their relationships with education and media sector leaders. At the time of our interviews, the Milltown public schools were in the midst of a serious leadership crisis; hence, our radar charts show that very few community leaders nominated alters from the education sector. Since then, a state-appointed receiver has assumed control of the city schools, and numerous reports suggest solid progress in addressing the problem. As the situation stabilizes, our CBO partners may want to further enlist their colleagues from the education sector in an effort to change public opinion about HI. Finally, almost two-thirds of study participants feel the local media do a poor job of covering HI, and very few of them nominated media sector colleagues as influential leaders. In the concluding section, we will briefly mention one way in which our research team is addressing these concerns.

Limitations
Through our content analysis of interview transcripts, we drew the conclusion that influential community leaders seem to understand that social, cultural and economic factors are contributing to HI in Milltown. Though we stand by this conclusion, it is possible that our interview questions primed certain participants to think about these issues to a greater extent than they normally would. And although the 33 people we interviewed are broadly acknowledged as community-wide leaders in Milltown, we did not ask ordinary citizens for their opinions about individual leaders or leadership networks. From the beginning, however, our study team has worked in close collaboration with other leaders and community activists who lie outside our network of 33. We continue to do this through participation in the Mayor’s Health Task Force (MHTF), a strong local coalition whose main
focus is to enhance the overall health of Milltown through the application of public health policies and initiatives. MHTF member organizations have strong, ongoing relationships with citizens throughout the community. Our research partnership with this task force allows us to keep a finger on the pulse of public opinion in Milltown regarding public health, community leadership and other contemporary issues and concerns.

Our data are cross sectional, which limits our ability to make causal statements, and they focus on a single community, which limits generalizability. We also collected data through semi-structured interviews in which the interviewer strived to pose all important questions in a uniform manner. This interviewing style does allow for reflection and open-ended response, and the data that each question produced embody some qualitative variability from respondent-to-respondent; we attempted to overcome this limitation through careful, systematic coding. Despite these limitations, our approach has uncovered patterns of perception and communication between community leaders, patterns that illuminate the social nature of learning and acting upon information about important threats to public health.

Conclusions

Our study shows how public health practitioners and CBO partners can use community reconnaissance and network analysis to uncover the relational dynamics of local leaders, and shows how these dynamics can impact public opinion about HI. We have also shown how these tools can be used to identify and mobilize leaders for the purpose of influencing public opinion, with the ultimate goal of alleviating HI. If CBO leaders use these methods to develop a better picture of the leadership dynamics in their communities, their social change campaigns are more likely to be sustainable over time. In Milltown, the Project IMPACT research team has developed a community-based intervention designed to help this process along. For example, we conducted a series of workshops in 2013 and 2014 to improve our CBO partners’ media relations skills, with special focus on framing stories in a way that acknowledges upstream influences on community health. We have also developed research dissemination briefs and a ‘journalists’ toolkit’ to help local reporters and editors learn about HI and the social determinants of health. These efforts, by themselves, do not constitute evidence of public agenda change in Milltown—but they are clearly starting to bear fruit. Participants in our workshops have significantly increased their confidence in terms of media relations skills, and several participants have submitted and/or published relevant press releases and letters to the editor. We hope future studies in Milltown will show that more community leaders point to the positive influence of media sector leaders, and to the work of their reporters in publishing stories that focus on the socio-contextual factors that influence health.

Future research on community leadership networks should also consider the fact that people who live in low SEP communities like Milltown may have less access to information about healthy behaviors than people from high SEP communities, and may have more difficulty when it comes to comprehending and acting upon important preventive measures. Specifically, scholars who study HI might consider ways in which they can work with community leaders to alleviate these communication inequalities [51]. Finally, future studies should focus on combining the methods of community reconnaissance and traditional sociometric or ‘whole network’ analysis. Studies that use both approaches hold much promise for generating a deeper understanding of the rich dynamics of community leadership and community power.

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Supplementary data

Supplementary data are available at Health Education Research online

Conflict of interest statement

None declared.

References

Assessing opinions in community leadership networks


