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Community Participation in a Multisectoral Intervention to Address Health Determinants in an Inner-City Community in Central Havana

Annalee Yassi, Niurys Fernandez, Ariadna Fernandez, Mariano Bonet, Robert B. Tate, and Jerry Spiegel

ABSTRACT *It is increasingly acknowledged that the process of community involvement is critical to the successful implementation of community-based health interventions. Between 1995 and 1999, a multisectoral intervention called Plan Cayo Hueso was launched in the inner-city community of Cayo Hueso in Havana, Cuba, to address a variety of health determinants. To provide a better understanding of the political structures and processes involved, the Cuban context is described briefly. The interventions included improvements in housing, municipal infrastructure, and social and cultural activities. A qualitative study, consisting of interviews of key informants as well as community members, was conducted to evaluate the community participatory process. Questions from an extensive household survey pre- and postintervention that had been conducted in Cayo Hueso and a comparison community to assess the effectiveness of the intervention also informed the analysis of community participation, as did three community workshops held to choose indicators for evaluating effectiveness and to discuss findings. It was found that formal leaders led the interventions, providing the institutional driving force behind the plan. However, extensive community involvement occurred as the project took advantage of the existing community-based organizations, which played an active role in mobilizing community members and enhanced linkage systems critical to the project's success. Women played fairly traditional roles in interventions outside their households, but had equivalent roles to men in interventions within their household units. Most impressive about this project was the extent of mobilization to participate and the multidimensional ecosystem approach adopted. Indeed, Plan Cayo Hueso involved a massive mobilization of international, national, and community resources to address the needs of this community. This, as well as the involvement of community residents in the evaluation process, was seen as resulting in improved social interactions and community well-being and enhanced capacity for future action. While Cuba is unique in many respects, the lessons learned about enhancing community participation in urban health intervention projects, as well as in their evaluation, are applicable worldwide.*

Dr. Yassi is with the Institute of Health Promotion Research, University of British Columbia, Vancouver, Canada; Ms. Niurys Fernandez was and Dr. Bonet is with the Instituto Nacional de Higiene, Epidemiologia y Microbiologia, Havana, Cuba; Ms. Ariadna Fernandez is with the Centre for Human Settlement, School of Community and Regional Planning, University of British Columbia; Dr. Tate is with the Department of Community Health Sciences, University of Manitoba; and Dr. Spiegel is with the Liu Centre for the Study of Global Issues and Institute of Health Promotion Research, University of British Columbia.

Correspondence: Annalee Yassi, MD, MSc, FRCPC, Professor and Director, Institute of Health Promotion Research, Room 432, 2206 East Mall, LPC Building, University of British Columbia, Vancouver, BC V6T 1Z3, Canada. (E-mail: annaleey@aol.com)

INTRODUCTION

Since the Healthy Cities Movement[1] prompted awareness of the creativity with which health problems might be addressed by urban communities, it has been an exciting time for health promotion and disease prevention in urban environments. It has long been recognized that, in disadvantaged communities, it is often necessary to engage in capacity-building efforts prior to introducing health interventions.[2] Structural inequalities can be a major factor inhibiting participation in community health programs,[3] and these macrosocial forces must be taken into account in planning, implementing, and evaluating health interventions.[2]

Ecoepidemiology is an approach that recognizes the inherent connectedness among structures, such as populations, communities, single individuals, and individual biological systems.[4] A further development of this approach, an "ecosystem approach to human health," is based on a worldview that situates humans within a finite socioeconomic, biological, and physical ecosystem. This paradigm has been increasingly seen as a useful way to understand and address urban health problems.[5,6]

An ecosystem health approach moves from examining the relatively narrow effects of social and physical environmental factors on health to seeing people as participants within their dynamic social and physical ecosystem.[7] Comprehensive community initiatives, such as those that would qualify as embodiments of an ecosystem approach, promote positive change in individual, family, and community circumstances largely by improving physical, economic, and social conditions.[2,8] Such initiatives, to be successful, require extensive community participation. As noted by Schulz et al., in introducing a series of articles examining the community-based participatory approaches to addressing health issues in three US cities, meaningful community participation is required to successfully address health inequalities (including, for example, income distribution, access to education, and housing policies) or what has become known as "the social determinants of health."[2]

Indeed, there has been increasing recognition that meaningful community participation is desirable in the design, implementation, and evaluation of any community-based health intervention.[9,10] Hawe and colleagues,[11] for example, argue that in the long term, organizational capacity building prolongs and multiplies health effects by increasing the likelihood that programs will be sustained or that people working on programs will have a greater capacity to respond to a diverse range of future health challenges. Green[12] has long contended that community involvement is a core element of health promotion, and Frankish and colleagues[13] recently summarized the challenges related to community involvement.

Community-based coalitions, made up of representatives of organizations and groups that come together to address community issues, are a way to enhance community participation.[14] Some authors stress that the real value of these efforts in improving health is largely indirect; that is, it is the building of community capacity and increasing community empowerment that is the main influence on community health.[15] While it is argued that the composition and structure of community coalitions are essential to the effectiveness of community initiatives since the over-representation of elites or agency staff can stifle meaningful participation by community members, one study revealed that who initiates a coalition is not a key predictor of the ultimate level of participant ownership.[16]

Community participation in health initiatives has a strong tradition in Latin America, and current efforts to build on this are represented in the *municipios*

saludables (healthy municipalities) movement and the work of the Pan American Health Organization[17] that promotes collaboration between communities and policymakers to formulate health interventions that empower communities.

Broader social and policy issues certainly affect the functioning of community coalitions,[18] and comparative research indicates that competent leadership, shared decision making, linkages with other organizations, and a supportive environment are especially important.[15,19] However, there has been insufficient research dedicated to the understanding of the cultural, political, and organizational contexts within which such coalitions function and how this may have an impact on the effectiveness of their efforts to mobilize communities to bring about positive change.

With rapid urbanization a growing global phenomenon, the basic human need for appropriate shelter requires ongoing attention. Dunn[20,21] and Howden-Chapman[22] note that, while addressing housing issues to prevent the transmission of infectious disease was a crucial component of the public health reforms of the 19th century, housing-related infectious diseases still persist in many parts of the world.[23] Moreover, housing influences health in a complex and multidimensional manner beyond its impact on infectious diseases.[20]

Scholars in the field of women, gender, and development[24,25] note that housing issues provide a good starting point to explore gender-related health inequalities as housing issues can directly affect a variety of health conditions and interact with domains such as safety, transportation, domestic violence, employment, and other socioeconomic issues. Moser and Holland's[26] participatory action research with urban poor communities demonstrates the critical role of housing in urban health and violence in the city.

The focus of this article is on assessing community participation in a multisectoral intervention in an inner-city community in Cuba, where improvements to health and the quality of life were pursued by applying an ecosystem approach,[5] specifically seeking to remedy housing and urban infrastructure deficiencies. The need to address housing and urban infrastructure in this community was rooted in equity-oriented policies implemented in Cuba after the 1959 revolution, which aimed to develop the rural areas of the country, de-emphasizing the development of capital. The city of Havana was neglected, and its infrastructure was allowed to deteriorate. Between 1962 and 1972, the city contained 27% of the country's population; however, it only received 15% of all new housing.[27] The imperative to address the social, environmental, and economic problems in the capital came to the fore by the mid-1980s, at which time planning began to address these needs.

Over the course of the 1990s, Cuba faced a severe economic crisis brought on by the collapse of the economies of the Soviet bloc, Cuba's major trading partners, and the intensification of the US embargo. This had serious impacts on health, the environment, and social services, specifically on nutrition, transport, water quality, housing, and public health services.[28,29] In response to the pressures of this "special period," as it had become known, the Cuban Ministry of Public Health sought interventions to maintain the health achievements of the previous few decades.[30–32] The specific objectives of this government initiative were to increase effectiveness, efficiency, quality of care, and population satisfaction[33] and focused on (1) decentralization of decisions to the level of the newly created Popular Councils, (2) community participation in keeping with the principles of the Healthy Cities movement, and (3) intersectoral collaboration.[34]

Cuba provides an interesting case to study how communities are addressing urban health issues precisely because circumstances in Cuba forced it to rely on

community participation and intersectoral collaboration to effect positive change in a time of severe economic constraints.

Community-based action research, with its goal of empowerment and change, has been successfully employed to encourage and sustain community-based initiatives to improve health and the quality of life in other contexts.[35,36] This methodology seeks to actively engage people in the research and builds on the valuable information that local citizens possess.[37–41] Community-based action research, with its purpose of promoting continuing action and outcomes, engages stakeholders in all aspects of the investigation process, including the processes of data collection, analysis, theorizing, taking action based on these findings, and evaluation of the effectiveness of these actions. As a tool for empowerment at a grassroots level, it is also useful for evaluating meaningful participation in community-based interventions.[42] We therefore adopted an action research methodology, consistent with an ecosystem health theoretical framework, and specifically incorporated Cernea's[36] "components of meaningful participation" into the evaluation process. The components of participation considered appropriate for this project were

- opportunity to participate
- linkage systems and forms of cooperation between government and social actors
- information and communication patterns (dissemination of information)
- joint decision making
- mobilization of people and local resources through existing social structures, and
- self-definition of interests by the local community.

To set the context for the analysis, this article begins with a description of Cuban society, the community involved, and the intervention itself.

THE CONTEXT

Creation of Community-based Groups, Mass Organizations, and Popular Councils

As noted, Cuba's focus since the 1959 revolution was development of the rural areas of the country, but by the mid-1980s, the health of inner-city Havana residents had become a growing concern. The Group for the Integral Development of the Capital (GDIC) was therefore established in 1987 by the Cuban government to address the social, cultural, and physical deterioration of Havana underlying the health concerns.[43] In 1988, the Talleres de Transformación Integral del Barrio (Integrated Neighborhood Transformation Workshops) were launched as a GDIC pilot project. The Taller was to mobilize local professionals to form interdisciplinary teams to work at the community level in a decentralized and participatory manner. Initially, these Talleres focused on improvement of housing conditions, urban education for children and youths, community identity, and development of local economy. As time went on, the Talleres were successful in securing funding from outside sources to address a variety of community health concerns.

Meanwhile, mass organizations had been created by the government as early as 1960, such as the Committees for the Defense of the Revolution (CDR) and

the Federation of Cuban Women (FMC), to provide organized options for public participation.

In addition, as a result of the changing political and economic climate of the 1980s, it was determined that local self-government must play a central role in addressing the health and infrastructural needs in Cuba. The concept of the Consejos Populares (CP, Popular Councils) was proposed in 1986 at the Third Congress of the Cuban Communist Party to address this need. The role of the CP was to increase public participation in government.[44,45] The elected delegates of the CP are integrated with representatives of mass organizations and centers of employment within a specific area. CPs therefore include a president (elected), a vice president (elected), delegates (elected), and representatives from each mass organization and important sectoral groups (CDR, FMC, education, health, etc.) and from each center of work. All are part of the decision-making process.

Centro Habana and the Cayo Hueso Community

Centro Habana, a municipality of Havana City founded more than 450 years ago, by 1995 had approximately 170,000 inhabitants in an area of 3.5 km^2, making it one of the oldest areas of the city and the area with the highest population density in the country. In addition, there are more elderly in this municipality than elsewhere in Cuba, with 13.8% of the population of Centro Habana aged 65 years or older compared to 11.1% in Havana City and 9.1% in Cuba. The rates of infectious diseases, noncommunicable diseases, and injuries were also documented to be high in this community. For example, mortality for communicable disease in Cuba as a whole was 47.6 per 100,000 population (1993–1995), while the age-adjusted corresponding mortality rate for Centro Habana was 82.5. Similarly, the cancer rate in Cuba was 136.6 per 100,000 persons at that time, while in this municipality, it was 206.6. There were 304.8 deaths from circulatory disease in Cuba, with the corresponding age-adjusted rate here 502.4; the rate of violent deaths was 84.4 in Cuba as a whole, with this municipality having a rate of 105.4 at this time.[46]

Previous investigations had documented that this municipality had been experiencing serious housing difficulties.[5,47] In addition, more than half the population did not have daily access to potable water. The capacity to dispose liquid and solid waste had decreased in Centro Habana, while regular waste collection was carried out in the commercial zone only. In other noncommercial areas, regular waste disposal varied depending on the availability of scarce financial resources. Moreover, the water disposal system was deficient and partially broken. Disease vectors were prevalent, and diarrheal diseases, leptospirosis, tuberculosis, and sexually transmitted diseases had increased.[5,47]

Analysis of health indicators within the municipality showed marked differences between CPs.[46] The Popular Council of Cayo Hueso, with 38,193 inhabitants situated in 0.83 km^2 in the northwest area of the municipality, had a population density of 46,016 people per square kilometer. The difficult economic conditions had a major impact on the ecosystem of Cayo Hueso: 70% of the houses were classified by the Municipal Department of Housing as bad, with 38% uninhabitable. Cayo Hueso, however, was felt by the government to have an enormous value to Cuba due to the richness and variety of its construction style, its history and culture, and the social values, which had been very strong in this community.

The Cuban government deemed it very important for Cuban society to protect the traditions of Cayo Hueso for future generations.

Plan Cayo Hueso (the Intervention)

Having become aware of the needs of Cayo Hueso through its delegates and institutionally sponsored mass organizations, the Cuban government initiated a set of interventions between 1995 and 1999 to improve the quality of life and human health in Cayo Hueso. The plan mobilized government organizations as well as nongovernmental organizations (NGOs) and was implemented in coordination with the provincial and municipal governments.

Interest in the intervention was secured by a massive advertising campaign on radio and television as well as face-to-face meetings promoting Plan Cayo Hueso as a plan to improve living conditions, health, and well-being. To promote participation in collective projects, this campaign emphasized the value of volunteer work.

To coordinate the infrastructural upgrades and exterior building repairs being undertaken with the aid of the ministries and NGOs, the municipal government established the Office of Rehabilitation Development (ORD). The ORD oversaw the construction contracts, coordinated the projects that were developed, and provided technical assistance to assess the housing improvement needs. Commissions, including community representatives as well as an ORD technician, visited homes, evaluated the technical state of the house, and calculated, with the head of the household, the materials required and what would be assigned.

In addition, the Taller de Transformacion de Cayo Hueso continued to build spaces where youths and children could gather, such as the Casa del Niño y la Niña, for which funds were obtained from the United Nations International Children's Fund (UNICEF). They also received donations of materials and toys from Spain and Canada. The ability to secure international funding was an important component of their success. The Taller, along with the CDR and FMC, continued their health promotion programs, for example, conducting several programs for seniors, such as self-esteem workshops and exercise programs. Other activities conducted by the Taller included Tintalla, La Casa del Son, Callejon del Decima o Musica Campesina, Rincon del Feeling, the Quiero a mi Barrio program, and the Cooperacion Barrial program (organizations that promoted various types of dance, music, and community pride).

Exterior repair of housing and public buildings was organized according to the ministry or NGO responsible. Interior housing repair was directly coordinated by the ORD in consultation with the Consejos de Vecinos (neighborhood councils) and individual families. Some ministries became important sources of employment for people in the community. An estimated 600 unemployed people from the neighborhood were contracted to work in the construction brigades. Capacity-building workshops, provided to youths between the ages of 14 and 18 years, were hosted by the Ministry of the Construction Industry. The majority of youths that participated in these workshops were also unemployed and were later incorporated into the brigades.

Every individual family was sold materials below cost, up to a set amount, as a way to stimulate individuals to take on the responsibility of gathering their resources to complete repairs to their homes. It was, of course, the decision of the families whether they would spend the time and resources on these identified needs as well as whether they would contribute to the interventions in the community as a whole. It was the role of the CP to mobilize individuals to continue their repairs

and to assist others who could not do it on their own. In addition, the CDR and the FMC encouraged families to participate in the interventions.

Not every household in Cayo Hueso was given the opportunity of housing improvements; only those houses that were considered by the ORD to be in a repairable state were offered assistance. Houses that were too dilapidated to repair and housing that was in good condition were left out of the housing improvement intervention. The total amount of government investment in these projects was more than 13 million pesos, a huge investment for Cuba at that time.[5]

This mass mobilization of local and national resources allowed the following interventions to be carried out[5,48]:

1. Repair of housing exteriors and provision of basic construction materials at substantially reduced prices for residents to repair interiors.
2. Repair of public buildings and construction of recreational, social, and cultural venues.
3. Repair of streets and replacement of water and drainage mains to improve water supply and eliminate sources of contamination.
4. Improvement of solid waste removal.
5. Installation of improved lighting.
6. Improvement of neighborhood social and cultural activities, many of which had strong themes of health promotion.

These interventions aimed to use a community participatory process to design and implement strategies to improve the quality of life and human health in the community. Findings regarding the effectiveness of the interventions with respect to changing perceptions of health risk[49–51] and improving health indicators and satisfaction[52,53] are reported elsewhere, as is an analysis of social capital and its relation to health in Central Havana.[54]

The purpose of this article is to provide an overview of the implementation of the Cayo Hueso Plan and lessons learned about community participation. Specifically, our objectives were (1) to assess the role of community leaders, mass organizations, and the nature and extent of community participation; (2) to determine if community members participated equally or whether their roles and participation differed by age, occupation, and especially gender; and (3) to ascertain what mechanisms were used, if any, to enhance participation. Lessons learned by the community from the implementation process that served to build capacity for further interventions in their community and lessons that can be extrapolated to situations outside Cuba are then provided.

METHODOLOGY

In-depth Interviews With Community Leaders

Individual interviews with 28 selected formal and informal leaders were conducted by a professional researcher, a community psychologist (N. F.) from the National Institute of Hygiene Epidemiology and Microbiology (INHEM). Initially, eight leaders were selected from community organizations: one from the CDR, one from the FMC, one delegate from the CP, one doctor, and four nurses. From these initial interviews, snowball sampling was employed until 28 interviews (7 from the FMC, 8 from the CDR, 4 CP delegates, 4 from the health sector, and 5 other informal

leaders, such as cultural leaders, religious leaders, and those individuals who assumed leadership roles in the intervention) were conducted. The objective of these interviews was to determine the level of participation of formal versus informal leaders in the Cayo Hueso intervention and to gauge their perception of the participation of the community. The interviews were taped and transcribed, and a content analysis was then conducted.

Community Interviews

A method of primary and secondary informants was used to obtain the views of community members about the level and nature of community participation in the intervention. The Popular Council of Cayo Hueso was divided into its smallest territorial units, according to the areas served by the 44 family medical centers (*consultorios*) in the community. Of these, 15 *consultorios* were selected for a house-to-house survey (described below), using a sample size calculation to ensure adequate representation.[52,53] Individuals were then selected to be primary informants for this community participation evaluation from each of the five occupational groups (housewife, employed, retired, student, unemployed) under the assumption that occupation could affect the level of participation in the community process. One person from each occupational category was selected from each of the 15 *consultorios,* with gender balance maintained in the selection process (50.4% of primary informants were female, and 49.6% were male). Only those who had lived in Cayo Hueso since 1995 participated in the study to ensure that those interviewed were living in the community during the interventions. A total of 71 interviews were conducted; 4 of the selected people declined. The interviews with primary informants were also conducted by the community psychology INHEM researcher. All interviews were conducted in the homes of the interviewee.

These primary informants were then trained to conduct secondary informant interviews with their peers as a way to better involve the community in the research process. The primary informants each selected four secondary informants from among their neighbors. Investigators requested that gender balance be maintained by selecting two men and two women as secondary informants. Once trained in capacity-building workshops, the primary informants conducted 186 interviews with secondary informants. (See Table 1 for the actual demographics of the secondary respondents.)

Initially, more interviews were planned, but it was later considered unnecessary as the interviews had reached the point of saturation, with little new knowledge being gathered.[55]

TABLE 1. Distribution of occupation and gender of secondary informants

	Gender	
Occupation	Female	Male
Retired	31	20
Employed	48	30
Students	12	6
Housewives	38	—
Military	—	1
Total	129 (69)	57 (31%)

An interview guide was developed to guide the interviews with leaders, as well as primary and secondary informants. The guide contained five main questions that prompted the interviewer to enquire about the following: the interviewee's perception of how the plan was developed and implemented, with particular reference to the perceived role of the various organizations in this regard; what the interviewee thought of the nature and extent of community participation; what the interviewee thought of the participation of various groups, particularly the role of women; what resources were contributed by the community; and what mechanisms were used, or should have been used, to enhance meaningful community involvement.

A workshop was held midway during the interview process to review the interviews that had been conducted by the primary informants and to address any questions that arose.

The primary interviews were recorded and transcribed. The interviews of the secondary informants were recorded on paper and later typed into the computer. A content analysis was conducted by INHEM investigators, pulling out the main themes and categories.

Community Workshops

In addition to qualitative interviews and many informal meetings between investigators and community members and organizations, several community workshops were held during the evaluation. The explicit purpose of the first workshop was to discuss the evaluation strategy and determine indicators to evaluate the success of the plan.[5,48] Involving the community in developing indicators of success of community health interventions is known to be useful in capacity building to help communities develop appropriate programs in the long term.[56] Community leaders from both Colon, a comparison inner-city community also located in Central Havana, and Cayo Hueso were present, as well as the ORD and the municipal health administrators. The second workshop was held for community members to interact with the investigators to receive preliminary results and help formulate further hypotheses to test; the final workshop discussed the findings and dissemination strategy.

All primary and secondary informants were invited to attend the final two workshops, as were all informal and formal community leaders. Approximately 50 people attended each workshop. All workshops were video recorded and reviewed for main themes and issues. There was also a designated note taker present at each workshop.

While the research objective of the workshops was to obtain meaningful input to the design of the evaluation and to verify the results, they also evolved into cultural and educational events. The debates initiated by the presentations (see the Figure) enriched the findings. Furthermore, the workshops provided an opportunity for members of the community to learn how to better analyze their problems and find possible solutions—making them capacity-building workshops as well. Specifically, an ecosystem health framework developed by the World Health Organization[57] that assessed driving forces, pressures, states, exposures, and health effects along with actions that could be taken at each step was introduced to the community and discussed at some length.[5,48] The capacity-building impact of the workshops in the context of action research methodology is discussed below.

Household Surveys

Household interviews had also been conducted with 1,708 individuals, consisting of all people over age 15 years in the 328 families chosen by random sampling

FIGURE. Debates around presentation of analyses at a community workshop.

methods from the catchment areas of 15 *consultorios* within Cayo Hueso and 15 in Colon.[48,50–54] The respondents in this survey were 58.9% women and 41.1% men; 53.5% were employed, 19.3% retired, 15.1% housewives, 8.5% students, 3.0% unemployed (neither study nor work), and 0.9% were in the military. The questionnaire contained questions related to the socioeconomic and material conditions of the family, health risk perception, self-rated health, health risk behaviors, and participation in the Plan Cayo Hueso, as well as the perceived benefit from the interventions. Only those results pertaining to community participation are discussed here.

Thus, four data sources contributed to the analysis of community participation: 28 in-depth interviews with formal and informal community leaders; interviews with 186 community members, using primary and secondary informants; three workshops held with the community; and relevant findings from a household survey of 1,703 residents.

RESULTS

Role of Leaders and Extent of Community Participation

It was found that the type and level of participation of the leaders, applying Cernea's elements of meaningful participation, varied according to specific leadership role, as shown in Table 2. For example, while the FMC and the CDR did not make decisions, they were directly involved in mobilizing the community to participate in interventions taking place. The delegates were the government representatives responsible for decision making, and they coordinated the dissemination of infor-

TABLE 2. Summary of participation

Components of meaning community participation	CDR, FMC	Delegate	Informal leaders, including health professionals	Community
Opportunity to participate	Participated in the commissions Actively organized and participated in cleaning and assisting with interventions	Provided the community with information about Plan Cayo Hueso, offering people the opportunity to participate	Informed of Plan Cayo Hueso in the same way as the community Participation was requested by the government and NGOs for specific activities	Extensive participation in interior housing repairs, but limited participation in exterior housing repairs; participated in social and cultural activities
Linkage systems	Part of commissions Led discussions in the community	Directed and coordinated the commission for the interventions outside of homes and designated resources to members of the community	Met with community members face to face to discuss sanitation and control of disease vectors	Community kept informed through CDR, FMC, and delegates
Information and communication patterns	Responsible for providing information about the Plan Cayo Hueso	Were on the commissions to disseminate information about the Plan Cayo Hueso	Met with delegates and other government representatives	Participated in community meetings
Joint decision making	Not involved in decision making, but expressed the concerns of community and looked after quality control	Participated as representatives of government and were involved in the decision-making process	Not directly involved in decision-making processes	Not directly involved in the decision-making process, but were able to express their concerns to their delegates
Mobilization of people and resources	Mobilized and organized the people of their block in the inventions	Involved in the distribution of resources for housing repairs	Talked to people about sanitation and fumigation	People shared food and contributed their labor to the interventions
Self-definition of interests by the local community	Role was to express the concerns of the community to the delegates	Directly received the concerns of the community, and role was to act on these concerns	Informal mechanisms of defining and expressing community concerns	Expressed concerns to the delegates, who are the representatives of government at the community level

mation regarding the interventions. Informal leaders and health professionals had a very limited role, participating only when their collaboration was requested. The community leaders (such as those active in the Taller) acted as a link between the government and the community and facilitated greater cooperation.

Although there was no joint decision making in the allocation of resources or in the division of labor, the community was able, through the mass organizations, to express their concerns about their needs being met. The leaders also played an extremely important role in the dissemination of information and the mobilization of the community, thus providing the community with opportunity to participate.

It was found that the participation varied according to which ministry or NGO was in charge of the specific intervention. For example, people living on the street Soledad, which was under the administration of the Ministry of Basic Industry and was the first street where the plan was developed, reported better organization and more community participation.

The participation also varied by type of intervention. For those interventions that dealt with interior housing repairs, members of the community were highly involved, taking responsibility for the actions carried out. In contrast, their participation in repairs of public building exteriors was limited. They participated in exterior intervention only after being advised of these interventions and had no direct input on how these interventions were conducted.

Nonetheless, there was strong contribution of community resources, consisting primarily of food for the workers and water to make construction mixes. It is important to note that provision of food is a significant contribution given the crisis conditions of the time. Many people did not have enough to eat themselves, yet they spontaneously shared what they had with the workers. The government did not have food to give to workers or the community; the population decided, independently, to give what they could: "The women swept, and many people gave snacks, and even lunch," according to a 53-year-old female planner.

In housing interiors, families contributed money, time, and effort to repairs: "People had to do interior repairs on their own account and put in the labor; the street repairs were done by the construction workers; the CDR and the FMC helped us to mobilize to do the cleaning after they finished," said a 61-year-old FMC female (L#4). According to a retired 55-year-old female:

> We enthusiastically received the construction workers and we gave them a lot of attention—pop, lunch, sometimes we made them salads . . . we cleaned up the construction waste, we created the "Marianas," and when the workers finished, we would go to clean. They sold materials for interior repairs to the community through the ORD, CDR; FMC and the Taller Integral offered cultural activities for those from other provinces; I had the responsibility of carrying out cultural activities with the neighborhood children each time they were going to complete a street, and we gave them gifts. However, some families are still waiting for the second phase because their housing was in very poor condition, and it did not form part of the initial phase.

Data regarding mobilization of individuals for participation in home and community repairs in Cayo Hueso and Colon, according to the household survey,[48,53] are shown in Table 3. Although the targeted intervention was in Cayo Hueso, 50% of individuals in Colon conducted some home repairs during the study period. However, while only 5% of respondents in Colon had worked on community projects during this time period, 9% of Cayo Hueso individuals did so. For those who

TABLE 3. Participation in home and community repair in Cayo Hueso and Colon (N = 1,703)

Participation	Cayo Hueso (n = 896)	Colon (n = 807)	Chi square	*P*
Own home repaired and worked on own home	297/481 (62%)	206/411 (50%)	11.71	<.001
Worked on community projects	80/896 (9%)	37/807 (5%)	11.85	<.001
Own home repaired and worked on community projects	53/481 (11%)	27/411 (7%)	4.84	.028
Own home not repaired and worked on community projects	27/415 (7%)	10/396 (3%)	6.49	.011

did not have their home repaired, only 3% had worked on community projects in Colon, while 7% did so in Cayo Hueso. All differences between Cayo Hueso and Colon were statistically significant, with chi square and *P* values shown in Table 3. The fact that 18% of community residents of Cayo Hueso worked on community projects was quite impressive. The contribution of time and resources to collective projects was demonstrative of meaningful participation of the community in the overall intervention.

As discussed in the community workshop, the figures obtained in the household surveys do not represent the massive mobilization for participation in the activities that occurred in Cayo Hueso, as individuals understood these questions to mean "worked on the organizing and implementing of the projects" (e.g., worked on construction brigades), not as recipients of the programs or interventions.

Varying Roles by Gender, Age, and Occupation

Contrary to what was originally anticipated, it was found that different occupational groups had a very similar level of participation, particularly in the categories of housewife, employed, and retired. Level and type of participation differed more according to gender and age than according to occupational categories. However, some differences were found in the category of student; many members from this age group were too young to have participated to a great extent in the plan. Furthermore, it was not possible to evaluate the level of participation of those in the category of unemployed as no one in this category was interviewed as a secondary informant. This may be because of the negative social connotations this category tends to have in Cuba. It was noted, however, that among those interviewed as primary informants, there was very little difference between unemployed members of the community and the others.

The results from the community interviews demonstrated that community participation was affected by gender, particularly in the area of exterior construction. Male activity was centered on the construction and transportation of materials, while female activity was centered fundamentally on cleaning, food preparation, and attention to the needs of male workers. This gender differentiation did not occur in work conducted indoors, for which the roles of men and women were the same. According to a 27-year-old housewife, "Some women lent their buckets to carry water, they provided snacks, in some places they even shoveled, they passed blocks or bricks to the workers."

With respect to decisions on interior housing interventions, participation was not differentiated by gender, but by who was the head of household. The survey found that 67.5% of household heads in Cayo Hueso in 1996 were women.[53]

The perception of the intervention also varied among leaders based on their gender. Women leaders focused their discussion more on the housing intervention and expressed this in a very personal way, expressing in many cases dissatisfaction with the work carried out; that is, they more frequently spoke in the first person plural: "We swept, we cleaned, we prepared lunch." With men, there existed a wider perception of the intervention, which was expressed in a less personal and less critical way. The difference in perception of the intervention by gender is likely tied to what Tinker[58] cites as Latin American women's predominant role in community management because of household obligations, establishing mutual aid networks and organizing to secure urban services. In keeping with Tinker's assertion, it is interesting to note that there was a predominance of women in the group of leaders studied. There was also a tendency for these women to be middle aged or older.

In the case of the women's organization (FMC), it was noted that they demonstrated flexibility by assuming new roles and developing new organizational structures that facilitated their work in the intervention. While some organizations, such as the CDR, were criticized for not doing enough, the FMC was recognized and praised for the work they did, specifically for creating new mechanisms to enhance participation, as noted below.

Mechanisms to Enhance Participation

As discussed, the Taller de Transformacion Integral conducted activities in the streets with children to promote the improvement of the environment, such as keeping the streets clean, and along with the CDR and FMC, conducted various health promotion activities that enhanced community involvement in the overall plan. In addition, it is noteworthy that the ORD-led commissions that visited homes and returned later to observe the development of the repairs included representatives from various community organizations, which enhanced the involvement of these organizations in the effort.

As also mentioned, women created new groups to enhance participation, such as a group of women who called themselves "Marianas" and took it upon themselves to mobilize other women to help with the efforts, including not only cleaning and providing snacks, but also organizing activities for children and cultural events.

DISCUSSION

Community participation provides an opportunity to draw on local knowledge and take into consideration community values. It enables the community to work out conflicting interests and not have inadequate or inappropriate solutions imposed on them. Furthermore, public processes empower people to initiate change to address their needs and give them greater control over specific decisions for healthy choices.[2,59] Involving the community in participatory project implementation can increase the impact of resources, an extremely important factor to consider when resources are scarce. Furthermore, to ensure that changes are sustainable, they must involve the community.[11,60]

The Cayo Hueso intervention constituted an extraordinary effort on the part of the Cuban government, NGOs, and community residents to adopt an ecosystem perspective to improve health and the quality of life in their community. The ability

to mobilize for this multisectoral initiative came from the fact that this was an extremely active community, and many of the structures necessary to carry out such interventions were already in place. The work of the CDR, the FMC, and the ORD and the formation of the commissions are examples of what Cernea refers to as "linkage systems."

Schulz and colleagues[2] refer to these linkages as "community-based participatory partnerships" and note that equitable engagement of residents, community-based organizations, government and service-providing agencies, and academic institutions are an important mechanism to address the social determinants of health. While the intervention was government initiated, the coalition that was created facilitated communication and cooperation between community residents and the workers mobilized by the NGOs and the government.

The linkage systems between different levels of government and community organizations, known to be essential for community-based action research projects to have sustainable impacts, indeed led to some sustained impact. Unlike many of the community participatory interventions currently being described in the literature, which tend to focus on specific health problems,[2] a particular strength of the Cayo Hueso intervention was that it indeed adopted an ecosystem (i.e., more integrated and comprehensive) approach. Experience gained from the Plan Cayo Hueso has since been effectively used to mobilize the community in a massive campaign against dengue[61] and in further housing improvement interventions, speaking to the effectiveness of the capacity building that had occurred.

While there was good overall participation, the type and level of community participation varied according to type of intervention, gender, and community status (leader versus community member). There was a marked difference between the interventions that benefited the individual (interior of housing) and those that benefited the community at large (exterior housing repairs, lighting repairs, street repairs, organization of social and cultural events) with respect to the type of participation and the contribution of resources.

The social and cultural activities, for example, were not part of the Plan Cayo Hueso, but were regular Taller-organized activities. However, the plan provided the Taller with resources to develop further cultural and social activities, including activities that had a strong direct health promotion focus. Although the plan was organized in a top-down manner, the Taller made it possible for the community to mobilize to address sociocultural issues at the community level. Indeed, as discussed elsewhere,[48,52,53] rates of smoking in women under 20 years old decreased markedly and significantly in Cayo Hueso, but not in Colon; young men in Cayo Hueso had significantly increased rates of participation in physical recreation; and elderly women had significantly better self-rated health than their counterparts who were not targeted by the interventions.

As noted by Israel and others,[9,10,36,59,60,62,63–65] it is essential that a community be involved not only in the design and implementation of interventions, but also in the evaluation. This was indeed a participatory investigation as the community participated in each phase of the investigation. Specifically, with respect to the study design, workshops were conducted to determine health indicators, as discussed by Spiegel and colleagues.[48] Monitoring of changes in health risk perception was considered an important part of the analysis[51] as this construct integrates individual values and perceptions of the importance of the health risk in question.

Wallerstein[56] maintains that the search for useful indicators helps communities continue to develop appropriate programs that become illuminated through a dis-

cussion of relevant indicators. With respect to involvement in data collection, it is noted that primary informants from the community were used to interview secondary informants. Interestingly, when compared with the interviews with primary informants, the interviews with secondary informants were characterized by greater depth and criticisms in their responses. This is likely because of the institutional nature of the intervention, as shown in our findings, and that the primary informants felt more restricted in expressing their opinions with those representing the institutions (i.e., the investigators). This also demonstrates how useful it is to involve members of the community in research as they may be able to draw out the concerns of fellow community members more effectively than professional researchers.

With respect to involvement in the data analysis, as noted, a workshop, attended by community leaders as well as primary and secondary informants, was conducted to present the preliminary analysis prepared by the investigators. Debates between community members initiated in the workshop enriched the findings by providing the researchers with greater insights to the community dynamics and perceptions. This process provided an opportunity for community members to analyze their problems and plan possible solutions (see the Figure).

Finally, with respect to formation of conclusions and recommendations, yet another community workshop was held. This had considerable capacity-building impact as the community readily embraced the ecosystem perspective in discussing root causes of the problems and formulating further actions. The use of a theoretical framework that examines driving forces, pressures, states, exposures and effects, as well as actions that could be taken at each of these levels provided participants at the workshops greater insight to the social and environmental determinants of health. According to an informal survey taken during the course of the last workshop among those who attended, this framework was found to be quite useful Through the process of investigation, some informants became activists in the community, helping the formal investigators organize the researcher-community workshops.

Enhanced community participation achieved through the intervention generated positive social change among the citizens of Cayo Hueso, and as documented by Spiegel et al.,[54] was associated with greater social capital in Cayo Hueso compared to Colon.

Based on the results of this study, the community concluded that, in developing future interventions like that of Plan Cayo Hueso, it should be established in advance how the community will participate in the process, and flexible strategies should be developed to enhance community participation. It was recommended that explicit roles be developed for the various NGOs working in the community, and that new organizations, such as the informal women's group that evolved for the project, be encouraged, although with the role of women going beyond the traditional roles that characterized much of the female participation in this intervention.

While the social structure of Cuba is unique in many ways, the existence of elected delegates at the community level and very active mass organizations is not unique. Lessons learned from this massive multisectoral intervention to improve health—particularly regarding the importance of the governmental and NGO communities working together—are applicable to interventions that occur in inner cities throughout the world. The manner of involving the community in the actual evaluative process, including the usefulness of using primary and secondary informants

and holding community workshops, is also a useful technique that can be generalized.

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