Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment

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Photovoice is a process by which people can identify, represent, and enhance their community through a specific photographic technique. As a practice based in the production of knowledge, photovoice has three main goals: (1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about important issues through large and small group discussion of photographs, and (3) to reach policymakers. Applying photovoice to public health promotion, the authors describe the methodology and analyze its value for participatory needs assessment. They discuss the development of the photovoice concept, advantages and disadvantages, key elements, participatory analysis, materials and resources, and implications for practice.

INTRODUCTION

Photovoice is a process by which people can identify, represent, and enhance their community through a specific photographic technique. It entrusts cameras to the hands of people to enable them to act as recorders, and potential catalysts for change, in their own communities. It uses the immediacy of the visual image to furnish evidence and to promote an effective, participatory means of sharing expertise and knowledge. In previous instances, we have called this methodology *photo novella*.[1,2] But the terms *photo novella*, *foto novella*, and *photonovel* have also been commonly used to describe the process of using photographs or pictures to tell a story or to teach language and literacy.[3,4] The process to be described here is significantly different; hence, the term *photovoice*.

Photovoice has three main goals: (1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about important community issues through large and small group discussion of photographs, and (3) to reach policymakers. In line with these goals, people can use photovoice as a tool for participatory research. Photovoice is highly flexible and can be adapted to specific participatory goals, different groups and communities, and distinct public health issues. In this article, we describe the concept and methodology, with emphasis on the first goal, using photovoice to conduct participatory needs assessment.

DEVELOPMENT OF THE CONCEPT

We have developed the concept for photovoice from three main sources: (1) the theoretical literature on education for critical consciousness, feminist theory, and documentary photography; (2) the efforts of community photographers and participatory educators to challenge assumptions about representation and documentary authorship; and (3) our experience articulating and applying the process in the Ford Foundation-supported Yunnan Women's Reproductive Health and Development Program.

The theoretical underpinnings of photovoice[1] described in an earlier article can be reviewed briefly here. First, in the adaptation for health education initiated by Wallerstein and Bernstein,[5] based on Freire's methods,[6] problem-posing education starts with issues that people see as central to their lives and then enables them to identify common themes through dialogue. Freire noted that one means of enabling people to think critically about their community, and to begin discussing the everyday social and political forces that influence their lives, was the visual image.[6] He used line drawings or photographs that represented significant realities or "coded situation-problems."[7] Photovoice takes this concept one step further so that the images of the community are made by the people themselves.

Second, feminist theory and practice has shed light on the male bias that has influenced participatory research. In an important contribution to this critique, Maguire[8] has noted that participatory research may unwittingly contradict itself by making women invisible. She has, for instance, observed:

> Consider the drawings used by Freire for cultural circle discussions. The drawings, used
> as the basis for group dialogue about "man in the world," without doubt, suggest that
> *men*, not women, create culture. These drawings encourage men and women to focus on
> men's contribution to culture. Freire maintained that domination was the major theme of
> our epoch, yet his conscientizacion tools ignore men's domination of women. (p. 84)

Whereas Rowbotham[9] has said that "We learn ourselves through images made by men," the work of Chinese village women as visual anthropologists has demonstrated that the exact opposite is possible. Because virtually anyone can learn to use a camera, photovoice may be particularly powerful not only for women but also for workers, children, peasants, people who do not read or write in the dominant language, and people with socially stigmatized health conditions or status. It recognizes that such people often have an expertise and insight into their own communities and worlds that professionals and outsiders lack.

Third, how does the method differ from orthodox approaches to documentary photography? Photovoice gives cameras to people who might otherwise not have access to such

a tool, so that they may record and catalyze change in their communities, rather than stand as passive subjects of other people's intentions and images. At the same time, historic and contemporary uses of documentary photography have informed the photovoice approach.

The term *documentary photography* has been used to describe an immense array of visual styles, genres, and commitments. Roy Stryker, chief of the Historical Section of the Depression-era U.S. Farm Security Administration, shaped one of the most well-known contributions of documentary photography. He dispatched a staff of photographers, including Walker Evans, Dorothea Lange, and Ben Shahn, to capture the relationship between rural poverty and improper land use, the decline of the small farming community, and the growth of urban decay.[10] Documentary photography has been characterized as the social conscience presented in visual imagery.[11] Stryker has provided a simple, broad, and powerful definition of documentary photography: "the things to be said in the language of pictures."[12]

One of the earliest and most famous efforts to enable indigenous people to produce their own images was initiated by Worth and Adair. In 1972, they wrote *Through Navajo Eyes*, an analysis of their experience training Navajo citizens to film their social world.[13] As Feitosa has noted, however, *Through Navajo Eyes* reflected the interests of the researchers rather than those of the Navajos.[14] By contrast, during the past several decades, the Mekaron Opoi Doi project with the Kayapo Indians of Brazil has been a landmark effort to reshape the documentary form. The project has "had as its goal enabling the Kayapo to produce *their* own videos according to *their* interests and needs" (p. 48, emphasis in the original).[14] And Kuttab has used videocameras and community-based production techniques to enable Palestinians living in the occupied territories to portray their lives as outsiders had not.[15]

In expanding the practice of documentary photography, Ewald's *Portraits and Dreams* presented the images and words of Appalachian youth who portrayed their everyday lives.[16] In line with this trend, the photographer Jim Hubbard has described teaching and learning alongside homeless children who are "shooting back" with cameras.[17] Spence's Photography Workshop in Britain has helped to stretch the boundaries within which community groups, labor and women's movements, and adult educators can move "toward a better understanding of the progressive potential for making and using photographs" (p. 89).[18] Spence explicitly attempted to encourage peasants and workers "to open up for discussion the social, political, institutional, and subjective spaces which we occupy daily" (p. 221).[18] Further, Young has promoted citizen participation by having junior high school students photograph the basic structure of their local school system and discuss how they would go about influencing leaders and making a change they believed in.[19] And Roter, Rudd, Frantz, and Comings,[20] as well as Rudd and Comings[21] have described an innovative process in which community members help craft health education text and photographs based on Freirian principles. These efforts have offered imaginative models for integrating community participation, health concerns, and the visual image.

ADVANTAGES

Linking Needs Assessment With Community Participation

Why use a technique like photovoice for participatory needs assessment? The current literature on needs assessment describes community inventory, community assessment,

context evaluation, diagnostic evaluation, formative or process evaluation, and social diagnosis, as well as citing the advantages of time-honored assessment tools such as focus groups, nominal group process, Delphi technique, surveys, archival research, and interviews.[22-25] A full comparison of photovoice with each of these approaches is beyond the scope of this article. However, photovoice offers several distinctive contributions to needs assessment. First, it enables health researchers and practitioners to gain "the possibility of perceiving the world from the viewpoint of the people who lead lives that are different from those traditionally in control of the means for imaging the world" (p. 50).[26] As such, this approach to participatory needs assessment, or participatory appraisal, values the knowledge put forth by people as a vital source of expertise. It confronts a fundamental problem of needs assessment: what researchers think is important may neglect what the community thinks is important. As Gaventa has noted, the participatory process assumes the legitimacy of popular knowledge produced outside a formal scientific structure.[27]

Second, photovoice addresses the descriptive mandate of needs assessment through an exceptionally powerful means—the visual image. To enable people to describe their perceived needs, photovoice appropriates this robust form of communication. As the social documentary photographer Lewis Hine has said, "If I could tell the story in words, I wouldn't need to lug a camera."

Third, the process of photovoice can affirm the ingenuity and perspective of society's most vulnerable populations. In Yunnan, for example, many village women are not formally educated; they were poor or they had to work to help support their families or the parents believed that schooling was less important for females. These conditions are not unique to rural China. Photovoice is accessible to anyone who can learn to handle an instamatic camera; and, what is more, it does not presume the ability to read or write.

Fourth, the method facilitates the sampling of different social and behavioral settings. People with cameras can record settings—as well as moments and ideas—that may not be available to health professionals and health researchers. The village women of Yunnan, for example, sometimes brought cameras to the market, the water pump, the clinic, the rice paddy, the tobacco drying shed, the election hall, and the pharmacy. To paraphrase Warren, local participation in the method increases the probability that the program site "will be diagnosed as having a richer and more complex social life" than if only formal survey sampling techniques are used.[28]

Fifth, this method can sustain community participation during the period between the needs assessment phase and program implementation. Cameras are an unusually motivating and appealing tool for most people. Using them in a photovoice project can be a source of community pride and ownership.

Sixth, photovoice provides a way to reaffirm or redefine program goals during the period when community needs are being assessed. In Yunnan, the village women were often asked by friends and neighbors why they were taking pictures. Their own explanations served to focus attention on women's status and health, to teach the community about the goals of the project, and to solicit people's feedback about the process.

Seventh, photovoice enables participants to bring the explanations, ideas, or stories of other community members into the assessment process. They can use this advantage in almost any variety of picture-taking situations. For example, taking into account the time of day when she took the picture, one village woman posed questions to learn a girl's own story about her work burdens (see Figure 1).

Eighth, photovoice provides tangible and immediate benefits to people and their networks. As Buchanan has noted, long-term community members cultivate long-term relationships.[29] Giving photographs back to neighbors and friends enables participants to

Figure 1. "I took this photograph in Luliang County. I asked the girl in the picture her age. She said she was not yet ten and in her third year of school. I asked her many questions. 'Do you have homework at noontime?' 'Yes.' 'What do you do after lunch?' 'I have to collect and wash the bowls and chopsticks and feed the pigs, because my parents are working in the field.' If the parents were educated they wouldn't let the child do so much housework. Village women, because of heavy housework and field work, don't have time to look after their children's studying. 'Can your parents read?' 'No.' I took this photo to make the parents pay attention to the educational issue of children, and to influence them to reduce home chores and field work." Photograph and caption by Jin Xiang Xiang, a Luliang County farmer, age 40.

express their appreciation, build ties, and pass along something of value made by themselves.

Ninth, the method enables people to depict not only the community's needs but also its assets. By contrast, household surveys and other conventional needs assessment methods—in which people are counted, interviewed, and questioned—may inadvertently reinforce a sense of impotence, inferiority, and resentment. McKnight notes that the range of community experience includes capacities, collective efforts, informality, stories, celebration, and tragedy.[30] In Yunnan, the village women photographed moments of loss and grief as well as those of celebration and strength, and elicited stories about the community's imagination, resources, and capabilities.

Finally, embedded in a Freirian context of problem-posing education, the images produced and the issues discussed and framed by people may stimulate social action. Photovoice can be a tool to reach, inform, and organize community members, enabling them to prioritize their concerns and discuss problems and solutions. Photovoice goes beyond the conventional role of needs assessment by inviting people to become advocates for their own and their community's well-being.

Adaptability

Photovoice can be used in many ways: (1) for specific participatory objectives in health promotion, (2) with different groups and communities, and (3) for diverse public health issues. For example, although this article focuses on photovoice as a methodology for participatory needs assessment, the same methodology can be adapted for participatory evaluation. As an illustration, in the Yunnan project, the village women have turned the cameras back on the project to evaluate what worked and what failed in the programs and policies instigated.[31] And in the United States, photovoice is currently being used in separate projects with high school students and with village health workers. Finally, the breadth and depth of public health problems suggest that photovoice may be a creative approach that enables people to identify, define, and enhance their community according to their own specific concerns and priorities.

DISADVANTAGES

What are the limitations of photovoice? First, the potential risks to participants must be made explicit. If *politics*, in a dictionary definition, is "competition between competing interest groups or individuals for power," then persons who document community reality and discuss community change are committing political acts. Thus, in Yunnan, it was the cadres and peasants, not the project funders or consultants, who would face uncertain or unpredictable outcomes. Therefore, as photographers, the women engaged in de facto self-censorship by deciding which actions would be appropriate to photograph and which would not. They were mindful of what might be in the best interests of themselves, their families, and their village. As facilitators, the cadres and organizers asked women to photograph evidence of conditions and problems they would like to see changed, but they refrained from asking them to focus on the most politically sensitive topics. For example, had they asked, "What is your greatest fear?" or "What are you most afraid of?" they might have learned more about the social forces of domination, access, and authority that shaped women's realities. If the intent "to do no harm" is paramount, there is the danger, as Minkler has noted, that "the process of community organization itself may serve more to maintain the status quo than to change it" (p. 208).[32]

Second, personal judgment may intervene at many different levels of representation: who used the camera, what the user photographed, what the user chose not to photograph, who selected which photograph to discuss, and who recorded whose and what thoughts about whose and which photographs. The postmodern scrutiny of these issues compares, in survey research, to examining who designed a questionnaire, what questions were put in and what questions were left out, who implemented the questionnaire, who analyzed what components of the data, and who reported what components of the data. What is more, while one may interpret what material has been included, it is hard to discover what has been left out. In other words, all methodologies hide as well as disclose.

Third, broader class stratification may be reproduced by the control of resources. For example, the process entrusts cameras to the hands of ordinary people, but in whose hands does money, support, and editorial control remain?[2,33] The participatory process attempts to address material and status inequalities, yet the extent to which it may perpetuate those inequalities deserves scrutiny.

Other dilemmas arise when using photovoice as a tool to assess community assets and needs. Photographs are easy to gather but difficult to analyze and summarize because they yield an abundance of complex data that can be difficult to digest.

In addition, limitations of capital, transportation, and communication raise unique concerns. Large-scale applications of photovoice, as in rural Yunnan, require cooperation between different levels of government—province, county, and township leaders. The Women's Federation, a national organization that promotes women's well-being, possessed fewer resources than most of its government counterparts, but its cadres succeeded in getting the Bureau of Public Health to provide drivers and vehicles, which were crucial assets in the remote countryside. Cooperation between such groups strengthened ties within and among institutions serving women. The process of a community-based photovoice project can increase communication and build networks among organizations that might otherwise seldom interact, even though the social and economic problems they strive to solve overlap.

Finally, methodological ideals may not coincide with reality. For example, audiotaping people's narratives about their photographs can capture the breadth, nuance, and idioms of people's stories. In Yunnan, audiotaping would have spared others the difficult task of attempting to script Chinese characters longhand at the speed of the photographers' reflections. However, we rejected this approach for several reasons. First, needs assessment always takes place within a social and political context.[34] China has a long history of persecuting its own; a person leaving an audiotaped record of her opinions might well fear self-incrimination. Second, some cadres had quietly expressed concern about whether photovoice was a foreign intelligence project: what was the purpose of tape-recording what uneducated village women had to say? Third, the use of tapes would have introduced a degree of excruciating self-consciousness for many village women, who also believed it was strange, if not suspicious, for anyone to think they had anything valuable to say.

PHOTOVOICE ELEMENTS

Building Capacity for Action

From its inception, the Yunnan Women's Reproductive Health and Development Program has acted on the belief that local women themselves are best able to define and articulate their own needs and that they ought to be the most important actors in designing efforts to address those needs.

McLeroy, Bibeau, Steckler, and Glanz have noted the power of mediating structures that connect individuals and the larger social environment and that serve as points of access to, and influence on, the larger social environment.[35] Such structures may include activists, policymakers, journalists, and elected officials and may take the form of a steering committee, board of directors, or advisory group. In Yunnan, participants created the capacity for action by organizing the Provincial and County Guidance Group. Guidance Group members were recruited from the leadership of virtually every sector of Chinese society that influences women's health. Throughout the needs assessment, the group provided a formal forum for feedback, such as through slide shows in which people showed to policymakers what mattered in their daily lives and what needed to change.[2]

Facilitators

Ideal principles of facilitation include a commitment to improve the ability of group members to work together effectively, to provide an information resource, and to reduce dependence on the facilitator for solving future problems.[36] A core training team may include both outsider and insider facilitators. In Yunnan, outsider facilitators were public health workers who had lived and worked in China, were proficient in the local language, and had a commitment to improving women's health and social position through an adaptation of Freire's work. Insider or indigenous facilitators were township, county, and provincial Women's Federation cadres, including highly skilled teachers and community organizers.

The word *facilitator* has a ring of neutrality. However, in photovoice, the facilitator is accountable to a group or community and openly committed to certain kinds of social change. The facilitator must recognize the political nature of photography and community-based work. He or she should be sensitive to issues of power and ethics related to cameras; should recognize personal aesthetic tastes and biases in photography; and should be supportive of different styles of picture-taking.

While the ability to teach others how to use a camera is necessary, being an effective facilitator turns on one's understanding of photovoice as a Freirian process of discussion and action and on the ability to facilitate dialogue about the social and political context of women's visual images. For example, when discussing a Yunnan woman's picture of children eating a meal, a cadre, in her role as facilitator, began to pose a series of questions: What is this photograph about? What is the girl at the table doing? What do her conversation and laughter at the table suggest? How does what she's allowed to do relate to our experience as young girls? And now, as mothers? What do these reflections tell us about girls' status? What are the cultural expectations that we grew up with? What are the cultural expectations for females and males that we want to promote or to change today? How could we do that? What strategies for action do we have? How might these actions make a difference? What are the barriers? What are our resources?

A facilitator's commitments require an understanding of local history, economics, and culture. As Fernandes and Tandon have suggested, this understanding takes on greater importance when outsiders participate as facilitators and trainers, for they enter "not as persons who have answers but as learners." For them, "the starting point should be humility, honesty, and openness in [their] participation and a recognition of the failure of solutions" that do not consider the cultural patterns and social relations of people and that exclude people from the decision-making process (p. 201).[37]

Preparing local women to serve as trainers had several purposes: to enrich collaboration between community organizations and the people they serve; to improve existing organizations' infrastructure, effectiveness, and credibility in the community; and to improve the skills and resources of grassroots workers dedicated to social change. For instance, in assuming the role of trainers in photovoice, local township Women's Federation cadres could provide social support that ranged from emotional, instrumental, informational, and appraising in nature.[38] By planning and implementing photovoice as an effort in successful large-scale community organizing, the cadres also strengthened their power, visibility, and capacity as local leaders.

As Hochbaum, Sorensen, and Lorig have put it, "Even the best and most proven theories are no substitute for practitioners' training, experience, mastery of skills, knowledge, and inventiveness" (p. 309).[39] In Yunnan, for example, village women were inspired by one cadre who was also a seasoned teacher and school principal. When they explained

that their friends and family members would put on their best clothes and insist on posing for pictures, the cadre urged them to answer with ingenuity and humor. They could say to their friends, "All right! Let's take a picture! Let's go to the field where you planted tobacco today!" or "Show me what you do in the kitchen!" or "Show me where your water comes from!" In this way, she said, the women could educate their neighbors about the purpose of the project, achieve its aims, and also fulfill their neighbors' requests.

Participants

The ideal "who" or "where" for using photovoice is a community or group in which people are involved in all major phases of selecting and planning the process. For example, it might be a community in which grassroots organizations have expressed a powerful interest in learning about or improving their health.

Why was photovoice carried out in the two Yunnan counties of Chengjiang and Luliang? First, county involvement was not mandated by higher officials at the provincial level as is usually the case in China. Instead, the county leaders expressed a strong commitment to the underlying goal of community participation. Second, the people's income in the two counties fell in the bottom quarter for the nation. Yunnan is one of China's poorest provinces, a criterion important to the donor agency. Third, Chengjiang and Luliang Counties were each within a half day's drive of the provincial capital of Kunming. This relative accessibility would enable provincial and county cadres to work together more closely, instead of county cadres simply doing what was mandated at the provincial level.

In Yunnan, the village women, themselves daughters of villagers, lived in Little Dragon New Street Village, Pine Garden Grass Village, Big Dipper Wheat Field Village, and many other *ziran cun*, or natural villages. Telephones, paved roads, and bicycle and motor transport were scarce in these remote regions, and tasks that are relatively simple to handle in a city—such as getting in touch with people, going to meetings, or photocopying a teaching plan—proved extremely difficult in the countryside. Fortunately, Chinese cadres have spent decades perfecting the practice of community organization, and members of the Women's Federation provided a dedicated infrastructure of insiders for developing and handling film and facilitating regular meetings. The participating village women were supported by hundreds of people at the grassroots level—families, ministry chiefs, drivers, officials, schoolteachers, clinic doctors, and health workers.

In June 1992, some 53 women from Chengjiang and Luliang counties received intensive training in the techniques and process of photovoice. Six months later, an additional 9 village women from Luliang County participated in photovoice training. County- and township-level Women's Federation cadres selected women who were representative of the range of age (18-56 years), marital status (single, married, and widowed), and income in the villages. No two women came from the same natural village. Among the 62 photographers, 50 women came from the Han Chinese majority nationality, and 12 were of Chinese ethnic minority nationality—10 Yi, 1 Hmong, and 1 Hui. All were full-time farmers.

The roles of facilitators and participants may not be mutually exclusive. For example, Women's Federation cadres who facilitated group discussions also took cameras in hand to document their perceptions. Participants led group discussions, posed questions to one another, and encouraged one another to voice their opinions.

APPLICATION OF PHOTOVOICE TO
PARTICIPATORY NEEDS ASSESSMENT

Photovoice Trainings

Trainings are tailored to a community's specific goals, culture, and priorities, but several conceptual guidelines apply. When the key application of photovoice is participatory needs assessment, how should facilitators convey this concept? The challenge here is to offer guidelines that might expand, rather than limit, the perceived range of a community's assets and to avoid a language that pathologizes its members.

During the first training in Yunnan, we asked women simply to photograph *nongcun funu shenghuo de jingshen*, or the spirit of village women's everyday lives. We chose this phrase because the term *spirit* might be said to carry an implicit compliment, evoking the strength women need to do their everyday work. Like Ewald, we wanted the people "to expand their ideas about picture taking but to stay close to what they felt deeply" (p. 17).[16]

The first training should include a discussion of cameras, ethics, and power; ways of seeing photographs; and a philosophy of giving photographs back to community members as a way of expressing appreciation, respect, or camaraderie. Shared questions might include the following:

> What is an acceptable way to approach someone to take their picture?
> Should someone take pictures of other people without their knowledge?
> What criteria should we use when evaluating photographs?
> To whom might people wish to give photographs, and what might be the implications?

The curriculum may then move to address mechanical aspects of camera use. It may include how to protect the camera (what happens if it is dropped, how heat and water affect the camera, and use of the lens cover); parts of the camera (such as batteries, flash, and viewfinder); operating the camera; when to use the flash (the range at which it works); indoor, outdoor, and night use; camera handling when taking photos (holding the camera steady when pressing the shutter release); distance from subject; and framing. It may further cover loading the camera; keeping the back of the film-loaded camera closed; rewinding the film; taking photos in the village; close-ups and angles; different ways to photograph a family or a group of people; posed and unposed pictures; and how symbols of the community or culture might be photographed.

Facilitators should minimize technical advice during the initial trainings to avoid stifling people's creativity. In Yunnan, facilitators advised photographers simply to keep their fingers out of the camera's eye; to place the sun at their back as often as possible; and to avoid putting the center of interest in the middle of the photograph every time. All participants learned to care for, load, and unload a Ricoh YF-20 autofocus, autorewind camera. By the morning of the second day of training, each woman had taken her first roll of 36-exposure color film. That afternoon, while their film was shuttled to county or provincial sites for one-hour developing, each woman talked about what it was like to take photographs for the first time. On the third day, each received the full set of her developed prints, which provided a catalyst for more group discussions.

At the outset of any needs assessment, a fundamental question arises: How are data from an assessment likely to be used?[40] In Yunnan, women talked about the methodology within the context of the program's broader aims. They knew that their photographs and

vision could become tools to educate policymakers, urban officials, and public health workers and that their images and words might gain a wider audience in local exhibitions and beyond.

Facilitated Small
and Large Group Discussions

The purpose of group discussion is to enable people to reflect on the images they have produced. Transferring the photograph to slide form makes group discussion easier and literally enlarges the visual impact of the images. People may wish to study a variety of internationally known historic images that illustrate how photography has been used to promote social change. In Yunnan, for example, women looked at photographs by the Depression-era American photographers Dorothea Lange and Walker Evans. They saw pictures taken by the Appalachian children taught by Wendy Ewald. They thought of their own children when they were shown a picture of an American child lying across the back of his spotted horse.[16] They studied more photographs taken by the homeless youth of Jim Hubbard's "Shooting Back" project: snapshots of a boy leaping into a handspring, of the Washington Monument studied behind a barbed wire fence, of three children's faces contorted with worry as their hands clasped a wounded pigeon.[17] They admired the black, white, and grey purity in the pictures of everyday rural life as captured by the Chinese photographer Li Yuan Qi: a young fellow from Liaoning eating steamed bread, a male farmer from Henan shouldering a sack of rice, and bespectacled old men from Shanxi peering up at the sky.[41] But where were the women in Li's photographs? Li's pictures gave dimension and language to the beauty of ordinary life, but they also suggested a need to document the spirit, work, and struggles of rural women.

Though such historic images illustrated varied and powerful approaches to photography as a form of expression and offered some inspiration, the majority of the pictures discussed in Yunnan were the people's own. At the first opportunity, the Women's Federation cadres and village women saw their own work as slides. For example, one farmer photographed what life is like when it rains in the village (see Figure 2). She selected this photograph for group discussion, and when she explained what was happening in it, other participants offered words of affirmation and assent. When she later wrote in her caption "We hope that the situation can be improved," she wanted to express not only the feelings of the discussion participants but also those of many people in the village.

The facilitators and the women themselves set a supportive tone for discussion, and their mutual involvement grew from tentative to enthusiastic. For instance, one woman who was too shy to introduce herself on the first day began to speak out with confidence as weeks went by. Facilitators acknowledged that the women might prefer talking individually among themselves rather than in group settings, that they might be reluctant to bring up problems for fear of being seen as challenging their leaders and as complaining of neglect, and that they felt a responsibility to one another that induced respect.

In Yunnan, the well-known photographer and editor for a popular magazine, *World of Women*, volunteered his time and skill for the training workshops. Using a native Yunnan dialect, he urged the women not to *shi er bu jian*—turn a blind eye to the obvious—and explained how they could take photographs of relationships, conditions, and chance occurrences. They laughed when he illustrated that while one could get a friend to pose in a chair, one could not pose a dozen chicks scrambling for grain. Fluent in the political
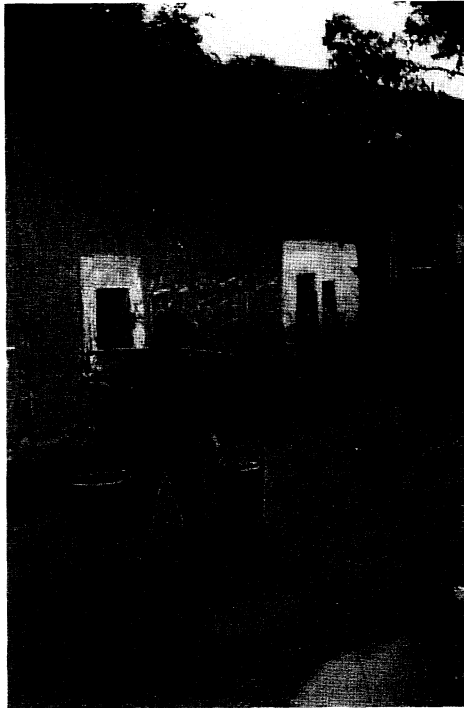
Figure 2. "The old woman is over sixty. She is carrying food to feed pigs. I wanted to capture the industriousness of women in the countryside. Usually, in our village, women her age take care of children at home and do housework and no longer have to do this kind of work, but this woman's family does not have enough workers. My photo shows that our village is still poor, the houses are run down, and the streets are in poor condition. When it rains, it's extremely muddy. We hope that the situation can be improved. A paved road would improve the public health condition in the village." Photograph and caption by Fu Qiong, a Haikou County farmer, age 25.

and cultural etiquette of the countryside, he inspired the women by creating a setting in which they were offered constructive feedback, recognition, and support for their achievements.[42]

PARTICIPATORY ANALYSIS

In using photovoice for needs assessment, participants should be involved in a three-stage process that provides the foundation for analysis: selecting (choosing those photographs that most accurately reflect the community's needs and assets); contextualizing (telling stories about what the photographs mean); and codifying (identifying those issues, themes, or theories that emerge).

The participatory approach dictates the first stage—selecting. So that people can lead the way in discussion, it is they who choose the photographs. In Yunnan, women selected the photographs they considered most significant from each roll of film they had taken.

The participatory approach also generates the second stage—contextualizing, or storytelling. This occurs in the process of group discussion, suggested by the acronym
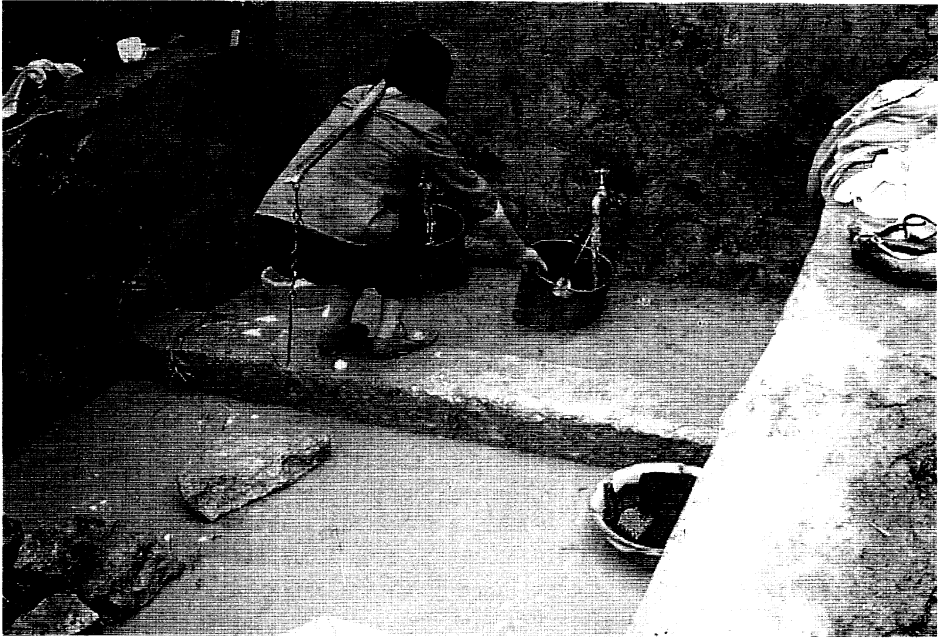
Figure 3. "Drinking water is a problem in our mountainous area. The water is not very clean. The water the woman is getting flows from two faucets. The faucet water is pumped up from the pond by the electric power station. Whenever there is a power blackout in our mountain areas, even the water from these faucets is not available. I wanted to show the difficulty of getting drinking water." Photograph and caption by Li Cui Zhen, a Chengjiang County farmer, age 34.

VOICE—*v*oicing *o*ur *i*ndividual and *c*ollective *e*xperience. Photographs alone, considered outside the context of women's own voices and stories, would contradict the essence of photovoice. In Yunnan, women narrated the meaning of their images in discussion groups, wrote captions for them, or told their stories to family members or friends. Anthropologists from the provincial Academy of Social Sciences, traveling to cluster sites, also wrote down many of the women's stories.

The participatory approach gives multiple meanings to singular images and thus frames the third stage—codifying. In this stage, participants may identify three types of dimensions that arise from the dialogue process: issues, themes, or theories. They may codify issues when the concerns targeted for action are pragmatic, immediate, and tangible. This is the most direct application of the analysis. They may also codify themes and patterns or develop theories that are grounded in data that have been systematically gathered and analyzed in collective discussion.

For example, one woman photographed a farmer wearily stooping to get water from the cistern faucets (see Figure 3). Her photograph repeatedly spurred the reflections and recognition of every village woman. The overwhelming response to this critical image, and to other pictures of women fetching water from cisterns, dredging wells, and hauling heavy buckets, underscored the problem of access to clean water in the villages. Access to clean water has permeated every aspect of rural women's lives, in time spent, physical labor exerted, and unsanitary conditions endured. Similarly, engineering ways to provide clean water sources has been a monumental struggle fraught with obstacles. Local leaders,

confronted with women's photographs that showed these concerns, brought construction of clean water reservoirs to the forefront of the agenda. The women's pictures and stories were not the only catalyst for change, but they helped to focus unprecedented attention on the problem.

We described earlier the dilemmas suggested by issues of representation. A related dilemma of needs assessment is how to prioritize findings. These dilemmas can be partly addressed in the analytical strategy by two kinds of replication: internal and external. Internal replication means that the findings may be validated by other remarks from a single source. External replication means that the findings may be validated by other sources (e.g., told by other individuals' photographs and stories; and other forms of needs assessment). No claim is made that the data that emerge from the process are representative in a social scientific way. But taken together, there may be enough internal and external replication to suggest that the findings provide a reliable picture of people's priorities at a particular historical moment.

When photovoice serves as a tool for participatory needs assessment, data analysis involves people in defining issues. Such an approach avoids the distortion of fitting data into a predetermined paradigm; it enables us to hear and understand how people make meaning themselves or construct what matters to them. Photovoice, to paraphrase Glik, Gordon, Ward, Kouame, and Guessan in a different context, is not simply the shuffling of information around but entails people reflecting on their own community portraits and voices and on what questions can be linked into more general constructs or can be seen to be interrelated.[43] Photography provides the medium through which people's visions and voices may surface.

In Yunnan, photovoice did not differ notably from the other needs assessment techniques in what it uncovered; the difference, rather, was in the process that was used and the implications of that process. From the four assessment techniques used (survey questionnaire, nominal group process, focus groups, and photovoice) in the Yunnan Program, the public health needs and issues that were identified spanned burdens and status of women and girls relative to men and boys (including problems with the lack of day care, parents not sending girls to school, and women's household chores beyond their massive farming burdens); access to clean water and transportation; and maternal and child health (including problems with the accessibility and quality of village health stations, lack of female village clinicians, and providers' attitudes). Fugelsang has argued that an assessment may "operate no less efficiently" on comparatively coarse measurements.[44] Photovoice is a participatory method not of counting up things but of drawing on the community's active lore, observation, and stories, in terms both visual and oral. McKnight has noted that community stories "allow people to reach back into their common history and their individual experience for knowledge . . . and direction for the future" (p. 58).[30] Photovoice may provide an effective and vivid way for people to show firsthand their perceived strengths and needs, to promote critical dialogue and knowledge about their community's assets and concerns, and to reach policymakers through images and stories of everyday life to bring about change. It exploits the emotional power of photographs produced by people who carry a particular authority in what they choose to describe. It is designed to increase the individual's and the community's access to power. It may involve people at the grassroots level in all aspects of defining their community's concerns, furnishing the evidence, and getting solutions enacted into programs and policies. Finally, it may complement and enhance other needs assessment strategies.

MATERIALS AND RESOURCES

Some goods may be on hand or donated, but cost items for equipment may include instamatic or disposable cameras, flash batteries, film and processing, and a slide projector. Participants may wish to make scrapbooks for themselves or others; in Yunnan, for example, women created albums and wrote down or dictated captions to family members or friends.

"Shooting Back" participants mastered the use of manual focus cameras and learned to develop film in a darkroom. More closely adapting Ewald's approach, we used autofocus, autorewind instamatics equipped with a battery-operated flash that a person with no previous formal education could learn to use in one day. We did not assume literacy among the photovoice participants and chose a camera for which the ability to read numbers was unnecessary. The Ricoh YF-20 cameras were produced in Beijing through a joint venture with Japan, which eliminated the prohibitive import tax that might have been incurred by choosing a camera manufactured elsewhere.

Students of art and professional photography have often been taught to value black-and-white images over color ones, assigning judgments of aesthetic purity and clarity to the monochrome form.[45] In Yunnan, village women and facilitators rejected this hierarchy of taste, preferring to buy bulk quantities of color Fuji film sold within the country. Women snapped the rich colors that swathe their native costumes, the ruddy complexions of their children growing up in tobacco fields, and the hues that outline the water cisterns.

The choice of film and camera must be guided by a long-term practical view: What are the easiest items to keep using after donor funding is gone? In China, color photo labs were more accessible to township and county residents than black-and-white ones. Sturdy instamatics minimized mechanical difficulties.

Are videocameras appropriate for photovoice? Many videocameras currently available are relatively simple to use, and over time the technology will continue to become less expensive and more widespread. In the meantime, we call attention to McKnight's concern about the use of technical devices "that necessarily require outside dominance" to be used effectively.[46] On one hand, the Palestine project noted earlier yielded a vital community self-portrait using videocameras. On the other hand, participants first took an intensive three-week training course, and four months of laborious editing in New York were subsequently required.[15] In Yunnan, participants simply took photographs home to elicit others' stories and feedback; access to a videotape player or editing equipment was unnecessary. Photovoice should be creatively and flexibly adapted to the needs of its users. We suggest that communities, groups, and facilitators consider both the technical and the humanistic advantages and disadvantages in choosing what kind of camera to use. A premise of the photovoice method is accessibility and that people can participate with a minimum of technical training.

What happens to the cameras at the end of the project? In *Portraits and Dreams*, Ewald wrote that the Appalachian children who photographed their mountain life purchased their cameras; she hoped this would give them a sense of ownership and value.[16] In Yunnan, photographers gained opportunities and advantages not available to other people in their village (for example, women received all of their prints from each roll to keep or distribute to friends), and so cameras were not made as an outright gift. Instead, Women's Federation cadres and village women decided on an affordable price that was approximately 25% of the cost of a new camera. All the women chose to buy the cameras, and the money raised was donated to the local Women's Federation for community projects to benefit women.

In addition, a number of Women's Federation cadres currently use the cameras for participatory evaluation, documenting and spurring critical dialogue about the successes and limitations of the new projects generated by photovoice as participatory needs assessment.

IMPLICATIONS FOR PRACTICE

As noted earlier, photovoice offers important advantages for needs assessment in general and for participatory needs assessment in particular. Our experience in Yunnan suggests additional implications for practitioners interested in infusing all levels of program design and evaluation with a participatory approach. First, photographs, belonging to the photographers and to the people depicted and displayed in the community's public spaces, may bear witness to otherwise individualized, yet truly public, issues.[47,48] In Yunnan, photovoice gave participants a tool for directly observing and documenting their community's native strengths as well as its problems. As Freire has shown, visual images can stir a group to analyze critically many social relations and conditions within their own community. Photographs may fuel critical consciousness and collective action by making a political statement about the reality of peoples' lives.[7]

Second, as a participatory method, photovoice is well suited to address what Green and Lewis have called "theory failure."[49] For example, we frequently encountered the assumption that lack of knowledge was the major problem facing rural women. But by using the photovoice method, the village women themselves documented the fact that their major problems included lack of water, lack of transportation, and lack of child care. As a means of participatory needs assessment, photovoice provides a community-based diagnostic tool to redress the inadequate theory on which programs may be based.

Third, Guyer, Schor, Messenger, Prenney, and Evans have noted that needs assessment methods may provide a powerful means to advocate increased funding and to guide the distribution of money.[50] Finally, close to the vein of media advocacy for public health innovated by Wallack, Dorfman, Jernigan, and Makani, photovoice may enable grassroots constituents, representing their own community, to participate in framing the agenda and adding their voice to the policy-making process.[51]

CONCLUSION

Photovoice can make several distinctive contributions to participatory needs assessment. First, it can give health researchers and health professionals "the possibility of perceiving the world from the viewpoint of the people who lead lives that are different from those traditionally in control of the means for imaging the world" (p. 50).[26] Second, it addresses the descriptive mandate of needs assessment through an exceptionally powerful means—the critical image. Third, the process of creating these images affirms the ingenuity and perspective of society's most vulnerable populations, including those who may not be able to read or write. Fourth, it facilitates the sampling of different social and behavioral settings by taking advantage of the access enjoyed by participatory researchers. Fifth, it can sustain community participation and ownership during the period between the end of needs assessment and the start of program implementation. Sixth, it provides a way to reaffirm or redefine program philosophy, structure, approach, goals,

and values during the needs assessment. Seventh, it enables participants to draw community members' explanations, ideas, or stories into the assessment process. Eighth, it provides tangible benefits to people and their networks. Ninth, it enables people to show not only the community's needs but also its assets and strengths. Finally, embedded in a Freirian context of problem-posing education, the images produced and the issues discussed and framed by people may stimulate community problem solving, organizing, and social action.

Photovoice enables people to percuss their community and to collectively prioritize its needs. Sontag has noted, "The force of photographic images come from their being material realities in their own right, richly informative deposits left in the wake of whatever emitted them, potent means for turning the tables on reality—for turning *it* into a shadow" (p. 180).[52] Photovoice expands the genre of participatory needs assessment. From the people, their visions, and their words, we can begin to assess real local needs, in the hope that the divergent perspectives of health professionals and laypeople will converge to exert a more effective impact on a community's well-being.

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in New York City ''Trying to Eat Healthy'' : A Photovoice Study About Women's Access to Healthy Food

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"Trying to Eat Healthy"

A Photovoice Study About Women's Access to Healthy Food in New York City

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Photovoice is a participatory action approach in which individuals use photographs to identify and address issues in their community. The objective of this study was to document the challenges that low-income women face in accessing healthy food in New York city. Data were drawn from focus-group interviews with nine low-income women aged 20–45. The findings indicated that low-income women who live in homeless shelters have less access to healthy food, such as fresh fruits and vegetables, than do other women. They speak of the broader issue of structural barriers to eating healthy that women in impoverished urban communities face. Even with these constraints, women are not powerless and instead find ways to exercise personal agency.

Keywords: *food; photovoice; urban life; women*

Widespread food insecurity is a growing crisis in New York city. Despite New York city's abundant wealth, glamour, and opportunities, the number of people who suffer from hunger and food insecurity is staggering. The New York City Coalition Against Hunger (2005) reported that before the current economic crisis, 1.3 million residents lived in households in which food was limited and scarce, and more than 1.7 million New York city residents had incomes that were below the poverty line of US$15,670—figures that undoubtedly increased since then. Studies have demonstrated that income inequality may be linked to hunger, food insecurity, and the lack of access to healthy food options (Casey, Szeto, Lensing, Bogle, & Weber, 2001; Drewnowski & Darmon, 2005; Lynch et al., 2004). In addition to income inequality, fresh fruits and vegetables are scarce in low-income New York city neighborhoods. Limited access to healthy foods may contribute to various chronic health problems, including heart disease, stroke, colon cancer, obesity, and type 2 diabetes (Gordon, Ghai, Purciel, Talwalker, & Goodman, 2007).

A growing body of scientific literature has shown that neighborhoods with a high proportion of ethnic and racial minorities have fewer healthy food choices and less access to fresh fruits and vegetables (Hill, Wyatt, Reed, & Peters, 2003; Kwate, 2008; Lewis et al.,

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2005; Riley, Glasgow, & Eakin, 2001; Winkler, Turrell, & Patterson, 2006). Studies have shown that low-income women in predominately African American and Latino neighborhoods experience a greater increase in food insecurity and related illnesses than do middle-income women in predominately Caucasian neighborhoods (Morland & Filomena, 2007; Powell, Chaloupka, & Bao, 2007). Public health researchers, advocates, and community practitioners have expressed concern that the increase in food insecurity has contributed to the growing epidemic of obesity and diabetes in New York city among low-income women (Adler, 2006; Food Bank Association, 2007; New York City Coalition Against Hunger, 2005; Wallace, 2008). Although studies have examined healthy food choices among low-income women (Inglis, Ball, & Crawford, 2005; Yancey, Lesile, & Abel, 2006), more studies are needed that vividly capture the challenges that low-income women face in accessing healthy foods in their communities. This article reports the results of a photovoice project—"Trying to Eat Healthy"—a qualitative study that captured and conveyed the experiences that affect women's access to healthy foods through documentary photography.

Photovoice is a research method, based on the principles of critical consciousness theory (Freire, 1970) and feminist theory (Wang & Burris, 1997), which is used in the first stage of participatory action research. The photographs act as a vehicle for participants to identify pressing issues (Wang, 1999). Photovoice is unique in that it encourages participants to take photographs that reflect their surroundings and life experiences (Wang, Yi, Tao, & Carovano, 1998). The visual representations of their experiences allow participants to mobilize and communicate the issues more effectively to policy makers and other stakeholders (Wang, 1999; Wang & Burris, 1997). The "Trying to Eat Healthy" photovoice project investigated the following questions: Can we afford to eat healthy in New York city? Under what circumstances are women more likely to experience hunger and food insecurity?

Method

Context and Key Participants

Sisterlink is a program of Community Action for Prenatal Care, funded by the New York State Department of Health AIDS Institute and located at the Northern Manhattan Prenatal Partnership in New York city. The program began in 1999, in Buffalo, and includes zip codes in Brooklyn, the Bronx, and northern Manhattan where there were high rates of HIV seroprevalence among women who give birth and high rates of late or no prenatal care. Sisterlink is designed to reduce adverse birth outcomes, such as mother-to-child HIV transmission and low birth weight, by recruiting high-risk pregnant women and linking them to culturally appropriate prenatal care and social support services.

The nine participants, recruited from SisterLink, were mostly ethnic and racially minority mothers aged 20–45—four African American, three Afro-Caribbean, one Caucasian, and one Asian American. The women were predominately from low-income backgrounds with reported personal annual incomes of less than US$10,000; six were on public assistance, and three were living in homeless family shelters. Their level of education ranged from some high school to a bachelor's degree. Only one participant worked part time; the rest were unemployed. The women's children ranged in age from 6 months to 16 years.

Procedures

The data used in the study included field notes prepared during the three focus-group meetings, transcripts from the focus-group meetings, and photographs taken by the participants. The Photovoice project was part of a community-based participatory research course conducted from September 2007 through December 2007. This study was the result of a class project of a master's of public health student (the second author) and a postdoctoral research fellow (the first author) from a major research institution. Three focus-group sessions, ranging from 1 to 3 hr, were held in a private and comfortable training room. During the first meeting, the participants were given an overview of the photovoice method; consent procedures approved by the university's institutional review board were discussed and signed. The participants were informed that a signed release would be required for any photographs of people, including those younger than age 18.

In addition, the participants were informed that there were at least three additional sessions and that they would receive a disposable camera and a US$10 incentive for their participation. We stressed to the participants how important it was for them to reflect on their surroundings and to use photography to share their life experiences and perceptions about the social problems they faced in their community. Their research assignment, to be turned in at the second meeting (4 weeks later), was to take photographs that reflected their experiences with access to healthy food in Central Harlem.

In the first session, the participants discussed concerns that affected their families. The issues raised questions about safety in the parks; the lack of available men in the area; the inability to buy fruits and vegetables because of their high cost; and their concerns about diabetes affecting their children. The participants began establishing priorities among these social problems and decided to focus on one issue: healthy foods and whether they had access to fresh fruits and vegetables. They began to ask each other why it was difficult for them to access healthy foods in their neighborhood, which resulted in their overall research question: Can we afford to eat healthy in Central Harlem? The participants were encouraged to take photographs that reflected the research question. At the end of the first session, they were instructed to bring their disposable cameras for processing to the SisterLink office before the next meeting.

During the second session, the group was given their photographs to review. In this session, each participant was asked to select four to six photographs to discuss in the group. The researchers used a focus group facilitators' guide, known as the objective, reflective, interpretive and decisional (ORID) questions (see Governance and Local Democracy Project, 1999, for more information about the ORID method), to facilitate the participants' thought process. After everyone in the group had described her photographs, several common themes began to emerge. The third session was used to discuss the strengths and challenges of the photovoice project, acknowledge the women's accomplishments, present the findings to the group, and discuss possible solutions.

Data Analysis

Focus-group protocol. Each focus-group process used a semistructured interview protocol (Kreuger, 1999; Morgan, 1997) The ORID focus-group discussion method was used after the participants selected the photographs that most reflected the issue they had identified: access to healthy food in Central Harlem. The ORID focus-group discussions had four consecutive stages. First, the participants were asked about the objective of taking

pictures. For example, they were asked, "How many pictures did you take?" The probes included, "What did you observe?" and "How long did it take you to complete your research assignment?" Second, reflective questions were asked to enable the group members to discuss how they felt about their photographs. For example, the participants were asked, "How did you feel when you took that picture?" The probes included, "What was the most challenging part of taking these pictures?" and "How did you decide to take this picture?" Third, interpretive questions were asked to enable the group members to describe the meaning of their photographs. For example, the participants were asked, "What would you say about this picture to someone who is not from your neighborhood?" The probes included, "What did you achieve by taking this picture?" Finally, decisional questions were asked to enable the group members to respond to the problems of food insecurity and limited access to healthy foods. For example, they were asked, "What possible solutions do you have to address food insecurity?" The probes included, "What needs to change?" and "Who should be involved in changing these issues?"

Coding and Construction of the Theme

The discussions were digitally recorded and transcribed before the final meeting, and the text that was generated from the transcribed data was read in full and subject to content analysis (Miles & Huberman, 1984). We analyzed the data from the focus-group discussions to ensure interrater reliability and used quotations from the transcripts to exemplify the themes that emerged from the data. The photographs were discussed, evaluated, and selected by the participants. During the final meeting, we conducted a member check, in which the participants validated our synthesis of the data (Miles & Huberman, 1984).

Results

Early in the study, it became evident to us that the participants shared a high level of knowledge and awareness of nutrition. The participants often referred to the food pyramid guide and were aware that they should eat more foods from the bottom part of the pyramid (vegetables and whole grains) and less from the top (meat). When prompted, they communicated their knowledge that they knew how to eat healthy. However, this level of knowledge did not translate into healthy eating because they could not afford to buy fresh fruits and vegetables. By applying photovoice as a method to view the social and economic circumstances that affected their lives, the participants were able to go beyond commiserating about the issues, what Wang (2003) referred to as social action through photovoice. Through dialogue and critical analysis of the photographs, opportunities to think about potential solutions emerged from the discussions. Three major themes were identified (a) the lack of access to healthy foods, (b) the participants' emergent awareness of their local environment, and (c) the process of becoming change agents. In keeping with the goals of participatory action research, the participants achieved a consensus on the themes and the content of the study (Wang, 2003).

The Lack of Access to Healthy Foods

The participants described their lack of access to healthy foods, or food insecurity, their regular reliance on food pantries and soup kitchens to feed their families, and their struggle

each month to have enough money to buy groceries. They discussed how they sought food pantries and soup kitchens in their neighborhood to survive. As the participants engaged in the process of documenting their lives, they discovered that their individual experiences of food insecurity did not differ from each other, but how they managed the process of events varied by the severity of their food insecurity.

The degree of food insecurity depended on their living conditions. Several women with children who were living in shelters talked about the struggles of not having enough food for their children. These women learned to cut back on food or relied on food pantries and soup kitchens to provide consistent meals. For others, gaining access to healthy foods was an ordeal, and healthy foods were often difficult to afford in their neighborhood. Overall, the women reported that they had to make frequent changes in the quality and quantity of their diets because of their limited food stamp budgets.

Access to good-quality affordable food was a related theme. The participants viewed the high price of fresh fruits and vegetables as a constant roadblock to healthy lifestyles. For example, several participants talked about the desire to buy fruits and vegetables but reflected on the challenges of having to choose between other basic needs, as in the following comments:

> I want to buy healthy foods, but I got to pay the rent, pay the bills, and pay the baby-sitter. My one job is not going to do that. How do I live? (African American woman with three teenage children)

> As women, we need sanitary napkins, soap, and deodorant. And we can't afford to buy it if we got to spend money on expensive foods like this. (Afro-Caribbean woman with one child)

The participants struggled with the ability to buy healthy foods to feed themselves and their children. The awareness of the high cost of fruits and vegetables in their local supermarkets surprised some participants. Referring to a photograph (see Figure 1), one participant spoke about the high cost of tomatoes. She stated, "I was shocked, eight tomatoes for $3.99—that's outrageous for tomatoes."

Several participants felt frustrated by the limited options in their local supermarkets:

> Bad. Angry sometimes? This stuff. I have to cook with it, just to get the nutrients stuff that I need to better me. But, oh man! That's a lot of money. I just look at [it] and leave it alone. I need them, but I can't buy them. (Afro-Caribbean woman with one child)

> I have two small children that I am trying to feed properly. It's easy to open up a can of ravioli and give that to my kids. Is it healthy for them? Does it have all the vitamins and things to help them develop? No, it does not. My daughter she's a vegetable fanatic, thank God, but some days I can't buy her those strawberries because they're $4.99. Before I had kids, I wasn't one of those who likes to eat strawberries; that wasn't my thing. If I had a taste for strawberries, I would get myself some strawberry preserves in a jar and get over myself. But, I don't want to give my children all of that processed artificial sugar. She wants to eat a carton of strawberries, by all means eat them, but not at $4.99. "We can't do it today, sweetie. Not today." (African American woman with two children)

The participants also stated that they must buy food that clearly does not have any nutritional value. They noted that they "just want to be able to cook a decent meal for their children." Referring to a photograph (see Figure 2), another participant said, "I wanted to

Figure 1
Sky-High Prices! For What?

Figure 2
Fish Is for the Rich

Figure 3
No Vegetable Cart

give my kids some fish. The salmon is $6.99 a pound, but I told them we cannot afford it"
(African American women with two children)

The participants also emphasized that food insecurity was not a phenomenon that only
they experienced, but one that other women in their neighbored experienced as well. One
participant referred to a photograph of her neighbor's grocery cart (see Figure 3) that had no
vegetables:

> My reaction toward it, it was like WOW! So I asked her if she needed any help. "No baby, I'm
> OK," said the woman. She was explaining to me, "I just got to do this every month trying to
> put money aside you know." (African American woman with two children)

All too often, food choices were limited or simply unaffordable. The participants iden-
tified another subtheme related to food insecurity: the challenge of living on a limited food
stamp budget. They emphasized that purchasing fresh fruits and vegetables locally was
unrealistic with the limited food stamp benefits they received each month. Living on a food
stamp budget in New York city is extremely difficult; the nation's average food stamp ben-
efit is US$196 per month (U.S. Department of Agriculture, Food and Nutrition, Office of
Analysis, Nutrition, and Evaluation, 2005), but most participants were receiving an average
of US$98 per month to feed a family of four. They also reported that they often did not
receive their food stamp benefits at the scheduled date each month; some waited for weeks
for their food stamps to arrive.

Referring to the photograph in Figure 3, the participants noted that other women were
also facing economic hardships. Participants frequented food banks, food pantries, and

soup kitchens at the end of each month. Other participants also reflected on the challenges of not getting enough assistance to pay for basic needs, such as toiletries and feminine hygiene products, and said that when their food stamp benefits run short, they use whatever remaining cash they have to cover the difference and have no cash left to purchase basic items:

> Because we're not getting enough cash. I'm not working. I got to buy food clothing, toiletries, and personal stuff. The amount of money I'm getting in cash can't buy all that stuff. Food stamps can only buy food. They can't buy toiletries or any of that stuff. So, then I don't have enough money to buy my toiletries. (Afro-Caribbean woman with two children)

Some participants said that being forced to eat on a limited food stamp budget was the cause of developing health problems. What they and their families eat or lack in their diets ultimately leads to poor health outcomes (Lynch et al., 2004). Several participants commented on such health concerns as high blood pressure, diabetes, and chronic illness.

Emergent Awareness of the Local Environment

Through their own discussions and by sharing similar stories with each other, the participants voiced frustration and anger about coming to terms with this awareness of their circumstances within the context of their community. The participants ascribed their increased awareness of the conditions that perpetuated food insecurities, such as financial disparities (i.e., poverty), to the ways in which advertising campaigns and marketing techniques strongly encourage customers to buy and eat unhealthy foods:

> I was taking pictures of some of the things that were healthy and some of the things that I've noticed that they were [practically] giving away. When you go to the supermarket and when you see a can of soda for 25 cents and a bottle of water for $2, sometimes your income will force you to buy the unhealthy food. (African American woman with two children)

> Even at some of the restaurants, if you buy a slice of pizza, instead of them giving you a bottle of water for free, they'll give you a can of soda for free. (White woman with three children)

Perhaps what was most important is that the participants were aware that food marketing strongly influenced their food choices, as shown in the photograph in Figure 4. When asked which groups are affected by this advertising, many of them had concerns for the well-being of their children and the risks to their own health:

> When I'm feeding my kid, you know, the sugar, the cereal that got all this sugar, rather than the Rice Cheks or something that's a bit more expensive, there's a whole lot more stuff to worry about. We pay for it at the end and so do our children. There's a big picture. (African American with four children)

> Why does it matter? So, maybe we can live longer. I mean I don't want to be here where I cannot totally do anything by myself. But, I think having a heart attack at age 37 is a big disgrace. Like 37, I'm dying from a heart attack or even at risk of having a heart attack. At 37! (African American woman with three children)

Figure 4
Diabetes for Sale

Through critical reflections on their surroundings that restricted their choices to eat healthier, the participants reported that they were fearful that their food choices would increase the risk of heart diseases and the likelihood of their children developing type 2 diabetes mellitus. They agreed that local supermarkets and food producers go out of their way to promote unhealthy foods. However, when they turned away from local supermarkets because the food is too expensive and shop at local corner stores, they reported that they are still sold unhealthy food. The participants noted that the option of making wise food choices is not typically available to them.

Access to cheap foods because of a limited food stamp budget was identified as the only option that many participants and other people in their neighborhood have. The photograph in Figure 5 shocked some participants that corner stores were allowed to sell debilitated turkey parts.

People buy this stuff? (all)

Yeah, they can't afford not to. No, that's not the local store, that's between Broadway and Amsterdam. You see how beat up the turkey is; that's why it's so cheap, but people buy it. So many scary turkey parts. . . . Scary, but it looks like food, and you don't feel hungry [afterward], but for fruits, you know, you pay like $10 and still make you feel hungry. (Asian woman with one child)

The participants' food choices are based on what they can afford. The participants noted that eating "so many scary turkey parts" may have disastrous and unhealthy outcomes, at

Figure 5
So Many Scary Turkeys

least their family would feel satiated after the meal. Because the availability of affordable food is limited, some make poor food choices, not because they eat without thinking about the unhealthy consequences. On the contrary, they think about food constantly and worry about their next meal. Because fast-food restaurants are readily accessible and affordable to low-income women and their children, some participants relied on them to feed their families a three-course meal. In this neighborhood, the participants noted the prevalence of fast-food restaurants within a two-block radius: KFC, Dominos, Popeye's, and McDonalds. The incessant advertising, marketing, and selling of the poorest quality foods imaginable in their local environment were a real concern for the participants. The participants noted that poor people are often blamed by doctors and the general public for their poor diet and their children's poor food intake:

> I have doctors knocking at my door because according to their chart, my son is about 150 pounds overweight. He's in the obese category. (African American woman with three teenage boys)

> My daughter, she is 3 years old. I have problems with the weight lady bugging me about my daughter not putting on the pounds that she's supposed to have. (Afro-Caribbean woman with one child)

The Process of Becoming Community Change Agents

The participants were encouraged to reflect on what they could do to minimize the difficulties of maintaining a nutritious diet. Several strategies were used in the photovoice

project to support such efforts. First, we focused on a set of framing questions (i.e., How do you survive? What needs to change?), which gave them the opportunity to examine their experiences more critically. Second, the use of photography required the participants constantly to interact with the issue and to begin to think about solutions to address the phenomenon of food insecurity. Several strategic themes emerged: shopping outside the neighborhood may be less expensive, cooking at home may be cheaper, and increasing the awareness of the community-at-large and policy makers of women's lack of access to healthy and affordable foods in New York city.

Shopping outside their neighborhood was one strategy that the participants used to minimize the food insecurities they experienced. The participants said that they often traveled great distances to other boroughs to buy healthy, affordable foods:

> I have to travel to Astoria, Queens . . . I have to buy my fruits and vegetables there because I can't afford to in Harlem. The Pathmark here kills my budget. In Astoria, they have 99 cents-per-pound red peppers and green peppers . . . In Harlem, peppers are $2.99 a pound or more; [for that amount] you could buy four peppers in Astoria. At Pathmark in Harlem, red, orange peppers are $5 a pound. (African American woman with two children)

> They have this supermarket that is in the Bronx, it's called Food Bazaar, and it's great because I get my money's worth. We call it a service store. We would leave from Manhattan and go to the Bronx and take a cab, we got bags like crazy. You save because then I could get four items that you know you could buy for one price in Pathmark they cost this price. (White woman with three children)

Even when there were several local supermarkets in their neighborhood, the participants traveled long distances to buy affordable food at other supermarkets. They reported that access to public transportation (a bus, subway, or taxi) afforded them the opportunity to purchase food outside their neighborhood.

"Homemade is cheaper" was another theme that many participants viewed as an important aspect of minimizing food insecurity. One participant explained that cooking at home is economical and has several benefits: choosing the exact menu and choosing to include healthier and tastier ingredients. Referring to the photograph in Figure 6, she emphasized the importance of cooking at home to save money:

> Homemade is better, tastier, and a cheaper price. My husband said if you count my job because you know we have to do everything, cooking, the cleaning, everything we have to do there, it's priceless. Because we have to prepare this food the whole morning for the lunch, this is cheaper than the commercials. (Asian woman with one child)

This participant said that she travels to Chinatown to buy most of her groceries. Two plates of dumplings can feed a family of four, she noted, costing her approximately US$5 to purchase the ingredients. Several participants stated that the preparation time for home-cooked meals was a major drawback. However, the women who lived in homeless family shelters did not have the benefit of cooking in their homes, and for them, easier access to unhealthy foods than to healthy foods was a reality. For these women, the problem was not limited to access to food, because cooking is an added challenge; they described the difficulty of cooking a healthy meal on a hot plate when no oven or stove is provided.

Aside from the lack of cooking materials, the participants also raised the issue of safety. Referring to the photograph in Figure 7, some participants were fearful that their children

Figure 6
Homemade Is Cheaper

would get electrocuted because electrical plugs were near the kitchen sink. The compact refrigerator (size 1.7 cubic feet) that is typically found in most shelter dwellings does not have the capacity to hold even 1 gallon of milk. For several participants, these hardships made eating out more of a necessity than a choice. Thus, changing the living conditions of women in homeless family shelters emerged as a major theme.

Discussion

The findings from our study indicate that low-income women in low-income neighborhoods are offered higher end supermarket prices, which makes it more challenging for women and their children to eat healthier. Barriers to eating healthy foods may increase the likelihood that their children will develop chronic health conditions, such as obesity and type 2 diabetes mellitus. The participants' concerns were consistent with the findings of other studies that have demonstrated the association between the lack of access to healthy foods and type 2 diabetes (Adams, Grummer-Strawn, & Chavez, 2003; Horowitz, Colson, Hebert, & Lancaster, 2004). Our findings also support what other researchers have found: Neighborhoods with a high proportion of low-income African Americans and Latinos have limited access to affordable healthy foods (Gordon et al., 2007; Kaufman & Karpati, 2007).

The study reported here is the first to demonstrate the usefulness of photovoice to examine the challenges to eating healthy foods in New York city. Photovoice gave the participants the opportunity to examine their community critically through their lived experiences. Through focus-group discussions and using photographs as evidence of women's plight, the participants documented their own stories about the challenges in accessing healthy foods. Unlike the traditional focus-group approach to capturing data, the photovoice method engaged the participants in the entire process of research, including dissemination of their findings. With photovoice, researchers could use focus-group

Figure 7
Home Sweet Home

discussions to reflect on the pictorial data collected by participants. Both researchers and members of a community leave these discussions with rich data and a desire for social change. Moreover, photovoice offers a unique tool for understanding a social problem from the perspectives of research participants that will inform quantitative data but, what is more important, may lead to culturally appropriate solutions because the participants are involved in the collection, interpretation, and dissemination of the findings.

For instance, the participants recommended that increasing food stamp benefits (to include cash) to pay for organic and healthier foods would decrease food insecurities. In addition, providing food vouchers to use at farmers' markets may help them afford to eat healthier and provide better access to fresh fruits and vegetables. They also reported that the limited food stamp program, the poor food supplies, the unkempt corner stores, and inadequate shelter accommodations ought not to be ignored.

As a result of this study, two important action plans were implemented. The participants wrote letters to their local assembly members to communicate the findings to policy makers. They also presented their photovoice project at the second annual Conference on Health Disparities at Teachers College, Columbia University.

Although our research was one of only a handful of studies to use photovoice methods for participatory action research, it was not without its limitations. One limitation was the small sample of nonrandomly selected women from one agency in Central Harlem. Some participants were living in homeless family shelters with a limited ability to cook their own meals. As a result, generalizations cannot necessarily be made to low-income women who do not reside in homeless family shelters. However, given the remarkable burden of food insecurity that low-income women face, further examination of the chronic health disparities and health risks for this population from low-income neighborhoods is an important area for social work and public health research.

Conclusion

As a participatory action research project, "Trying to Eat Healthy" helped to promote what Wang (2003) referred to as social action through photovoice, the process by which individuals become change agents and take a proactive approach to finding solutions to social problems by fostering critical understanding, dialogue, and collective action. This photovoice project built on the assets, strengths, and resources of the community. A collaborative partnership was established, and the knowledge of the researchers and participants was integrated for the mutual benefit of both. The project was one way to shed light on the topic of food insecurity in a city that is filled with healthy foods, wealth, and abundance.

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A photovoice documentation of the role of neighborhood physical and social environments in older adults' physical activity in two metropolitan areas in North America

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ABSTRACT

A substantial body of evidence indicates that regular engagement in moderate-intensity physical activity on most days of the week is sufficient for older adults to achieve positive health outcomes. Although there is a growing body of literature that examines the affect of neighborhood environment on physical activity in older adults, the research tends to overlook social aspects that potentially shape the relationship between physical environment and physical activity. This article presents qualitative themes related to the role of the physical and social environments in influencing physical activity among older adults as identified through the photovoice method with sixty-six older adults in eight neighborhoods in metropolitan Vancouver, British Columbia, Canada and Greater Portland, Oregon, USA. The photovoice data generated seven themes: being safe and feeling secure, getting there, comfort in movement, diversity of destinations, community-based programs, *peer support* and *intergenerational/volunteer activities*. Although the majority of these themes have explicit or implicit physical and social aspects, certain themes are primarily based on physical environmental aspects (e.g., *safe and feeling secure*, *comfort in movement*), while a few themes are more oriented to social context (e.g., *peer support, intergenerational activity/volunteering*). The themes are discussed with a focus on how the neighborhood physical and social environmental aspects interplay to foster or hinder older adults in staying active in both everyday activities and intentional physical activities. Policy implications of the findings are discussed.

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Introduction

A substantial body of evidence indicates that regular engagement in moderate-intensity physical activity on most days of the week is sufficient for older adults to achieve positive health outcomes (Blumenthal & Gullette, 2002; Li et al., 2005). Regular participation in physical activity for leisure, transportation or household activities could prevent, delay, or significantly minimize negative effects associated with chronic conditions (e.g., heart disease, diabetes) commonly experienced in later life (e.g., Colman & Walker, 2004; Seefeldt, Malina, & Clark, 2002). Furthermore, there is substantial evidence that older adults who engage in regular physical activity benefit from increased psychological well-being and various health-related quality of life domains including

emotional, cognitive and social functioning (Acree et al., 2006; Taylor et al., 2004; White, Wójcicki, & McAuley, 2009).

Physical functioning, mental health, physical activity, social participation, social networks, political and economic structures, and physical environmental factors are interrelated concepts that interface in these dynamics (Oswald et al., 2007; World Health Organization, 2001). The centrality of *place* or *geographical context* in the aging process is a key element in understanding issues of physical health and psychological well-being of older adults. The neighborhood environment becomes increasingly salient to older adults who face multiple personal and social changes that often limit daily activities to their immediate or nearby surroundings (Dobson & Gilron, 2009; Glass & Balfour, 2003). The relevance of the socio-physical context as related to health is well-established in the literature (Barrett, 2000; Cummins, Curtis, Diez-Roux, & Macintyre, 2007; Veenstra et al., 2005). Both subjective (perceived neighborhood quality) and objective neighborhood constructs (neighborhood disadvantages and affluence) are associated with residents' health (Bowling & Stafford, 2007; Weden, Carpiano, & Robert, 2008). Research (see Frank, Engelke, & Schmid, 2003; Pickett & Pearl, 2001;

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Shaw, 2004) has demonstrated that people, especially older adults (Howden-Chapman, Signal, & Crane, 1999; Phillipson, 2007), living in impoverished neighborhoods with poor infrastructure and support services including lack of access to proper nutrition (e.g., grocery stores carrying nutritious food products) (Black, Carpiano, Fleming, & Lauster, 2011) have lower level of health-related quality of life compared to people who live in more affluent neighborhoods. Furthermore, there is evidence that older adults whose income had declined but who still lived in high status neighborhoods had poorer physical functioning and cognitive ability than those whose incomes had not declined (Deeg & Thomése, 2005). On the other hand, amenities in neighborhood can facilitate older adult residents' mobility within the neighborhood, enabling them to access services, and provide opportunities to be active and use their neighborhood environments on a regular basis (Chaudhury, Mahmood, Michael, Campo, & Hay, 2012; Chaudhury, Sarte, Michael, Mahmood, McGregor, & Wister, 2011; Phillips, Siu, Yeh, & Cheng, 2005). Access to adequate and affordable public transportation and age-friendly urban design features helps to integrate them into the social fabric of the community and contribute to their physical functioning, mental health and well-being (Saelens, Sallis, & Frank, 2003).

Longstanding relationships with proximate family, friends and neighbors can be fundamental to the continuity of social support. Social support, in turn, serves as a protective health factor (Seeman, Lusignolo, Albert, & Berkman, 2001). This is especially true for those living in areas characterized by intense social deprivation (Scharf, Phillipson, Kingston, & Smith, 2001). Additionally, familiarity and comfort with the local area helps to foster autonomy and a psychological sense of control for older adults and contribute to their mental health (Oswald, Wahl, Martin, & Mollenkopf, 2003; Phillips et al., 2005). Furthermore, neighborhoods differentially affect mental health of residents from different socio-economic status and gender (Burke, O'Campo, Salmon, & Walker, 2009). However, despite this growing body of literature on neighborhood and health connection, there is still a need for a better understanding of attributes of neighborhoods salient to health (Frank et al., 2003; Schaefer-McDaniel, Dunn, Minian, & Katz, 2010).

Physical activity that is accomplished as part of daily life, such as walking for travel or recreation, usually occurs within one's neighborhood (Giles-Corti & Donovan, 2002; Troped, Saunders, Pate, Reininger, Ureda, & Thompson, 2001) and these habitual forms of physical activities represent key sources of exercise for older adults (Li et al., 2005). In the last ten years, the concept of *walkable neighborhoods* or *walkability* has received growing attention in many disciplines, including public health, community planning, urban design, etc., that recognize the potential of modifying the built environment to foster walking behavior. For example, numerous municipalities and regional governments throughout Canada and the United States have engaged in projects, many involving environmental audits, which assess neighborhood design features that can foster increased physical activity in neighborhoods in an attempt to facilitate environmental and policy changes (e.g., City of New Westminster, 2010; Deehr & Shumann, 2009; Halton Region Health Department, 2009). Research evaluating the impact of the neighborhood physical and social environments on the physical activity of older adults is growing, but still limited in number compared to similar research with the general adult population (Yen, Michael, & Perdue, 2009). This emerging research on older adults investigates key features within the neighborhood built environment as it pertains to active living and increasingly, active aging (e.g., Brownson, Hoehner, Day, Forsyth, & Sallis, 2009; Grant, Edwards, Sveistrup, Andrew, & Egan, 2010; King, 2008). At the core of all such work is better understanding of older adults' needs in terms of the neighborhood built environment and an effective way of

understanding of these needs is through active participation of the older adult in the research process and data collection.

The participatory-action research strategy of "photovoice," which engages study participants to take photographs as a method of documentation and communication of a physical-social phenomenon, is perceived to offer novel insights and convey the 'feel' of specific events or locations which is often lost with research methods relying on oral, aural or written data (Rose, 2007). In this study, *Photovoice* is defined as "a participatory action research (PAR) strategy by which people create and discuss photographs as means of catalyzing personal and community change" (Wang, Yi, Tao, & Carovano, 1998). Photovoice has emerged as a potential tool for collecting and disseminating knowledge in a way that enables local people to get involved in identifying and assessing the strengths and concerns in their community, create dialog, share knowledge and develop a presentation of their lived experiences and priorities (Hergenrather, Rhodes, & Bardhoshi, 2009). Photovoice method is consistent with core community-based participatory research principles with an emphasis "on individual and community strengths, co-learning, capacity building and balancing research and action" (Catalani & Minkler, 2010, p. 425). The process has three main goals: a) to enable people to record and reflect their communities strengths and concerns, b) to promote critical dialog and knowledge about important community issues through large and small group discussion of photographs, and c) to reach policy-makers (Wang & Burris, 1997).

Participants are given cameras to record and reflect on the strengths and concerns regarding the topic of interest. Often this is followed by facilitated photo discussion(s) which allows the participants to share, discuss and contextualize the photographs they took and promote critical discussion. The data of photo discussions are analyzed like other qualitative data through coding data, and exploring, formulating and interpreting themes (Hergenrather et al., 2009). Often themes are developed in partnership with the participants, or they are validated by the participants, typically through interactive discussion in a community forum. Photovoice method has been employed by researchers in different disciplines to explore and address a variety of culturally diverse groups and community issues. In a review of literature on photovoice research, Hergenrather et al. (2009) identified 31 studies using photovoice methodology conducted in seven different countries. However, there are very few photovoice studies that focus directly on older adults' health, neighborhoods or physical activity. LeClarc, Wells, Craig, and Wilson (2002) used photovoice to explore the everyday issues, challenges, struggles and needs of community-dwelling elderly women in the first weeks after hospital discharge. Baker and Wang (2006) employed photovoice to explore the experience of chronic pain in older adults. The experience of pain, a difficult dimension to capture, was explored through photovoice as an alternative method in understanding and describing the pain experience in older adults' everyday lives. Photovoice method was also explored by Aubeeluck and Buchanan (2006), to capture and describe the experience of the spousal carer for people living with Huntington's disease by photographing and describing elements of their life in which they felt their quality of life was being enhanced or compromised.

There is a paucity of research on neighborhood-characteristics and physical activity using the photovoice method with older adults. Nowell, Berkowitz, Deacon, and Foster-Fishman (2006) explore the meanings residents ascribe to characteristics of their neighborhoods using the photovoice method with 29 adult and youth residents in seven distressed urban neighborhoods in Battle Creek, Michigan. According to the participants in that study, both positive and negative characteristics of their proximal neighborhood (e.g., parks, walking trails, public spaces, landmarks, as well

as, graffiti, boarded up buildings, ill maintained yards and public areas) conveyed cues to residents about their personal histories as members of that community. Additionally, these characteristics defined social norms and behaviors within the community and conveyed cues to residents about who they are and who they might become. Looking specifically at older adults, a study by Lockett, Willis, and Edwards (2005) used the photovoice approach to examine physical environmental factors that influence the walking choices of older adults in three distinct neighborhoods in Ottawa, Canada. The findings indicate that environmental hazards related to traffic, fall risks due to poor maintenance and access barriers are all significant barriers to walking for seniors. Walking was seen to be facilitated by aesthetically pleasing environments, accessible transit systems and convenient, barrier-free routes between destinations. The findings also revealed how simple amenities such as public washrooms and benches can facilitate walking for seniors. The use of photovoice as a method was well received by the participants, indicating a feeling of empowerment and a heightened awareness to avoiding fall hazards in the neighborhood (Lockett et al., 2005). These studies utilize a participatory research method to identify physical environmental features perceived as fostering or hindering walking behavior in adults. However, an understanding of the interrelated effect of neighborhood physical environment and social aspects on physical activity in older adults with a photovoice method remains largely unexplored.

The purpose of this study was to conduct a participatory research process with community-dwelling older adults using photovoice method to identify neighborhood physical environmental features and social aspects that influence physical activity in older adults. The study reported in this article is part of a three-year research project. The first year of the larger study focused on developing a comprehensive neighborhood environmental audit tool for physical activity in older adults by integrating two existing tools, the Irvine Minnesota (IMI) Tool (Day, Boarnet, & Alfonzo, 2005; Day, Boarnet, Alfonzo, & Forsyth, 2005) and the Senior Walking Environmental Audit Tool (SWEAT) (Cunningham, Michael, Farquhar, & Lapidus, 2005; Keast, Carlson, Chapman, & Michael, 2010). The Senior Walking Environmental Audit Tool − Revised (SWEAT-R) (Chaudhury et al, 2011; Michael et al., 2009) was developed and used for environmental audit in eight neighborhoods in Portland and Vancouver. In the second year, issues and concepts related to the role of the physical and social environments in influencing seniors' physical activity were identified through the photovoice method. The final year involves a cross-sectional survey with a random sample of older adults in the Vancouver and Portland study neighborhoods. This article presents the findings from the photovoice portion of the larger study.

Methods

Thirty-four older adults in four neighborhoods in metropolitan Vancouver, British Columbia and 32 older adults in four neighborhoods in Greater Portland, Oregon participated in this study. The eight neighborhoods were selected earlier in the first year of the larger three-year study with varying levels of residential density in order to pilot test an environmental audit tool. We continued with those eight neighborhoods in the second year's photovoice method as our research team had established links with community-based seniors' organizations. Multiple strategies were used to recruit the photovoice study participants. Primary recruitment took place at the local community centers in the eight neighborhoods by posting flyers and by making brief presentations of the study to older adult groups. Other recruitment techniques included contacting churches, community planning tables, advertisements in community newspapers and word-of-mouth. The eligibility criteria for

inclusion in the study were: 65 years of age or over, living in the community, able to communicate and understand basic English, functionally mobile and comfortable walking in neighborhood with or without assistive devices, able to self-report physical and social activity, have no hindrances that would impede the ability to operate a camera, and willing to attend a one half-day training session and one half-day discussion session. The nature of data collection required that the participants are able to move about in their neighborhoods to take photographs of physical and social aspects of the neighborhoods. English-speaking participants were recruited in order that they could follow the photovoice training session, understand and communicate with the research team.

Trained researchers screened potential participants to evaluate whether they met inclusion criteria. Those who met the criteria were invited to consent to take part, while those who did not meet the criteria were informed that they were not eligible for inclusion in the project. In Vancouver, there were two rounds of recruitment, one in fall of 2008 (14 participants) and one in winter/spring of 2009 (20 participants). In Portland, there was one round of recruitment in the winter/spring of 2009 (32 participants). All participants attended one training/information session before the data collection. A catered half-day training/information session was held in each metropolitan area. The half-day session is needed in order to achieve multiple goals. The first part of the session included presentation of an overview of the study, introduction and discussion of the photovoice process and discussion on the ethics and responsibilities of taking photographs in public spaces. A brief questionnaire on self-reported health and physical activity levels was administered. During this initial session, the participatory nature of the photovoice method was emphasized. The training identified three important reasons the method was selected for this project each related to the importance of engaging community members in the research: (a) the method values the *knowledge put forth by people* as a vital source of expertise; (b) what professionals, researchers, specialists, and outsiders think is important *may completely fail to match* what the *community* thinks is important, and (c) the photovoice process turns the camera lens toward the eyes and experiences of *people that may not be heard otherwise*. In the second part of the session, a professional photographer instructed the study participants on effective photo-taking techniques and allowed them time to practice with a disposable camera.

For the actual photovoice activity, the participants were asked to photograph physical and social aspects of their respective neighborhoods that they perceived as facilitators or barriers to their physical activity behaviors. For the purpose of this study, "physical activity" was defined as to any physical movement or mobility carried out for the purpose of leisure (e.g., walk in the park, dance class, workout at gym) or transportation (e.g., walking/cycling to a destination) in the participant's neighborhood. Although physical activity also includes activities of daily living (ADLs) in the home, the current definition in this study was based on its focus on activities taking place in the neighborhood environment. A participant package was handed out that included: a 27-exposure disposable camera, a photo-journal to document where each picture was taken and the reason behind taking the picture, general information on the study and photography tips, picture taking consent forms, a postage-paid envelope and instructions. Participants had two weeks to take the pictures and were asked to mail the camera back to the research team when finished. The photographs were developed by the research team and a set of prints was mailed back to the participants with additional instructions. Each participant was asked to select 6−8 photographs from her/his respective set that best reflected the issues he/she was trying to capture and write additional comments or impressions about those selected pictures. The study participants attended a second half-day catered group discussion session in each metropolitan area. In Vancouver, the

discussion session was attended by all 34 participants, and in Portland, all 32 participants attended this session. In the first part of this session, the researchers randomly distributed the participants into multiple small groups, with each group having 4–5 participants. Each participant then discussed her/his 6–8 selected pictures within the small group with a facilitator (researcher/research assistant) who took notes and summarized the group's findings. In the second half of the session, highlights from the multiple small group discussions were shared with the whole group (32 participants in Portland and 34 participants in Vancouver) and a facilitated discussion was recorded. These sessions were meant to foster critical discussion and reflection regarding issues identified in the photographs, emerging issues and to generate planning and design recommendations on how to overcome the barriers and enhance facilitators of physical activity in the study neighborhoods. Each participant who completed the study up to this point was given a stipend of $100 as honorarium for her/his time and travel expenses to attend the two face-to-face sessions (training and discussion) as required by the study process. We were pleased that all 64 initial participants completed the study by taking photographs in their respective neighborhoods and participating in the subsequent discussion session. Although the number of training and discussion sessions differed in the two regions (4 sessions in Vancouver, and 2 in Portland), all sessions and subsequent two week periods in which the participants took photographs, took place in fall and spring seasons in the Pacific Northwest. These two seasons in this part of North America have similar weather pattern minimizing any weather related variation in the nature of physical activities.

All photographs, photo journals and additional write-ups were then collected, organized and coded by two researchers in each region. The researchers started with a framework of concepts identified from the literature using a deductive analytic strategy called "Successive approximation" (Neuman, 2006). "Successive approximation" is a method of qualitative data analysis in which the researcher repeatedly moves back and forth between the empirical data and abstract concepts or theories (Neuman, p. 469). The concepts, i.e., safety, accessibility, etc, have been previously reported as important issues in the literature on physical environment for walkability. In this study, the concepts are explored and exemplified in a participatory method (photovoice) and potential social aspects of physical activity are identified. We explored areas of congruence and incongruence between cities. We characterized relatively large minorities as representing "most" of the participants. This photovoice data analysis generated several themes which are presented in the results section. Ethics approval for this study was granted by the Simon Fraser University Research Ethics Board.

Demographics of participants

All participants filled out a questionnaire asking basic questions on their socio-demographics, general health and physical activity levels (see Table 1). In both cities, the majority of the participants were female. In Portland area, the age ranged from 65 to 92 years old and 62% were in the older age ranges from 75 to 80. In Vancouver area, the majority of the sample was younger with 61% belonging to the lower age ranges of 65–74. The education level in Portland was high, with 75% reported having completed college, university or some graduate school or more, compared to only 27% in Vancouver. In Vancouver, 88% of the participants owned their home, while in Portland there was a more even distribution between renting (47%) and owning (53%) their homes. In both cities, over 90% of the population reported their general health as good to excellent. The vast majority of participants engaged in five or more hours of physical activity per week. In Portland, the top three types of physical activity reported were walking, gardening and gym/strength training, while in Vancouver, these were walking, gardening and group exercises.

Findings

Seven major themes emerged based on a systematic analysis of the participants' photographs and the corresponding descriptions of each photograph. The themes are: being safe and feeling secure,

Table 1
Socio-economic status (SES), neighborhoods, health and physical activities of study participants.

General SES demographics	Portland ($n = 32$)	Vancouver ($n = 34$)	Neighborhood and health	Portland ($n = 32$)	Vancouver ($n = 34$)
Gender			**Neighborhoods**	16 Mount Tabor	13 S. Surrey or
Male	37% (12)	26% (9)		9 Lake Oswego	White Rock
Female	62% (20)	73% (25)		6 Milwaukie	9 Maple Ridge
				1 Clackamas	7 Vancouver
					5 Burnaby
Age			**Years lived in Neighborhood**		
Age Range	65–92	65–87	Range	6 m–80 yrs	2–54 yrs
65–69	25% (8)	32% (11)	Average	18 years	23 yrs
70–74	12% (4)	29% (10)			
75–79	28% (9)	15% (5)	**Tenure**		
80+	34% (11)	12% (4)	Rent	47% (15)	9% (3)
Not stated		12% (4)	Own	53% (17)	88% (30)
			Not stated		3% (1)
Marital Status			**General Health**		
Single (never married)	0% (0)	3% (1)	Excellent	19% (6)	26% (9)
Married/Common Law	44% (14)	47% (16)	Very Good	41% (13)	44% (15)
Separated/Divorced	31% (10)	12% (4)	Good	34% (11)	26% (9)
Widowed	25% (8)	38% (13)	Fair	3% (1)	3% (1)
			Poor	0% (0)	0% (0)
			Not stated	3% (1)	
Education			**Hours of Activity per week**		
Not stated	3% (1)	3% (1)	Not stated	3% (1)	0% (0)
Grade school	0% (0)	0% (0)	None	0% (0)	0% (0)
(up to grade 8)	9% (3)	29% (10)	Less than 1 h	0% (0)	3% (1)
High school	3% (1)	9% (3)	1–2 h	0% (0)	9% (3)
(up to grade 12)	9% (3)	32% (11)	3–4 h	22% (7)	24% (8)
Technical training cert.	28% (9)	15% (5)		75% (24)	65% (22)
Some college or univ.	47% (15)	12% (4)			

getting there, comfort in movement, diversity of destinations, community-based programs, *peer support, intergenerational/volunteer activities*. Most of the themes have explicit or implicit physical and social aspects. A few themes are primarily based on physical environmental aspects (e.g., *being safe and feeling secure*, *comfort in movement*), while others are more socially oriented (e.g., *peer support, intergenerational activity/volunteering*). The emergent themes and brief descriptions of their physical and social aspects are indicated in Table 2.

The following section discusses each theme, outlining any differences between the two regions and providing examples of related photographs and quotes.

Being safe and feeling secure

Safety and security was the most photographed and talked about theme in both Vancouver and Portland regions. This theme included both physical environmental features of the streetscape related to physical safety, as well as social perceptions of feeling secure. The importance of a psychological sense of safety and security was as relevant as the concern for physical safety. The constituting issues of this theme included physical environmental aspects, e.g., maintenance, upkeep, traffic hazards; on the other hand, they included psychological perception of the neighborhood atmosphere, e.g., perception of socially inappropriate behaviors. The most commonly photographed issues regarding safety and security were features of the physical environment that were seen as barriers to physical activity. A common barrier reported was uneven sidewalks or damage to the pavement, making it difficult to walk in the neighborhood streets (e.g., Fig. 1). A participant in Portland area referred to this issue as, "Uneven surface with barks from trees, planting encroaching on 10' wide walkway easement. Gravel would provide more secure footing in the walkway. A sign designating this walkway would encourage more use. As it is now, many potential walkers think this walkway is private property and therefore do not want to use it or feel they are trespassing." In Portland, a common complaint concerned sidewalks that would abruptly end or that there was no sidewalk at all — forcing people to walk in the street or on rough terrain, often an unsafe walking condition. Other physical features of the environment, such as lack of sidewalk curb cuts, narrow sidewalks or obstacles on sidewalks were described by the participants as unsafe environmental features impacting walking in their neighborhoods. One participant stated, "[The streets near my home have] no sidewalks, no shoulders on one side, poor visibility due to curve. This is my only access

to church and a bus stop... I walk here but don't enjoy it." Another participant expressed her frustration as, "This street runs in front of the adult community center (senior center) with elderly people who live nearby having to walk in the street as there is sidewalk to nowhere [sidewalk ends abruptly]." On a positive note, the presence of adequate lighting in neighborhoods and recreational areas (e.g., parks and trails) was also found to be a facilitator of physical activity as lighting can increase visibility of the surrounding area, and of oneself by others.

Traffic hazards were highlighted as barriers that deterred participants from walking in their communities. Speeding cars, heavy traffic and drivers not obeying traffic rules (e.g., pedestrian crossing signals) left participants feeling uneasy and unsafe (e.g., Fig. 1). Lack of visibility to oncoming traffic from sidewalks or street crossings was also a concern for many participants in both cities. According to one participant (referring to a highway crossing for pedestrians and bikes at an intersection), "This crossing is notorious in our neighborhood with people — seniors who walk downtown to the bakery or the drug store or whatever. Notorious for near misses of 'becoming a hood ornament' bicyclists have to carry their bikes upstairs and across the tracks or catch a bus." Participants also identified areas in their neighborhood where they would like to see a crosswalk put in for better access to shops and bus stops across the street. While the presence of safe crossing areas was important in both cities, participants in Portland emphasized the need for more convenient crossing especially on busy streets.

A few participants in both regions mentioned issues that made them feel unsafe in their neighborhoods, such as signs of poverty, drugs, criminal activity, vandalism, or poor housing (e.g., Fig. 2). The perception of an unsafe atmosphere or negative atmosphere in the neighborhood contributed to a sense of vulnerability, which deterred people from being physically active in spaces that they would otherwise enjoy using. One participant from Portland commented, "Neighborhood graffiti — negative social factor, gangs in neighborhood at night." Another person wrote, "Across from the street where I live — tangents (homeless) live in this area and are seen wheeling the grocery carts loaded with their possessions. I do not feel comfortable walking when they are around. A Vancouver participant noted, "Some problems in area includes poverty, drug and criminal activities and poor housing, etc. Some people do not feel safe or willing to walk through area to get to river." Participants highlighted the need for well-lit spaces for walking. "Comes to mind, Gertrude Stein's quip on Los Angeles, 'There's no there there'... perhaps a block of 'x' street made into a mall with a fountain and benches would be a start...

Table 2
Emergent qualitative themes from the photovoice data.

Photovoice themes	Physical and social aspects
Being safe and feeling secure: *maintenance, traffic hazards, atmosphere*	Primarily related to physical environmental features such narrow sidewalks, obstacles on sidewalks, adequate lighting, etc.; also included perceived social aspects of safety such as poverty, lack of police presence, etc.
Getting there: *transportation, amenities*	Both physical features such as bus shelters, availability of bus routes, location of bus stop, social aspects, such as convenient bus schedule were noted
Comfort in movement: *convenient features, available amenities*	Based on primarily physical environmental features, such as flat, accessible sidewalks, ramps, handrails, presence of benches, etc.
Diversity of destinations: *recreational, utilitarian*	Physical presence of places like grocery, bank, mall, park, farmer's market etc. were also noted for their value in making social connections
Community-based programs: *formal programs*	Presence of community centers, churches, etc. as settings, along with the availability of exercise classes or social activities that had a physical activity component such as water aerobics, Tai Chi, yoga class, etc.
Peer Support: *formal and informal, gardening*	Primarily related to social aspects, such informal and formal interaction and support through walking groups, community gardens, etc.
Intergenerational/Volunteer Activities *reason/motivation to stay active*	Primarily related to social aspects, such as volunteering or intergenerational activity at a school, 1library, multicultural events, etc. act as a motivating force to get out and walk or stay active.

Vancouver: Traffic Hazards-Lack of Safe Crossing	Portland: Barrier to Physical Activity
To reach [Semiahmoo Trail], Crescent Road must be crossed – **no crossing signals, no cross walk**. Visual barriers prevent accurate evaluation of oncoming traffic, which travels at quite a speed, much having recently exited from the freeway" (69, F, South Surrey)	"Street that connects two big streets, sidewalk in bad condition for past 20 years. City claims is closed for use **but it is a very important connection between two streets, very needed**" (82, M, Lake Oswego)

*Photo citation (Age, Gender, Neighborhood)

Fig. 1. Sample photographs and quotes for "Being Safe and Feeling Secure".

too dark and deserted at night, the city begs for more signs of safe, civil habitation, no place to stroll." While these issues were common to both regions, participants in Vancouver mentioned that the embedded presence of police in their community made them feel safer. As "police stations" were integrated with retail, services, etc. within the community, the proximity of the police with street life seemed to have contributed to an enhanced sense of security (e.g., Fig. 2).

Getting there

This theme is related to real and perceived barriers to accessing services and amenities in the neighborhoods. For example, the importance of accessible and convenient public transportation was noted in both cities. With regards to public transportation, *scheduling and infrastructure* emerged as two primary issues. As for scheduling, several participants identified the need for public transportation services outside the peak working hours (e.g., during the day, evenings and weekends) to better meet the needs of older adults who are not in the workforce. In Portland, community

buses run by senior centers or senior housing were seen as a facilitator for community outings, shopping and socialization with friends (e.g., Fig. 3). One participant in Portland highlighted this aspect while also describing that the community bus drivers themselves were often older adults, "Mini bus service (for older adults) enable seniors to do their own grocery shopping, banking, or just going from one place in their neighborhood to another. Additional entertainment trips or outing for lunch, concerts or local plays keep seniors lively and physically fit. Some drivers of these vehicles have actually retired and are over the age of 65 years. They do driving for special events to make a little extra spending money." This is an interesting example of an opportunity for peer interaction for both the older adult passengers of the bus and the bus driver. In a contrasting scenario, most of the participants in Vancouver pointed out the limitations of the city's bus routes, especially to local parks or trails.

In terms of public transportation infrastructure, several environmental features were identified as important to facilitating mobility. The location of bus stops was one such feature; having a bus stop close to home and in close proximity to their destinations

Vancouver: Perception of Safety	Portland: Crime/Vandalism
"Because the community police have become a presence in the neighborhood and participate in community activities-handing out information and advice etc… **I feel safer knowing that they do know our neighborhood**" (n.s, F, Vancouver)	"**Negative physical barrier** – alley behind house attracts crime/prostitution, car theft and break ins, garage break ins, graffiti, trailer theft, abandoned stolen vehicles. Police don't patrol. Most of the **crime** in our neighborhood happens here." (66, F, Mt. Tabor)

Fig. 2. Sample photographs and quotes for "Being Safe and Feeling Secure".

Vancouver: Shelters and Scheduling	Portland: Community Buses
"Many bus stops throughout the area **have shelters and benches and posted schedules which encourage people to use the buses** … If public transportation system and scheduling improves, more seniors may use it … and may walk and exercise more" (66, F, Maple Ridge)	"**mini bus services enable seniors** to do their own grocery shopping, banking, or just going from one place in their neighborhood to another. Additional entertainment trips for out to lunch, concerts or local plays keep seniors lively and physically fit." (67, F, Milwaukie)

Fig. 3. Sample photographs and quotes for "Getting There.

(e.g., community center, shopping center) facilitated ease of access to social and/or physical activity that might be happening at the destinations. One Vancouver participant's comment on the lack of easy access to bus stop highlights this point, "Picture shows the large parking lot area and I attempted to give a view of the distance between stores and services. There is no shuttle and no benches for seniors to rest in-between shops and visits to stores, cafes and cinemas. Seniors who depend on public transport find it difficult to access. Some areas in [neighborhood] do not have any public transportation and some have very limited…. No weekend service and a several hour wait with no bench is not conducive to public usage or an incentive to be more active." Another participant from Portland commented, "Busy street, fast traffic — no crosswalk to bus stop in either direction and quickest public transit to downtown. A person has to walk four blocks in one direction or three in the other direction to find a crosswalk to get to the bus stop." Additionally, bus stops with seating areas, shelters and posted schedules were photographed as being influential in engaging in physical activity and accessing local amenities (e.g., Fig. 3). This theme's illustration of the importance of getting to the service or amenity is an over-looked aspect in planning for programs and services for older adults. The existence of a program/service (e.g., seniors' program at the community center, adult day center) does not necessarily mean that older adult residents are able to *get there* in a safe and convenient manner. Essentially, the meaningful success of a senior-oriented program or service is dependent on older adults' independent access to the site on foot or by safe public transit.

Comfort in movement

This theme encompasses physical environmental features that assist older adults' needs and preferences when navigating in the neighborhood environment. Presence of convenient features, such as benches, and availability of amenities such as parking areas were subjects of several photographs and descriptions. For example, one participant in Vancouver noted, "Parking is limited especially at peak activity time and it is located at the bottom of the hill area. [Need to] add better public transportation and encourage more people to walk to location and leave their cars at home." Paved, flat, accessible side-walks or pathways facilitated walking in neighborhoods and recreational spaces. Additionally, the importance of sidewalks and pathways to be easily accessible and well-maintained for people using assistive devices in order to help them carry out daily activities was highlighted. For instance, one participant mentioned the following about the

challenge in getting to the local grocery store, "No way to safely get from sidewalk to store if in wheelchair or disabled. Across the lot [there is] ramp to pharmacy drive-through, but no way to get to it safely." Presence of benches in parks and walkways was also an important feature which made walking more feasible (e.g., Fig. 4). For areas with steep slopes or stairs, handrails or ramps were described as important features that made it safer for older adults to walk. Various environmental features that might not be generally associated with mobility were identified as helpful for the participants. In both cities, availability of drinking fountains in public spaces was found to be a facilitator of physical activity. In Vancouver, participants expressed the need for senior-friendly print on community signage and access to convenient and clean public bathrooms (e.g., Fig. 4).

In Vancouver, specifically in the lower density neighborhoods, lack of parking near recreational and other spaces (e.g., restaurants) was described as a barrier to access and mobility, whereas having low or no cost parking options near community centers and recreational spaces was viewed as a facilitator to physical activity. Participants in both cities also mentioned disruption in access and movement due to ongoing construction in their communities, as these would often block walkways and force individuals to find alternative (often longer) routes or creating unsafe walking conditions.

Diversity of destinations

Many neighborhood destinations were photographed and described by the photovoice participants. Although, these can be broadly grouped into the two categories of recreational and utilitarian, several destinations were considered to have both components. Destinations where community-based programs occurred are discussed in the next theme. Utilitarian type destinations included the grocery store, bank, post office or mall. For many participants, these destinations kept them physically active while doing their errands. The important issue identified here relates to the close proximity of these amenities to their home as a determining factor in encouraging individuals to go out and walk to the particular destination. One participant in Portland noted, "Walking to local mailbox — keeps me active, 5 blocks from home, prefer using this to leaving mail out for postman." Another in Vancouver stated, "Banks are about 4 blocks away from my neighborhood and it is pleasant to do banking with personnel instead of doing banking on-line from home. You see people there, and when walking to the bank — they are from your neighborhood." These two quotes clearly reveal that individuals might appreciate taking a walk over 4–5 blocks (i.e.,

Vancouver: Public Seating	Portland: Access Barrier
"Senior at rest! Beautiful rod-iron bench just off busy shopping street. We meet friends here … **She is prone to falling, so this bench is a fine resting spot on her walks**. This bench … brings … seniors and other folks together. **It's a good community builder**. As I get older I appreciate them more and more." (69, F, Vancouver)	"Mount Tabor Park. Many steps to "level" area – no railings. **Too many steps for seniors – no rails to help balance**." (83, F, Mt. Tabor)

Fig. 4. Sample photographs and quotes for "Comfort in Movement".

taking approximately 10–15 min) to access simple amenities as an opportunity to get out and be in their neighborhoods.

Beyond the utilitarian purposes of going out and walking to a service or amenity, frequenting neighborhood destinations often involved a social component, such as meeting friends for coffee or talking to people along the way. Shopping malls were photographed and described as a destination for both utilitarian and recreational activities, especially in Vancouver (e.g., Fig. 5). The malls were described as easily accessible places to walk as they have wide and smooth walking surfaces, resting places; also, they are temperature controlled and very good meeting places for socialization. Recreational destinations were also often photographed and discussed. In Portland, the most mentioned recreational destination was the community parks and walkways, which were considered as good places to go walking. Several people mentioned parks as destinations not only for the scenic beauty, but also as places for family interaction. One participant in Portland mentioned, "Picnics are for everyone with a chance to entertain the grandkids and walk around to top (sloped area of the park) to see the views." Another participant, also from Portland observed, "A small beautiful children's park. Grandma brings the little ones to play while she rests in the shade and watches them happily enjoy their play."

In Vancouver, outdoor walking spaces such as hiking trails, the beach and walkways, were mentioned as recreational destinations. For dog owners, dog-friendly parks were viewed as a positive destination to encourage physical activity. Additionally, in both regions the beautiful scenery of these destinations was pointed out as attractions that get them out and walking. The natural environment, – rivers, trees, flowers, mountains and sculptures in the neighborhoods were also considered as attractive aspects of the environment that encouraged participants to spend time outdoors (e.g., Fig. 5). A Vancouver resident described a local park as "very busy once baseball begins and the pool opens, most enjoyable to watch the games and walk around park…. Plenty of seats placed with good view of duck ponds, very accessible for seniors." Other recreational destinations included indoor recreational facilities such as gyms, swimming pools, and outdoor facilities including tennis courts and golf courses.

Community events were also described as destinations in the participants' communities. Many participants talked about going to local farmers markets on the weekends, a place for socialization and community involvement. A Portland resident noted, "Saturday Market (May to October), a very popular location – a place to buy, to meet and to be part of – important to seniors." In Vancouver, particularly in the lower density areas, participants mentioned

Vancouver: Mall- exercising and socializing	Portland: Parks and Scenery
"The mall seems to encourage a meeting place for seniors, programs like 'Hearts in Motion' **occur before store opening, and serves as a meeting place afterwards for coffee** … seniors don't feel isolated. The mall is … temperature controlled, comfortable in inclement weather … wide aisles and smooth surfaces" (79, F, South Surrey)	"I am very fortunate I live near Mt. Tabor Park. Very little traffic. I picked the Mt. Tabor photos because it is such a beautiful and pleasant place to walk compared to the neighborhoods. **It is so pleasant, green, no traffic, scenic**." (92, M, Mt. Tabor)

Fig. 5. Sample photographs and quotes for "Diversity of Destinations".

many more community events that they enjoyed participating in such as festivals, summer concerts, multicultural events and community celebrations. These latter destinations underscore the salience of social programs and events in drawing older adults out of their home, get to a public destination, and move about as they enjoy the event or gathering.

Community-based programs

"Community-based programs" refers to formal programs in the community, such as social and exercise programs at community centers, planned community groups, events at city facilities or the local churches. A variety of community-based programs were mentioned in both regions. The most common programs were at local community or seniors'community center. One participant highlighted the programs in her neighborhood community center, "The center has many activities for seniors and their families from travel, exercise classes, painting, wood carving, computers to name a few… [there is] a nice walking area and a dog exercise area which is fenced, dogs do not have to be on leashes…. [there is] meals on wheels, lunch and transportation [for seniors]." One person in Vancouver documented a Senior's Forum commenting, "Senior's talk to seniors about 'our' issues. Issues and concerns shared and recorded on charts at each table [listen to guest speakers]." Another person in Portland mentioned the opportunity to volunteer, as well as access service at these types of centers, "The adult center is tucked way amid the trees. It is very organized and offers great opportunities for entertainment, education and socialization for seniors. It is also a good place to offer one's services as a volunteer."

Availability, regular scheduling and the variety of programs were highlighted as positive factors that encouraged participation. Participants mentioned attending physical activity classes such as water aerobics, exercise classes or Tai Chi. In addition to exercise classes, community groups outside of the community centers were also described. In Portland, such groups included a poetry or art class, tennis club, bird watching group, yoga center or belonging on a local dragon boat team (e.g., Fig. 6). In Vancouver, community groups included walking, hiking, peer counseling and exercise groups. The local library was also described as a place that offered volunteer opportunities and connections to the community. In Portland, the local colleges and churches were also photographed as being places that offered community-based programs. The colleges were a source of community activities, sports, concerts and plays, while the church was seen as a facilitator of community-based programs such as weekly lunches or local events. This was similar to Vancouver, where churches were used as spaces for senior-led recreational programs. The community-based programs in both Portland and Vancouver were seen as facilitators for both physical activity and social activity, often at the same time. Although, many of these programs primarily focused on physical activity, they facilitated positive socialization during or after the programs. This informal and natural opportunity for social interaction associated with a formal or "official" purpose emerged as positive overlay to a "planned activity." It is possible that for many older adults, the informal social aspect of a planned event (physical or social) could serve as an attractive aspect of the whole experience.

Peer support

Community-based peer support appeared as an important way of facilitating physical and social activities. In the formal and informal community-based programs outlined in the previous theme, the associated informal social interaction with other older adults was a source of meaningful peer support for the study participants. Socialization and peer support were often mentioned as occurring after or during physical activity, whether it be working out and socializing with a friend at the gym or exercise class or post-exercise socialization. The integrated nature of physical activity and social activity is captured well by a participant in her description of a walking group in Vancouver, "*Tri Hard Walkers* [walk in] town core shopping center. Group of up to 50 walkers meet and walk three times a week — group walks inside mall or outside mall near local area business and residential streets — some streets are with sidewalks, some without… walkers [have] coffee after walk [in Mall Food Court]." Many participants photographed walking with family or friends for exercise or walking to a meeting spot to have coffee and socialize (e.g., Fig. 7). Participants also referenced meeting and socializing with community members or neighbors while on a walk, at the shops or stopping to chat with people passing by. In Vancouver, several participants cited that these informal interactions often led to an increased sense of community in the neighborhood.

Gardening was often photographed as a facilitator of physical activity and social interaction in both regions. Many of the gardening photographs and descriptions were of community gardening plots where the land was shared with other members of the community. One Vancouver resident astutely noted the benefit

Vancouver: Variety of Community Programs	Portland: Physical/Social Community Groups
"Kitsilano Community Centre. Exercise Class. Reasonable rates. Regular scheduled classes. **There are classes for physically challenged seniors as well – exercise from the sitting position.** This is a nice place to meet people of similar ability and an opportunity to form friendships." (65, F, Vancouver)	"Dragon boat race, residents and staff of community, ages 24-74. **Neighborhood teams/ associations/ classes can increase a senior's mental and physical well being.**" (67, F, Milwaukie)

Fig. 6. Sample photographs and quotes for "Community-Based Programs'".

Vancouver: Physical Activity and Socialization	Portland: Social Support
"Usually these trails are visited by our Hiking Club's members and we feel safe in larger groups with leaders and sweepers... **The connection between all of us is friendly** and we all have **the same goal to enjoy being outdoors** and enjoying our forests and **staying physically fit.**" (65, F, Maple Ridge)	"Positive: **Church group lunch attend every week** – take car there. This makes me get out. **Seniors need this type of service outing to get out of the home.**" (71, F, Mt. Tabor)

Fig. 7. Sample photographs and quotes for "Peer Support".

of community garden plots while discussing local garden plots, "This is the only community garden in [the neighborhood]. Studies have shown that seniors living in multi-family housing such as condos and townhouse, get more involved in physical activity if they have a small plot land to cultivate." While attending to plants and vegetables acted as the source of physical activity, several participants enjoyed the social aspect of this activity where a social gardening community was formed. However, the availability of these plots was quite limited in Vancouver, often resulting in long waitlists to obtain a gardening space. It was interesting to note that social aspects were mentioned when *residential* gardening was photographed and discussed as well. For instance, one Portland resident stated, "Keeps me active…practice social factors — can swap stories and vegetables with my neighbors," while a Vancouver resident described, "Residential area yards change with the seasons and provide a reason for us to keep walking by to enjoy the gardens and to meet new dogs, cats and residents along the way and to get gardening tips." In Portland, several participants also documented gardening at home in their private yard.

Intergenerational/volunteer activities

In Portland, many participants photographed and discussed activities, events or places that had a positive intergenerational aspect. Intergenerational activities included students coming to the retirement communities for a visit, events at the local church with all ages involved and watching a student game at the local gym or field. One participant documented an intergenerational gardening project where older adults taught younger people gardening techniques (e.g. Fig. 8). One participant in Portland succinctly noted the positive power of intergenerational gardening, "Both young and old can use these areas to plan gardens. It really doesn't matter if the person wishes to plant sustainable fruits and vegetables or ornamental flowers and shrubs. The spaces can be as simple as an older vacant lot, a former building site or even some space along sidewalks and curbs. The senior citizens who may no longer be part of the workforce can work these garden plots at their leisure and can share their knowledge with younger generations of parents and children. It would not only be physical activity but would keep them mentally active too. Many community centers or neighborhood activities were available and enjoyed by all ages — an aspect that several participants mentioned in a positive light.

Volunteering in the community was also highlighted in the photographs as a facilitator for both physical and social activities. A few participants volunteered at the local schools, which were reported as a positive intergenerational activity that motivated them to get out of the house and walk to the school. One participant observed, "Elementary school is just a block away and I inquired about volunteering there next fall to help with the ESL classes and/or their READ program. They have a Spanish immersion program

Portland: Intergenerational Activities	Portland: Volunteering
"Rose Villa's Community Garden/Oak Grove Grade School project. Open spaces are needed in every community so **seniors can garden and young people can learn from them or their parents** on how to grow simple vegetables and flowers." (67, F, Milwaukie)	"Loaves and Fishes Center. **Delivered Meals on Wheels here for 12 years – drive and do this, enjoy doing this.** Serving home bound seniors with hot meals and a little conversation." (86, F, Mt. Tabor)

Fig. 8. Sample photographs and quotes for "Intergenerational/Volunteer Activities".

for kindergarten and it is a great opportunity to be around children and to review my Spanish." Others reported volunteering at the library or community center or local churches. "I love this church, there is such a wonderful ethnic mix and it as so many projects that I can work on with teenagers, parents and other 'oldie-goldies' such as rolling meatballs for spaghetti dinner and cooking the International Festival. They always make me feel useful." One participant delivered meals on wheels on a weekly basis, reporting it as a positive physical as well as social activity. Volunteering was a facilitator for many participants in the Portland area to be involved and active in their community. There were a few mentions of intergenerational activities in Vancouver. These included participating in activities such as at dances, celebrations, or multicultural events. In several instances, participants highlighted their enjoyment of visiting recreational spaces (e.g. parks) where children and families frequented. While they did not always engage with the children or younger adults, a level of enjoyment was derived from people watching.

Discussion

Although this study was done in eight neighborhoods across two metropolitan areas, significant similarities emerged from the participants' photographs and descriptions. Themes such as *being safe and feeling secure, getting there* and *comfort in movement* reported common facilitators and barriers, regardless of the associated city or neighborhood. Common physical environmental features, such as flat, smooth walkways or sidewalks, aesthetically pleasing environments or presence of benches, handrails and ramps were identified as facilitators to physical activity. This finding corresponds with Lockett et al. (2005), and suggests that these facilitators may be common physical environmental issues among a broad spectrum of the older adult population. Another important universal factor which facilitated physical activity was accessibility of neighborhood amenities. Having walkable access to grocery, post office, bank or community center can support regular and sustainable physical activity in the community. Prior non-photovoice research that focused on older populations in various neighborhoods and cities found positive associations between the level of walking and the accessibility of facilities and the density of housing and population. (Forsyth, Michael, Lee, & Schmitz, 2009; King et al, 2005; Mujahid et al. 2008; Riva, Gauvin, Apparicio, & Brodeur, 2009; Rodríguez, Evenson, Diez & Brines, 2009; Sigematsu et al. 2009)

Another major thread across majority of the participants in both metropolitan areas was the importance of a social component associated with the physical activity. This finding is consistent with social-ecological theory that suggests interpersonal social support and partners for activity is associated with active living (Sallis, Cervero, Ascher, Henderson, Kraft & Kerr, 2006). Level of social cohesion is independently associated with health outcomes among older adults (Macintyre & Ellaway, 2000). In the themes *diversity of destinations, community-based programs* and *peer support*, there was a strong social dimension that was described often as facilitating or encouraging the participants to take part in the physical activity event. The purpose of these groups was two-fold — engaging physical activity and socialization with friends or family. Also, there were social groups or programs that primarily focused on the social aspect, such as luncheons or card games; however, many described a physical activity component, such having to walk to the community center to participate. Physical activity and socialization were often intertwined. The integrated nature of physical activity and social interaction, as evidenced through the participants' photographs and descriptions, is an important contribution to our understanding of the meaning or role of physical activity in the lives of older adults. Given the general reality that many older adults are

retired from formal labor force, and in many instances, socially restricted due to cessation or restriction of driving, the importance of positive social stimulation linked with health promoting behaviors cannot be underestimated. Group-based physical activities — either as a formal exercise program (e.g., seniors' exercise class) or as an informal activity (e.g., neighborhood-based walking club) — have an inherent opportunity for informal social exchange. Our findings suggest that beyond the intention to become or to stay physically active, the potential of interacting with others may play an equally motivating (if not a stronger) factor for older adults to get out of their homes and participate in a physical activity oriented event.

The only notable difference between the two metropolitan areas seen in the findings was the greater relevance of intergenerational and volunteer activities in Portland neighborhoods. The difference in the importance of these activities between the two cities may be due to the chosen sample and/or neighborhoods. Nevertheless, it would be worthwhile in future studies to explore the prevalence of intergenerational activities and volunteering programs for older adults in the Vancouver area, and if there are any structural or programmatic difference between the two regions.

Photovoice was a valuable method for this area of inquiry on several levels: it allowed older adult participants to capture facilitators and barriers for physical activity in their social and physical environments through their own 'lens', and the process of taking photographs, writing and discussing their content provided an unique opportunity to reflect on the significance of neighborhood environment (physical and social) in fostering active aging. The photographs and photo journals elicited a wealth of information from the older adults' individual perspectives and allowed the researchers, participants and community members to engage in a discussion on the physical activity issues as identified through concrete illustrations. This method captured details that might have been overlooked by solely conducting interviews that elicit only narrative stories, and in essence, generated rich data regarding the facilitators and barriers to physical activity in the participants' daily lives. Also, we believe that the photovoice process increased the participants' awareness of the role of physical environmental features in their neighborhoods that are related to walking and other physical activity behaviors. The high level of compliance and engagement of the participants indicated that they found the process enjoyable and meaningful.

Photovoice has the potential to empower and mobilize seniors to take action on these environmental issues; however, a sustainable mechanism or method needs be developed to get the relevant groups organized and stay engaged in a meaningful way. Several participants expressed the desire to form a seniors' coalition to create change in their neighbors using their photographs and joining with others from the study. In order to successfully create these senior advocate groups, more resources are needed to continue the project on the local level. Focus on a small scale geographic area (e.g., neighborhood) has the potential of mobilization of community residents and local resources (Smock, 1997; Stone, 1994). Citizens' participation in change processes in their own neighborhoods helps to foster sustainable change (Traynor, 2002), as well as contribute to capacity building in the community. Residents have the familiarity and insight about their neighborhood, which can provide a more grounded perspective on the pressing needs (Nowell et al., 2006).

Given the qualitative nature of this study, the objective was to gather older adults' subjective evaluation of the neighborhood environment by means of a participatory method. The findings were not analyzed in relation to any information on the participants' actual physical activity. However, the participants included individuals with variability in individual- and neighborhood-characteristics and the consistency of the findings from the two

cities suggests that the barriers and facilitators were real and important. Data were collected in only eight neighborhoods in two cities in the Pacific Northwest of North America, potentially limiting the generalizability of our results. The barriers and facilitators identified in this county might not be the same in other urban areas. Nevertheless, studies such as this one are essential as a first step in designing interventions for understudied groups, including older adults.

Conclusion

Findings from this study provide strong support for neighborhood physical and social environmental characteristics that have perceived or real influences on health promoting behaviors. The meanings associated with physical features have implications for older adults' residents' willingness, sense of security and motivation to participate in activities that can have positive effect on physical and mental health. The importance of neighborhood as a place as having a substantive impact on health and well-being is getting increasing attention from professionals and policy-makers in public health, city planning and urban design. An understanding of what really matters from older residents' perspectives, as exemplified in this study, can be used as a leverage to identify physical environmental interventions that are grounded in people's experiences. In order to make meaningful and effective environmental changes, it is important that various stake-holders, such as seniors' advocacy organizations, city planners, urban designers, landscape architects, traffic engineers, and social planners engage in a collaborative effort. Drawing from ecological theories, one can argue that interventions/policy or practice or design change at a level (e.g., neighborhood) above the level (individual) where impact is desired may have more success in generating change (Bubloz & Sontag, 1993).

In considering the findings from this photovoice study, it is important to acknowledge that the physical environmental aspects supportive of active aging as identified in this study are also beneficial to people in younger age groups. Addressing the barriers and implementing facilitating environmental features would make the neighborhood more liveable for all. The political relevance of bringing about changes in the neighborhood physical environment should not narrowly view the issues as "seniors' issues," but rather acknowledge, appreciate and engage other constituent groups in the community. One significant substantive findings of this study related to the need to recognize the interrelationship between physical and social environmental aspects of neighborhood, and in turn, to address both aspects to increase the likelihood of maintaining and fostering physical activity in older adults. "Physical activity" for older adults needs to be conceptualized and approached as a broad spectrum of activities that vary in their levels of "physical activity" component, formality and informality, and the social interaction dimension. It would be important to be innovative in thinking about activities and programs that creatively incorporate a social aspect to a physical activity oriented event or program. Also, the significance of sustainable physical activities, i.e., those that are integrated as part of daily activities, cannot be overstated. Regular activity such as walking safely to the corner store, bus stop, pharmacy or a park can be an important form of physical for many older adults. The sustainability of these activities could be enriched by potential social contact, which in turn, feeds back into the desire of getting out and walking to the amenity.

In future studies, participants with different levels of mobility could be recruited to provide different perspectives on physical and social barriers and facilitators to walking in urban neighborhoods. A truly senior-friendly neighborhood environment needs to take into account challenges and preferences of older adults with differing mobility challenges, physical frailty and cognitive status. Also, cities on North America are increasingly becoming multicultural; therefore, it would be important to explore potential variations in physical activities and associated role of the neighborhood environment for older adults from diverse ethnic backgrounds.

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Champions for social change: Photovoice ethics in practice and 'false hopes' for policy and social change

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ABSTRACT

Photovoice methodology is growing in popularity in the health, education and social sciences as a research tool based on the core values of community-based participatory research. Most photovoice projects state a claim to the third goal of photovoice: to reach policy-makers or effect policy change. This paper examines the concerns of raising false hopes or unrealistic expectations amongst the participants of photovoice projects as they are positioned to be the champions for social change in their communities. The impetus for social change seems to lie in the hands of those most affected by the issue. This drive behind collective social action forms, what could be termed, a micro-social movement or comparative interest group. Looking to the potential use of social movement theory and resource mobilisation concepts, this paper poses a series of unanswered questions about the ethics of photovoice projects. The ethical concern centres on the focus of policy change as a key initiative; yet, most projects remain vague about the implementation and outcomes of this focus.

Introduction

In response to the enduring 'crisis of representation', many researchers have sought out research projects collaborative in design to share knowledge and shift traditional researcher–subject relationships. Photovoice, developed by Wang and Burris (1994), offers a research design that requires a positive and engaged audience to affect this desired change. Within the aims of photovoice to elicit social change, critical consciousness and social action mobilisation will be ineffective if the study is negatively received by the wider public or those in positions to commit to actual social change. There are a handful of insightful researchers who have commented that photovoice also has the potential to raise false hopes as when efforts to rally public concern or efforts to inform public policy are unsuccessful (Mitchell, 2011; Tanjasiri, Lew, Kuratani, Wong & Fu, 2011; Wallerstein & Bernstein, 1988). Mitchell has asked 'Why is finding the solution to a social issue always the responsibility of those most affected by the issue?' (2011, p. 14). Wallerstein and Bernstein (1988) argue that people cannot assume the sole responsibility for creating a healthier environment, arguing that individuals alone are not responsible for enacting

and changing complex multiple categories and issues. I will begin with a brief overview of photovoice as a methodology and discuss a few key points on this unclear aspect of the photovoice research design. This aspect may imply an imbedded pressure for the participants to be the champions of social change. I propose that photovoice researchers could benefit from reviewing the literature on social movements theory, especially in terms of resource mobilisation, to facilitate social change outcomes.

Methodology

In the course of a thorough reading of the literature, a feature emerged that remains as an unanswered question as to how photovoice is discussed with regard to effecting social change and changing policy. These insights emerged in reviewing photovoice literature for my doctoral research. I am not the first to point out the ethical issues of photovoice as a social change project, but I state that these researchers stand out as the few rather than the many. I performed a scoping review (Armstrong, Hall, Doyle, & Waters, 2011) of 53 published articles that have informed this review. This scoping review began by using a variety of search engines including EBSCO, Sociological Abstracts, SocINDEX, HealthSource, ProQuest, JSTOR and WorldCat accessed through the University of New Brunswick Harriet Irving Library between March 2012 and September 2012. I searched for articles using a variety of keywords: photovoice, community based participatory research, participatory action research (PAR), community photography, reflexive photography, photo narrative and visual self-elicitation. I gathered literature that fit the goals of photovoice and CBPR/PAR with a focus on community involvement and collaboration as part of the research design. As a scoping review, I anticipate that this literature will inform an updated systematic review at a later date (Armstrong et al., 2011). The emergent parameters from this scoping review and the research gap it addresses demonstrate that there is great potential for the development of understanding the ethics of photovoice, false hopes, social and policy change.

Photovoice

Photovoice is an increasingly popular technique also termed 'native image production' (Wagner, 1979), 'cultural self-portrayal' (Pauwels, 2010), 'photo self-elicitation' (Banks, 2001) 'photo novellas' and 'visual narratives' (Guillemin & Drew, 2010). Images in these practices are produced within a research context, although not by the researchers, but rather by the participant. In most projects, the researcher and participant work collaboratively in the selection and analysis of the images. The researcher's control over the production of these images as a process is limited, as the viewpoint of the participant is the focus to provide a unique insider perspective (Pauwels, 2010). It asserts that people and their experience as they see it from their viewpoint are a legitimate and important source of expertise. Photovoice is a community-based participatory action research (CBPR) method (Strack, Magill, & McDonagh, 2004) that expresses the idea that 'power is held by those who have voice, set language, make history, and participate in decisions' (Schneider, 2010, p. 47). Photovoice aims to bring new or seldom-heard ideas, images, conversations and voices into the public forum (Wang, 2001) by creating

images from the viewpoint of the participant rather than the images being subjected to the selection of the visual researcher.

Photovoice and community-based participatory research

The 'photovoice' method, a branch of CBPR, has received a growing interest and is practised mainly in health, education and the social sciences. In photovoice projects, participants are invited to express their viewpoint, by exploring community issues and daily-lived experience by taking photographs, discussing the photographs, developing narratives of the photos and participating in social action to enact social or policy change (Wang & Burris, 1994). This commitment to social action may take the form of new expressions of unheard knowledge, social awareness-raising (Wang, 1999; Wilson et al., 2007) or opening dialogue with policy-makers (Wang, 1999; Wang & Burris, 1994). With these aims, photovoice has three main goals: (1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about personal and community issues through large and small group discussion of their photographs and (3) to reach policy-makers (Wang, 1999, p. 185). Photovoice is consistent with the core principles of CBPR, also known as PAR. When artistic methods are incorporated, it is called participatory arts-based research and shares similar goals. All participatory methods aim to have researchers and members of a specific community work together as equal partners in the development, implementation and dissemination of research that is relevant to the community. The research approach of CBPR abandons the dominant research tradition of control over the process and the products of research. Participatory research stresses empowerment, education and social action claiming that there is a political nature to all research, and that all research has implications for the distribution of power in society (Schneider, 2010).

Issues of power are central to CBPR/PAR research. Baum, MacDougall, and Smith (2006) state that the general goal of empowerment is a shift in the modes of power and to establish new relationships to reduce inequalities and power differences in access to resources (Baum et al., 2006). When community members are central in the maintenance of research agendas, and are active in research, empowerment emerges as they are established as 'more powerful agents' (Baum et al., 2006, p. 855). Given this framework, in traditional or non-CBPR research settings, people are rarely considered knowledgeable or capable of knowing about their own reality and are accordingly subjected to research projects as objects (Jaggar, 2008, p. 421). In this aim, participatory research expresses that all people, provided with tools and opportunities, are capable of critical reflection and analysis (Castleden, Garvin, & First Nation, 2008). The aim of CBPR is not to position one type of knowledge over one another but to incorporate ignored and subjugated voices into the conversation. It is to reject traditional models of power and knowledge production within the research relationship (Harrison, 2002, p. 862). In this approach, CBPR seeks to equalise the influence and knowledge of community members, organisation representatives and researchers to be equal in authority, responsibility and knowledge. CBPR offers a dialogue approach to research where everyone should participate as equals and co-learners to express social knowledge from various perspectives (Wallerstein & Bernstein, 1988, p. 382). This dialogue approach, as practised in photovoice and similar methods implies a co-action component also consistent with the principles of CBPR.

How is photovoice practised?

The foundational work by Wang and Burris (1994) focused on rural women in China's Yunnan province (Wand, 1999; Wang & Burris, 1994, 1997; Wang, Yi, Tao, & Carovano, 1998) has inspired a wide range of photovoice projects addressing a variety of public health and social concerns ranging from HIV/AIDS (Gosselink & Myllykangas, 2007), cancer survivorship (López, Eng, Randall-David, & Robinson, 2005; Poudrier & Mac-Lean, 2009), women's health (LeClerc, Wells, Craig, & Wilson, 2002; Moffitt & Vollman, 2004; Wang & Burris, 1997), economically disadvantaged youth (Foster-Fishman, Nowell, Deacon, Nievar, & McCann, 2005; Stevens, 2006; Strack et al., 2004; Wang & Redwood-Jones, 2001). older adult communities (Baker & Wang, 2006; LeClerc et al., 2002), youth (Wang et al., 2006), mental illness (Erdner, Andersson, Magnusson, & Lützén, 2009; Sitvast, Abma, & Widdershoven, 2010; Thompson et al., 2008), Aboriginal women's health (Moffitt & Vollman, 2004; Poudrier & Mac-Lean, 2009), lone mothers (Duffy, 2010) and the homeless (Wang, Cash, & Powers, 2000). The photovoice methodology offers many advantages to sociological inquiry. Photovoice situates expert knowledge within the daily-lived experience of the participant because their vision and voice are recognised as equal and valid (Killion & Wang, 2000; Wang & Burris, 1994). The participants of photovoice are often from economically, politically, or socially disadvantaged social groups and the design of photovoice 'reduces the distinction between those seen as experts and non-experts' (Chio & Fandt, 2007, p. 486). The extensive opportunities of access to various groups and personal narrative situate the photovoice methodology as a creative and innovative PAR strategy. The advantages could be seen as a two-stage process: the focus is first on individual development through empowerment and then on hopes of community development and change (Wang & Burris, 1994).

Policy change: what do we DO about it?

Photovoice is, as termed by Wang (1999), Wang and Burris (1994, 1997) and Wang et al. (1998), a combination of several theoretical perspectives that emphasise community participation for social action, including empowerment education and documentary photography. These theoretical perspectives appreciate the value of participants defining and determining the subjects that are documented, with the emphasis on uncovering underlying root causes and identifying policy-oriented actions to address injustices. During analysis of the pictures taken by photovoice participants, many studies state the use of SHOWeD, an acronym developed by Wang and Burris (1994) to explore concepts and meaning representing: What do you See here? What's really Happening here? How does this relate to Our lives? Why does this problem or strength exists? What can we Do about this? (Catalani & Minkler, 2010). SHOWeD is used to identify the root cause of the problem or asset, discuss the image critically and focused mainly to develop strategies for change. The question is a focus on this '*do*' component. It is a built-in to almost every photovoice project, the implied social or policy change spearheaded by the newly empowered participants to engage in their communities and effect real change by reaching policy-makers. This emphasis on involving policy-makers and other community leaders in photovoice projects has been a part of Wang and similar researcher's ongoing work and recommendations for best practices (Catalani & Minkler, 2010; Wang, 1999; Wang &

Redwood-Jones, 2001). It has been stated that this component of effective social change reaffirms community identity and involvement as the narrative comes from within stimulating social action as people become their own advocates (Wang & Burris, 1994, p. 173). Most photovoice projects have a built-in 'research as social change' orientation (Reason & Bradbury, 2001) that normally manifests as a 'research action plan' to be mobilised towards social action.

Social action and photovoice

Social action is an integral part of the conceptual framework of photovoice. Yet, despite the central focus on social action and policy change, there is a vagueness in addressing how to enact social action plans. There are also concerns for the noticeable lack of documented follow-through actions of attempts at social change and project outcomes. The concern of this vagueness is that the inspiration for change, as a participant, a co-leaner, is that the participants are responsible for this change and that a photovoice study will achieve necessary social and policy change. What does this mean for the participants? With such a focus on social and policy change, what if nothing comes about? Why is hardly anyone discussing this issue save a handful of researchers? With the growing popularity of photovoice, this is an important and critical concern.

Wang and Burris (1994) themselves have stated that photovoice projects often require a positive and engaged audience effect. The audiences, of the public or of influential policy leaders, must be open to unconventional ideas and capable of processing criticism (Wang & Burris, 1994, p. 184). Adding that critical conscious raising and social action mobilisation will be ineffective if the study is negatively received by the wider public or those in positions to commit to change (Wang & Burris, 1994). With the acknowledgement of external factors for social and policy change, why is the focus on empowerment leading to policy change initiated by the participants themselves?

False hopes and expectations

There are a few researchers (Catalani & Minkler, 2010; Mitchell, 2011; Tanjasiri et al., 2011), who have commented that photovoice has the potential to raise false hopes when efforts to rally public concern or attempts to change public policy fail (Tanjasiri et al., 2011). Some studies offer few details about the method itself leaving a somewhat romanticised view of participatory photography and its potential to reach transformative results (Harley, 2012; Prins, 2010). Harley (2012) has commented on the two most noted review articles by Hergenrather, Rhodes, Cowan, Bardhoshi, and Pula (2009) of 31 photovoice articles and Catalani and Minkler's (2010) review of 37 articles summarising that in most of the studies reviewed, there was little attempt to evaluate any long-term impact of the method on individuals and communities (Harley, 2012). These studies showed an overall lack of the 'bigger picture' of structural inequalities and available resources needed to enact social and policy change (Harley, 2012, p. 329). In the review article of Catalani and Minkler (2010), the photovoice projects culminated in vague descriptions of project evaluations and practices stating a lack of consistent reporting. Approximately 60% of the projects reported having an action plan or action component yielding three outcomes: enhanced community engagement in action or advocacy, improved

understanding of community needs and assets and increased personal empowerment (Harley, 2012). Yet, the project outcomes overwhelmingly summarised to 'enhanced understanding' of social problems (Catalani & Minkler, 2010).

Tanjasiri et al. (2011) have also stated the potential to raise false hopes for change among participants, unless the project is already facilitated by policy activist or other external resources (Tanjasiri et al., 2011). In the Tanjasiri photovoice study, one of the few citing actual policy change, it was recognised that the youth had the opportunity to share their pictures with local policy-makers to support the successful passage of a tobacco vendor licensing law that was already under review. Tanjasiri et al. (2011) state that, as discussed by Wang (2006), involvement of policy-makers at the outset of a project could facilitate the changing of local policies or organisational practices (Tanjasiri, 2011). In most photovoice studies, it is not practice to organise with policy-makers in the beginning but rather later, during public exhibition or display (Catalani & Minkler, 2010).

In efforts for research to be community-based and participatory, it is often overlooked that Photovoice projects are similar to other 'parachute projects' or other one-time research interventions. Strack et al. (2004) argue that participation in a photovoice project will not lead to a complete state of empowerment. This complete state of empowerment would illustrate a meaningful shift in the modes of power and the establishment of new relationships to reduce inequalities and power differences in access to resources (Baum et al., 2006). Strack et al. (2004) further this statement that photovoice projects might have damaging consequences and the real and negative outcome of false hopes and disillusioned expectations by failing to inform policy or rally public concern in an effective way to incite change. There is a risk in certain studies that the outcome for participants is that they may feel 'more hopeless and unempowered than when they started the program' (Strack et al., 2004, p. 57). It is argued here that it is imperative that researchers select sites for photovoice project that have an already or ongoing commitment to policy change or further empowerment to ensure successful goals of the project (Catalani & Minkler, 2010; Strack et al., 2004; Tanjasiri et al., 2011).

Discussion

Photovoice as a micro-social movement?

This leads to a discussion and examination of resource mobilisation theory as positioned by Tarrow (1998) and McCarthy and Zald (1979), to question the underlying social structure and mobilisation potential that can be transformed into action on any level, big or small. As most photovoice projects work with marginalised groups who have been noted as 'powerless' (Booth & Booth, 2003), how then does change happen? How does one incite meaningful change when you have no power to incite that change, no political or policy influence? Tarrow (1998) argues that a combination of external factors will effect meaningful change with a clear statement that 'powerless actors' need support to bring about political change. Often, this requires interactions with power holders, third parties that concur with public opinion in order to enter the discussion and hope to enact social change (Della & Diani, 2006; McAdam, McCarthy, & Zald, 1996; Staggenborg, 2011). In summary, to enact change, especially in policy, the participants will need two things: public opinion and political alliances. When important social issues are brought

forward for discussion, the goal is to try to raise public awareness and concern about certain issues. In doing so, the aim is to directly provoke structural and cultural changes in society by influencing people's attitudes and behaviours and address public opinion in order to make it an ally (Della & Diani, 2006; McAdam et al., 1996; Staggenborg, 2011). Tarrow (1998) argues that when anyone wanting to make change benefits from the support of public opinion, individuals or groups rallying for public change increase their legitimacy as political actors when in alliance with public opinion. Tarrow (1998) argues that while important, this needs to be politically supported under a system of organised political action that can sustain itself for an undetermined duration requiring resources and various forms of capital (McAdam et al., 1996). The integration of material, human, social and cultural resources together increases the chance that policy changes will occur (Diani & McAdam, 2003; Staggenborg, 2011).

Resource mobilisation and social change

As researchers, we need to look at the dimensions of the political and social environment that provide incentives for collective action and help shape success or failure (Della & Diani, 2006; McAdam et al., 1996; Staggenborg, 2011; Tarrow, 1998). The key point here is the access and maintenance of resources and how and to whom they are available. As mentioned, the groups selected by researchers for a photovoice project are typically marginalised groups: HIV/AIDS (Gosselink & Myllykangas, 2007; Mitchell, DeLange, Molestane, Stuart, & Buthelezi, 2005), cancer survivorship (López, Eng, Robinson, & Wang, 2005), lone mothers (Duffy, 2010), indigenous peoples (Castleden et al., 2008), mental illness (Erdner et al., 2009; Sitvast et al., 2010; Thompson et al., 2008), the homeless (Wang et al., 2000), just to cite a few. The question asked by Mitchell, 'why is finding the solution to a social issue always the responsibility of those most affected by the issue?' (2011, p. 14) is a question of resources, expectations and communication. It has been stated that mobilisation of resources external to the group is key to social and policy change. Especially, when the potential change fits into existing schemes or widening opportunities of change. Allies become important; the public or political figures who can repress or facilitate a project's goals or voice. A photovoice project essentially creates an interest group (Olson, 1965; Snow, Soule, & Kriesi, 2007) or a micro version of a social movement. In its most simplistic definition provided by the Blackwell Companion to Social Movements (2007), social movements are: a collective that gives voice to their grievances and well-being of themselves and others and would engage in collective action (Snow et al., 2007, p. 3). This potential collective change intersects within a spatial, historical and political context requiring an ecological perspective that recognises that it exists as part of a complex web of social relations. A major component of that web is the unequal distribution of resources among social groups as the result of durable patterns of resource inequality in the broader society that shapes the differential ability of individual resources between and within particular social groups (McAdam, Tarrow, & Tilly, 2001). These resources are limited not only to financial capital but also to actual human resources; labour, expertise, skills, leadership, emotional and physical ability (Della & Diani, 2006; McAdam et al., 1996; Snow et al., 2007; Staggenborg, 2011). There is a necessity to combine internal and external sources with the understanding that marginalised groups have had far less success mobilising for collective action

(Snow et al., 2007, p. 143). Photovoice recognises participants' input and control over agenda setting, facilitates communication and reflection concerning their surroundings and fosters the development of skills. As a needs assessment tool, Photovoice offers insight into a tangible point of view perspective of participants and what they feel is important. In some instances, these groups may experience empowerment and feel for the first time they are being listened to and their concerns taken seriously as noted by Akesson et al. (2014). At the same time, there is a real danger for researchers to manifest false hopes or make unrealistic promises that cannot be fulfilled in the extent and practice of the research, making it vital to not mislead or raise unrealistic expectations (Akesson et al., 2014).

Like many CBPR approaches, photovoice includes a standard and repeated component of social change. From www.photovoice.org the official mission is

> to build skills within disadvantaged and marginalized communities. To achieve this, we utilize innovative participatory photography and digital storytelling methods. These skills enable individuals to represent themselves and create tools for advocacy and communication. Through this, and *through developing partnerships*, we deliver positive social change. (www. photovoice.org, emphasis added)

The message highlights the advantages of photovoice while underlying the importance of partnerships in the social change process. In photovoice.org's statement of ethical practice, it states a concern for well-being: Section (2.1) states,

> managing expectations: it is important that a project doesn't unrealistically raise participant's expectations. From the outset participants need to know the timetable, the end point, and what the project is likely to mean for them in concrete terms. They should never be led to believe that their circumstances will be dramatically or immediately changed by being involved. (www.photovoice.org)

Adding to Section (4.3), support: 'once it is all over, there can be a sense of disappointment and frustration if nothing material has changed. It is important that the participants be well supported throughout the project' (www.photovoice.org). Though these overall issues are addressed at photovoice.org, there is still a general lack of this discussion in most photovoice projects. Part of this aspect of being 'well supported' would be an essential focus on communication of goals so that researcher and community members can align their ideas about expectations of social and policy change. Additionally, the overall photovoice goal is often to reach policy-makers who have the power to implement changes within that community (Wang & Burris, 1997). But what about the inability to develop partnerships, the unequal access or distribution of resources? As Akeeson et al. (2014) have asked, what are the ethical implications when meaningful change is complex, challenging and perhaps an impossibility? What are the ethical implications of employing methods that seek transformation where such transformation can in no way be guaranteed? (Akeeson et al., 2014).

Recommendations for further inquiry

The community where the photovoice project takes place is a useful point of departure for investigating the potential concerns of a photovoice project. The community, small or large-scale is a site of vast differences in access to material and symbolic resources

amongst its members (McAdam et al., 1996). There is an implied tone in some CBPR projects that the marginalised have no power and that it must be conferred on them by someone from the outside (Banks, 2001). This suggests that an 'external change agent raises the consciousness of the marginalised population on the underlying causes of their (health) problem and through a collaborative process facilitates their capacity development to address the problem' (Cargo, Delormier, Lévesque, McComber, & Macaulay, 2011, p. 96). Each CBPR and photovoice study should be adjusted for the cultural and social context (Blackburn, 2000, p. 10) so that inappropriate impositions of a certain vision of power on those who may not actually perceive themselves as powerless do not occur (Thompson, 2008). Ideally, local people should be inviting researchers in, not the agencies of interest setting the agenda (McIntyre, 2003, p. 49). This was discussed by Cargo et al. (2011) in terms of the established mistrust generated from externally driven research and the self-determination movement of Aboriginals in a Kanien'kehaka (Mohawk) community near Montreal, Canada. This study illustrates an effective use of an 'inside job' where the community initiated control over the Kahnawake Schools Diabetes Prevention Project (KSDPP) study. With a range of leaders working in partnership such as the KSDPP Staff, a Community Advisory Board of members from health, social, political, spiritual, recreational, private and community sectors, academic researchers, community researchers, community affiliates and a supervisory board, this study illustrates that effective change relies on an understanding that 'community capacity is dynamic and develops in stages of readiness' (Cargo et al., 2011, p. 99). This willingness to partner in collaboration with varying aspects of the community shows the potential of reducing initiation of an 'external agent' and points to growth in effective strategies for social change.

Photovoice may be best utilised as a method as part of a comprehensive system that will unlikely stand alone to bring about policy change. If photovoice is to be used as a means of completing a community needs assessment, the group should be made to understand that the project has the potential to be *policy informing rather than policy changing*. There is good potential for photovoice to inform community and policy leaders about community issues but the direct path to social and policy change involves a variety of material, social and cultural factors. The vague evaluation of most photovoice projects should shift from a focus on policy change and 'reaching policy makers' and rely on the strengths of the method to avoid false hopes and disappointment (Catalani & Minkler, 2010). Photovoice goals should include a focus on empowerment as a long-term process with many steps, such as building self-esteem or participation in community organising efforts (Wallerstein & Bernstein, 1988). In the photovoice study conducted by Wallerstein and Bernstein (1988) with patients in an HIV treatment programme, the authors argue that patients do not have sole responsibility in creating a healthier environment,

> empowerment education with its dual focus on participatory reflection and action should be incorporated into the other prevention strategies of health promotion, disease prevention, and health protection. By becoming incorporated into current prevention approaches, empowerment education can enhance changes in personal growth, social support, community organizing, policy and environmental changes, and other indicators of increased control over one's life in society. (Wallerstein & Bernstein, 1988, p. 388)

Conclusion

Although photovoice is not without its limitations, it has great appeal as a method of engaging people in the political and social lives of their communities. Photovoice has been noted as a flexible tool for strengthening public health research through community participation including enhanced community involvement and individual empowerment (Catalani & Minkler, 2010, p. 448). The proposed shift in power, from the traditional researcher to the participants as co-learners, is noticeably its greatest and desirable strength. The shift in power should be recognised as a shift in viewpoint and authority in the image-making process without the unnecessary leap to responsibility to enact meaningful yet sometimes complicated social and policy change. I remind the reader that photovoice should be regarded as a tool for policy informing rather than changing. For further understanding of the utility of the photovoice method, new projects are needed that will take into account some of the suggestions made in this article. The article highlights current gaps in the research and poses several unanswered questions in the application and ethical practice of photovoice as a research methodology. I began this review inspired by the question posed by Mitchell, 'why is finding the solution to a social issue always the responsibility of those most affected by the issue?' (2011, p. 14). Perhaps, with further collaboration and engaged inquiry, we may work towards an answer void of false hopes for effective policy and social change.

Disclosure statement

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Photovoice: A Review of the Literature in Health and Public Health

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Although a growing number of projects have been implemented using the community-based participatory research method known as photovoice, no known systematic review of the literature on this approach has been conducted to date. This review draws on the peer-reviewed literature on photovoice in public health and related disciplines conducted before January 2008 to determine (a) what defines the photovoice process, (b) the outcomes associated with photovoice, and (c) how the level of community participation is related to photovoice processes and outcomes. In all, 37 unduplicated articles were identified and reviewed using a descriptive coding scheme and Viswanathan et al.'s quality of participation tool. Findings reveal no relationship between group size and quality of participation but a direct relationship between the latter and project duration as well as with getting to action. More participatory projects also were associated with long-standing relationships between the community and outside researcher partners and an intensive training component. Although vague descriptions of project evaluation practices and a lack of consistent reporting precluded hard conclusions, 60% of projects reported an action component. Particularly among highly participatory projects, photovoice appears to contribute to an enhanced understanding of community assets and needs and to empowerment.

Keywords: *photovoice; community-based participatory research; participatory action research; visual methods*

Since its development in the mid-1990s by Caroline Wang and her colleagues (Wang, 1999; Wang & Burris, 1994, 1997; Wang, Yi, Tao, & Carovano, 1998), the community-based participatory research (CBPR) method known as photovoice has received growing attention in health education and related fields. Concisely defined as "a process by which people can identify, represent, and enhance their community through a specific photographic technique" (Wang, Cash, & Powers, 2000, p. 82), photovoice was described in a seminal article (Wang & Burris, 1997) as having three goals:

> (1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about important issues through large and small group discussion of photographs, and (3) to reach policymakers. (p. 369)

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As suggested in these goals, the photovoice method is highly consistent with core CBPR principles stressing empowerment and an emphasis on individual and community strengths, colearning, community capacity building, and balancing research and action (Israel, Schultz, Parker, & Becker, 1998).

Since its early application by Wang et al. in their work with rural village women in China's Yunnan province (Wang, 1999; Wang & Burris, 1994, 1997; Wang et al., 1998), photovoice has been used to address a diversity of public health and social justice concerns ranging from infectious disease epidemics (Grosselink & Myllykangas, 2007; Mamary, McCright, & Roe, 2007) and chronic health problems (Allotey, Reidpath, Kouame, & Cummins, 2003; Oliffe & Bottorff, 2007) to political violence (Lykes, Blanche, & Hamber, 2003) and discrimination (Graziano, 2004). Similarly, the method has been implemented with age groups ranging from early adolescents (Wilson et al., 2007) to seniors (Baker & Wang, 2006; Killion & Wang, 2000) and with underserved communities in the United States, Asia, Africa, Latin America, and Europe (see Tables 1 to 3). Given this broad reach and scope, there is need for a critical review of the literature on photovoice to help examine the state of the art in this rapidly growing field.

To help address this need, this article builds on Viswanathan and her colleagues' (2004) review of more than 300 peer-reviewed articles meeting the criteria of CBPR to focus more deeply on photovoice. Utilizing core questions and instruments adopted from Viswanathan et al., the article addresses the following questions: (a) What defines the photovoice process? (b) How is community participation realized in photovoice partnerships and processes? and (c) What are the outcomes associated with photovoice? The article concludes by presenting implications for practice to maximize the scientific and community benefits of photovoice.

METHOD

Sampling

This review began with a broad search of peer-reviewed public health and related literature using the following keywords and search phrases: photovoice, photo novella, and participatory research AND photography OR photo. Databases used included ProQuest, PubMed/MEDLINE, ISI Web of Science, and CSA Illumina PsycINFO. All searches were limited to peer-reviewed journals and the English-language literature. All articles were published or in press before January 2008. All included articles or journals had a focus on health, broadly defined, as determined by the journals' title, vision, or mission or the articles' keywords, title, or abstract.

The initial search using these keywords resulted in 129 articles. After reviewing all abstracts and removing those that did not involve participatory research ($n = 52$), participant photography production ($n = 24$), and public health topics ($n = 7$), there was a remaining pool of 46 articles for consideration. Among them, most ($n = 23$) reported on descriptive research that used photovoice methodology. Many ($n = 14$) included evaluations of the processes and outcomes of photovoice projects, and close to one fourth ($n = 10$) evaluated or theoretically developed photovoice methodology itself. A few ($n = 4$) articles were literature reviews that included photovoice among their reviewed practices or methods. Within this sample, there were 37 unduplicated articles.

Table 1. Low Quality of Participation

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Allotey	2003	Descriptive research: How does the burden of disease differ according to gender, social, cultural, or environmental context within which conditions are experienced?	1.22	76	Paraplegic adults in Cameroon and Australia	7 months	Enhanced understanding of paraplegia in Cameroonian community to improve measurement of burden of disease
Baker	2006	Methodological evaluation: How can photovoice be an effective, unique, and innovative method of examining the pain experiences of clinic and nonclinic Black and White adults older than 50 years of age?	1.22	13	Senior citizens in Michigan	0.5 months	Enhanced understanding of seniors' experiences of pain to improve clinical services
LeClerc	2002	Descriptive research: How do elderly, community-dwelling women describe the issues, challenges, and struggles of everyday life in the first 6 to 8 weeks after hospital discharge?	1.22	4	Women senior citizens recently discharged from hospitals in the Toronto area	0.5 months	Enhanced understanding of seniors' needs and assets after hospital discharge to improve clinical services

Table 1. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Oliffe	2007	Methodological evaluation: What are the benefits of using photo elicitation to understand prostate cancer from the perspective of a small cohort of survivors?	1.22	19	Middle-aged Australian prostate cancer survivors	N/R	Enhanced understanding of men's experiences living with prostate cancer
Stevens	2006	Descriptive research: How do adolescent women who are parenting describe being healthy and define their health needs?	1.22	15	Diverse youth mothers in the Seattle area	N/R	Enhanced understanding of young mothers' needs and assets to improve health promotion programs
Grosselink	2007	Descriptive research: What are the leisure behaviors of older women living with HIV/AIDS in the United States?	1.33	4	Older women living with HIV/AIDS in the U.S. Midwest	N/R	Enhanced understanding of leisure behaviors of older women living with HIV/AIDS
Rhodes	2007	Descriptive research: What do photographs taken by Latino immigrant men tell us about local HIV prevention?	1.33	9	Latino immigrant men in Winston-Salem, North Carolina	N/R	Enhanced understanding of Latino men's needs and assets to improve HIV prevention services
Killion	2000	Descriptive research: What issues need to be considered to improve the feasibility of establishing house-sharing arrangements for mutual	1.40	5	African American homeless women and women seniors in a midwestern city	7 months	Enhanced understanding of African American women's needs and assets to improve effectiveness of housing intervention

(continued)

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Table 1. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
		assistance between young and elderly people African Americans?					
Booth	2003	Descriptive research: What is the collective and individual experience of mothers with learning difficulties?	1.44	6-16	Mothers with learning disabilities in Sheffield England	6 months	Enhanced understanding of needs and assets of mothers with learning difficulties
Hussey	2006	Descriptive research: How do female to male transsexuals experience accessing health care?	1.44	5	Female to male transsexual adults in the San Francisco, California	1.75 months	Enhanced understanding of experiences of female to male transsexuals to improve health care
Levin	2007	Descriptive research: What are the daily lives of people living with stroke like? How can you provide stroke victims with the means for engagement?	1.60	5	Stroke survivors in Chicago	1.25 months	Engaged stroke survivors in action; enhanced understanding of stroke survivors' needs and assets to improve health and social services

NOTE: N/R = not reported.

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Table 2. Medium Quality of Participation

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Mamary	2007	Descriptive research: What are the perceptions of non-gay-identified African American men who have sex with men (MSM) regarding the social, cultural, community, and family influences associated with their HIV risk?	1.67	7	African American non-gay-identifying MSM in the San Francisco area	5 months	Engaged African American MSM in action and advocacy; enhanced understanding of their needs and assets to improve HIV prevention services; facilitated individual empowerment
Schwartz	2007	Intervention evaluation and descriptive research: How was the project implemented? What did we learn? What are Latino immigrants' opinions on accessing family planning services in our city?	1.70	7-10	Newly arrived Mexican migrant adults in Missouri college town	1.25 months	Engaged Mexican immigrants in action and advocacy; Enhanced understanding of their needs and assets to improve family planning services
McAllister	2005	Descriptive research: What are the perspectives of low-income and minority parents on school readiness?	1.78	7	Low-income women with young children, mostly African American and some White, in Pittsburgh	N/R	Enhanced understanding of mothers' perspectives, needs and assets to improve school readiness programs
Wang	2000	Intervention evaluation: What is the experience of homeless photovoice participants in Ann Arbor?	1.80	11	Diverse homeless adults in Ann Arbor	1 mo	Engaged homeless adults in action and advocacy; Enhanced understanding of their needs and assets to improve health and social service programs

(continued)

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Table 2. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Wang	2004b	Methodological evaluation and descriptive research: How can photovoice be used by maternal and child health program managers to enhance assessment and program planning? How does photovoice enable community people to record, reflect, and communicate maternal and child health assets and concerns?	1.80	60	Youth and adults, mostly African American, some White, few Hispanic, in Contra Costa County, California	5 months	Engaged community in action and advocacy; Enhanced understanding of community needs and assets among program managers to improve maternal and child health services
Fournier	2007	Descriptive research: What is the experience of Ugandan nurses caring for individuals with HIV illness?	1.89	12	Nurses in Uganda	3 months	Enhanced understanding of Ugandan nurses' needs and assets to improve health care provided to HIV patients
Lopez	2005	Descriptive research: How do African American breast cancer survivors perceive and address their quality of life within their own social context? What is a conceptual model for survivorship quality of life?	1.89	13	Black breast cancer survivors in poor and rural North Carolina	7 months	Engaged African American breast cancer survivors in action and advocacy; enhanced understanding of their needs and assets to improve health and social services

(continued)

Table 2. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Wang	1994	Methodological development: What are the conceptual roots of photo novella theory and practice?	1.90	62	Ethically diverse rural Chinese women in Yunnan, China	12 months	Engaged rural Chinese women in action and advocacy; enhanced understanding of their needs and assets to improve reproductive health programs; facilitated individual empowerment
Wang	1997	Methodological development and intervention evaluation: What is the photovoice method? How does photovoice contribute to participatory needs assessment?	Same as above	Same as above	Same as above	Same as above	Enhanced understanding of rural Chinese women's needs and assets to improve reproductive health programs
Wang	1998	Methodological evaluation: How does photovoice succeed or fail in fulfilling its participatory aims? With whom does power reside at each stage of research?	Same as above	Same as above	Same as above	Same as above	Engaged Chinese rural women and health organizations in action and advocacy to improve reproductive health
Graziano	2004	Descriptive research: How do Black gay men and lesbians view themselves in relation to White gay men and lesbians in South Africa?	2.10	7	Gay and lesbian adults in South Africa	3 months	Engaged gays and lesbians in action to address discrimination; enhanced understanding of their needs and assets; facilitated individual empowerment

(continued)

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Table 2. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Side	2005	Intervention evaluation: What was the impact of photovoice on a cross-community reconciliation project focused on acknowledging the contributions of women in Northern Ireland?	2.10	12	Protestant and Catholic adult women in rural Northern Ireland	2 months	Engaged Protestant and Catholic women in action; facilitated individual empowerment
Carlson	2006	Intervention evaluation: How was a photovoice project in a lower income, African American urban community able to generate a social process that resulted in active grassroots participation in a community–campus partnership?	2.20	5-24	Underserved African American community in Texas	1.25 months	Engaged African Americans in action and advocacy to improve health; facilitated individual empowerment
Short	2006	Intervention evaluation and review: What are some simple and effective methods for preventing HIV infection that are available and affordable on under $2 per day?	2.20	N/R	HIV-vulnerable and low-income teens in Botswana	N/R	Engaged African youth in action to engage in HIV/AIDS education and prevention among other youth
Wang	2004c	Methodological evaluation and descriptive research: How can photovoice improve medical education? What situations in health care	2.20	N/R	Medical students in Ann Arbor, Michigan	N/R	Engaged medical students in action and advocacy to improve patient care and medical education

(continued)

Table 2. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
		delivery suggest policy changes with a potential to improve patient care or medical education?					
Wilson	2006	Intervention evaluation: How did Youth Empowerment Strategies (YES!) promote social action and civic participation among underserved elementary and middle school youth?	2.20	122	Diverse adolescents in West Contra Costa County, CA	9 months	Engaged adolescents in action to improve school conditions; facilitated individual empowerment
Wilson	2007	Methodological evaluation: How is photovoice useful and effective in engaging early adolescents in critical thinking for social action?	Same as above	Same as above	Same as above	Same as above	Engaged adolescents in action to improve school conditions
Willson	2006	Descriptive research: What are poor women's lives like?	2.22	16	Low-income women in Winnipeg and Saskatoon, Canada	N/R	Engaged women in action and advocacy to improve conditions of low-income women; enhanced understanding of their needs and assets
Streng	2004	Descriptive research: How does immigration influence the quality of life of Latino high school students?	2.33	8	Latino immigrant youth, mostly boys, in rural North Carolina	12 months	Engaged Latino youth in action to improve school conditions; enhanced understanding of their needs and assets; facilitated individual empowerment

NOTE: N/R = not reported.

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Table 3. High Quality of Participation

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Goodhart	2006	Intervention evaluation: What was the process and impact of a photovoice project implemented with students at Rutgers University?	2.40	N/R	College students at Rutgers University in New Jersey	0.75 months	Engaged college students in action and advocacy to improve student health services and policies; enhanced understanding of their needs and assets; facilitated individual empowerment
Bader	2007	Intervention evaluation: How effective was the six-phase global youth voices model for engaging youth in community health promotion in the Middle East?	2.50	20	Bedouin youth in Israel	9 months	Engaged Bedouin youth in action to promote community health; facilitated individual empowerment
Williams	2003	Intervention evaluation: What was the meaning of a photovoice project with Guatemalan women and feminist researchers?	2.50	20	Mayan village women in Guatemala	N/R	N/R: Process evaluation
Foster-Fishman	2005	Intervention evaluation: What is the impact of participating in photovoice effort? How does photovoice foster impacts?	2.70	29	Diverse adult and youth in Battle Creek, Michigan	1.25 months	Engaged diverse community members in action and advocacy to improve city conditions; facilitated individual empowerment

(continued)

Table 3. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Nowell	2006	Descriptive research: What meaning and significance do residents ascribe to the physical conditions of their neighborhoods and community?	Same as above	Same as above	Same as above	Same as above	Enhance understanding of citywide needs and assets to improve city conditions
Hergenrather	2006	Descriptive research: What are the influences on the employment-seeking behavior of PLWHA?	2.78	11	Mostly Black people living with HIV/AIDS in Washington, D.C.	2.25 months	Engaged Black people living with HIV/AIDS in action to improve employment conditions; enhanced understanding of their needs and assets
Rhodes	2007	Descriptive research: What are perspectives of poor people living with HIV/AIDS in the South about their condition?	2.80	15	Low-income African American adults living with HIV/AIDS in North Carolina	22 months	Engaged people living with HIV/AIDS in action to improve health services; enhanced understanding of their needs and assets; facilitated individual empowerment
Jurkowski	2007	Intervention evaluation: What is the process and impact of photovoice with people with intellectual disabilities?	2.80	4	Latino adults with intellectual disabilities in Chicago	3 months	Engaged Latinos with intellectual disabilities in action and advocacy to improve health programs; enhanced understanding of their needs and assets

(continued)

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Table 3. (continued)

First Author	Year	Purpose and Research Question(s)	Mean Participation Score	N	Participant Description	Duration	Outcomes
Lykes	2003	Intervention evaluation: How does the use of participatory photographic methods impact communities coping with historical violence in Guatemala and South Africa?	2.80	20	Women in Guatemala and adults in South Africa	Many years, exact N/R	Engaged women in action and advocacy to promote reconciliation of historical violence; facilitated individual empowerment
Wang	2004a	Methodological evaluation and descriptive research: What are the community's assets and concerns? Are there benefits to including policy makers in photovoice efforts?	2.80	41	Adults and youth in Flint, Michigan	5 months	Engaged diverse community members in action and advocacy to improve health policy; enhanced understanding of city needs and assets among policy makers
Wang	2001	Methodological evaluation: How can photovoice practitioners ethically reduce the risk to participants and enhance the benefits to participants?	Same as above	Same as above	Same as above	Same as above	N/A
Strack	2004	Intervention evaluation: How effective is the program and curriculum for engaging youth in the photovoice process?	3.00	14	Low-income youth, mostly Black and White, in Baltimore	3 months	Engaged youth in action and advocacy to improve school and neighborhood conditions; facilitated individual empowerment

NOTE: PLWHA = people living with HIV/AIDS.

Analysis

Analysis began with the iterative development of a descriptive coding scheme (Strauss & Corbin, 1990), including such categories as research question, recruitment, study design and sampling, participant characteristics (e.g., youth, women of color), data collection and analysis, findings, dissemination, advocacy and action, outcomes, and limitations. Further coding was then undertaken for indicators of enhanced research quality through photovoice, capacity building, sustainability, and so on as well as for implications or lessons learned (see Tables 1 to 3). Each article was systematically reviewed by labeling all text corresponding to categories including the above. A detailed data matrix was produced using an Excel spreadsheet that described the coded text within articles, facilitating a summary of each article and comparison across articles. This matrix supported a descriptive understanding of photovoice partnerships and processes and illuminated evidence and counterevidence that photovoice appeared to result in its intended outcomes.

Viswanathan et al.'s (2004) quality of participation measurement tool was used to examine community participation. This tool rated the level of community participation on 10 aspects of CBPR projects, including selection of research question, proposal development, financial responsibility for grant funds, study design, recruitment and retention of study participants, measurement instruments and data collection, intervention development and implementation, interpretation of findings, dissemination of findings, and application of findings to health concern identified. Each of these aspects was rated on a 3-point scale, with 1 signifying insufficient information or poor participation, 2 signifying fair participation, and 3 signifying good participation. The mean of these scores produced the overall quality of participation rating, used to divide articles into low-, medium-, and high-participation categories, as in Tables 1 to 3.

Limitations

This review suffered from several limitations. First, the exclusion of articles from non-peer-reviewed sources may have eliminated some important and influential reports as well as book chapters devoted to exploring this approach (Israel et al., 2005; Minkler & Wallerstein, 2008) and several relevant master's and doctoral theses. Limiting the search to the health-related literature and to articles published in English may well have missed some important contributions in other languages and in related fields such as social work, where the method has also been used. These limitations appeared justified, however, given the review's aims of exploring (a) the historical foundations and ongoing practice of photovoice and (b) the potential of this method for future application within the public health domain, by focusing on studies that met the standards of peer review.

Publication bias is the limitation of most concern. Studies that result in limited or negative findings are less likely to be published, resulting in a sample of studies that are biased toward more significant findings and more effective interventions. Although an initial review of the literature reveals a broad range in study quality and outcomes, it nevertheless is important to consider the effects of this bias on findings.

Although several photovoice practitioners helped to develop this review, a final limitation is that the analysis itself was primarily the work of a single author. Coding of the literature consequently did not include the comparing or reconciling of coding or the calculation of interrater reliability. To improve internal reliability, however, the

research was embedded within theories, scales, and concepts developed by a multiplicity of researchers.

FINDINGS

Seminal Early Research

The practice of photovoice in public health continues to be heavily influenced by Wang and colleagues' early work (Wang, 1999; Wang & Burris, 1994, 1997; Wang et al., 1998). These original works were characterized by project initiation and facilitation by researchers, further development and refinement by leaders from community organizations, and then participation of community members during project implementation stages. Within this structure, community participants did not typically share decision-making power on the overall focus of the research project (e.g., reproductive health), research design, or selection of photovoice methodology. However, their leadership often contributed to key decisions once the project was under way, especially broadening the focus of the research question to include issues (e.g., child care and neighborhood violence) that often are beyond the purview of traditional public health research.

These early projects typically included a brief training on photography skills, photovoice ethics, and safety. Projects then tended to involve an iterative cycle of photo assignments, collecting photographs, and engaging in critical group discussion of a selection of photographs. These iterations put more control of the research process in the hands of community members, who identified issues that arose in their photography and discussed them using the SHOWeD technique (Shaffer, 1983). Using the SHOWeD pneumonic, discussion facilitators would ask, (a) What do you See here? (b) What's really Happening here? (c) How does this relate to Our lives? (d) Why does this problem, concern, or strength Exist? and (e) what can we Do about it? This group discussion technique is based on Paolo Freire's (1973) conception of praxis and is meant to facilitate the empowerment of community participants.

Next, Wang and colleagues encouraged the use of participatory visual analysis, a process that they pioneered. As Wang and Burris (1997) described, participants select a set of "photographs that most accurately reflect community needs and assets," contextualize the photographs by "telling stories about what the photographs mean," and then codify the "issues, themes, or theories that emerge" (p. 380). Finally, early photovoice projects by Wang and her colleagues emphasized action. Photos and accompanying narratives depicting community needs and assets were typically shared with influential local leaders. These exhibits tended to be well attended and provided an opportunity for participants to directly communicate with influential people, to creatively express their concerns, and to become further engaged in efforts to address these concerns.

Undertaken in rural China and urban areas within the United States, these first studies suggested that photovoice might offer a useful new approach for public health research and practice, but this assertion was yet to be put to the test. Building on this foundational literature, this review describes how photovoice processes have continued to develop to date, how these processes have embodied the ideal of participation, and what outcomes or effects there have been. The literature reviewed and these key attributes are described in Tables 1 to 3.

The Photovoice Process

Partnership Building and Community Participation. As previously described, Viswanathan et al.'s (2004) quality of participation scale was used to determine each project's average rating from 1.00 to 3.00, where 1 is low and 3 is high participation. The level of participation varied broadly across a spectrum.

Within the studies reviewed, 1,006 community participants had engaged in photovoice efforts, ranging from 4 older women living with HIV in the Midwest (Grosselink & Myllykangas, 2007) to 122 at-risk adolescents in California (Wilson et al., 2007), with a median project size of 13 community participants. Although it seemed probable that quality of participation might vary according to the number of participants, no relationship was found between group size and quality of participation.

Perhaps reflecting in part its roots in feminist research (Wang & Burris, 1997), most photovoice projects (78%) reported engaging majority-female groups. Participants included a diverse range of ages, races/ethnicities, and geographical locations. Among the 26 articles that reported duration of community participation, photovoice projects ranged from 2 weeks to several years, with a median of 3 months.

Across the studies examined, the quality of participation appeared to increase with project duration. In all, 11 (30%) projects engaged community participants at a low level, 1.00 to 1.66 on the quality of participation scale. These projects, with a median duration of 1.75 months, tended to limit community participation to photographic data collection and photo-elicited interviews.

For example, in their assessment of the technical and social assumptions of disability adjusted life years, Allotey et al. (2003) gave disposable cameras to 76 paraplegic people from Australia and Cameroon and requested that they "take pictures that would provide insight into the factors that created the reality of their everyday life" (p. 951). The individual choice involved in taking pictures was the only evidence of participant or community decision making in this project. Projects of this sort tended to be described by authors as pilot or exploratory studies. As such, they did not assess the impact of photovoice on participants or communities.

Among these low-participation studies, most outside researchers met with participants only twice during that time: once to introduce the project and then once to collect photographs and photo-elicited interviews or discussions. Participants tended to have minimal interaction with researchers or each other. Even dialoguing with other project participants about the photographs and their meanings—a core part of photovoice methodology—was omitted in these more cursory projects.

In all, 16 (43%) photovoice projects demonstrated a medium quality of participation, ranging from 1.67 to 2.33. In these projects, outside researchers and community participants tended to work together on studies that were most frequently designed, initiated, and managed by researchers. This level of participation was well exemplified by Wang et al.'s Yunnan Women's Reproductive Health and Development Program project. In their evaluation of the project (Wang et al., 1998), the authors offered one of the most detailed evaluations of community participation in a photovoice project to date. They reported vastly different levels of political, social, and economic power, privilege, and status among the diverse partners engaged in the project. Partner participation varied by stage in the process and by the specific skills and needs that each group brought.

Wang and her colleagues argued that varied levels of participation were necessary to maximize partnership efficiency and ethically distribute the costs and benefits associated

with participation. Full participation from community members was central to some stages of the Yunnan project, including taking pictures, selecting photographs for discussion, contextualizing and storytelling, codifying photographs, disseminating findings through community presentations, and conducting project evaluation. However, rural women were notably not engaged in the initial conceptualization, development, and administration of the project. Furthermore, and likely reflecting the broader Chinese sociopolitical context in which this study took place, participants did not take part in advocating for policy change.

Across the literature, projects with medium quality of participation scores tended to be published as descriptive research (47%) and less often as community interventions (37%). Those that self-described as community interventions, moreover, still tended to primarily provide process descriptions with limited discussion of findings or outcomes. Projects in this medium participation category had more participants on average than did projects ranked either low or high on quality of participation. The median project duration was 4 months, during which time facilitators and participants met more than twice to clarify photo assignments, discuss pictures, and engage in action. Action commonly took the form of organizing a public photo exhibit.

On the far end of the participatory spectrum, 10 studies (27%) had high quality of participation scores, 2.34 to 3.00. The photovoice projects that engaged participants at this level tended to be born from ongoing partnerships with communities, had a longer than average duration, reported an emphasis on training and community capacity building, and engaged in action. For example, Lykes et al. (2003) had been working with rural Guatemalan women for many years before they partnered to initiate a photovoice project focusing on truth and reconciliation. Researchers served as facilitators and technical advisors to community leaders, who led every stage of the project. The authors explained that high levels of participation in this project required long-term dedication to building local capacity for research and documentary photography among rural women who had little or no formal education. Sharing power with rural Mayan women meant not just sharing the tasks of implementation and ownership but also developing a shared basis of knowledge and expertise. To this end, community participants "appropriated the skills and techniques of social scientific research in the service of speaking out about past horrors to construct new options toward a better future" (p. 84).

In reviewing the photovoice literature, it is apparent that photovoice practitioners continue to grapple with the ideal of community participation in all of the stages of the research process. The following section explores the processes involved in photovoice and how participation has been achieved and missed, with particular attention to (a) facilitating photovoice training, (b) researching and documenting particular aspects of community through participatory photography, and (c) engaging in individual or group photo-elicited discussion.

Training. As Wang and colleagues (1997) noted, photovoice "entrusts cameras to the hands of people to enable them to act as recorders" (p. 369). Most photovoice projects included training to build basic documentary photography skills and knowledge, but great variability was observed in the approach to and scope of training. Projects with low community participation frequently included little or no training. Among projects that scored in the middle range (e.g., Wang et al.'s Yunnan project), a 1- or 2-day basic training on ethics and technical approaches to photography tended to be offered. On the far end of the continuum, the most participatory projects tended to include training on ethics and safety as well as "professional" training on photography

and research, sometimes extending over several weeks (cf. Wilson, Minkler, Dasho, Wallerstein, & Martin, 2006).

Although many studies (24%) were vague about training, five studies (14%) appeared not to include any formal training, a decision that was sometimes intentional and reflective of a sociological or anthropological approach to visual methods. For example, in explaining their purposeful decision to omit formalized training in their "naturalistic" work, Grosselink and Myllykangas (2007) provided a disposable camera and logbook to four elderly women living with HIV/AIDS, asking each to capture "what leisure meant to her both pre- and post-HIV/AIDS." As the investigators went on to comment, "At no point was an operational definition of leisure offered so that for each participant, the meaning of leisure was based on her perspective" (pp. 7-8). In this case, the investigators appeared to prefer a minimum of researcher interference with the participants' naturalistic style of expression and interpretation of the key theme. Because the photographs were intended to be kept private and confidential rather than displayed in a final exhibition or in the research article itself, the photographs did not need to communicate to others but simply to serve as raw data for qualitative analysis.

Harrison's (2002) literature review on the use of images in narrative inquiry further describes a rationale behind including no training. Visual methodologists, she explained, assume that the way in which untrained photographers take pictures (i.e., personal or everyday photography) is in itself a rich source of data on cultural and social constructions. Given this, introducing photography training or insisting on a certain kind of photography might alter participants' practices of representation, limiting the researchers' ability to make observations about this practice and its reflection on the phenomena of inquiry.

Despite this argument, the majority of photovoice projects (62%) included some basic training. Among these, half (12) explicitly reported including photography training plus a brief training on ethics and safety. Modeling this practice in Yunnan, Wang and colleagues (Wang & Burris, 1997) provided rural women with a brief introduction to photography techniques, ethics, power, and safety. The authors argued that participants should be trained briefly at first and then continue to develop their skills and understanding through an iterative cycle of doing and discussing.

In contrast, projects with the highest levels of participation demonstrated an intensive approach to community capacity building and training. Lykes et al. (2003), for instance, involved all participants in professional photography training, with a core group trained "to assume all roles within the research process" (p. 84), gaining computer skills, becoming data recorders and analysts, and learning how to balance the financial accounts of their projects. Through their training, "The 20 women who co-developed this project are the first rural Ixil and K'iche' women to become 'professional photographers,' and several have gone on to write grant proposals to support new economic development, education, and mental health initiatives" (p. 84).

Research and Documentation. The photovoice process is often valued for its ability to uncover rich descriptive information. As a methodology, it is almost exclusively used to answer descriptive research questions, such as what the collective and individual experience of mothers with learning disabilities in Sheffield, England is (Booth & Booth, 2003) and what poor women's lives are like in rural Canada (Willson, Green, Haworth-Brockman, & Rapaport Beck, 2006).

Photovoice has been widely adapted to fit the particular needs of research and documentation projects. It produces several types of data, from discussion and interview

transcripts to photographic images, enabling data triangulation. The more participatory projects tended to emphasize participatory analysis, but otherwise data collection methods tended to be similar across the varying levels of participation.

Although all of the articles reviewed discussed photovoice as involving the taking of photographs to document individual or community realities, there was less consistency in subsequent steps in the process or in the treatment of photographic data. Most typically, the main source of data used to answer research questions was not the photographs themselves but rather transcripts from photo-elicited group discussions or individual interviews. For example, in a study of oppression and resilience among a small group of gay and lesbian Blacks in postapartheid South Africa, Graziano (2004) and colleagues complemented the photography phase of the project with an ongoing critical dialogue about the photos, individually and within the group. The researchers engaged participants in the initial stages of analysis and provide rich descriptive information about findings, but Graziano did not report the methods used to complete the analysis process, and there is no indication that the photos were analyzed using visual methods.

Graziano's (2004) study is typical of those reviewed in that the outside researchers typically do not report analyzing the photographs themselves. For Wang and Burris (1994), this choice is rooted in feminist theory, critical pedagogy, and action research. As explained by Wang and Pies (2004) in their study of family, maternal, and child health in California,

> PV is not intended to be a methodology in which an entire body of visual data is exhaustively analyzed in the social scientific sense. . . . As a participatory methodology, photovoice requires a new framework and paradigm in which participants drive the analysis—from the selection of their own photographs that they feel are most important, or simply like best, to the "decoding" or descriptive interpretation of the images. (pp. 100-101)

Like this study by Wang and Pies, all of the studies that report using a participatory approach to analysis have medium or high participation scores.

Nearly all studies reviewed used two or more sources of data to triangulate the findings. For example, in Nowell, Berkowitz, Deacon, and Foster-Fishman's (2006) study of the meaning and significance that residents of Battle Creek, Michigan, ascribe to the physical conditions of their neighborhood, the authors reported triangulating several data sources, including participant photographs, transcripts of participant verbal reflections, participants' written reflections, and transcripts of group discussions of photographs.

In a few cases (Baker & Wang, 2006; Jurkowski & Paul-Ward, 2007; Leclerc, Wells, Craig, & Wilson, 2002; McAllister, Wilson, Green, & Baldwin, 2005; Oliffe & Bottorff, 2007), photovoice was used by researchers with a sample of participants from a larger study to gain in-depth insight into the everyday lives of a few research participants. Community participation in these studies tended to be low. In McAllister et al.'s (2005) assessment of the perspectives of low-income and minority parents on school readiness in Pittsburgh, the team conducted 150 qualitative interviews with parents and then selected a sample of 7 participants for in-depth study using ethnographic methods and photovoice. Although working within the constraints of an established research project limited participants' ability to share decision-making power, the researchers argued that this approach to photovoice enabled them to "learn from culturally diverse and economically stressed community members . . . and actively 'listen' to parents and other community members in order to develop a better understanding of their perspectives on issues such as school-readiness" (p. 623).

Photo-Elicited Discussion. The vast majority of projects (85%) described engaging participants in at least one group discussion based on photos. During discussions, photographers typically selected a subset of pictures and a facilitator engaged the group in discussion using SHOWeD or a similar acronym to elicit responses to questions about the photographs and form a bridge to subsequent action. Among those studies that engaged in discussion, about one third argued that these techniques facilitated the Freirian notion of critical consciousness (Freire, 1973), a consciousness based on critical reflection through dialogue and action.

Photovoice discussions varied in frequency and in style. The more participatory projects tended to engage community photographers in a cycle of photography or documentation and discussion over several months. For example, Fournier, Kipp, Mill, and Walusimbi (2007) used the SHOWeD technique during biweekly 2-hour sessions over 3 months to engage 12 Ugandan nurse participants in an ongoing critical dialogue about the challenges involved in caring for individuals with HIV/AIDS. Fournier and colleagues referred to this dialogue as "consciousness-raising," stating, "It involves the recognition of social, political, economic, and personal constraints on freedom and provides the forum in which to take action to challenge those constraints" (p. 258). The Youth Empowerment Strategies (YES!) Project in and near Richmond, California, similarly involved small groups of its 122 youth participants in a cyclical process of taking pictures, doing "free writes" expressing their personal reflections on their photos, and engaging in group dialogue and analysis using the SHOWeD acronym. The cycle was repeated numerous times over several months, with all but one of the small groups eventually using the pictures and discussions as the basis of social action projects (Wilson et al., 2006; Wilson et al., 2007).

Like the two studies just described, the majority of photovoice articles suggested that engaging participants in critical dialogue had a double yield: producing valuable research data in the form of discussion transcripts and serving as an empowerment intervention that had immediate benefits for research participants and their communities (see outcomes below).

Several projects (15%), however, all with low levels of participation, did not report engaging participants in group discussion. Baker and Wang (2006), for example, modified the photovoice method to explore the experience of chronic pain with 13 older adults in Michigan. The authors recruited participants from a larger study of pain, engaging them in an orientation, 2 weeks of personal photography, and an exit interview. The participants had no direct contact with each other during the study and never discussed photographs with one another. Instead, researchers interviewed participants one-on-one, using photo-elicitation techniques to explore the contexts and meaning of their pictures.

Outcomes

Although the photovoice articles reviewed focused on reporting *processes*, most (in particular the 31% that reported intervention evaluation findings) included some description of outcomes. These in turn tended to fall into three categories: (a) enhanced community engagement in action and advocacy, (b) improved understanding of community needs and assets, which in turn could have community or public health benefits, and (c) increased individual empowerment. These outcomes were reported consistently across varying photovoice projects, from efforts in collaboration with a diverse range of partners and community participants, and from studies using a multiplicity of often triangulated methods.

Action and Advocacy. The majority (60%) of projects reviewed culminated in action to address issues identified through community documentation and discussion, and a direct relationship was observed between level of participation and getting to action. Only 2 out of the 11 (18%) low-participation projects thus reported culminating in action, compared to 14 out of 16 (86%) among the medium- and 9 out of 10 (90%) among the high-participation projects.

Among the projects that did include an action phase, 96% organized public photo exhibitions to share their photographs and findings with the broader community, often including policy makers and other influential leaders. Wang and her colleagues (2000) for example, worked with homeless photovoice participants in Ann Arbor, Michigan, to hold several forums and showings of the latter's powerful words and pictures. As they noted,

> First, participants snapped photographs and wrote descriptive text for newspaper articles. Second, participants' photographs and captions were exhibited locally at a downtown gallery. . . . Finally, several hundred people, including policy makers, journalists, researchers, public health graduate students, and the public, came to the city's largest theater where photographers showed their slides with accompanying narrations and spoke to an audience of present and future community leaders. (p. 85)

This emphasis on involving policy makers and other community leaders in photovoice projects has been a part of Wang and colleagues' ongoing work and recommendations for best practices (Wang, Morrel-Samuels, & Hutchison, 2004; Wang & Pies, 2004).

In addition to photo exhibits, five of the action-oriented projects (21%) culminated in participant-led action initiatives inspired by photovoice findings. In their evaluation of a youth empowerment intervention with 122 youth in Contra Costa County, California, Wilson et al. (2007) described 12 social action projects, 8 of which directly resulted from the assets and issues identified through photovoice discussions. These included youth-led awareness campaigns, the use of photovoice posters along with petitions to protest loss of sports and teachers because of fiscal cutbacks, and the writing of a successful request to a school district official to get a dangerous shed on campus closed down (Wilson et al., 2006; Wilson et al., 2007).

Although action is a typical outcome of photovoice projects, it is important to acknowledge that 13 (35%) photovoice projects did not report engaging in this step. These projects tended to have a low quality of participation. A few (4) indicated that this decision was spurred by the need to protect the privacy of vulnerable participants, such as female-to-male transgender people (Hussey, 2006) or undocumented immigrants (Rhodes & Hergenrather, 2007).

Several authors argued that photovoice can have an impact on policy because of its tendency to mobilize communities to action. Yet none of the photovoice articles reviewed adequately discussed or evaluated the impacts of photovoice, if any, on the policy level—a challenge made difficult in part by the complex nature of policy making and the long time frame typically involved.

Enhanced Understanding of Community Needs and Assets. A second major reported outcome of photovoice was improving the understanding of community needs and assets among photovoice partners, service providers, local policy makers and other influential community members, and the broader community. Practitioners claimed

that this is made possible, first and foremost, by the methodology's unique capacity to engage hard-to-reach groups and to elicit open and honest conversation.

The literature provides several example of how this happens. In their highly participatory project with Latino adults with intellectual disabilities, Jurkowski and Paul-Ward (2007) noted that research and health promotion interventions tend to overlook people with such mental challenges because they are "often regarded as incapable of expressing their own health needs & incapable of learning health-promoting skills" (p. 359). Although the researchers had already engaged these participants in focus group discussion, they found that photovoice elicited rich descriptive information about participants' everyday lives. Researchers used this information to improve health promotion programs for people with intellectual disabilities in their community.

Photovoice projects have also helped establish trusting relationships among researchers, practitioners, and members of underserved communities of color in the United States, where public health researchers have often encountered resistance and mistrust (Gamble, 1997; Thomas & Crouse Quinn, 2001; Wasserman, Flannery, & Clair, 2007). In their medium-level participatory study, Streng et al. (2004) engaged Latino immigrant youth to capture an in-depth and critical assessment of the challenges they face and the ways they overcome barriers in high school. The youth exhibited their photographs and shared them with local leaders, policy makers, service providers, school administration, teachers, and counselors to improve the understanding of their needs and assets among influential people in their community. Streng et al. noted that the method's emphasis on shared decision making and power sharing allowed group discussions to go beyond what Scott (1985) called "public discourse" to obtain information about "hidden transcripts," the often deeply critical cultural and political discourse that takes place outside the venues normally open to members of other groups.

Projects at the low end of the participatory spectrum still reported a unique ability to gather in-depth descriptive information from hard-to-access groups. In their photovoice project with men diagnosed with prostate cancer, Oliffe and Bottorff (2007) thus reported that "the men consistently revealed a great deal about their prostate cancer experiences and lives, both in and through their photographs" (p. 854).

Although these less participatory projects captured participants' needs, assets, and experiences, most gave no indication that these results were shared through exhibits or other means. In both the study of men with prostate cancer study and the earlier mentioned study of older patients with chronic pain (Baker & Wang, 2006), for example, the potential to directly improve understanding and thus improve services was suggested; however, there was no evidence that it did.

Individual Empowerment. Among photovoice articles, reports of individual empowerment outcomes increased with participation scores. None of the 11 low-participation, 7 of 16 (44%) medium-participation, and 6 of 10 (60%) high-participation projects reported facilitating increased individual empowerment. As suggested in Figure 1, a positive relationship thus was hypothesized between empowerment and the processes of partnership and community participation, intensive training, and, in particular, the iterative cycle of research, discussion, and action.

The two most thorough evaluations of photovoice impacts, by Foster-Fishman, Nowell, and Deacon (2005) and Carlson, Engebretson, and Chamberlain (2006), respectively, explored these relationships. In a study that received a high overall participation score, Foster-Fishman et al. interviewed the participants of a Michigan
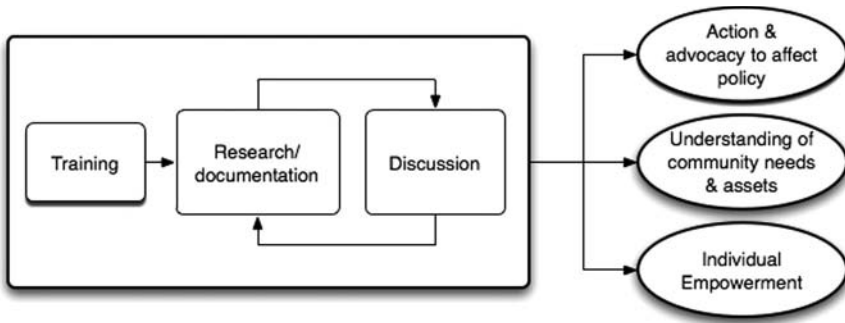
Figure 1.   Photovoice impact model.

photovoice project and found that two iterative processes in particular facilitated empowerment: documenting community strengths and concerns using photography and engaging in critical dialogue with other community members. In their breakdown of the concept of empowerment, the investigators explained that "impacts ranged from an increased sense of control over their own lives to the emergence of the kinds of awareness, relationships, and efficacy supportive of participants becoming community change agents" (p. 275).

Carlson et al. (2006) used a retrospective ethnographic analysis to evaluate the impact of a photovoice project with a medium participation score in a lower income, African American urban community. The researchers analyzed dozens of photographs, participant stories, group discussion transcripts, and facilitator journals. They found that the photovoice project was able to generate a social process of critical consciousness and active grassroots participation, thereby facilitating empowerment, by providing multiple opportunities for reflection, critical thinking, and then active engagement. The authors identified these opportunities as "deciding what to photograph, developing a story of why it was important, experiencing the entirety of the group's creation, and, finally, participating in a group dialogue of introspection" (p. 842). The fact that the group joined a community–campus partnership and community civic clubs during the closing stages of the photovoice study was cited as illustrative of the ways in which this more empowered group was now attempting to contribute to improved community health and well-being. Although the assessment would have benefitted from collecting additional interviews, thereby enabling an analysis of more long-term impacts, the retrospective data were helpful in addressing the evaluation questions.

In searching for counterevidence within the literature, further support emerged for these relationships. There were several studies that that did not engage participants in an iterative process of research or documentation and discussion (Allotey et al., 2003; Baker & Wang, 2006; Grosselink & Myllykangas, 2007; Leclerc et al., 2002; McAllister, Green, & Terry, 2003; Stevens, 2006). Among these studies, there were no reports of enhanced empowerment, sense of control, or critical consciousness. One such project, led by Grosselink and Myllykangas (2007), with participation from four people living with HIV/AIDS, included a report of the status of their participants 2 years after the conclusion of the study. The investigators found them in a state of distinct disempowerment, in their increasing despondence, seclusion, and disengagement from communities.

DISCUSSION

The practice of photovoice is growing rapidly and the photovoice literature is proliferating. Although newer photovoice projects are clearly rooted in the seminal works of Wang and colleagues and most all subsequent articles reference them, the majority of photovoice efforts alter Wang's methodology to suit the needs and constraints of researchers' unique projects. As a result of this tailoring, the manifestations of partnership and of photovoice methodology vary broadly across the participatory spectrum.

Along with their substantial contributions, the early literature left several questions unanswered. These articles provided reflective descriptions of the photovoice methodology but did not provide a model or tools for how to evaluate photovoice processes and outcomes. In most of Wang and her colleagues' work, the authors do not report how evaluation data were collected or analyzed, the data limitations, or how other researchers might confirm findings. They further do not include short- or long-term follow-up to assess impacts.

As the body of photovoice literature has grown, some convergence on reported processes and outcomes has occurred, but, as suggested in this review, the quality of studies has varied considerably.

There are several weaknesses within the literature that should be addressed by future photovoice researchers and their community partners. First, as noted above, the methods used to evaluate photovoice projects tend to be only vaguely described, if they are described at all. This is especially true for analysis methods, and although there is a substantial body of literature on methods for the analysis of visual data (Rose, 2007; Van Leeuwen & Jewitt, 2001), essential information about how researchers went from photographs to findings is rarely mentioned. There also tends to be little or no discussion of study limitations in terms of research rigor, although other limitations and challenges (e.g., regarding ethical and participation issues) often were discussed.

Second, there were no consistent practices in terms of reporting the level of community participation throughout the project. Nearly all of the articles provided enough information to assess the level of community participation in determining research question(s), study design, recruitment and retention of participants, measurement instruments and data collection, intervention development and implementation, interpretation of findings, and/or dissemination of findings. However, only a few publications (Lykes et al., 2003; Wang et al., 1998) provided a description of community participation in proposal development, financial responsibility for grant funds, and/or application of findings to the health concern identified. Because of this inconsistency, some low participation scores may in part be a reflection of underreporting.

Third and finally, although photovoice is often conceived of as a community intervention, its impact at the community level has not been well described or assessed. None of the studies reviewed used community- or neighborhood-level analysis. Throughout the literature, there was little attempt to evaluate the long-term impact of photovoice on individuals or communities, although it was often assumed that intention to act, increasing the understanding of community concerns, and individual empowerment would have important long-term impacts on community health.

Despite these limitations, the photovoice literature in public health is becoming more robust, describing and analyzing diverse, nuanced applications of the method within a range of geographic and social contexts. There is increasing evidence that photovoice can be used as a participatory tool for engaging communities as partners in a CBPR process. Photovoice also has shown promise in enabling public health

researchers and practitioners to reach hard-to-reach communities and engage them in a meaningful, action-oriented research process.

The photovoice literature reviewed here suggests that the processes and outcomes of the more participatory projects differ from those of their less participatory peers in some important ways. More participatory projects tend to be associated with (a) long-standing relationships between researchers and community, (b) intensive training to build community capacity, (c) an iterative cycle of community documentation and critical dialogue, and (d) multilevel outcomes including engaging community members in action and advocacy, enhancing understanding of community needs and assets, and facilitating individual empowerment. There is no trend indicating that quality of participation differed by participant characteristics such as age, race/ethnicity, income level, or geographical residence. The literature reveals that only the more participatory projects tended to achieve all three of Wang and Burris's (1997) original photovoice goals—recording and reflecting on community strengths and concerns, promoting critical dialogue and knowledge, and reaching policy makers.

IMPLICATIONS FOR PRACTICE

This review of the literature suggests several key implications for practice. First, photovoice is a flexible tool for strengthening public health research and interventions. It can be altered to fit diverse partnerships, community contexts, participant characteristics, and research or intervention interests.

Second, the level of community participation in photovoice also can vary across key stages, including training, research and documentation, and photo-elicited discussion. Although the strongest projects reviewed tended to be those with the highest rates of participation across phases, flexibility in the levels of participation according to the specific skills that different partner groups offer, the varying needs of different contributors, and the ethical challenges inherent in particular cases may enable broader applicability of this approach.

Third, photovoice can result in several outcomes that are important to improving community health, including enhanced community involvement in action and advocacy, enriched public health research, and individual empowerment. The possibility of achieving these outcomes is further strengthened by equitable community participation during all stages of the photovoice process, and photovoice practitioners are encouraged to strive for the highest levels of involvement that are feasible or practical in their applications of this approach.

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Nota metodológica

Metodología para el mapeo de activos de salud en una comunidad

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INFORMACIÓN DEL ARTÍCULO

RESUMEN

Dentro del proceso regional de desarrollo de una estrategia de participación comunitaria en salud en Asturias, y en el contexto del Observatorio de Salud, hemos desarrollado una metodología para iniciar el mapeo de los activos en salud de ámbito local. En esta metodología se parte de una descripción de los recursos más formales y de las actividades comunitarias existentes, junto con una caracterización de los recursos en salud más informales, personales y simbólicos. Se presentan las herramientas agrupadas para el desarrollo del mapeo y su conexión con los modelos teóricos de la salutogénesis, *asset model* y del desarrollo comunitario.

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Methodology for health assets mapping in a community

ABSTRACT

Within the development of a regional strategy for community health engagement in Asturias (Spain), and connected to the Health Observatory, we carried out a methodology to initiate the mapping of health assets at a local level. This methodology begins with a description of the most formal resources and of the pre-existing community activities, together with a characterization of the most informal, personal and symbolic health resources. We introduce our tools, grouped for the development of mapping, and explain their connection with the theoretical models of salutogenesis, asset model and community development.

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Introducción

La estrategia para la Participación Comunitaria en Salud en Asturias inicia un trabajo en red, mediante la elaboración de un mapa de actividades comunitarias[1]. Esta iniciativa comienza a visibilizar las experiencias de participación que con posterioridad, en 2011, conforma la red de salud comunitaria en Asturias (Asturias Actúa), la cual pretende conocer la situación de su territorio, conversar sobre cómo puede mejorarse y cómo actuar coordinadamente con actividades basadas en la evidencia.

El proceso de participación comunitaria está íntimamente ligado al Observatorio de Salud en Asturias (OBSA), que tiene como objetivo la conexión de la información con la acción, y entre sus funciones pretende generar conversaciones en los distintos grupos poblacionales sobre la situación de la salud (desde una perspectiva de los determinantes sociales de la salud) y ayudar a establecer

procesos de cambio[2]. De este modo, vincula la información clásica de los indicadores de salud con las distintas actuaciones comunitarias. Esta situación de partida complementa la visión del modelo tradicional del déficit con el enfoque salutogénico[3] y de activos en salud[4]. Así, la necesidad de conocer las riquezas de la comunidad para establecer procesos de desarrollo se establece una vez señalados los indicadores negativos y de determinantes sociales de la salud[2,4].

La complementariedad de enfoques[5] integra el modelo de «déficit» (la «foto de salud» de los indicadores de resultados y determinantes en salud del OBSA [http://www.obsaludasturias.com/]) con el modelo «positivo» (la «foto de salud» inicial de la comunidad que se está potenciando y desarrollando a través de diferentes agentes: municipales, asociaciones, profesionales, otros organismos e instituciones).

Algunos autores, como McKnight[6], han considerado que estos diferentes agentes y recursos facilitan el desarrollo comunitario basado en activos (*Asset Based Community Development*, http://www.abcdinstitute.org), con la identificación de activos locales individuales, asociativos, organizacionales, culturales, económicos y del entorno.

Asimismo, la estrategia de participación pretende profundizar en la «foto de salud» inicial de la comunidad uniendo los recursos más formales con los informales de la comunidad. Para ello se utiliza una metodología de visibilización y movilización de las riquezas[7] y del patrimonio[8] de la comunidad, el mapeo de recursos sobre activos en salud[6,9], que más que un instrumento de recopilación de datos es un proceso en que la ciudadanía comienza a descubrir factores positivos de su comunidad y a tejer una red de relaciones y de apoyos mutuos, de forma que este proceso desemboca en proyectos que mejoran la calidad de vida y promocionan la salud[2,6,9].

El objetivo de este trabajo es describir la metodología propuesta para el inicio de un mapeo de activos en salud con agentes locales en un territorio determinado.

Metodología

La metodología desarrollada para el mapeo de activos en salud consta de las siguientes fases:

- Fase 1: presentación a los agentes locales.
- Fase 2: delimitación del mapeo.
- Fase 3: trabajo inicial con los agentes del terreno.
- Fase 4: trabajo de campo en la comunidad.
- Fase 5: visibilización en la web 2.0.
- Fase 6: transferencia a los agentes locales y a la población.

Fase 1: presentación a los agentes locales

En esta fase se exponen la estrategia de participación, la información sobre determinantes y resultados de salud existente en la zona, y la herramienta del mapeo de activos, a los agentes locales.

Los agentes locales se definen como las personas de referencia en el ayuntamiento o en asociaciones que son líderes dentro de la comunidad. Su función será contactar con los agentes del terreno. Por otro lado, los agentes del terreno son las personas clave de la comunidad que lideran el proceso del mapeo. La información existente se expone mediante:

La información de indicadores de salud y determinantes sociales de la salud por concejos elaborada por el OBSA («foto de salud» del OBSA). Es una información cuantitativa, epidemiológica, relevante para iniciar el trabajo de campo.

El mapa de actividades comunitarias de las jornadas de participación (http://www.obsaludasturias.com/obsa/asturias-actua/) y los recursos formales de la web de la Consejería de Vivienda y Bienestar Social (http://tematico.asturias.es/websociales/).

Tabla 1
Mapeo de activos. (Adaptada de Improvement and Development Agency[6].)

Qué recursos	Quiénes	Qué tienen	Reflexión
Recursos de los individuos	Miembros de la comunidad Familias Vecinos	Poder Pasión Talento Habilidades Experiencia Conocimiento Tiempo Cuidado	¿Qué es lo bueno del lugar donde viven? ¿Qué pueden hacer para mejorar la vida en su comunidad?
Recursos de las asociaciones formales	Grupos religiosos Grupos deportivos Asociaciones juveniles Grupos de voluntarios Asociaciones de vecinos Grupos de autoayuda o de ayuda mutua Asociaciones de pacientes Voluntarios	Visión Redes Conocimiento compartido Influencia Talento	¿Cuáles son las redes formales de su comunidad?
Recursos de las asociaciones informales	Red informal de cuidadores Red informal de apoyo	Visión Redes Conocimiento compartido Influencia Espacios compartidos Talento	¿Cuáles son las redes informales de su comunidad?
Recursos físicos del área	Parques Centros educativos Bibliotecas Centros de salud Centros infantiles	Edificios Espacios compartidos	¿Qué espacios verdes, terrenos sin utilizar, edificios, calles, mercados o transportes hay en la comunidad?
Recursos económicos	Negocios locales Comercios locales	Dinero Influencia Edificios	¿Cuál es la situación económica local?
Recursos culturales	Teatro Música Arte	Visión Redes Conocimiento compartido Influencia Espacios compartidos Talento	¿Qué talento tiene la gente para la música, el teatro o el arte?
Recursos de las organizaciones	Servicios del ayuntamiento Concejalías o concejales Líderes o representantes de barrios o vecindarios Policía Trabajadores sociales Médicos de familia Enfermería	Dinero Edificios y recursos Servicios reales o potenciales Influencia sobre otros Tiempo Poder Conocimiento Liderazgo Capacidad y buena voluntad para el cambio	' ¿Qué recursos tienen las organizaciones independientemente de si se usan o no?

Tabla 2
Algunas técnicas para realizar el mapeo sobre recursos en salud

Qué recursos	Cómo explorarlos. Técnicas							
	Entrevistas en profundidad	Grupo focal	Base de datos/web/redes sociales 2.0	Conversación	Mapping party	Photovoice	Investigación narrativa storytelling	Tertulia del café
Recursos de los individuos	+++	+++	+	+++	++	++	+++	+++
Recursos de las asociaciones formales	+	+	+++	+	++	++	+	+
Recursos de las asociaciones informales	++	++	+	++	+++	+++	++	++
Recursos físicos del área	+	++	+++	++	+++	++	++	++
Recursos económicos	++	++	+++	++	+	++	++	++
Recursos culturales	++	++	++	++	++	++	++	++
Recursos de las organizaciones	++	+	++	+		++	+	+

Gradación orientativa de la utilidad de cada técnica: +++ muy adecuada, ++ adecuada, ++ puede ser adecuada.

Fase 2: delimitación del mapeo

La segunda fase delimita el mapeo definiendo variables como la zona de realización del mapeo, el tamaño poblacional, los recursos disponibles y las acciones posteriores.

Fase 3: trabajo con los agentes del terreno

Esta etapa incluye la presentación de la propuesta de trabajo a los agentes del terreno, la creación del grupo motor que guía el proceso del mapeo y la delimitación de la figura de algún informante clave (miembros que conocen la comunidad o algún activo muy específico e informantes que representan a miembros minoritarios de la comunidad)[9]. Además, se deciden las áreas donde se localizarán los activos dependiendo de la información de los informantes clave y de la información descrita en la fase 1.

Fase 4: trabajo de campo en la comunidad

En esta fase, a través de los informantes clave saldrá el grupo encargado de realizar el mapeo que cuenta con el apoyo de personas de una organización con experiencia en desarrollo comunitario. Los activos se localizan en distintos ámbitos[6,9] y se reflexiona sobre ellos (tabla 1).

Las técnicas para explorar los activos en salud están basadas en técnicas de participación comunitaria[9–11]. En la tabla 2 se detalla qué recursos explorar y cómo explorarlos. Las técnicas consisten en:

- Entrevistas en profundidad: encuentro cara a cara entre la persona clave y la persona que recoge la información, dirigido a la comprensión de las perspectivas que tienen los vecinos respecto a sus comportamientos, sentimientos o experiencias[11].
- Grupos de discusión: conversación de un grupo pequeño y homogéneo diseñada para obtener información de un tema de interés común, con un guión de preguntas y la ayuda de un moderador[11].
- *Mapping party:* encuentro de personas que se reúnen para cartografiar de forma colectiva determinados lugares, donde cualquier persona puede participar.
- Observación sistemática de comportamientos y conversaciones con observación participante.
- *Photovoice:* reflexión y discusión para describir e intercambiar impresiones a través de fotografías de la comunidad[11].
- Investigación narrativa *(storytelling):* invitación a la gente a contar y compartir historias sobre cómo se han enfrentado a situaciones difíciles[9–11].
- Tertulias del café: generar conversación sobre un tema de interés. En el café, cinco o seis personas alrededor de una mesa charlan entre sí y una persona hace de anfitrión. Al cabo de 20 minutos se cambian de mesa y el anfitrión se queda para resumir a los nuevos la discusión previa. Al final, se recogen y extraen los temas por parte de todo el grupo[9–11].

Fase 5: visibilización en la web 2.0

En esta fase se visibilizan los activos en la web a través de Asturias Actúa (https://sites.google.com/site/obsasturias/mapasturias) y se organizan por etiquetas (sexualidad, jóvenes...). Las actividades comunitarias también pueden introducirse en la red de actividades comunitarias (Asturias Actúa).

Fase 6: transferencia a agentes locales y población

Aunque las herramientas de la web son muy útiles tanto como repositorios como para generar procesos colaborativos, aún no son recursos utilizados de forma generalizada por la población y por los agentes de salud. En esta fase se trata de visibilizar y difundir los activos de salud a través de otro tipo de metodologías (sesiones, reuniones, foros comunitarios, publicaciones municipales en papel...)[11]. A partir de este trabajo, la comunidad revitaliza la «foto de salud» comunitaria (de déficit y de activos en salud) para generar procesos de cambio[2].

Conclusiones

El presente trabajo describe el mapeo de activos como una metodología que obtiene información sobre el patrimonio en salud de las personas y la comunidad, y sobre desarrollo comunitario basado en activos en el ámbito local. Otros trabajos diseñados ad hoc para investigar podrían confirmarlo. También se observa que la metodología de mapeo y las técnicas cualitativas adoptadas son útiles para instrumentar estas estrategias incipientes de participación social e investigación de acción. Desarrollar estas metodologías permitirá avanzar en el conocimiento en la materia y mejorar la instrumentación de los trabajos.

Contribuciones de autoría

B. Botello y R. Cofiño desarrollaron el esquema inicial del manuscrito. B. Botello llevó a cabo la redacción inicial del primer borrador. S. Palacio, M. García, F. Fernández y M. Margolles revisaron y ampliaron la parte de desarrollo de la metodología del mapeo de activos en relación con la experiencia de trabajo en Asturias. M. Hernán amplió la parte metodológica en relación con su conocimiento teórico de la materia y con la experiencia de trabajo en Asturias.

J. Nieto aportó y revisó contenido en relación con la experiencia de trabajo de intervenciones en modelos del estado de Wisconsin.

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Perceived community environmental influences on eating behaviors: A Photovoice analysis

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ABSTRACT

People's perceptions of local food environments influence their abilities to eat healthily. PhotoVoice participants from four communities in Alberta, Canada took pictures of barriers and opportunities for healthy eating and shared their stories in one-on-one semi-structured interviews. Using a socioecological framework, emergent themes were organized by type and size of environment. Findings show that, while availability and access to food outlets influence healthy eating practices, these factors may be eclipsed by other non-physical environmental considerations, such as food regulations and socio-cultural preferences. This study identifies a set of meta-themes that summarize and illustrate the interrelationships between environmental attributes, people's perceptions, and eating behaviors: a) availability and accessibility are interrelated and only part of the healthy eating equation; b) local food is synonymous with healthy eating; c) local food places for healthy eating help define community identity; d) communal dining (commensality) does not necessarily mean healthy eating; e) rewarding an achievement or celebrating special occasions with highly processed foods is socially accepted; f) food costs seemed to be driving forces in food decisions; g) macro-environmental influences are latent in food decisions. Recognizing the interrelationship among multiple environmental factors may help efforts to design effective community-based interventions and address knowledge gaps on how sociocultural, economic, and political environments intersect with physical worlds.

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1. Introduction

The rising overweight and obesity rates in developed and developing countries are associated with serious health implications (e.g., diabetes and cardiovascular diseases) and increased health care system costs (Di Cesare et al., 2016). Promotion of healthy eating is one response to this weight-related pandemic. Interventions targeting individual-level eating behavior changes (e.g., nutrition knowledge) have shown limited success with temporary positive effects on health (Sallis and Glanz, 2009). That is because eating behaviors are not individual choices disconnected from the environment where they are enacted (Brug, 2008). Rather, environment is a critical force that may restrict or increase people's abilities to make healthy eating decisions. Inherently of greater reach (Glanz et al., 2005; Sallis and Glanz, 2009), environmental strategies are more likely to produce sustainable changes,

impacting risk factors and health outcomes by tackling the structural roots of unhealthy eating (WHO, 2004).

Socioecological approaches (Glanz et al., 2005; Sallis and Glanz, 2009; Story et al., 2008) are useful for researchers and policy-makers to better address (i) the complex, dynamic nature of the environment and (ii) people's interactions with and within the multiple and interdependent facets of that environment. Environmental barriers to healthy eating have been described by many quantitative studies (Brug, 2008; Caspi et al., 2012; Kamphuis et al., 2006; Sallis and Glanz, 2009). Specifically, limited availability of and poor access to neighborhood grocery stores (Raine et al., 2008), high prices of fruits and vegetables (Kamphuis et al., 2006), and influences of family contexts on children's energy expenditures and fat intake (Engler-Stringer et al., 2014; Sleddens et al., 2015) are some of the myriad of environmental determinants affecting unhealthy diet and obesity (Caspi et al., 2012; Lovasi et al., 2009). However, systematic literature reviews have shown mixed results regarding the association between environmental factors and healthy eating (Brug, 2008; Caspi et al., 2012; Kamphuis et al., 2006; Papas et al., 2007) (e.g., conflicting results for the

relationship of dietary outcomes with accessibility (Caspi et al., 2012) or with seasonal influences (Kamphuis et al., 2006)), great variability in the operationalization of both diet- and environment-related measures (Caspi et al., 2012; Engler-Stringer et al., 2014; Kamphuis et al., 2006; Papas et al., 2007), and a lack of replication studies using validated instruments (Brug, 2008; Engler-Stringer et al., 2014). Inconsistent findings may also stem from studies that have not examined how interconnections between physical and non-physical environmental factors (Papas et al., 2007) shape people's abilities to adopt or maintain a healthy diet. Previous reviews reveal critical, but understudied ecological factors, for example, cultural influences on eating patterns (Kamphuis et al., 2006), and policy-related influences like hours of operation for local food outlets (Caspi et al., 2012).

Community-based participatory research (CBPR) methods can be used to address some of these knowledge gaps by shedding light on the complex nature of the food environment from community members' perspectives (Engler-Stringer et al., 2014). CBPR can help reveal environmental features relevant to people that may have been under-investigated, including delineation of proximal and distal environmental factors affecting their abilities to eat healthily. Building upon a collaborative, equitable partnership between communities and academics, CBPR is an approach that promotes active engagement of community members in all research phases for the development of effective, sustainable interventions that benefit the community (Israel et al., 2001). CBPR's goal of mobilizing the co-produced knowledge for social action is well-aligned with ecological, health promotion strategies targeting community health and well-being improvement (Nykiforuk et al., 2011; Wallerstein et al., 2011).

PhotoVoice is a CBPR, qualitative method grounded in the Freirian approach to critical consciousness, feminist theory, and community-based approach to documentary photography (Wang, 1999). In this relatively new participatory method (Foster-Fishman et al., 2005), community members take photographs of their everyday realities with the objective of sharing their perspectives with the researchers on a topic under consideration, revealing the meanings and significance behind each image. The visual images trigger reflection, dialogue, and empowerment for social change among participants (Foster-Fishman et al., 2005; Strack et al., 2010; Wang, 1999). Through the discussion of the visual representation (i.e., photo-stories), researchers can gain a better understanding of the community members' perceptions and experiences, by seeing what the insiders see and hearing about the meaning of those images in the participants' own words. This community understanding of the relationships between people and their surroundings is crucial for refining measures and methodologies used to estimate the impact of environmental factors on healthy eating, and to address the conceptual gaps in understanding about the fundamental, defining characteristics of a community food environment. Further, this community knowledge can bring local experience and expertise to the development of policies and practices (Foster-Fishman et al., 2005) that aim to enhance local food environments, thereby increasing potential for intervention uptake and success (Strack et al., 2010).

The Photovoice literature on eating behaviors (Castellanos et al., 2013; Kramer et al., 2010) is small, but still growing. Few Photovoice studies (see, for example, Findholt (Findholt et al., 2011) and Watts (Watts et al., 2015)) have explored the interconnections between different environmental attributes, people's perceptions and food decisions in the light of socioecological approaches. This study builds upon the strengths of socioecological literature on food environment (Sallis and Glanz, 2009; Story et al., 2008; Strack et al., 2010) and reaps the multitude of benefits associated with the Photovoice method (e.g., critical dialogue allowing for in-depth

exploration of issues (Castellanos et al., 2013; Foster-Fishman et al., 2005; Kramer et al., 2010; Wang, 1999); participants' empowerment (Foster-Fishman et al., 2005; Wang, 1999); and policy advocacy (Kramer et al., 2010; Wang, 1999)). By integrating both approaches, this study helps expand the current limited understanding of how multiple environmental factors are interconnected in shaping people's food decisions in order to inform health policies and programs. Thus, the purpose of this study was to identify the barriers to and opportunities for healthy eating among residents of four communities representing the heterogeneity of urban communities.

2. Method

Healthy eating data used in this study came from a larger PhotoVoice project that investigated residents' perceptions of how their community environment influenced their perceived abilities to be physically active and eat healthy food. This PhotoVoice project was the qualitative component of a three-year CBPR project, which aimed to examine the role of community environments in healthy behaviors and chronic disease prevention in different municipal contexts (Nykiforuk et al., 2011). Specific methods pertaining to the current analysis are described below. Ethical approval for the overarching project and PhotoVoice was granted by the Health Research Ethics Board (Panel B), University of Alberta.

2.1. Participants

Multiple purposive sampling strategies were used for participant recruitment from the general population, including advertisements in local newspapers, flyers posted in key community locations, and e-mails through local organization mailing lists. A total of 35 individuals participated across communities: 74.3% women; 11.4% were under the age of 24; 71.4% aged 25–64; 17.2% aged 65 or more; and 40% with household income of less than $50,000 CAD per year (Nykiforuk et al., 2011). A $30 CAD grocery store gift certificate was provided to each participant in appreciation of his/her participation. All participants provided informed consent.

2.2. Settings

Data was collected in four communities in the province of Alberta, representing a spectrum of urban communities as defined by Statistics Canada (Statistics Canada, 2012), which categorizes urban municipalities into small, medium, and large centers, depending on their population size. The Bonnyville and St. Paul are two small population centers (each with populations of about 5000). North Central Edmonton is a community located in the City of Edmonton, a large population center (population approx. 40,000). The Medicine Hat is a medium population center (population approx. 60,000). Detailed information about these municipalities can be found elsewhere (Nykiforuk et al., 2011). These four communities were chosen because of research team members' previous CBPR projects with these municipalities, which offered an opportunity to create sustainable health interventions (Nykiforuk et al., 2011). Their food environments differ from one another, particularly when comparing relative availability of fast-food restaurants to non-fast-food restaurants (e.g., family-run buffets and ethnic restaurants). Data (unpublished) obtained from the food environment audit tool used in the large CBPR project showed the fast-food restaurants represent 59.1% of the total food outlets in the medium population center. The diversity of the food environments in the studied small and large population centers is more evident, where fast-food restaurants account for only 22.4% and 12.6%, respectively.

2.3. Data collection

PhotoVoice activities were conducted between May and July 2009. Data gathering involved baseline and follow-up interviews interspersed with a photo-taking period. In the baseline individual semi-structured interview (prior to photo-taking), participants were asked to share their general perceptions of their community environment, and their physical activity and eating behaviors (e.g., "when you think of community, what does that bring to your mind?"). They then received instructions about how to use the digital camera and were given two weeks to take photographs on the general study topic, i.e., described as community elements that made it easier or harder for them to be physically active or eat healthy food. The photographic mission was not prescriptive; rather, participants were encouraged to freely interpret what community environment, physical activity, and eating behaviors meant to them and - critically - what images to capture in photographs to best portray those meanings, and the interrelationships among meanings.

After two weeks, the cameras were collected and the research team printed all photographs. In the follow-up individual semi-structured interview, participants were given copies of all their photographs, and were asked to select the photographs most meaningful to them for in-depth discussion with the researcher. This interview was participant-driven: the participants discussed what promoted and hindered their physical activity and healthy eating by telling the stories associated with each of their "most meaningful" photographs (photo-stories). The follow-up interview guide contained questions and probes to encourage participants to share the stories behind of the photograph chosen, by telling their reasons for taking that photograph and what it represented to them (e.g., "why did you take that picture"?; "I'd be interested to hear your thoughts about that"; "does this picture raise any community issue for you?").

Trained graduate research assistants conducted the interviews and an observer took notes. The baseline and follow-up interviews lasted 60 and 90 min, respectively. Interviews were digitally recorded and transcribed verbatim. A detailed description of the PhotoVoice methodology is provided elsewhere (Nykiforuk et al., 2011). Out of 1320 photographs taken (on average, 41 per participant; range 9–182), 457 of them were discussed in the follow-up interviews (on average, 13 per participant; range 8–30). In 20.4% of the discussed photographs, the topic raised by the participant was related to healthy eating.

2.4. Data analysis

Only material from follow-up interviews on eating behaviors was analyzed in this paper: the baseline interview focused on general community environment and was extraneous to the specific research question addressed here. Findings on physical activity were published elsewhere (Belon et al., 2014, 2015). The photographs' contents were not coded separately from the interviews that discussed them. In the PhotoVoice method, photographs are meaningless if not accompanied by participants' voices; the photographs are the means to bring forward the participants' stories and the meanings of the images to them (Wang, 1999).

In the thematic analysis, two researchers (APB and LMN) used an inductive approach and independently line-by-line coded the interview transcripts. The entire research team worked together to organize codes in themes; discrepancies were discussed until consensus was reached. Researchers identified all themes that contributed to addressing the research questions, rather than quantifying (or limiting analytic focus to) the most commonly occurring codes.

The emergent themes were then organized (deductive approach) according to a socioecological framework developed to dissect obesogenic influences in the environment, well-known as the Analysis Grid for Environments Linked to Obesity (ANGELO) framework (Swinburn et al., 1999). The framework divides environmental influences on physical activity and eating behaviors into two levels (macro and micro) and four types of environment (physical, sociocultural, economic, and political). The macro-environmental sector refers to broad infrastructure (e.g., food advertising and health systems), whereas micro-environments encompass local settings (e.g., workplaces and homes). Concerning the types of environment, (1) physical environment is characterized as available resources in the environment (e.g., soft-drink vending machines in worksites); (2) sociocultural environment refers to values, attitudes, and beliefs towards (un)healthy behaviors (e.g., peer pressure to eat in fast-food restaurants); (3) economic environment is defined as costs related to (un)healthy behaviors (e.g., high cost of fruits and vegetables in convenience stores); and (4) political environment includes policies and formal and informal rules (e.g., lack of household rules for children concerning food behaviors). The main advantages of the ANGELO framework are its simplicity and succinctness, as well as practicality for targeting interventions (Raine et al., 2008). QSR International's NVivo 10 software was used to code, organize, and analyze the data.

Finally, for a better understanding of the interrelationships between themes organized according to ANGELO framework, the research team used meta-coding techniques. Meta-coding allows for teasing out the relationships between the themes previously identified in order to create a small number of overarching meta-themes, which are presented in the Discussion section.

3. Results

The physical, sociocultural, economic, and political environmental influences reported by the participants are summarized in Fig. 1. These emergent themes were similar across the different demographic groups and communities, contributing to broad insight on the general nature of community food environments. For this reason, results are not disaggregated here. It is noteworthy that, when reflecting on their own experiences, some participants shared their perceptions of how other community members may interact with and within the local food environment.

While photographs portrayed physical infrastructure of the food environment (e.g., grocery stores and restaurants), participants' photo-stories transcended availability- and accessibility-related topics. The photographs served as gateways for discussion of more intangible aspects of the food environment, such as social interactions (sociocultural), fast-food prices (economic), and food regulations (political).

All themes refer to micro-environment, unless otherwise indicated, as this is consistent with what was shared by participants. The themes for each type of environment are shown in separate subsections to facilitate the presentation of findings. Themes were also interconnected, revealing the complex relationships among environmental types and levels. For instance, a participant noted that, while the availability of food outlets in his community (physical) plays a role in his family's eating behaviors, it also matters if grocery stores have fresh, healthy product selection (physical) (Fig. 2). Aligned with the availability of food outlets (physical), a participant explained that restaurants create a food consumption destination that attracts locals and outsiders to their community (sociocultural) (Fig. 3). Another participant reinforced her preference to support local, small businesses (sociocultural) closer to her home (physical) over paying less in large chain supermarkets
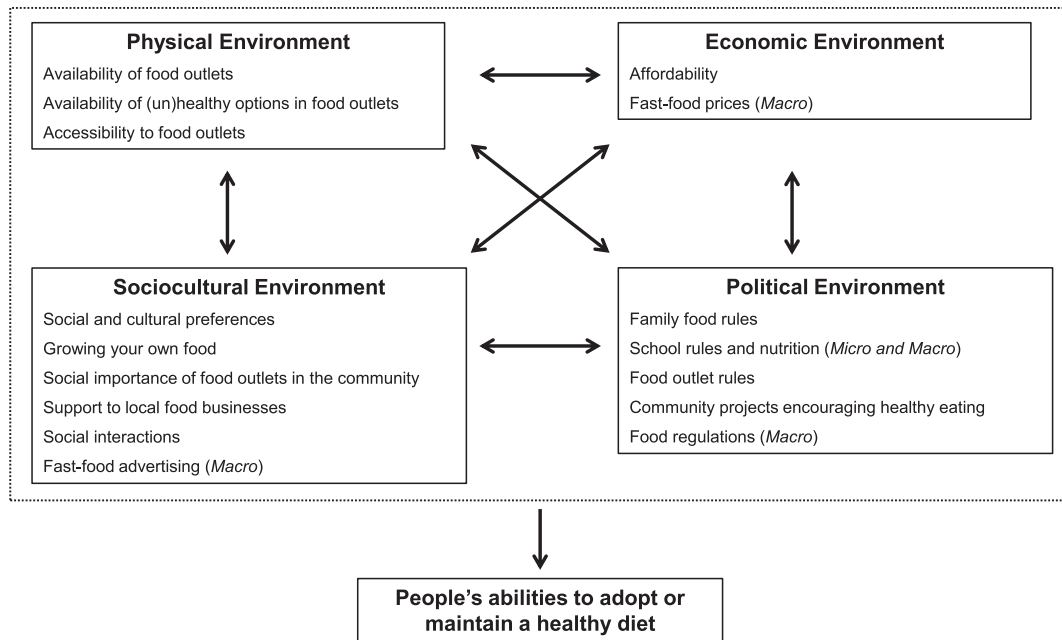
Fig. 1. Participants' PhotoVoice themes on eating behaviors, according to ANGELO Framework.

"I think of, on the flipside of that, that is great to have a grocery store within a few blocks of home. The flipside to that both [supermarket chains] tend to have limited selection of a lot of good things [...] You don't get a lot of the good fresh produce, the selection is limited compared to other stores. So we may end up actually to have to drive farther away from home to get the food that we are looking for."

Fig. 2. Accessibility to food outlets (physical) and availability of (un)healthy options in food outlets (physical).

(economic) (Fig. 4). Yet another participant stated that, despite the easy access to a local farmers' market (physical), she is deterred from shopping there due to its limited hours of operation (political) (Fig. 5).

3.1. Physical environment

Three themes were classified in the physical environment: availability of food outlets; availability of (un)healthy options in food outlets; and accessibility to food outlets. While many participants discussed the importance of having food retailers in their communities, some described how community members have coped with the lack of local grocery stores. For example, a participant explained that: " [People in her community] go to the dollar store and a lot of shopping is done there […] There is nowhere else to shop […] There is no place to buy fresh vegetables […] [dollar store is] filling the need right there."

Availability of food outlets and the availability of healthy options

within them were considered equally influential. However, many participants were skeptical about whether people actually purchase healthy food when it is available. A participant pondered: "You can't get anything healthy at [fast-food restaurants], you can still make some healthier choices at [another fast-food restaurant], but I mean, I think their salads are like 5% of their sales or something. I mean you can make healthier choices there, but I don't think people typically do."

Food outlet accessibility was discussed by most participants in terms of distance from home to the food outlets and availability of public transit, and also relative to the existence/lack of signs to make people aware of community amenities like farmers' markets and greenhouses. A participant, for instance, complained that: "They don't have a sign right by their farmers' market as you come in saying 'farmers' market', and it is a big building and there [are] a lot of things going on. I mean, somebody just coming in wouldn't realize this was a farmers' market. So, I think that is something they should look at."

"[Having ethnic restaurants in the community] makes me really enjoy it more [...] and that I can bring other people to my community and let them experience it. It is just not always the same, you know, and so there is a ton of variety and that is really exciting."

Fig. 3. Availability of food outlets (physical) and its social importance in the community (sociocultural).

"It is like an old fashioned butcher, so like they bring fresh meat in. [...] it is really good quality meat, and we don't mind it is a little more expensive than [supermarket chain] might be. [...] But it is all fresh and you are supporting a local businessman [...] this is much more convenient for us, it is right in our community."

Fig. 4. Affordability (economic), support to local food business (sociocultural), and availability of food outlets (physical).

3.2. Sociocultural environment

Six themes were identified as elements of sociocultural environment: social and cultural preferences; growing your own food; social importance of food outlets in the community; support to local food businesses; social interactions; and fast-food advertising. In the social and cultural preferences theme, most participants described why they go (or not) to some food outlets, particularly fast-food restaurants. Participants often reflected on their own experiences in the context of other people's (un)healthy food practices. Time constraints caused by busy schedules was identified as rationale for eating out, as can be seen in this quote: "I think one of the biggest barriers is time [...] if I get out of here at 6:00 p.m., I don't feel like going home and making stir fry or a big salad. [...] I think families are, mom works late and it's 'oh I will pick up a bucket of chicken', right? Or 'let's order pizza tonight', so I think

"Farmers' market does a pretty good job of putting up signs. They put up sandwich boards on the roads and stuff […] They don't always have it at the right time of day. I think because they are sort of targeting an older market, I suppose. They tend to have farmers' markets during the day and I can't always go."

Fig. 5. Accessibility (physical) and rules limiting access to food outlets (political).

that time is a barrier for sure."

Novelty and reward seemed to influence food decision-making in the face of time constraints. Some participants explained that they wanted to treat themselves to something they could not duplicate at home, as exemplified here: "[…] when you go out, you want to pick something off the menu that you can't, you don't normally make at home. Nothing tastes like say a […] burger from [fast-food restaurant]." Another participant said: "I know that [fast-food restaurant] try to offer healthier options now, which is fine. But I don't want to go to a fast-food place and have something healthy. I am not interested that way. If I am going there, I am going for something greasy […] if I want healthy, it is easier to go make something myself, right." Another participant shared the same opinion: "Well, if you really want to eat healthy, you stay home and make your food yourself."

Growing their own food was closely connected with personal values as well as the integration of a healthy diet into some participants' lives. When showing a photograph of garden tools, a participant said: "[…] my wife does some gardening. […] last year she grew a lot of vegetables […] the carrots were a big hit with the kids last year, they loved them." Having a chemical-free vegetable garden also appeared to be appealing, as described by another participant: "[…] you are always kind of worried about all the toxic stuff in your food, so it is much safer to grow your own food. At least, we know we don't put chemicals on it."

Some participants emphasized the social importance of local food establishments, such as cafeterias and farmers' markets, as a defining element of their community's identity. For example, when describing a photo of a local corner store, a participant highlighted that, although it is "just a corner store, it is one of those things that completely solidifies the physical boundaries or destinations that make up your community." Further, the intrinsic value of local food was central for some participants, especially those who emphasized the importance of supporting local businesses, regardless of food prices. A participant explained "[…] you try to give some business to the people there [farmers' market] […] it [is] like a little bit more [expensive] than the store, but I am going to buy some there all the time, because I want them to stay here in our area."

In addition to the satiety and food rewarding elements, the motivation to eat out seemed to be driven by the opportunity to socialize with family members and friends. Local, small food outlets and, more frequently, fast-food restaurants (particularly in the middle-sized population center), were seen by most participants as gathering places facilitating social interactions. One participant explained: "[Fast-food restaurant] is actually a nice meeting place. When I walk down there, I meet all sorts of neighbors in the summertime […] seniors walk over there for ice cream." Another noted that: "If any of the kids have dance recitals, or soccer games, we would typically go to that [fast-food restaurant] and meet up as a family and all go there and have like an ice cream together."

The influence of food industry, and its association with obesity trends, did not go unnoticed. Several participants commented on the deceitful nature of fast-food advertising and promotion strategies, which are a macro-level environmental factor. A participant, for instance, noted: "There [are] weight issues in our society and it seems to be more and more of a problem. You see the advertisements saying come down and get your kids a healthy meal and they can play in the park […] I would bet their [children's] meal, even though it has apple slices, it also comes with caramel sauce and I am sure their grilled cheese sandwiches […] are probably jam packed with whatever to make them taste a little bit better than just making a grilled cheese at home […] I think they misrepresent their food as healthy."

3.3. Economic environment

Affordability and fast-food prices were the two themes classified in the economic environment. Many participants revealed how financial cost plays an important role in people's decisions of where to buy groceries and eat out. When asked about how busy a fast-food restaurant was, a participant answered: "Places like that, that are cheap, you are always going to get lots of people, here, because I think cost in [town] is a big factor, in terms of some of the eating spaces that you would see. I don't think health is a big factor at all. I think it is cost that makes a difference in terms of how busy places are." Food costs were also implicated in the description of the grocery shopping behavior of another participant: "I shop at [warehouse club] […] it is typically the cheaper […] I do stop at the [local grocery store], for kind of last minute stuff […] I will go and pay the extra for the milk." Some participants also discussed the higher costs of vegetables, fruits, milk and other healthy items, often leading themselves and other people in their community to consume more unhealthy food. A participant said about a fast-food restaurant chain: "their food is cheap, right? And we are in financial difficulties right now, and you know healthier food seems to be more expensive, sometimes."

A few participants also emphasized that the pricing strategies at fast-food restaurant chains – a macro-environmental factor – often

encourage people to eat more unhealthy food for a lower price, as reported here: "We all eat there, when we get those coupons, you know the two for one coupons […] You can tell when those have come out in the mail, because everyone on the block is taking their little coupons down to [fast-food restaurant] […] I never eat at [fast-food restaurant] except for, 'oh I got these coupons'." The pricing strategies at these chain restaurants also concerned some participants as creating competition for local, small food businesses: "[Food at fast-food restaurant] is so cheap […] and they are all fast-food places that are corporations […] so they have a chain thing. The ones that have failed are the individual businesses."

3.4. Political environment

Five key themes were considered part of the political environment: family food rules; school rules and nutrition; food outlet rules; community projects encouraging healthy eating; and food regulations. Some participants shared their family rules with respect to eating out (sociocultural); rules were often related to fast-food restaurants. A participant explained how fast-food restaurants were associated with celebratory occasions: "We don't eat out fast-foods very much. You know, we have the special deals […] probably father's day my kids take me out or something, or mother's day." For others, fast-food venues were politicized as locations where foods embodied ethical stances that could be discordant with family values. This was illustrated with the behaviours of another participant who would not shop for ice cream in a fast-food restaurant because she did not "want [her child] to think that it is okay to always eat out at fast-food [restaurants]." For this participant, so pervasive is fast-food that obtaining ice-cream in this kind of food outlet could lead to "always" eating at fast-food venues, and efforts must be made to avoid that outcome.

School rules, school nutrition policy, and education were seen by a few participants as having a positive impact on healthy eating practices among children. A participant highlighted the impact of school-based nutrition education on children's dietary practices in the long term: "Actually a school program having kids learn organic gardening. […] [students] mix the compost in with the dirt, and they plant their seeds and they water them, and they tend to them until they grow up. And they have food at the end of it […] That is starting really young […] it was probably necessary, because at the 20-something, if they are not gardening now, they probably won't." While the previous quote refers to a local school policy (i.e., micro-environmental setting), other participants described school policies guided by the provincial government (i.e., a macro-environmental sector), for example: "Well [schools] have that new thing, oh that is a provincial thing, there is no more like pops or candy bars and stuff in the schools, in elementary schools or whatever, so they can't just buy junk […] whatever they have at the office is healthy stuff. They are not regulating what you are allowed to bring in the school or not, but I know in the grade one class they have to eat their sandwich before they can eat anything else that they have."

When availability of fresh produce in local food outlets was not an issue (physical), hours of operation seemed to limit people's access to healthy food, particularly in the local grocery stores and farmers' markets. This participant's quote illustrates many other participants' complaints: "It makes it impossible for me [to get to farmers' market on Fridays]. My wife might go at lunchtime if she can get away. But it would be a way better thing for a Saturday I think, myself personally." The existence of community projects encouraging healthy eating emerged as another theme. An example was given by a participant: "I know [local project is] involved with the [community organization], and I know they funded some bags to help people get their food stuff home […] My kids like the [food from the community organization]."

The last political environment-related theme was food regulation, which belongs to the macro-environmental level. Few participants questioned the role of the government in regulating family farms and farmers' markets, as illustrated by this quote: "I think the thing that has been a problem for all of Alberta's farmers' markets and vendors of that nature is food safety […] to have a separate kitchen which is the requirement, sometimes it is − it is too difficult for them. That is too bad […] Is it any safer than eating in some of our restaurants? I don't know if it is or not […]. Why should that be a restriction on whether you can make and sell something at the farmers' market?"

4. Discussion

This study reveals community-derived insights about the influences of community micro and macro physical, sociocultural, economic, and political environments on healthy eating. Although themes were classified separately for analytical purposes, the photo-stories revealed the reported influence of community environment factors as interrelated. The influence may also be additive when there are multiple facilitators or barriers for health eating (e.g., non-automobile ownership and poor public transit limit people's access to distant grocery stores). In an effort to better describe how the environmental factors seem to be interconnected within and across participants' photo-stories, the emergent themes were combined into overarching meta-themes, which are presented below.

4.1. Availability and accessibility are interrelated and only part of the healthy eating equation

While availability and access to food outlets influence people's eating behaviors (Caspi et al., 2012; Findholt et al., 2011; Papas et al., 2007; Raine et al., 2008), this study showed a myriad of other, non-physical elements in the environment that interplay with one another, reinforcing findings in recent literature (Brug, 2008; Cannuscio et al., 2014; Smith and Cummins, 2009). Participants' decisions about what, when, and where to buy and consume food were initially shaped by what was available in their community environment, but then nuanced by considerations of cost, social and cultural contexts, and by the rules and policies in place.

Consider, for example, the intersection of multiple environmental influences in poor/limited grocery store availability. Many participants described the insufficient number of grocery store options close to their homes, where they could find a variety of low-cost and good quality food, including fresh produce. While most participants felt affected by the poor access to affordable and fresh foods in local communities to some extent, some of them explained that they usually drive outside of their community to chain grocery stores or warehouses to purchase that kind of food. However, transportation, marked by poor access to public transit (if available at all) or no private vehicle, were considered by few participants as a barrier limiting their and other people's food purchases and, consequently, food choices. For those people, grocery shopping would involve biking long distances to chain grocery stores or walking to nearby convenience stores (or even dollar stores), which usually sell energy-dense food and have limited healthy food items available, typically at a high cost (Dean and Elliott, 2012; Findholt et al., 2011; Fleischhacker et al., 2011; Lovasi et al., 2009; McDermott and Stephens, 2010; Smith and Cummins, 2009). Although household income inequalities were not the focus of this study, these findings raise questions about the accessibility to healthy and affordable food options by low-income families living in communities with a precarious food environment and deficient public transportation system (Caspi et al., 2012; Darmon and

Drewnowski, 2008; Patrick and Cheesbrough, 2012). Critical, here, is the influence of the macro-political environment on the accessibility to food outlets in the community. It is often municipal policies that restrict (or allow) certain food outlets from opening in different areas of the community through zoning or restrictive covenant agreements. The macro-political environment influences people's accessibility to a variety of food outlets in their own community environment, defining the relative ease or difficulty of obtaining food and ultimately shaping people's eating behaviors.

Macro- and micro-environmental policies that affect accessibility to healthy food illustrate the interrelationship between physical and non-physical environmental attributes; i.e., what is available in the community may not be necessarily accessible (Dean and Elliott, 2012; Glanz et al., 2005; Sallis and Glanz, 2009; Story et al., 2008; WHO, 2004). For instance, community food projects (e.g., local food box programs) and farmers' markets were seen as examples of opportunities to access healthy food. However, participants also noted that local food rules (e.g., business hours) and regulations and policies (e.g., new federal inspection regulations affecting local, family cattle farmers' businesses) serve as impediments to community residents' ability to purchase local, healthy food. Limited hours of operation of food outlets were reported to preclude people from purchasing healthy food at both local grocery stores and farmers' markets. Limited hours of operation for food outlets is of concern because past research suggests a relationship between limited hours and lower fruit and vegetable consumption (Caspi et al., 2012).

4.2. Local food is synonymous with healthy eating

A desire to support local food outlets (e.g., farmers' markets and family-run food establishments), affiliation with community food initiatives (e.g., food box programs), and growing food (either in community gardens or backyards) all contribute towards people's food consumption decisions (Blake et al., 2010; Castellanos et al., 2013; Findholt et al., 2011). The different themes that emerged in this study revealed that the meaning of local food is constructed relative to physical and social boundaries of the community environment: "local food" represents food that is grown, produced, or prepared within and by the community. Healthfulness is a secondary - and intrinsically related - meaning attached to the idea of local food. The "local" component of local food seemed to enhance food proprieties and health benefits for participants; therefore, consuming local food seemed to qualify eating as healthy.

Some participants described their choice to patronize locally-owned food outlets and local food projects even when they have to sacrifice price and proximity. Participants also said they consume locally grown produce and homemade foods because they are healthy ("safe and tasty too"). In this way, anti-consumerism (Autio et al., 2013; Monteiro et al., 2015) ideals seemed to play little role on their decisions; the emphasis was on the intrinsic value of the local food to the participants. Similarly, participants' decisions to grow their own food seemed to be strongly shaped by their perceptions of the health and nutrition benefits, safety, sustainability, quality, and tastiness of the fresh produce.

These study findings add to the current literature showing that food provenance has become a factor of increasing concern and interest (Autio et al., 2013; Blake et al., 2010). Social movements and civil society organizations have advocated for local food to encourage healthy eating, while also supporting local, family farming communities. Supporting local farmers is frequently viewed as a critical component to maintaining vibrant communities, while also preserving local food cultures and food security. Additionally, supporting local foodways can be seen as a means of protecting environmentally sustainable food systems (Autio et al.,

2013; Monteiro et al., 2015). All of these discourses advocating for the consumption of local food among participants seemed to be anchored in the idea of avoiding globalized foods and food practices — a synonym of unhealthy eating. In this context, local food emerges as an alternative, albeit frequently expensive (Blake et al., 2010), healthy food.

4.3. Local food places for healthy eating help define community identity

Local food businesses (e.g., restaurants and farmers' market stalls) and community-based food initiatives (e.g., food box programs and community gardens) were linked with the idea of healthy eating and seemed to evoke a common, shared (and desirable) community identity. Buying and consuming healthy food that is grown, produced, and prepared locally was seen as a way to promote connectedness with the community — as if it consolidated food shopping destinations and increased the quality of life in the communities.

In the participants' photo-stories, the location of food outlets within the community territory revealed attached meanings and social values, thereby transforming food outlets into food *places*. The food places seemed to be instrumental in both identification of community-territory boundaries and creation of a singular identity for the community, contributing to the definition of social fabric of the community.

4.4. Communal dining (commensality) does not necessarily mean healthy eating

Social interactions are an important element in people's food environments (Cannuscio et al., 2014). Commensality has been emphasized as part of healthy eating because it evokes the ideal of sharing meals with others (Watson, 2006) and the practice of eating at a slow pace in a suitable environment (Brazil, 2014). The culture of eating in company of others also carries emotional and symbolic values that foster conviviality and quality of life (Brazil, 2014; Watson, 2006); importantly, homemade meals are central in the art of eating together. An example of this comes from an innovative approach (Monteiro et al., 2015) adopted in the Brazilian Dietary Guidelines (Brazil, 2014) that takes the sociability of eating behaviors into account when discussing opportunities for healthy eating, especially in home settings. In addition to the focus on meals instead of nutrients, this guideline highlights the importance of preparing and enjoying meals with family and friends as part of a strategy to promote healthy eating behaviors.

However, the current study findings reveal a sociocultural preference for eating fast-foods together in fast-food restaurants. Indeed, fast-food restaurants seemed to have become a favorite place for people to socialize, acting as a location for strengthening social connections among family members and friends. This preference may be driven by fast-food restaurants' low costs (Powell et al., 2013) vis-à-vis local restaurants' prices, as well as the use of high-energy foods as rewards and treats (Findholt et al., 2011) — a topic discussed in detail below. While socializing in fast-food restaurants is associated with high socioeconomic status in developing countries (Watson, 2006), in these four Canadian communities they were merely treated as places for entertaining family and cementing social bonds at a low financial cost. It is worthy to note that family food rules (political) and preferences (sociocultural) are illustrative of personal values that, in turn, reflect (and resist) hegemonic societal norms, regulations and political environments. Fast-food restaurants can be places where families celebrate special occasions and perform their social identities. For example, some families may consume food at venues that illustrate

the social location they aspire to, while others choose venues that reflect their knowledge and comfort with the social location they inhabit (Beagan et al., 2015; Watson, 2006).

Not only families, but older adults were also socializing at fast-food restaurants, because they get discounts, receive free coffee refills, and can spend unlimited time visiting with their peers without being strongly pressured to leave. While part of restaurant marketing (a macro-economic factor), this strategy also strengthens social ties among older people in the community. The drawback, however, is that the elderly population — a generation who were less exposed to fast-food's influences — may begin consuming more processed unhealthy foods. Taken together, these two findings are concerning: fast-food incentives combined with a friendly atmosphere for socialization may be adversely affecting people's food behaviors, particularly among seniors and families.

Participants often drew on photo-stories of positive school food policies in their communities such as replacing ultra-processed food and drink products with healthier options in school cafeterias. These policies were seen as essential to comprehensive, effective interventions to support the younger generation in healthy eating practices that may help revert the increasing trend of frequently consuming ready-to-eat foods and eating out in fast-food restaurants with peers. Participants also suggested the incorporation of gardening activities and mandatory cooking lessons into formal school curriculum. School policies regarding food availability and sales (Raine et al., 2008; Sallis and Glanz, 2009) and gardening activities (Findholt et al., 2011) have been recommended elsewhere as strategies to encourage children and families to increase their consumption of produce and home-prepared and -cooked meals.

4.5. Rewarding an achievement or celebrating special occasions with highly processed foods is socially accepted

Study findings revealed that use of highly palatable, but high-energy foods (especially foods bought at fast-food restaurants) as a "reward" (for self or others) seemed to be common place. Apart from costs (Dean and Elliott, 2012; Findholt et al., 2011; Lofink, 2012; Smith and Cummins, 2009) and convenience of such foods fitting into busy schedules (Castellanos et al., 2013; Darmon and Drewnowski, 2008; Dean and Elliott, 2012; Findholt et al., 2011), people also reported celebration of important events (Watson, 2006) and tastiness (Castellanos et al., 2013; Darmon and Drewnowski, 2008; Glanz et al., 2005; Lofink, 2012) as reasons for using these high-energy foods as rewards. In the photo-stories, participants clearly portrayed the health risks of consuming ultra-processed foods, but that seemed to play a minor role in their food decisions related to special occasions (e.g., birthday parties and sport events) or when they want to treat themselves with something they could not duplicate at home. When talking about parental rules, participants defined those circumstances when eating out with their children, particularly in fast-food restaurants, may be allowed. That differs from previous studies showing family food rules were more related to encouraging healthy eating habits in home settings (Dean and Elliott, 2012; Lofink, 2012; Watts et al., 2015). Rewarding children and adults with highly processed foods, even if only at special occasions, is concerning: it attaches positive emotional and symbolic values to consumption of nutritionally poor foods and may send a wrong message about food intake.

4.6. Food costs seemed to be driving forces in food decisions

Food costs can be considered a key factor in people's decision of what, when, and where to purchase and consume food (Cannuscio et al., 2014). Most participants described healthy items as costing more than unhealthy items; they also mentioned that fast-food restaurants would have a competitive advantage over local, small restaurants because of coupons, promotions, and the comparatively low cost of fast-food preparation. These findings corroborate recent literature showing that prices of unhealthy foods, such as sodas and pizzas, have reduced over time (Duffey et al., 2010) as well as relatively high price differences between healthy and less healthy food-based diet patterns per person a day (Fleischhacker et al., 2011; Powell et al., 2013; Rao et al., 2013). This combination of an increase in healthy food prices and real reduction of unhealthy food prices (Darmon and Drewnowski, 2008; Powell et al., 2013) seemed to have important implications for people's dietary behaviors.

Participants confirmed findings from other studies that showed the lower prices of unhealthy items purchased away-from-home (Castellanos et al., 2013; Duffey et al., 2010) would make these types of ultra-processed foods even more appealing. On the other hand, pricing strategies of fast-food restaurant chains and manufacturers of highly processed food products (e.g., lowering prices and offering discounts and promotions) are heavily advertised through multiple media (Glanz et al., 2005) and that may influence people's perceptions of food cost even when a fast-food-based diet is more expensive than a healthy diet (McDermott and Stephens, 2010). Price regulation and policies subsidizing healthy food (e.g., fresh produce and dairy products) would be effective in the reduction of economic barriers faced by families, particularly those with low income (Glanz et al., 2005; Smith and Cummins, 2009; WHO, 2004), and could help decrease the socioeconomic inequalities in diet (Darmon and Drewnowski, 2008; Lovasi et al., 2009).

4.7. Macro-environmental influences are latent in food decisions

Across photo-stories, participants focused more often on micro-environmental attributes of their communities than those of the macro-environment. Yet, macro-environmental attributes played a foundational role in participant perceptions as implicated in a number of photo-stories, e.g., about strict government regulations (macro-environment) to farmers' markets that imposed barriers to family businesses (micro-environment).

Although macro-sociocultural environments are well-known for simultaneously shaping and mirroring people's beliefs and attitudes toward eating behaviors (Brug, 2008; Glanz et al., 2005; Smith and Cummins, 2009), findings showed that participants were more aware of the influences exerted by families, community environments, and other immediate surroundings (micro-environment). Participants perceived only the fast-food industry and municipal, provincial, and federal governments as directly influencing the nature of people's opportunities to eat healthy food. Fast-food advertising strategies (sociocultural) and prices (economic) were seen as shaping both food consumption and eating modes, whereas governmental regulations for community-based food initiatives (political) and provincial school nutrition policies (political) were perceived affecting the availability and accessibility of food outlets in each of the community environments.

This is of concern considering people's greater exposure to persuasive commercial advertisement on food and eating practices (Story et al., 2008). Indeed, the effects of this exposure were reflected in the participants' descriptions of their own and other people's eating practices. Some participants, for instance, when showing pictures of a fast-food restaurant chain, repeatedly and unintentionally mentioned its slogan to indicate that was a place for eating fresh food and, therefore, associated with a healthy diet. Although the present study did not focus on the meanings of healthy eating (Beagan et al., 2015), this is clear evidence of the nuanced power of food advertising and marketing in shaping

people's food beliefs, including their interpretations of what a balanced, healthy diet is.

While providing people with knowledge on diet is an important element of health promotion, raising awareness about the macro influences of media advertising and TV shows may be more effective as people are frequently exposed to aggressive advertisements on food and eating practices (Dean and Elliott, 2012; Monteiro et al., 2015; Story et al., 2008; WHO, 2004). Important steps taken in this direction are the food media literacy initiatives led mostly by non-profit organizations (Dietz, 2013) and the inclusion of food-industry advertising strategies in food guidelines (Brazil, 2014) to support informed decision-making for healthy eating. In this way, people are encouraged to think critically about seductive food marketing and advertising strategies. Additionally, international and government agencies should take the lead in the regulation of food marketing, including the application of advertising restrictions (Dietz, 2013; WHO, 2004). An example is the Canadian province of Quebec that in 1980, instead of relying on food industry self-regulation, banned commercial advertising targeting children under the age of 12 (Raine et al., 2013). Given the lack of studies on overall macro-level sociocultural environment, and particularly on food marketing and advertising in the socioecological literature (Brug et al., 2008; Kirk et al., 2010), more research should be done to better inform population-wide strategies for supportive food environments.

This study brings important findings to the literature on food environments and dietary behaviors. First, it enhances the discussion of the broad influence of environment on people's dietary behaviors by identifying various domains of environmental barriers to and opportunities for healthy eating and revealing that the food environment is made up of a diverse range of attributes of physical, sociocultural, economic, and political environments. Second, it addresses an important knowledge gap in the literature by showing that, through community's perspectives, the environmental attributes are not separated factors affecting independently and unrelatedly eating behaviors. In contrast, this study reveals the interplay of environmental factors shaping how people interpret and interact with their food environments. The coupled use of PhotoVoice as a data collection method with ANGELO framework as a conceptual tool for data analysis was instrumental to capture these environmental interactions influencing eating behaviors. While physical attributes of the spaces are more easily portrayed, the stories revealed by the photographs transcended the availability- and accessibility-related topics. By dissecting each facet of the environment, while examining the interrelationships between environmental types and levels at once (Dean and Elliott, 2012), the framework helped reveal the complex nature of the food environment. Third, this study shows that some environmental features (e.g., the desire of supporting local food businesses) are missing in socioecological studies investigating food environments.

4.8. Limitations and strengths

Common to many in-depth qualitative CBPR studies, the limitations of this research are related to the localized data collection, purposive sampling, and participant self-selection, all which may limit the findings' transferability. The present findings may be specific to the Canadian urban communities and their general population (i.e., from which current study participants were recruited). Different environmental factors influencing eating behaviors may emerge from similar studies conducted in other geographic contexts (e.g., African American neighborhoods or Canadian indigenous communities) and/or with specific demographic groups (e.g., low-income single seniors or immigrant families with toddlers). The age and sex imbalance in the sample did not result in

different perceptions of barriers and facilitators for healthy eating. Themes were similar across demographic groups and data saturation was reached. However, despite the efforts to recruit participants from across the entire population, some groups (e.g., visible minority immigrants) did not take part of this study; therefore, their perceptions may not be represented here.

The framing of the study purpose as "about healthy eating in your community" to participants during recruitment may have inadvertently focused their attention on micro-environment attributes, which were more predominant in the photo-stories than were macro-environmental attributes. The macro-environment was implicated as a latent factor in several topics discussed by participants, and may have been elaborated had a third interview been added to the data collection protocol. Conversely, if participants had been introduced to and asked specifically to talk about the various macro-environmental factors relative to healthy eating (rather than a focus on their community and this behavior), a different pattern may have emerged from the PhotoVoice data. This possibility creates a new opportunity to conduct a similar study with a specific photography mission that encourages participants to explore each category within the ANGELO framework while taking pictures in their community.

The use of PhotoVoice to reveal community insight and experience with their food environments is the main strength of this study. The combination of photographs and stories produced a rich qualitative dataset that would not be captured otherwise. Collecting community members' voices evoked by their portraits of food environment revealed the real and experienced environment where dietary behaviors are enacted. A deep understanding of the concrete reality where people make food decisions and how they interact with and interpret their surroundings may be useful to practitioners for tailoring community-based healthy eating interventions. By revealing neglected environmental attributes in the current literature and the complex environmental interrelationships shaping eating behaviors, study findings may contribute to critical investigation of the food environment and determine the extent of the environmental influences.

5. Conclusions

This PhotoVoice study revealed community members' perceptions of the environmental influences on their healthy eating behaviors. It showed that physical environmental features are only one of the driving forces of food environment. A myriad of inter-related environmental factors seem to shape people's abilities to purchase and consume healthy food and may eclipse the influences of what and where the (un)healthy food is available in the community environment. Further research on complex dynamics of the local food environment and how it influences people's dietary behaviors is warranted. ANGELO framework can be a useful tool to reveal the broad range of environmental factors influencing eating behaviors.

Interventions targeting specific barriers in each environmental type one at a time are important; however, the complexity of food environments, as shown in this study, also critically needs to be addressed in order to increase the likelihood of population-level interventions to produce long-lasting effects. Health promotion strategies should be anchored in the understanding that people's behaviors are products of their interactions with their environment, recognizing that multiple forces seem to shape people's abilities to make healthy eating decisions. For example, bringing a farmers' market (physical) to a community where low-income working families are supportive of local food businesses (sociocultural) is only one step to promote healthy eating. Affordable food options (economic) and convenient hours of operation (political)

must complement the strategy. In another example, schools may ban sales of highly processed foods in their premises and incorporate food literacy activities into curricula (political). However, if students are not educated to critically interpret food marketing messages (sociocultural) in places lacking food marketing regulation (political), they may not adopt healthy eating behaviors.

Recognizing the multitude of the environmental factors as well as the sociocultural context of eating may help explain the failure or unexpected impact of community-based interventions that have narrowly focused on one or two environmental factors. The present findings and future work in this area can inform the design and implementation of tailored and culturally relevant community-level interventions for supporting the adoption of healthy eating behaviors.

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Understanding the local food environment: A participatory photovoice project in a low-income area in Madrid, Spain

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ABSTRACT

There is a need to partner between researchers, practitioners and residents to increase our understanding of environmental influences on dietary behaviors. We used the participatory method of Photovoice to understand key determinants of the local food environment influencing residents' diets. This project was conducted in Villaverde, a low-income area located in Madrid, Spain. From February to May 2015, 24 residents working in four Photovoice groups, took photographs related to their local food environment. Each group analyzed and critically discussed their photographs in small group sessions. Through a consensus-building process, participants identified 30 emerging categories, which followed five conceptual themes related to their food environment: 1) eating in moderation, 2) cultural diversity, 3) food stores, 4) social relationships and 5) economic crisis and poverty. Participants, researchers and practitioners successfully collaborated in analyzing, writing, disseminating the project results, and directly informing local policy-makers, media, and other residents. The project results may guide community-generated interventions for promoting a healthier food environment.

1. Introduction

In an effort to counter the obesity pandemic, many cities and countries are struggling to define effective policies, which go beyond individual behavior changes, and have started developing different population strategies for prevention (Franco et al., 2015; Chow et al., 2009; Rose, 1985). Tackling unhealthy diets and diet-related health outcomes at the population level requires a deep understanding of their social determinants (Schwartz and Diez-RouX, 2001; Rose, 1985). So far, approaches targeting individuals have had low success rates as individual choices are shaped by the local food environments where people live and work (Katan, 2009; Rose, 1985).

Over the last two decades, there has been a surge in addressing the relationship of urban food environments and diet-related health outcomes (Cobb et al., 2015; Caspi et al., 2012; Giskes et al., 2010; Feng et al., 2010; Holsten, 2009). As a result, research focusing on the link between local food environments and diet quality has emerged (Black et al., 2014; Ni Mhurchu et al., 2013; Caspi et al., 2012; Glanz, 2009; Mckinnon et al., 2009; Franco et al., 2009). Many of these studies have looked for associations between objectively measured aspects of the food environment and health behaviors, using mainly quantitative methodologies (Thornton et al., 2013; Kelly et al., 2011; Charreire et al., 2010). These studies have highlighted that unhealthier local food environments tend to correlate with low-socioeconomic neighborhoods (Stark et al., 2013; Feng et al., 2010; Rundle et al., 2009; Lovasi et al., 2009; Franco et al., 2008). Thus, understanding the processes by which food environment aspects influence dietary behaviors, particularly in low-income neighborhoods, is warranted.

One of the challenges when studying this relationship is including residents' insights on their local food environment (Bridle-Fitzpatrick, 2015; Caspi et al., 2012; Gustafson et al., 2011; Munoz-Plaza et al., 2008; Moore et al., 2008). Therefore, Participatory Action Research

(P.A.R) may be a suitable approach for understanding the local food environment from a residents' perspective, in order to design more effective interventions that promote healthier food environments (Cannuscio et al., 2014; Vasquez et al., 2007; Israel et al., 2006).

Community-Based Participatory Research (CBPR) is an approach that acknowledges community as an equal partner throughout the research and action process (Caldwell et al., 2015; Israel et al., 2010). Photovoice is a participatory method coming out of CBPR and PAR, defined as "a process by which people can identify, represent, and enhance their community through a specific photographic technique" (Wang and Burris, 1997). In the Photovoice process, participants use photography to document the features they think that are related to a particular community issue, and to inform social action (Wang and Burris, 1997). Thereby, Photovoice can facilitate a process of social action by: 1) involving residents in documenting their community needs and concerns with their photographs and narratives; 2) engaging participants in a reflective process, where they critically discuss and analyze their local food environment; and 3) disseminating participant-generated results with the community (e.g. with a photography exhibition) and local policy-makers (e.g. translating project results into food policies) (Murray and Nash, 2016; Catalani and Minkler, 2010; Belon et al., 2014). Thus, Photovoice allows researchers to detect salient aspects of the community, otherwise hidden behind quantitative assessments (Murray and Nash, 2016; Sanon et al., 2014; Belon et al., 2014). Previous seminal articles on Photovoice have highlighted how this methodology remains underused by public health researchers (Bugos et al., 2014; Fitzpatrick et al., 2012; Catalani and Minkler, 2010; Hergenrather et al., 2009).

This study reports on a participatory research initiative that brought together residents from a low-income area, public health practitioners (Madrid Public Health Institute) and academia (university-based researchers specialized in Social Epidemiology and Urban Health).

Our aim was to conduct a Photovoice project with adult residents of a low-income urban area to understand the characteristics of the local food environment influencing residents' diets.

2. Methods

This Photovoice project was conducted from January to December 2015, as part of the larger project Heart Healthy Hoods (hhhproject. eu), focusing on how social and physical characteristics of the Madrid city affect residents' cardiovascular health (Bilal et al., 2016; Carreno et al., 2015). The Ethics Research Committee of the Madrid Health Care System approved the study.

2.1. Study setting

The study area covered two administrative low-income neighborhoods (Los Rosales and San Cristobal), located within the District of Villaverde, in the city of Madrid. We based this Photovoice project in this area because of its low-income socioeconomic characteristics, but also because of its background of high social participation. Fig. 1 depicts the study area.

According to Madrid Municipal Registry 2016 data, both neighborhoods share a high population density, covering a total urban area of 2.6 km^2, and a total population of 51.410 residents. Los Rosales' and San Cristobal's population are made up of a 24.8% and a 44.6% of foreign-born residents, respectively (vs. 19.3% in Madrid). The unemployment rate was 13.5% in Los Rosales, and 19.5% in San Cristobal, in comparison to Madrid´s rate of 10.2%. Regarding educational level, 29.2% (Los Rosales) and 39.2% (San Cristobal) of the residents had a low educational level (highest level of education being high school or less), compared to 6.8% in Madrid. Car ownership rates were 41.2% in Los Rosales, and 10.9% in San Cristobal, compared to Madrid´s rate of 45.8% (Statistics, N. I. O. 2015).

The main research partner of this project was the Villaverde Health Promotion Center, which is part of Madrid Public Health Institute, associated to Madrid City Council. Other partners involved in this participatory project were the NGO "Education, culture and solidarity" and the community center in San Cristobal.

2.2. Participants

We used a purposive sampling strategy to engage participants. We invited adults who 1) lived in the neighborhood for more than one year, 2) spoke Spanish, 3) had no impediment to manage a digital camera, and 4) agreed to attend five group sessions during one month and a half. All eligible residents agreeing to participate completed informed consents, image release forms, and a survey about demographic information.

We based recruitment on residence location. Staff members of the local Health Promotion Center facilitated participants´ recruitment and retention. They used multiple recruitment strategies such as distributing information sheets, and conducting brief presentations in neighborhood associations and within health promotion workshops at their Health Promotion Center. Finally, recruitment resulted in a total of 24 adult participants.

2.3. Photovoice procedure

We set up four Photovoice groups, two at each neighborhood. Final composition of the four groups was: 1) six men living in Los Rosales, 2) six women living in Los Rosales, 3) four men living in San Cristobal, and 4) eight women living in San Cristobal. Each group met at least for five sessions, which were held weekly and lasted approximately two hours. Each small discussion group decided its convenient time and location to meet weekly. Both San Cristobal´s groups ended up meeting seven times due to participants' difficulties to attend group sessions. Co-facilitators (an academic-based researcher and a public health practitioner) facilitated each of the four Photovoice groups. We provided healthy foods at each group session, which were audio recorded and transcribed verbatim.

As in previous Photovoice projects, we broke our group sessions down into an initial group meeting, several small group discussions sessions, and a final meeting (Hergenrather et al., 2009). In session 1, we explained the project aims and scope, gave out digital cameras, collected demographics, and discussed an overview of the group sessions schedule. Participants took part in a one-hour photography workshop lead by a professional photographer, who also informed about the ethics of taking photographs and their related consent forms. Participants were instructed to obtain consent from any person they photographed, and to return the digital cameras once the project finished. At the end of this session, we invited participants to "*take pictures of all the features related to the food environment in your neighborhood over the next week*". Although we did not set any limit on how many photographs to take, co-facilitators asked participants to limit the number of images to the five that they believed were the most important. Before session 2, participants brought the five images they decided to the Health Promotion Center in order to be color-printed by researchers.

Sessions 2–4 consisted of small group discussions, where we discussed each selected participant-produced photograph. Facilitators used the SHOWED mnemonic method to guide discussions on why participants took that photograph and what it meant to them (Wang and Burris, 1997; Wallerstein and Bernstein, 1988). The SHOWED includes 5 questions: *What do you See here? What is really Happening? How does this relate to Our lives? Why does this problem or strength Exist? What can we Do about it?* (Catalani and Minkler, 2010; Wallerstein and Bernstein, 1988). Facilitators only intervened during these small discussion groups to explain the objectives of each session, to involve everyone, and to make sure that each participant
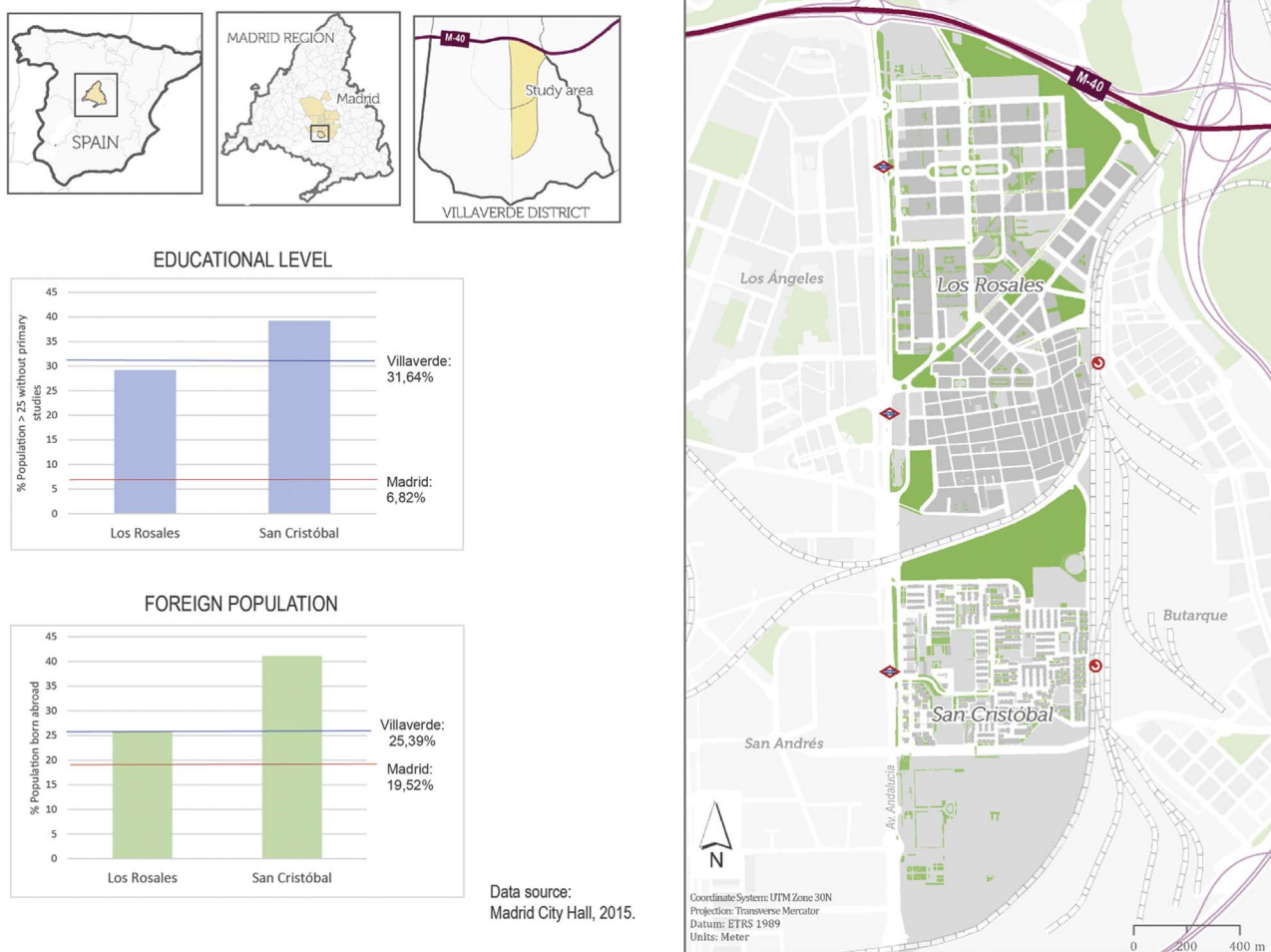
Fig. 1. Photovoice project study area, Villaverde, Spain, 2016.

had time to discuss their selected photographs with the group equally In session 5, participants selected the photographs they wanted to be published or used in future dissemination activities (e.g. public photography exhibition).

Once the four Photovoice groups finished their group sessions, we held a common meeting with all Photovoice participants to: 1) get groups to know each other, 2) provide each participant with a personal portrait taken by the professional photographer, as an acknowledgment of their work, and 3) decide future steps regarding the future project dissemination strategies.

2.4. Participatory data analysis

Following Wang and Burris guidelines, we carried out a participatory analysis of the data to include Photovoice participants throughout the entire research process (Wang and Burris, 1997; Shea et al., 2013).

First, each participant selected first the five photographs they thought best reflected their neighborhood food environment strengths and needs. Then, participants contextualized and critically analyzed these photographs, guided by the SHOWED questions during the small group discussion sessions 3 and 4. In the last group session, each Photovoice group sorted together their photographs into categories, emerging from their photographs and the discussions that arose from these images (Wang and Burris, 1997). They also chose the final photographs they wanted to be included in the photobook, and the photographic exhibition.

Participants´ categories were then grouped into broader themes by the co-authors, using the deductive analytical strategy of "successive

approximation", a method "of qualitative data analysis in which the researcher repeatedly moves back and forth between the empirical data and abstract concepts or theories"(Mahmood et al., 2012; Neuman, 2011). To enhance credibility and confirmability, these themes were later member-checked with participants, so participants could change photographs or comments they preferred not to share (Bugos et al., 2014).

3. Results

Twenty-four residents, aged 31−72 (mean age, 51.4) enrolled in this Photovoice project. More than half were female and five were foreign-born. Fifteen participants had a low educational level, seven lived with monthly household incomes lower than 900€ (≈982$), and four with monthly household incomes lower than 600€ (≈655$). A broader description of participants' sociodemographic characteristics is presented in Table 1.

Participants took a total of 163 photographs during the entire Photovoice project, and selected 31 as the ones best reflecting their local food environment. They identified 30 categories emerging from these photographs and their corresponding narratives. These categories were then organized around five themes: (1) eating in moderation, (2) cultural diversity, (3) food stores, (4) social relationships, and (5) economic crisis and poverty. Participants' results are presented accordingly to these five themes, following participants' selected photographs, their SHOWED-based narratives, and other group members related discussions.

Table 1

Demographics of Photovoice participants (n=24), Villaverde, Spain, 2016.

	Female (N=14)	Male (N=10)	Photovoice participants (N=24)
Foreign-born	3	2	5
Highest level of education			
College degree	1	1	2
High-school graduate	5	4	9
Not a high-school graduate	8	5	13
Employment			
Employed	1	2	3
Unemployed	4	4	8
Retired	3	3	6
Housewives	6	–	6
Not reported	–	1	1
Median household income/ month			
< 600€	2	2	4
≥600€-1200€	5	4	9
≥1200€	7	4	11
Living with spouse or partner in their household	11	9	20
Primary food purchaser for their household	12	6	18

3.1. Theme 1: Eating in moderation

The concept of eating in moderation was a topic of discussion that emerged in the four Photovoice groups. Participants acknowledged unhealthy foods as a health problem influencing their diet's quality, but defended that if consumed in moderation, these foods could still be healthy, as shown in Fig. 2(a).

They emphasized that controlling portion sizes was key, as one 72-year-old participant explained regarding Fig. 2(b): *"that´s what we say… that it is not harmful, if consumed moderately. But, if you scarf one wash tub of these down every day…"* Other participants stressed how they enjoyed eating these food products depicted in Fig. 2, *"everything I like is either illegal or fattening, not always the best*

for our lives and our health" (Male, 51).

3.2. Theme 2: Cultural diversity

The study area presents a great ethnical diversity. While discussing Fig. 3(a), one participant noted: *"cultures, there are over 60 or more than 80, I do not know"* (Female, 44). This cultural diversity of the neighborhood was recognized by all Photovoice groups as a direct influence on the neighborhood food environment. Some participants´ discussion related to how new food products were nowadays available in the neighborhood, due to the fact that their immigrant neighbors tried to consume the traditional foods they ate in their home countries: *"variety has enriched street markets, there are more foreign products, they sell bananas and foods they didn't before"* (Male, 53 discussing Fig. 3(a)). Some participants also described how they were consequently incorporating these culturally diverse "new" foods (e.g. cassava) into their diets.

Others were more reluctant to incorporate these cultural diverse foods, *"lots of kebab chains have appeared last year in the neighborhood. What I want to reflect here is that I still don´t know what a kebab is, we eat them because of their taste and smell, but I don´t know what they are putting inside …"* (Male, 53) and talked over the relevance of preserving traditional foods (Fig. 3(b)) and traditional food preparation techniques, *"nowadays you find twenty millions of these super fancy restaurants, but if you want to eat a good Spanish omelette, you can't find it. In Villaverde you still do."* (Male, 70).

3.3. Theme 3: Food stores

Overall, there was a consensus that small traditional food stores contributed to residents' healthy diets. One participant claimed while discussing Fig. 4(a) that, *"we have to protect these stores against other retail types such as supermarkets or street markets, especially in terms of places where you can by fresh food"* (Male, 66). The personalized customer service of these traditional neighborhood food stores was discussed as an important asset of the neighborhood food environment: *"traditional shopkeepers are the ones that give more*

Photograph: "**Bakery**"

"The tray came just out of the oven, with an appealing look and such a smell…so tasty!"

"They have a lot of fats because these products are mostly made of saturated fats"

"Just the once will not hurt"

(Female, 36)

Photograph: "**Saturated fats: chorizos**"

"We are looking at very appetizing products"

"Awesome for the palate. If abusing, your cholesterol will go through the roof"

"Moderation, a lot of moderation"

(Male, 69)

Fig. 2. (a) Photograph: "Bakery"; Category: Eating in moderation; Theme: Eating in moderation. (b) Photograph: "Saturated fats: chorizos"; Category: Occasional consumption products; Theme: Eating in moderation.

Photograph: "**Melon and cassava**"

"The stalls of the Street Market reflect the cultural diversity of our neighborhoods"

"We have to encourage people to try and prepare new foods…to diversify their diets"

(Female, 40)

Photograph: "**The Spanish omelette**"

"We see a very tempting Spanish omelette"

"The omelette has a very high nutritional value, because of the eggs and the potatoes"

(Male, 70)

Fig. 3. (a) Photograph: "Melon and cassava"; Category: International Food; Theme: Cultural diversity. (b) Photograph: "The Spanish omelette"; Category: Traditional foods; Theme: Cultural diversity.

confidence, there (at supermarkets) you purchase products randomly, you do not really know…, here (at the neighborhood fishmongers) you deal directly with the vendor, which always inspires trust" (Female, 36).

Residents also highlighted the presence of street markets in their neighborhood, as a food outlet type offering them a wide variety of affordable fresh foods (Fig. 4(b)). On the other hand, participants stressed that supermarkets' marketing strategies focused on trying to make customers buy more: "the bad thing for me is that we as

customers are subjected to a rampant consumerism. (…) that propaganda of take three and pay only for two makes us consume more than we should" (Male, 67).

3.4. Theme 4: Social relationships

The opportunity to engage in social activities while going shopping was viewed as a positive asset, especially "for elderly people, going shopping might be the only moment of the day for socializing and

Photograph: "**At the fishmonger´s shop**"

"The fishmonger is with one of his forever customers, the ones doing their grocery shopping always there"

"They keep their customers coming, because they sell high-quality fresh fish"

"Vegetables, fish, meat and fruits are very healthy"

(Female, 46)

Photograph: "**San Cristobal Street Market**"

" A great variety of fruits and vegetables, that come on!, so colourful I can't stop having my eyes on them."

"The foods they sell are healthy"

"This teaches us that we can eat a wide variety of low-cost healthy foods"

(Female, 46)

Fig. 4. (a) Photograph: "At the fishmonger's shop"; Category: Customer service; Theme: Food stores. (b) Photograph: "San Cristobal Street Market"; Category: Street markets vs. supermarkets; Theme: Food stores.

Photograph: **"Friends on the terrace"**

"I think that is very healthy to have some beers at the terrace with friends"

"It´s a everyday situation, a way to gather with friends"

"We have to be willing to take time out whenever we can to enjoy with the ones you love, with a beer, etc"

(Female, 51)

Photograph: **"Sewing workshop"**

"They´re eating while gathering with friends, they sew and have a chat"

"Being accompanied and with friends improve their self-esteem"

"Promote these workshops for widows feeling lonely. Encourage more women to engage in these activities"

(Female, 59)

Fig. 5. (a) Photograph: "Friends on the terrace"; Category: Food & Leisure; Theme: Social relationships. (b) Photograph: "Sewing workshop"; Category: Eating together; Theme: Social relationships.

talking with neighbors and shop keepers" (Male, 53). Another participant added, *"Grocery shopping pushes us to leave home. Grocery shopping by foot may be a very healthy daily activity since it allows us to socialize and be physically active"* (Male, 53). Through social networks residents connect and support each other, as one participant discussed (Fig. 5(a)), *"neighbors come to the bar to interact with people and there, they talk for a while and that's good also for distracting a little bit"* (Female, 53). In this sense, street markets were viewed as a place for community gathering, *"Daily encounters at the market are of great value, improving the sense of belonging to the neighborhood. These encounters may also serve as a social protection net against loneliness"* (Female, 46).

Participants also emphasized the need for quality common spaces, especially recreational amenities or urban gardens where residents could gather together because, *"socializing, being with people is very healthy"* (Female, 59 discussing Fig. 5(b)). They also expressed dissatisfaction with the quality of parks in the area, saying they tend to be dirty, unsafe and poorly maintained, *"we need more resources for cleaning the parks and public open spaces (…) civility means not getting public spaces dirty"* (Male, 53).

3.5. Theme 5: Economic crisis and poverty

Poverty was a major theme revealed to be affecting residents' diets. Participants highlighted the lack of financial resources to purchase healthy foods when describing which factors may prevent their neighbors from eating healthy. They also highlighted when discussing Fig. 6(a) that poverty seemed more present in the neighborhood nowadays: *"many people who go with the shopping-trolley, doing the tour of garbage bins. There have been always typical beggars, but now you see rummaging people from ordinary families…"* (Male, 72).

Participants were very concerned about the wellbeing of their neighbors in need, and questioned the effectiveness of existing programs, such as food banks (Fig. 6(b)). They expressed their concerns regarding food banks not providing healthy and nutritious foods, but collecting and distributing only non-perishable foods, *"when they give some, they give many legumes. People say, I have lentils, I have pasta, but, where is the sausage and the meat to make a proper*

meal? " (Male, 51).

4. Discussion

This Photovoice project illustrated which characteristics of the local food environment mattered most to residents of a low-income area in Madrid. To our knowledge, this is the first study involving residents in the entire research process. They participated as co-researchers, gathering and analyzing data, selecting the photographs and narratives to be used in all project dissemination activities, and communicating project results.

Participants' photographs and narratives have revealed how the local food environment influences their food choices. As in previous studies, aspects impacting residents' diets included: social factors (e.g. cultural diversity or social relationships); physical neighborhood environment factors (e.g. disappearance of traditional food stores, presence of supermarkets); and macro-level factors (e.g. neighborhood socioeconomic status, nutritional education) (Cannuscio et al., 2014; Munoz-Plaza et al., 2013; Hirsch and Hillier, 2013).

Our results add new evidence, relevant for food environment related research. Previous studies have shown that supermarkets as the food store type providing the greatest variety of healthy foods. Therefore, increasing the presence of supermarkets has been widely highlighted as a key approach when designing interventions for promoting healthier food environments (Elbel et al., 2015; Lovasi et al., 2009; Morland et al., 2006; Giang et al., 2008). However, participants of this Photovoice project have stressed many negative aspects related to supermarkets, such as their marketing strategies, or their lack of a personal customer service. Moreover, they discussed the wide variety of fresh foods that small neighborhood stores and street markets offered in their neighborhood. These results are particularly useful for future interventions aiming to improve neighborhoods´ healthy food availability through promoting public/farmers' markets (Bader et al., 2010; Bodor et al., 2008).

Prior studies have also suggested access to private vehicles as a positive aspect for improving healthy food access (Burns et al., 2015; Bodor et al., 2013; Burns and Inglis, 2007). Residents of this study did neither mention nor photograph anything related to car transportation.

Photograph: **"Woman at the Street Market"**

"A woman is picking up wasted fruits once the Street market was finished"

"The inequalities between families, because their lack of income or help from social services"

"We have to denounce these situations to the local authorities"

(Male, 72)

Photograph: **"Caritas´ food bank"**

"Food products they give away for those in need in San Cristobal"

"There are people without any resources, who need to eat"

"People with food should donate some to those in need. Don´t throw them into trash"

(Male, 42)

Fig. 6. (a) Photograph: "Woman at the Street Market"; Category: Poverty; Theme: Economic crisis and poverty. (b) Photograph: "Caritas´ food bank"; Category: Food banks; Theme: Economic crisis and poverty.

This highlights the relevance of encouraging more livable pedestrian environments that promote walking for grocery shopping.

In health research, few previously conducted Photovoice projects involved participants when analyzing data and choosing which photographs to display in public exhibitions or printed photobooks (Evans-AgneW and Rosemberg, 2016; Sanon et al., 2014). Usually, researchers have completed the data analysis and then presented the findings to participants, in order to confirm accuracy (Evans-AgneW and Rosemberg, 2016; Catalani and Minkler, 2010). In this sense, our equitable inclusion of practitioners and participants ensures that results and their interpretation represent community perspectives (Grieb et al., 2015). Enrollment of the community in all aspects of the research process helped us learning from residents' lived experiences, who have firsthand knowledge of the issue being explored in this project, their local food environment (Grieb et al., 2015; Fitzgerald et al., 2013). Besides, this equitable partnership can be particularly effective for developing future interventions at the neighborhood and policy-level (Israel et al., 2010).

This shared learning process led researchers to acknowledge the relevance of developing an effective dissemination strategy to communicate research results to the general public, researchers, and relevant local policy makers. As part of this communication strategy we developed a free-downloadable photobook (https://hhhproject.eu/wp-content/uploads/2016/02/160405_Photobook_web.pdf) and a photographic exhibition, featuring the 31 photographs selected by the participants, together with their corresponding narratives. The photographic exhibition has been shown in three different settings in Madrid by the time of submission and is planned to be shown in different Spanish cities. We believe that a wider use of photographic exhibits might raise critical consciousness and reach a broader audience, including policy makers, with the ultimate goal of influencing social change (Chung et al., 2009; Wang and Burris, 1997). We also created a video (https://www.youtube.com/watch?v=VIiFggKzVas), along with a website (https://hhhproject.eu/photovoice/), which includes an interactive cartographical application (http://www.geogra.uah.es/PHHHotovoiceMap/photovoice.html).

As a final step of this project, we organized two citizen science meetings (in December 2015 and April 2016) where participants

informed local policy-makers, media, and other residents on their main findings. They also presented the 11 policy recommendations they generated, such as investing in small neighborhood stores or promoting community gardens. This turning of research results into public policy initiatives may translate into future environmental interventions that promote a healthier food environment in the study area.

We acknowledge that our results present several limitations. First, it was conducted in two purposely selected low-SES neighborhoods, so that results may not be transferable to whole population in Madrid. However, establishing community connections is difficult and very challenging. Villaverde is an area with a rich history of social participation, which facilitated this crucial part of any Photovoice project.

Second, sample size may seem small, although appropriate for Photovoice projects as Catalani & Minkler's noted in their literature review focusing on the use of Photovoice in public health research (Catalani and Minkler, 2010). However, we want to highlight that recruiting and engaging men was particularly difficult, and therefore our Photovoice groups did not have equal representation of men and women. Third, participants could only select five of their photographs to be discussed in the small group discussion session. However, they were the ones who chose which photographs they wanted to share and which to discard.

5. Conclusions

This Photovoice study offered residents a space and an opportunity to critically debate and inform about their local food environment in relation to dietary behaviors. Photovoice was an engaging and useful method for understanding residents' perspectives. Participants identified five salient themes related to their food environment: 1) eating in moderation; 2) cultural diversity; 3) food stores; 4) social relationships; and 5) economic crisis and poverty.

Participants generated new knowledge on local food environment influences, highlighting the need of researcher-participant collaborations when designing public health interventions. Participants, researchers and public health practitioners successfully collaborated in

the dissemination of the results directly communicating with local policy makers and the community.

Conflict of interest

The authors of this paper do not report any conflict of interests.

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