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Photovoice in Kenya: Using a Community-Based Participatory Research Method to Identify Health Needs

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Abstract

Photovoice, a community-based participatory research method, was utilized to delineate the health-related needs of a small rural community in Kenya. Within the Cherangany Constituency, 13 women were recruited and trained in digital photography and appropriate ethical conduct in photography (respect for privacy, consent, and confidentiality). Both individual and group interviews were conducted with the participants, and data were transcribed and analyzed for common themes by both the participants and the researcher. Common themes present in the photos were coded and prioritized in order of importance: (a) school fees, (b) water, (c) hospital fees, (d) sanitation, (e) orphans, (f) widows, (g) lack of jobs/capital, (h) disabilities, and (i) presence of disease. Data from this study will be utilized for (a) development of culturally competent health education, (b) site-specific education/training of incoming medical teams, and (c) informative meetings with local leaders regarding health and associated challenges.

Keywords

photovoice; participatory action research; community needs assessment; determinants of health; qualitative; Africa

The United Nations Millennium Development Goals (MDGs) outline eight objectives to be addressed by member nations, all of which have a direct or indirect influence on individual and population-based health. The MDGs are designed to combat poverty, hunger, disease, illiteracy, environmental degradation, and gender discrimination (World Health Organization, 2010a). Unless accelerated intervention takes place within Kenya, the country remains far from reaching attainment of MDGs by the desired timeframe of 2015. As of 2008, maternal mortality was estimated to be 530/100,000 live births, far from realization of the goal of 93/100,000 by 2015. In addition, the under-five-year-old mortality rate as of 2009 was an estimated 84/1,000, with the goal of decreasing to 33/1,000 by 2015 (World Health Organization, 2010b). Although large-scale quantitative studies have outlined Kenya's national health needs, little data exist describing the *self-identified needs* of rural communities in diverse areas throughout the country.

In the summer of 2012, a community clinic was opened in the Cherangany Constituency of Trans Nzoia County, Kenya. Although plans for the clinic include multidisciplinary services, many of the health needs of the community remain unexplored. Trans Nzoia is considered a rural county, with 80% of its population living in rural areas. Based on the 2009 Kenyan Census, the poverty rate in the county is reported at 50.2%. Literacy and numeracy for the area is 51.6%. More than 70% of the population has completed primary education; however, completion of secondary education remains low at 10.9%. Although secondary completion education rates are low, it is estimated that 92% of young adults ages 15 to 18 are enrolled in school. With a county population of over 800,000, there is an estimated population of 20,469 people per nurse and 272,919 per doctor (Commission on Revenue Allocation, 2013).

Extensive HIV research in western Kenya has demonstrated social determinants of health related to HIV treatment and prevention (namely, food and job security); however, views of specific community's perception of health are lacking (Einterz et al., 2007). Past investigation into the health needs of the Cherangany Constituency is scarce, with few studies outlining health issues specific to

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the area. Quantitative data outlining the most common diagnoses remain underreported to date making accurate development of *culturally relevant* educational materials difficult. By partnering with a local non-governmental organization (NGO) to provide health outreach, preliminary studies from our group showed that common illnesses included upper respiratory illnesses, parasitic infections, allergies, and malaria. Prominent infectious diseases of the area include malaria, brucellosis, typhoid fever, sexually transmitted infections, and wound infections (Kingery et al., 2012). We aim to use this data to provide a framework from which to develop culturally appropriate educational material for specific diseases and underlying disease etiologies. Before we move forward with this goal, we would like to include the integral component of community participation in developing interventions deemed necessary by both researchers and community members. To close the gap between quantitative needs outlined at a local level and specific perceived needs of the Cherangany community, we proposed the implementation of community-based participatory research (CBPR) methods to fully realize health-centered goals. Specifically, photovoice, a CBPR method, was used to pinpoint self-identified health needs of the area.

Photovoice has become an emerging research tool in the fields of global and public health (Walker & Early, 2010). Developed in the 1990s by researcher Caroline Wang and colleagues, photovoice utilizes photography to identify local issues seen through the perspective of community members. The goals of photovoice are to enable people to record and reflect their community's strengths and concerns, to promote critical dialogue and knowledge about important community issues through group discussion, and for its results to reach local policymakers to stimulate social change (Wang & Burris, 1997). Photovoice methodology is based on the theoretical underpinning of giving a voice to those who are usually the subjects of research because of their underrepresented status and transforming them from research participants to researcher/participants. The visual image has the power to transcend language and literacy barriers, thus giving the seldom-heard the chance to participate in decisions that affect social change in their community (Freire, 1970; Wallerstein & Bernstein, 1988; Wang & Burris, 1997).

Since its inception by Wang and colleagues, photovoice has been used to address a myriad of research questions in both the United States and international settings. Within the United States, photovoice has been used in both rural and urban communities to address issues such as crime, poverty and food insecurity, discrimination, disability rights, immigrant health, as well as public health interventions aimed at addressing the obesity epidemic and the prevention of infectious diseases (Chilton, Rabinowich, Council, & Breaux, 2009; Grosselink & Myllykangas, 2007; Hennessy et al., 2010; Jurkowski & Paul-Ward, 2007; Mamary, McCright, & Roe, 2007; Rhodes & Hergenrather, 2007; Schwartz, Sable, Dannerbeck, & Campbell, 2007). Internationally, photovoice has been used in Europe, Central America, Asia, Africa, and Australia. From birth attendants in rural Guatemala to caregivers of orphans in Sierra Leone and gays and lesbians in South Africa, studies have demonstrated that photovoice can transcend language and literacy levels and represent a diverse set of values and viewpoints (Cooper & Yarbrough, 2010; Graziano, 2004; Walker & Early, 2010). Outcomes of photovoice projects have included political action via testimonies for the United States congress, the development of health promotion programs for adolescents, and improved prevention services for sexually transmitted infections (Chilton et al., 2009; Rhodes & Hergenrather, 2007; Stevens, 2006).

The photovoice project proposed for the Cherangany community represents a beneficial endeavor because the majority of data collected for public health interventions and educational modules are derived directly from participants themselves. According to Minkler and Wallerstein (2003), the best interventions are those that are "community based" versus "community placed," thus the Cherangany photovoice project will aid in developing creative solutions to health problems faced by those in Cherangany.

Methods

Participants used photovoice to identify local factors that affect the health status of community members. Per Wang and Burris (1997), the first steps of photovoice include (1) selecting a target audience to inform of the anticipated findings and (2) recruiting a group of photovoice participants. These steps need not be performed in sequence because it is important for the participants to help identify key leaders to inform. Table 1 describes suggested steps for photovoice.

The member of parliament (MP) represents the Cherangany constituency, comprised of more than 195,000 people. Cherangany is one of five constituencies within the county of Trans Nzoia. The local MP and his office members were chosen by the participant's as the main recipient of the information. His office was selected as the target audience because it oversees the community development in the region and allocates money each year through the constituency development fund (CDF). Each constituency has its own CDF board responsible for allocating funds. The MP of the constituency serves as a member of the board. Informing the local MP served as vital resource in the study, because he has access to the CDF funds that the participants deemed as a valuable resource in the community. The MP also has the political

Table 1. Photovoice Methodology Per Wang (2006).

Steps
1. Select and recruit a target audience of policymakers or community leaders.
2. Recruit a group of photovoice participants.
3. Introduce the photovoice methodology to participants, and facilitate a group discussion about cameras, power, and ethics.
4. Obtain informed consent. One hallmark of photovoice training is that the first session emphasizes safety and the authority and responsibility that come with using a camera.
5. Pose initial theme/s for taking pictures.
6. Distribute cameras to participants and review how to use the camera.
7. Provide time for participants to take pictures.
8. Meet to discuss photographs and identify themes.
9. Plan with participants a format to share photographs and stories with policymakers or community leaders.

Table 2. Participant Demographics.

Number of Participants	Age Range	Number of Children	Education Level	What Do You Do for a Living?[a]	Home Structure	Marital Status
13	27–50	1–10	Primary (2), secondary (11)	Small business (9), CHW (1), farming (5)	Mud-formed (7), brick/stone (6)	Single (1), widowed (2), married (10)

Note. CHW = community health worker.
[a]Some women responded having more than one role.

power to leverage more attention and funds for the area as an active MP in Nairobi.

To facilitate the study, we partnered with a local NGO. This organization serves the Cherangany constituency in a variety of areas. The NGO provides high school scholarships to disadvantaged students, sponsors free preschool classes in local churches, provides farming assistance, and facilitates health care outreach and medical referrals to those most in need. With the help of this NGO, 13 women were recruited by advertising for participants at medical clinics, churches, and villager centers. Kenyan volunteers from the NGO were integral in informing community leaders in the recruitment, including the local chiefs and clinical officers. These leaders were informed about the purpose of the study and were asked to seek female volunteers within their villages who had completed primary school. If more than one volunteer per village was interested in the study, then a vote was held at the village center to decide on the representative. Wang and Burris (1997) suggests a group of 7 to 10 participants; however, we chose 13 because it broadened the representation of villages and geographic areas throughout the constituency. Women were chosen, because they tend to be the most involved in ensuring the basic needs of the family are met. Numerous studies in global development have highlighted the positive impact of women as active members of society (Hausmann, Tyson, & Zahidi, 2009; World Bank, 2006). Women comprise more than 50% of the population yet represent 70% of the world's poor. Even though women comprised a large resource for development, according to a report from the Organization for Economic Cooperation and Development (2008), "As a group they have been marginalized and their economic, social and environmental contributions go in large part unrealized."

The participants' ages ranged from 27 to 50 years and all had completed primary school. Ten of the women were married, two were widowed, and one was single. All of the women had children, with a range of 1 to 10 children reported. Most of the women owned plots of land or small business stands at village centers. They all had a means of income; however, for many, it was unpredictable. Seven women had mud-formed homes, and six had brick/stone-formed homes. None of the women had indoor plumbing, though some had wells on their land. The participants were from three different tribes: Kalijen, Kikuyu, and Luhya. Although tribal tensions can be very high in various regions in Kenya, tribal conflicts in Cherangany have been minimal and the lack of tribal conflicts was a source of pride for the women in the study. Table 2 provides a summary of the background information on the participants.

Of the 13 women recruited, all 13 took part in the individual interview sessions. Twelve of the 13 women took part in the group discussion because one participant forgot about the group meeting time. Two local women served as volunteers for our partnering NGO and assisted with scheduling interviews and group discussions.

Before data collection, participants attended a 4-hour training session to learn about photovoice methodology. Per Wang and Burris (1997), Steps 3 to 6 of photovoice include hosting a training that encompasses photovoice methodology, reviewing the importance of informed consent, a brainstorming session on potential themes, and camera training and distribution. The training reviewed the methods and ethics of photovoice, including informed consent procedures. The participants were informed that they would be responsible for capturing the needs of the community through photography and would then reflect on the photographs in individual and group interviews. We discussed that the reports from the interviews would be used to brief area policymakers, to which they agreed that the MP should serve as the primary recipient of the information.

A discussion on photography etiquette took place that reviewed what types of photographs were acceptable and posed little risk to the subject. Participants were instructed to obtain written consent prior to taking an individual's photo. If the picture included a child, the child's guardian was instructed to consent. The informed consent forms described the purpose of the study and who to contact if the subject had questions. The photographer had each subject sign a form and gave the subject a copy to keep.

Participants were also trained on how to use the digital camera provided to them. Basic steps including how to turn on and off the camera, how to snap and review the pictures, and how to change the batteries were reviewed. Each participant had to demonstrate proper use of the camera to the study facilitator before use.

Last, the training included a brainstorming session on suitable photos to capture. Questions to guide suitable photos included (a) What factors affect health and well-being of community members? (b) What barriers to adequate health exist in your community? (c) What can be done to improve the health of your community? Per accepted photovoice methodology, training should include posing initial themes for photographs. With the above questions in mind, the participants suggested that access to food, water, education, and jobs be captured. All photographers were instructed that their photos were their property and that the project director must obtain permission to publish their photographs. The photovoice methods described here align with and reflect those described in previous studies (Booth & Booth, 2003; Carnahan, 2006; Clark & Zimmer, 2001; Hergenrather, Rhodes, & Clarke, 2006; Streng et al., 2004; Wang, 2006; Wang, Burris, & Xiang, 1996; Wang, Morrel-Samuels, Hutchison, Bell, & Prestronk, 2004; Wang & Pies, 2004; Wang & Redwood-Jones, 2001).

Data Collection

Participants were given 1 week to capture photos that address the following questions: (a) What factors affect health and well-being of community members? (b) What barriers to adequate health exist in your community? (c) What can be done to improve the health of your community? A collection period of 1 week aligns with previous study methodology of Wang and colleagues. After the collection period, participants chose photos to discuss in in-depth personal and group interviews.

Individual Interviews and Group Discussions

After a week of taking pictures, an interviewer visited the women's homes and uploaded their photos to an iPad. The participants sorted through the photos and chose several to describe using the SHOWeD method (Wang & Pies, 2004). Interviews were audio recorded or transcribed. The interviews and group discussions were conducted in Swahili by local interpreter's familiar with the cultural context of the area. The interpreter's also worked for the local NGO that aided in the study recruitment and training. In Kenya, English is introduced in primary school and most of secondary education (with the exception of Swahili) is taught in English; therefore, many of the participants were conversant in English. However, we chose to conduct the interviews in Swahili to aid with their interpretation of the photographs. Without prompting, some of the participant's chose to write reflections of their photographs in English, which they shared during the interviews. There were no differences in how the participant's education level affected the data analysis process. For example, one of the two women who did not complete primary school wrote her reflections in English. Following the interviews, the comments were transcribed into a report that was provided to the participants to review and verify authenticity. For the group discussion, the women chose five photographs and provided context for each photo using the SHOWeD method. The group discussion was also recorded and transcribed and offered to each participant to verify that the details represented in the report were authentic and true. Both individual and group interviews were chosen because both methods allowed us to collect more data and analyze how each session differed.

Data Analysis

Data from interviews were analyzed using the SHOWeD method. Participants chose a photo and answered the following: (a) What do you *S*EE here? (b) What is really *H*APPENING here? (c) How does this relate to *O*UR lives? (d) *W*HY does this problem or strength *E*XIST? (e) What can we *D*O about it? Following these interviews, participants then identified common themes of photographs while being audio recorded. Written transcripts of these sessions were created and the authenticity and

Table 3. Common Themes Identified in Photographs.

Themes	Individual Interviews (*N* = 13)	Group Discussion (*N* = 12)
Presence of disease	26%	20%
Sanitation	17%	18%
Hospital fees	15%	17%
Disabilities	9%	11%
School fees	8%	9%
Widows/women with little support	8%	8%
Orphans	7%	8%
Lack of jobs/capital	5%	5%
Water	5%	4%

consistency of the participants' statements were verified. Written transcripts will be used to develop a threefold action plan to (a) develop culturally competent health education/public health initiatives, (b) train incoming medical teams on the needs of the area, (c) inform local politicians and other stakeholders of barriers to adequate health area.

Results

Individual Interviews

The range of photographs taken by participants varied from 15 to 140 photos. Subject matter depicted in the photographs consisted of village members from various backgrounds. Photos depicted a wide range of concerns including people suffering from disease, poor sanitation and hygiene, disabled individuals, orphans, squatters, and widows. The individual interview sessions lasted 1 to 2 hours and the range of photos shared was 12 to 28. See Table 3 for a breakdown of themes present in photographs shared during the individual and group interviews. For samples of photographs and descriptions, see Figures 1 to 9.

Group Discussions

A group discussion was conducted with women to share their photos and discuss and prioritize solutions to common concerns present in the community. The women chose up to five photos to share with the group. After sharing, the women outlined common themes present throughout the photos. This thematic framework was then used to classify all other photos taken. Once the themes were established, as a group, the women discussed possible solutions to each concern. See Table 4 for proposed solutions. Following this discussion, they ranked the concerns in order of importance to their community. The women established themselves as a Community-Based Organization (CBO) within their constituency, and they are currently using the CBO status to approach the local government to ask for funds to support projects related to the concerns in their report.

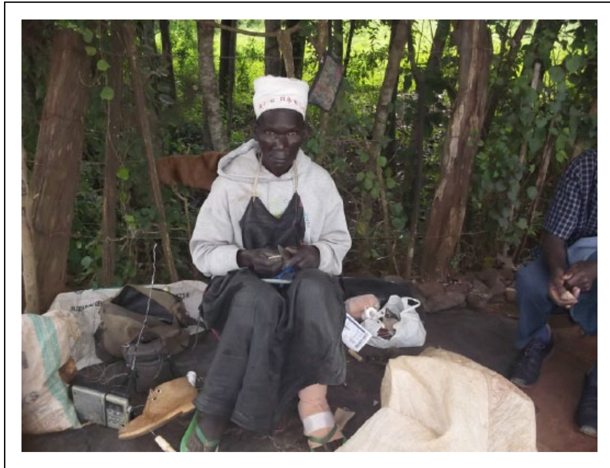

Figure 1. Presence of disease.
Note. "This man has high blood pressure. The leg itches and when he scratches it sometimes pus comes out, it has become a very large wound. He has dizziness most times. Also his stomach produces some sound that is heard [by those near him]."

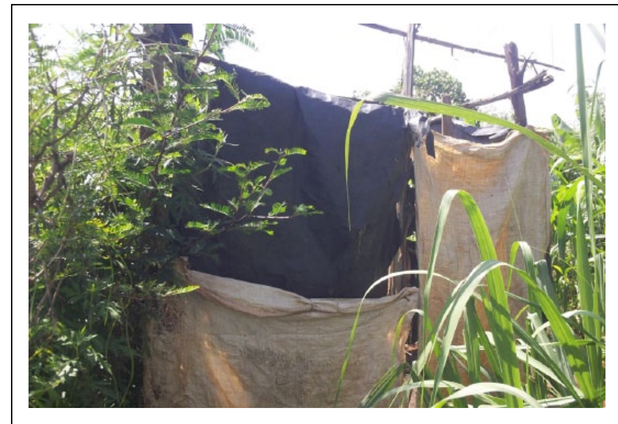

Figure 2. Sanitation.
Note. "This is a latrine. This is dangerous because when it rains the surrounding areas can break and someone can fall in. And the latrine is near a bush so I worry that they can get bitten by a snake."

The individual and group sessions differed in several ways. The individual interviews were less structured in that the participants could choose the number of photographs to share (which ranged from 12–28). Each individual session lasted between 1 and 2 hours. The group interview allowed participants to show five photos. Both individual and group discussions used the SHOWeD method to describe the photos. The group interview also included assigning themes, solutions, and prioritizing; therefore, the session lasted longer, 6 hours in total.

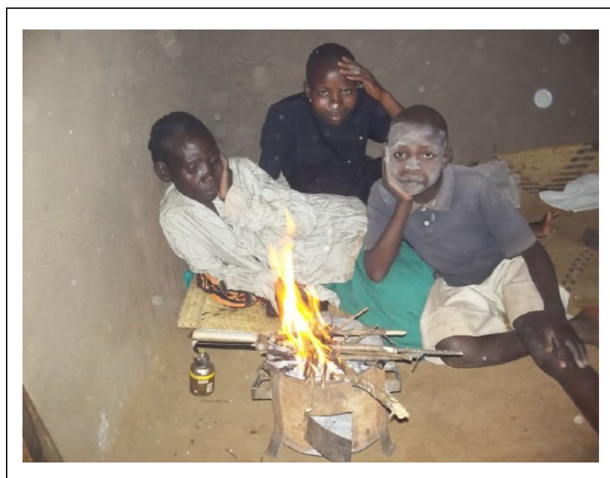

Figure 3. Hospital fees.
Note. "The mother here is single. I found her with her children around the fire. The mother has a problem of asthma every time she feels cold. The mother has no money to go for treatment. Also she doesn't have money to take her children to school. She lives in a rental house because she does not have land. So, it has been very difficult for her in life because she is sick and her children depend on her to get money to go to school."

Figure 4. Disabilities.
Note. "This is a paralyzed boy. After circumcising him, he became paralyzed. He can't look for food for himself and has to depend on parents, but mom has left a long time ago so he stays with the father. He uses this bicycle but it has become old."

We decided on both methods because it allowed us to collect more data and analyze how each session differed. The individual interviews also created a safer environment for participants to share photographs and reflect in ways they might have not wanted to in a group setting. The group interview is important because it allows participants to find commonalities and differences in the photographs they share. It also allows for a broader discussion on the issues presented.

Figure 5. School fees.
Note. "This young group of men are school leavers. They have finished form four, but they have no finances to proceed on to colleges, polytechnic, and university. Their families are poor so they cannot continue to a higher level of education. They live in the village as idlers without any gain in the day. This may result in many of them having negative thoughts and some may become criminals to meet their daily needs. Consequently, some of them may be found and killed because of robbery."

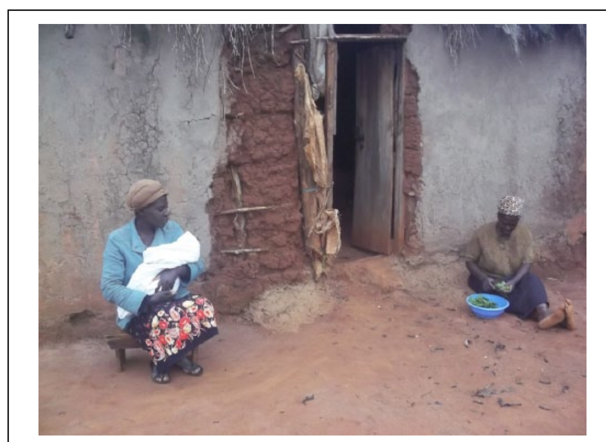

Figure 6. Widows/women with little partner support.
Note. "This baby is an orphan. The father died in a road accident and the mother now lives at home with her parents. The grandfather separated from the grandmother . . . so they now live like two widows in one house."

There were two group sessions: one to share and codify photos, and prioritize solutions and another to brief the MP. The first session lasted 6 hours and lunch was provided to participants. The information session with the MP lasted 1 hour.

The participants quickly noticed that many of their photographs depicted the same scene; therefore, when it came to assigning themes to photographs, labeling and agreeing on themes was mostly effortless and very efficient. Disagreements arose in two areas: (a) When deciding on

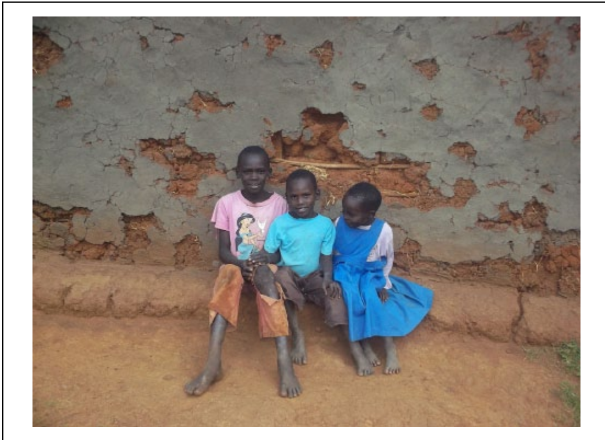

Figure 7. Orphans.
Note. "Their mother died 2 years ago. They are staying with their grandmother. They do not have anything, the grandmother is unable to provide education and provide food and clothing. The mom died of HIV . . . Maybe was passed on to children because when moms are pregnant they don't go for checkups . . . Maybe some of them give birth at home and so their children get infected. So many youths are idle and when they are idle they misbehave and have sex with infected people. Also because some lack money, they will sell themselves to people who are infected because they need money."

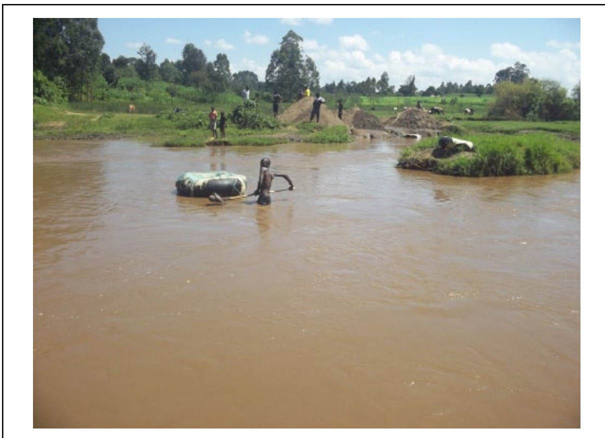

Figure 8. Jobs.
Note. "This boy always has to go inside river to collect sand from the river, putting it at the river side as a source of income by selling. The boy has not got any job, but he saw to collect sand to get money for his daily needs, but inside this river the water is very cold and it affects the health and may cause pneumonia. Also this water is very dirty. Its source is from a far place that collects any bacteria that cause diseases."

solutions to certain problems, some participants wanted to suggest solutions which would rely on international donors or sponsors; however, a majority of the women wanted to shift the solution to the community level to decrease the reliance on outside sources and (b) When prioritizing solutions, there was a disagreement on how widows/women with little support and sanitation should

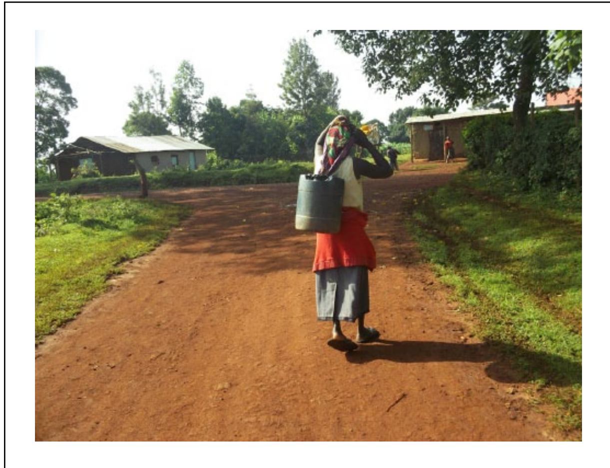

Figure 9. Water.
Note. "This picture shows a water problem. We must carry water from the river because we have no well and because we cannot afford one. The women gather the water with little support from their husbands, they are rude. To improve this situation, we need to use our MP [member of parliament] to educate people in the area. We need community pipes, we need to dig wells and work together."

be ranked. For the previously ranked categories (school fees, water, lack of jobs, hospital fees), the women voted unanimously for the rankings as 1 to 4. For widows/women with little support and sanitation, half the group voted on widows and the other half voted for sanitation. Those who lobbied for widows were the two widows in the group, as well as others, who said their mother or neighbors were widows, therefore they could more easily identify with their plight. Ultimately, both categories were labeled as the fifth priority.

The researchers chose which photographs to display in the manuscript. The selected photographs and reflections were thought to best represent the themes decided on by the participants.

Discussing Solutions to Common Themes

Presence of disease. The presence of disease, mainly preventable diseases, was reflected throughout many photographs. The women spoke about the effects of HIV in the community and how the disease was inherently linked to other themes: widows, orphans, and hospital fees. The participants agreed that improvements in prevention education are crucial to decrease the spread of HIV. Wife inheritance, the practice in which a widow remarries her late husband's kin, was also said to contribute to this issue. To combat HIV through education, participants suggested that community health workers (CHWs) and the Academic Model Providing Access to Health Care (AMPATH) program should perform improved community outreach. AMPATH is a collaboration of Moi Teaching and Referral

Table 4. Summary of Concerns and Solutions.

Concern	Solution
Lack of school fees	Work with teachers, chiefs, and MP to identify students who would qualify for lower fees Pay fees per family (opposed to per student)
Water problems	Increase access to community water sources by drilling and piping
Lack of jobs	Improve roads, bridges, and hospitals to increase jobs Work with county council to create markets in every village Build local polytechnic schools Lower loan interest for small businesses
Hospital fees	Access to at least one free hospital Work with CHWs to improve preventive health care at local dispensaries
Poor sanitation	Partner with CHWs to educate on latrine use, trash collection, and jiggers, and use of cow dung
Widows/women with little support	Form women's groups Government program for widows Seminars for fathers
Orphans	Improve health education for teens and parents Strengthen regulations on local breweries
Disabilities	Sponsorship or decreased school fees Create special education programs or schools Receive monthly government stipends and assistance with physical therapy
Presence of disease	Partner with CHWs and Moi University to improve community awareness of HIV, wound care, and other common infectious diseases (typhoid, malaria, brucellosis)

Note. CHWs = community health workers; MP = member of parliament.

Hospital (MTRH), Moi University School of Medicine, and a consortium of North American Universities that are committed to addressing health needs in western Kenya. As mentioned previously, the presence of infected wounds represented a common problem in community. Again, the participants suggested education and wound care supplies be utilized and increased among CHWs.

Last, endemic diseases such as typhoid, malaria, and brucellosis were documented to affect many people in the community. To prevent such diseases, the women suggested that cleanliness and a higher standard of hygiene be promoted in the community. The use of bed netting, water treatment, and better latrines were also discussed. Again, the CHWs were deemed as the best workforce to reach the community and educate about prevention of these diseases.

Sanitation. Several subthemes were present under sanitation. They were latrines, trash, jiggers, and the use of cow dung in the home. To improve latrines, many suggested using local materials to improve the foundation and stability of latrines. They suggested that the poor should receive assistance to build better latrines on their land, and that the local community and government should provide this assistance. One participant who also works as a CHW mentioned past misuses of latrines built for families. To combat this problem, she suggested that the CHWs make more home visits to areas that benefit from improved latrines.

Trash collection was another concern documented by many community members. Trash tended to be placed in open areas and presented a risk to children who would sometimes play among the debris. The group suggested that the CHWs make random, unscheduled visits to communities to ensure that trash is being collected and disposed of properly. This was suggested because scheduled visits by CHWs allow locals to clean their homes only the morning prior to the CHW visit.

The use of cow dung to smear the floors and foundations of houses appeared in almost all of the women's photographs. Most women agreed that this was not a sanitary practice but described that many women use this method to reduce dust and bugs in the home. A majority of the participants agreed that to reduce the use of cow dung, the price of cement had to be lowered. They expressed that on average it cost 10,000 Kenyan shillings ($98 USD) to cement each room, nearly equivalent to 2 months salary.

Last, the group discussed the presence of *jiggers* (a sand flea that burrows into the skin of the host) in several villages. Most of the participants wanted a medicine that can be used to prevent jiggers. Other participants suggested using the CHWs to spread awareness and teach about prevention of jigger infestations.

Hospital fees. Fees associated with medicine, medical treatment, and surgery cause many people in the constituency to put off necessary health care. As a result, many preventable or chronic medical conditions worsen. For example, many participants captured infected wounds. Wound infections were acquired from various sources such as accidents or surgeries. Chronic bone infections from infected wounds were documented in at least two communities. Other wounds included diabetic foot ulcers, which can largely be prevented with proper management of type II diabetes. Many other participants documented suspected malignancies that had been present for several years because many families lacked the fees for the required intervention. For example, a 4-year-old boy was documented to have a large breast mass that the parents have never sought treatment for. Two other women appeared in photographs having swollen abdomens. One woman was diagnosed with fibroids and a uterine mass but never sought surgery because it was too expensive. Another woman is suffering from fluid build-up in her abdomen and was scheduled to have a CT scan to determine the cause. She never went to the appointment, because she did not have the necessary funds.

To prevent scenarios like the ones documented above, the participants suggested having one hospital in the community that is free of costs. Other participants suggested that the hospital prices should be decreased so that everyone can afford treatment. To increase early intervention of disease, participants reiterated the importance of utilizing the CHW program under the Kenyan Ministry of Health. One participant expressed a desire to see the CHWs visit homes more often. She described how CHWs would host seminars at local dispensaries; however, this information rarely reached many people because the seminars attract low attendance. Another participant suggested that the CHWs use a process similar to photovoice to document the needs of their villagers. Last, several women discussed how the referral book used by CHWs to refer patients to the local district hospital should be utilized more because it lowers fees for those who receive the referral and gives them priority treatment on arrival at the hospital.

Disabilities. Disabled children with little to no support were prevalent throughout the participants' photographs. It was suggested that these children receive sponsorship for education and support. Furthermore, members suggested building schools or reducing school fees for the disabled. Many agreed that the government should support disabled children by providing families with stipends. In addition, they agreed that those who can be treated with physical therapy receive such assistance as well as other necessary support like crutches, wheelchairs, walkers, and braces. Last, one participant suggested that disabled adults be supported by helping them form small businesses that suit their needs and skillset.

School fees. Increasing school fees is a major concern for many families in the Cherangany Constituency. Even though primary education remains free for children in classes 1 to 8, many times, school fees associated with primary school keep children from attending class regularly. For example, fees associated with primary school include exam fees, activity fees, construction fees, and the cost of uniforms. Families are required to pay these fees annually for every child enrolled. One solution mentioned to reduce associated costs was to reduce the cost of the fees for larger families. For example, instead of paying per child, a parent would instead pay the fee per family. The participants also agreed that the area MP, local chiefs, and school headmasters should be involved in resolving issues with school fees. For example, one participant suggested that chiefs and headmasters could be responsible for identifying needy families that would benefit from lower school fees. Broader issues like increasing jobs and the use of family planning were also mentioned as a way to combat high school fees.

Widows/mothers with little partner support. A concern reported by most participants was that of widows or mothers with little support from their partners. The women reported that the stress of being a single parent was high because their family relies on them for every need. They suggested that women join together and form support groups. It was also suggested that a government program be established for widows to receive additional support. Hosting community seminars for men about the importance of family was also suggested to improve the involvement of fathers in the family unit.

Orphans. Every participant depicted the prevalence of orphans. Orphans were because of abandonment or death from preventable illnesses (accidents or HIV). Many participants named early pregnancy as a reason for orphans because of abandonment by young inexperienced mothers. To prevent early pregnancy, the group discussed the importance of education and support from parents. Other participants named peer pressure and broken families as reason for early pregnancy. Another participant focused on the issues of poverty and lack of jobs contributing to orphans in the community. Specific to neglectful fathers was the issue of alcohol use fueled by many local brewers. Most participants strongly felt that the breweries should be shut down or better regulated. Many of the women agreed that the men in their villages drink because of stress and idleness.

To prevent orphans because of preventable diseases, the group suggested that health education and access to

health care be improved so that sick and healthy parents can undergo frequent health checks to ensure better health.

Jobs/lack of capital. A lack of jobs, industry, and capital was expressed by most participants. It was suggested that the local government be responsible for building roads, bridges, and hospitals to increase employment. In addition, the county council was mentioned as a key resource: They can ensure every village has a community market place built so that local buying and selling could take place regularly. Increasing the number of polytechnic schools in the area was also seen as a way to increase jobs. Last, the group discussed high interest rates associated with business loans that hinder business success and development.

Water. One's source of water differs depending on the location within the constituency. The major sources of water consist of rivers, streams, wells, and community pumps. Most people walk a considerable distance to collect water. Photos depicting water collection show women carrying several liters of water on their head or back. Other photos showed children carrying jugs or pushing bikes or donkey drawn carts full of water. Much labor is required for collecting water and carrying it home. The participants discussed how they would like to see a greater availability of community water sources. They specifically mentioned the desire for drilled water sources, which could feed smaller clusters of houses via piping.

Prioritizing Solutions

The women were asked to discuss what concerns should take priority over others. A majority of women agreed on the following rankings (beginning with key priorities): school fees, water, jobs, hospital fees, sanitation/widows and women with little partner support, orphans, disabilities, and presence of disease. Widows/women with little partner support and sanitation were both placed as fifth because half of the women voted for sanitation and the other half voted for widows.

Discussion

The goal of the Cherangany photovoice project was to utilize photography to identify local factors that affect the health status of community members. A secondary goal of the project was to use the data to develop public health interventions and educational modules suitable for the community. By utilizing photovoice, the participants were able to aid in the development of creative solutions to health problems faced by those in Cherangany.

Our article reveals a variety of factors perceived by the local community to affect the health of the communities in Cherangany. Themes presented in both individual and group interviews align because a similar number photographs were shared that reflected each theme.

Although the number of photographs per theme was similar between individual and group interviews, an interesting distinction appeared at the interface of documentation rank and priority for change rank. Interestingly, themes documented most were ranked last as priorities for change. Namely, the participants ranked school fees, water, and jobs as the top priorities for change; however, fewer photos reflecting these topics were presented in group and individual interviews. Furthermore, "Presence of Disease" was ranked last even though participant's photos depicted this theme the most. The underlying rationale is likely multifactorial. Perhaps snapping photos of a sick person or their wound was easier to depict to represent the "Presence of Disease" compared with the issue of "School Fees"; therefore, these photos were more prominent. Furthermore, the top three concerns reflect those responsibilities of mothers in the household. Acquiring school fees, collecting water, and securing family income were described as their roles. Because all of the participants were mothers and some guardians of children other than their own, worrying about access to things that provide the basic needs might take precedence over other concerns. Last, and most interestingly, the ranking of the concerns reflects that the participants might recognize that the social determinants of health (having access to basic needs and rights like education, water, jobs, and affordable health care) will decrease the presence of disease, thus ranking this concern as last.

Previous photovoice studies in Kenya have focused on the experiences of children and youth including those by Skovdal and colleagues, whose participants have been children with HIV and caregivers of adults with HIV in the Lake Victoria region of western Kenya (Dakin, Parker, Amell, & Rogers, 2014; Johnson, 2011; Skovdal, 2011; Skovdal, Mwasiaji, Morrison, & Tomkins, 2008; Skovdal & Ogutu, 2009; Skovdal, Ogutu, Aoro, & Campbell, 2009). Their results have demonstrated the psychosocial well-being necessary for this population to be fully supported. Furthermore, Dakin and colleagues (2014) have utilized photovoice in Mathare, a large slum in Nairobi. By partnering with an NGO serving the youth, their work documented community strengths in Mathare. Last, apart from our article, the only photovoice work in Kenya with adult participants includes a study on environmental perspectives of educators in Narok, Kenya (Quigley, Dogbey, Che, Hallo, & Womac, 2014). This study found photovoice to be a valuable method to share knowledge about the environment and conservation, and emphasized the importance of photovoice methodology

in the post-colonial setting of Kenya. For instance, they highlighted that many times researchers benefit more from research than those researched. Photovoice limits this aspect of research because community members become in control of the data collected. This avoids researchers "parachuting in" to examine a defined problem and prevents solutions coming solely from "experts."

Our article differs from previous works in that women outlined community concerns. Furthermore, we had the women to codify their work. In the previous studies in Kenya, researchers codified common themes present in photographs. In addition, our article asked the participants to rank the concerns and pose solutions to each problem, and empowered the participants to seek avenues of social change. Many studies fall short of the main goals of photovoice which are (a) to enable people to record and reflect their community's strengths and concerns, (b) to promote critical dialogue and knowledge about important community issues through group discussion, and (c) for its results to reach local policymakers to stimulate social change. The studies described above meet goals (a) and (b) but fail to describe how their work reached policymakers. We were fortunate enough to brief the local MP on our findings, and the CBO created by the photovoice group is a lasting impact of the study as they currently lobby for change in their community. Last, our work described the needs specific to the Cherangany constituency. The needs of Kenya cannot be described with a single story. With a diverse landscape and 42 tribes throughout the country, needs will vary from community to community. Understanding the community stakeholders' views and perceptions of factors impacting health is integral to effective health outreach.

Of equal importance, in addition to the identification of community concerns and solutions, the secondary goals of photovoice methodology were met. One strength of this article is that it successfully fulfills the expectation of photovoice in that the project provided a platform for social change because the data were reported to local area officials. Following the group discussions, the photovoice participants presented their data to the constituency's MP during a meeting at which the members reviewed the common concerns presented as well as suggested solutions for each concern. The MP was a newly elected independent candidate in the preceding March 2013 election. The successes of the photovoice cohort were evident in that the policymaker offered to expedite their application to become a CBO, an important distinction in Kenya. Furthermore, the community–government partnership was developed to advance the goals of the project. As a CBO labeled "Cherangany Photovoice Project," the women will be able to draft and submit proposals to address the needs identified in the study . Many of the participants commented that the study motivated them to want to do more for their community and stated that the study showed that their voice could matter. This claim became even more evident as the women worked together to apply for and recently received Uwezo funding from the Kenyan Government. The Uwezo program aims to support projects at the community level that will impact the economic success of youth and women. The women's group intends to use their funding to develop poultry and dairy farming initiatives in their respective villages. The income generated from these projects will undoubtedly provide a partial solution to some of the top concerns, namely school fees and jobs. In addition, after hearing the report from the participants, the MP vowed to work hard to decrease school fees and increase job opportunities. Recently, he has made strides in achieving the latter goal by implementing large-scale dairy farming in the area. For example, he has worked to bring milk coolers to the region to improve cow milk production and sales in the area.

One limitation of utilizing photovoice as a tool for CBPR is that even though identified needs are specific to the community, the results might not be generalizable to the entire country of Kenya because geography and tribal differences contribute to diverse regions throughout the country. However, results can be used to exemplify that photovoice methodology is a proven, locally validated tool to support community dialogue and change.

In summary, our photovoice study in the Cherangany community allowed participants to demonstrate needs central to their lives transforming them from research participants to researcher/participants. This ensured that participants' desires were voiced rather than the researcher imposed views of value. Our group plans to use these findings to work in partnership with the newly established CBO and local health officials to improve targeted health education and public health initiatives. The priorities and solutions posed by the participants will serve as a reminder for health care providers that understanding the community's perception of illness is critical to providing effective health outreach. Furthermore, we hope that the data motivate health providers to work toward the broader goal of improving public health policies. For example, current health interventions in the area, such as monthly de-worming programs in the schools, supply a short-term solution to poor water supply and sanitation. Both local and international health workers who serve the area will benefit from being informed on the broader issues in the community and we hope that this study motivates them to take a stake in policy and community development because it will impact health on a greater level.

The next steps of this study include re-examining solutions proposed by the women and working with them to find practical, cost-effective, community-based solutions. Furthermore, replicating this study with different study

groups (men and youth) will add an additional perspective to our work. Our results and outcomes support the work of previous studies showing that photovoice is an effective method for CBPR that identifies community needs and promotes social change.

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References

Booth, T., & Booth, W. (2003). In the frame: Photovoice and mothers with learning difficulties. *Disability & Society*, *18*, 431–442.

Carnahan, C. (2006). Photovoice: Engaging children with autism and their teachers. *Teaching Exceptional Children*, *39*, 44–50.

Chilton, M., Rabinowich, J., Council, C., & Breaux, J. (2009). Witnesses to hunger: Participation through photovoice to ensure the right to food. *Health and Human Rights*, *11*, 73–85.

Clark, L., & Zimmer, L. (2001). What we learned from a photographic component in a study of Latino children's health. *Field Methods*, *13*, 303–328.

Commission on Revenue Allocation. (2013). *Kenya County Fact Sheets*. Retrieved from https://www.opendata.go.ke/download/qg44-68h8/application/pdf

Cooper, C. M., & Yarbrough, S. P. (2010). Tell me—Show me: Using combined focus group and photovoice methods to gain understanding of health issues in rural Guatemala. *Qualitative Health Research, 20*, 644–653. doi:10.117771049732310361894

Dakin, E. K., Parker, S. N., Amell, J. W., & Rogers, B. S. (2014). Seeing with our own eyes: Youth in Mathare, Kenya use photovoice to examine individual and community strengths. *Qualitative Social Work, 14*, 170–192.

Einterz, R. M., Kimaiyo, S., Mengech, H. N. K., Khwa-Otsyula, B., Esamai, F., Quigley, F., & Mamlin, J. J. (2007). Responding to the HIV pandemic: The power of an academic medical partnership. *Academic Medicine*, *82*, 812–818.

Freire, P. (1970). *Pedagogy of the oppressed*. New York: Seabury.

Graziano, K. J. (2004). Oppression and resiliency in a post-apartheid South Africa: Unheard voices of Black gay men and lesbians. *Cultural Diversity & Ethnic Minority Psychology*, *10*, 302–316.

Grosselink, C., & Myllykangas, S. (2007). The leisure experiences of older US women living with HIV/AIDS. *Health Care for Women International*, *28*, 3–20.

Hausmann, R., Tyson, L. D., & Zahidi, S. (2009). The global gender gap report. *World Economic Forum*. Retrieved from http://www.weforum.org/reports/global-gender-gap-report-2009

Hennessy, E., Kraak, V. I., Hyatt, R. R., Bloom, J., Fenton, F., Wagoner, C., & Economos, C. D. (2010). Active living for rural children community perspectives using photovoice. *American Journal of Preventative Medicine*, *39*, 537–545.

Hergenrather, K., Rhodes, S., & Clarke, G. (2006). Windows to work: Exploring employment-seeking behaviors of persons with HIV/AIDS through photovoice. *AIDS Education Prevention*, *18*, 243–258.

Johnson, G. A. (2011). A child's right to participation: Photovoice as methodology for documenting the experiences of children living in Kenyan orphanages. *Visual Anthropology Review*, *27*, 141–161.

Jurkowski, J. M., & Paul-Ward, A. (2007). Photovoice with vulnerable populations: Addressing disparities in health promotion among people with intellectual disabilities. *Health Promotion Practice*, *8*, 358–365.

Kingery, F. P., Duncan, D., Kenney, K., Brockman, M. M., Alford, B. S., Metry, R., et al. (2012, October). *Evaluation of common diagnoses and healthcare needs of a subregion of the Northwest Rift Valley Province of Kenya*. Poster presented at Crossing Borders and Disciplines: New Horizons in Global Health Regional Conference, *Lexington, KY*.

Mamary, E., McCright, J., & Roe, K. (2007). Our lives: An examination of sexual health issues using photovoice by non-gay identified African American men who have sex with men. *Culture, Health & Sexuality*, *9*, 359–370.

Minkler, M., & Wallerstein, N. (2003). Introduction to community-based participatory research: New issues and emphases. In M. Minkler & N. Wallerstein (Eds.), *Community-based participatory research for health: From process to outcome* (2nd ed., pp. 5–19). San Francisco: Jossey-Bass.

Organization for Economic Cooperation and Development. (2008). *Gender and sustainable development: Maximizing the economic, social and environmental role of women*. Retrieved from http://www.oecd.org/social/40881538.pdf

Quigley, C. F., Dogbey, J., Che, S. M., Hallo, J., & Womac, P. (2014). Through their lens: The potential of photovoice for documentation of environmental perspectives among Kenyan teachers. *The Qualitative Report*, *19*, 1–23.

Rhodes, S. D., & Hergenrather, K. C. (2007). Recently arrived immigrant Latino men identify community approaches to promote HIV prevention. *American Journal of Public Health*, *97*, 984–985.

Schwartz, L. R., Sable, M. R., Dannerbeck, A., & Campbell, J. D. (2007). Using photovoice to improve family planning services for immigrant Hispanics. *Journal of Health Care for the Poor and Underserved*, *18*, 757–766.

Skovdal, M. (2011). Examining the trajectories of children providing care for adults in rural Kenya: Implications for

service delivery. *Children and Youth Services Review*, *33*, 1262–1269.

Skovdal, M., Mwasiaji, W., Morrison, J., & Tomkins, A. (2008). Community-based capital cash transfer to support orphans in Western Kenya: A consumer perspective. *Vulnerable Children and Youth Studies*, *3*, 1–15.

Skovdal, M., & Ogutu, V. O. (2009). "I washed and fed my mother before going to school": Understanding the psychosocial well-being of children providing chronic care for adults affected by HIV/AIDS in Western Kenya. *Globalization and Health*, *5*, 8–17.

Skovdal, M., Ogutu, V. O., Aoro, C., & Campbell, C. (2009). Young carers as social actors: Coping strategies of children caring for ailing or ageing guardians in Western Kenya. *Social Science & Medicine*, *69*, 587–595.

Stevens, C. A. (2006). Being healthy: Voices of adolescent women who are parenting. *Journal of Specialists in Pediatric Nursing*, *11*, 28–40.

Streng, J. M., Rhodes, S. D., Ayala, G. X., Eng, E., Arceo, R., & Phipps, S. (2004). Realidad Latino: Latino adolescents, their school, and a university use photovoice to examine and address the influences of immigration. *Journal of Interprofessional Studies*, *18*, 403–415.

Walker, A., & Early, J. (2010). "We have to do something for ourselves": Using photovoice and participatory action research to assess the barriers to caregiving for abandoned and orphaned children in Sierra Leone. *International Electronic Journal of Health Education*, *13*, 33–48.

Wallerstein, N., & Bernstein, E. (1988). Empowerment Education: Freire's ideas adapted to health education. *Health Education Quarterly*, *15*, 379–394.

Wang, C. (1999). Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health*, *8*, 185–192.

Wang, C. (2006). Youth participation in photovoice as a strategy for community change. *Journal of Community Practice*, *14*, 147–161.

Wang, C., & Burris, M. (1997). Photovoice: Concept, methodology and use for participatory needs assessment. *Health and Education*, *24*, 369–387.

Wang, C., Burris, M., & Xiang, Y. (1996). Chinese village women as visual anthropologists: A participatory approach to reaching policy makers. *Social Science & Medicine*, *42*, 1391–1400.

Wang, C., Morrel-Samuels, S., Hutchison, P. M., Bell, L., & Prestronk, R. M. (2004). Flint photovoice: Community building among youths, adults, and policymakers. *American Journal of Public Health*, *94*, 911–913.

Wang, C., & Pies, C. (2004). Family, maternal, and child health through photovoice. *Maternal and Child Health Journal*, *8*, 95–102.

Wang, C., & Redwood-Jones, Y. (2001). Photovoice ethics: Perspectives from Flint Photovoice. *Health Education & Behavior*, *28*, 560–572.

World Bank. (2006). *Gender equality as smart economics: A World Bank Group Gender Action Plan*. Retrieved from http://siteresources.worldbank.org/INTGENDER/Resources/GAPNov2.pdf

World Health Organization. (2010a). *Accelerating progress towards the health-related millennium development goals*. Retrieved from http://www.who.int/topics/millennium_development_goals/who_dgo_2010_2/en/index.html

World Health Organization. (2010b). *Kenya: Health Statistics Profile 2010*. Retrieved from http://www.who.int/gho/countries/ken/country_profiles/en/index.html

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