THEMATIC PAPER

Implications of participatory methods to address mental health needs associated with climate change: 'photovoice' in Nepal

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'Photovoice', a community-based participatory research methodology, uses images as a tool to deconstruct problems by posing meaningful questions in a community to find actionable solutions. This community-enhancing technique was used to elicit experiences of climate change among women in rural Nepal. The current analysis employs mixed methods to explore the subjective mental health experience of participating in a 4- to 5-day photovoice process focused on climate change. A secondary objective of this work was to explore whether or not photovoice training, as a one-time 4- to 5-day intensive intervention, can mobilise people to be more aware of environmental changes related to climate change and to be more resilient to these changes, while providing positive mental health outcomes.

Climate change is the largest global health threat of the 21st century (Costello *et al*, 2009) and, despite currently limited empirical evidence, it is expected directly and indirectly to harm communities' psychosocial well-being. Vulnerable people and places, especially rural areas in low- and middle-income countries, will be disproportionately harmed because of their underlying socioeconomic disadvantage and reduced access to health services (Berry *et al*, 2010). International calls for gender equity (e.g. from the World Health Organization and the United Nations) remind us that women have disproportionately high levels of underlying disadvantage; women may therefore face additional harm from climate change, particularly in countries that have few resources and great risk. The aims of this study were to investigate whether community-based participatory research can help women in a vulnerable low-income country understand and adapt to important environmental challenges related to climate change, and whether this activity could help promote mental health.

Method

Setting and participants

This study was set in the mid-western region of Nepal, Jumla district, considered a high-risk area for climate change (Gentle & Maraseni, 2012). The *Nepal Human Development Report 2014* stated that, with life expectancy of 63 years and a human development index of 0.409, Jumla district is one of the most underdeveloped and economically depressed districts in Nepal (United Nations Development Programme, 2014). The United Nations Field Coordination Office (2010) reported that Jumla's ecology is vulnerable to landslides, drought and hailstorms, and these result in chronic food deficits, infrastructure damage and community displacement, all of which threaten health and well-being.

Participants were ten women subsistence farmers aged 27–49 years (mean 37.5 years) who participated voluntarily in this mixed-methods study. Women were recruited by a key informant living in Jumla who works for our partner organisation, Transcultural Psychosocial Organization – Nepal. All the women were Hindu, five from the lower caste ('Dalit', also known locally as the 'Nepali' caste) and five from the upper caste ('Bahun' or 'Thakuri'). Caste groups were recorded because lower caste is associated with poorer mental health (Kohrt *et al*, 2009). Eight women could not read or write.

Ethical approval for this study was given by Duke University and Nepal Health Research Council (protocol numbers Pro0052631 and 50, respectively). Data were collected June–August 2014.

Measures and procedure

All women participated in three study components: 'photovoice'; in-depth interviews (immediately after the final photovoice session and at follow-up 2 weeks later – time 1 and time 2); and self-report questionnaires. Photovoice is a community-based participatory research methodology which uses photographs taken by participants as a basis for deconstructing important questions they articulate, for the purpose of finding actionable solutions in the community (Wang & Burris, 1997). Photovoice has been used in climate change research in Uganda and Canada (Berrang-Ford *et al*, 2012; Healey *et al*, 2011). One of its strengths is that it gives agency to the community being studied (an important goal of the present study) while providing contextual understanding of the study topic.

A standard photovoice model consisting of five sessions (introductory session, three image-analysis sessions, one theme-validation session) (Wang &

Burris, 1997) was deployed over 4–5 days (participants chose this timeframe). First, the Nepali research assistant with the principal investigator taught participants how to use a camera (none of the women had used a camera before) and discussed ethics and group norms. Then, participants formulated important questions related to climate change and mental health (e.g. 'how will water scarcity affect our well-being and livelihood?').

After the introductory session, participants took photographs related to this question and shared their favourite images at the following analysis sessions. During these sessions, women selected one representative image each. They then deconstructed them using the 'SHOWeD' discussion format, facilitated by the Nepali research assistant:

- What do you **S**ee in the photograph?
- What is **H**appening in the photograph?
- How does this relate to **O**ur lives?
- **W**hy does this problem or strength exist?
- What can we **D**o about it?

This standard process was modified slightly to meet the cultural context, which included removing the E question (How do we become **E**mpowered with our new social understanding of problem-posing questions?). Their conversations were recorded and later translated and transcribed by the research assistant.

In the final session, the research team and participants reviewed the themes that had emerged from the women's discussions.

The photovoice sessions culminated with two photography exhibitions in the community (one lower caste, one upper caste, as interactions between castes is limited) to showcase the women's photographs and accompanying narratives, both selected by the women.

During each session, the women received breakfast and a small travel stipend (in accordance with local customs for compensation).

Self-reported mental health (presence of symptoms of depression) was assessed before and after the photovoice intervention using the Nepali version of the Beck Depression Inventory (BDI; higher scores indicate greater depression) (Kohrt *et al*, 2002). Prior to the first photovoice session, we also collected self-report demographic information: religion, literacy, age, caste and marital status. Transcripts from the two interviews (time 1 and time 2) were analysed in NVIVO for Mac (version 10) using grounded theory to develop the analysis codebook. Quantitative analyses were conducted using STATA software 13.1.

Results

A paired *t*-test revealed a significant reduction in depression following the photovoice sessions: mean $BDI_{allwomen}$ score, time 1 = 23.20, s.d. 9.00, and time 2 = 7.44, s.d. 8.05 ($t = 7.97$, $p < 0.001$).

The interviews revealed three themes: the benefits of sharing environmental best practices; the importance of building community capacity to adapt to and mitigate environmental issues in the community; and the importance of sharing stories to build confidence and ease pain (Tables 1 and 2). The interviews also highlighted barriers to maintaining photovoice projects in the community: no one to train or facilitate; no funding to participate (60% said they would need compensation and food to participate in facilitator training or future photovoice sessions); and envy from non-participants in the community. Notably, though 40% stated they would need a non-peer facilitator, 60% said they could self-facilitate if facilitator training were available.

Discussion

The aims of this study were to investigate whether community-based participatory research can help women in a vulnerable low-income country understand and adapt to important environmental challenges related to climate change; and whether this activity could help promote mental health.

Table 1

Examples of participants' accounts of the effects of climate change on their mental health and well-being, and useful adaptive strategies

Theme	Quote
Benefits of sharing environmental best practices	'We talked about water scarcity, drought and we understood about the pain in our heart. This is very big learning … if we try to dig deeper, there will be made a hole in the ground, but if we don't dig the ground will be smooth. That is, if you want to keep on digging deeper, there will always be more to share.' *25 years old, Dalit, illiterate*
Importance of building community capacity to adapt to and mitigate environmental issues in the community	'What I feel is, though I am a part of a problem, I can take few small steps like. I can plant a tree after cutting one tree. I can educate my children. I can keep my surroundings clean…. If I do good things like these then people will also follow. That is how our society will progress. We should behave positively with everyone and not to think negatively about others. We shouldn't lie.' *27 years old, Bahun, literate*
Importance of sharing stories to build confidence and ease pain	'In this training, we learned that we women need to come together and talk and sing and dance. All us women have pain in our heart, so we can come together, talk about funny things and smile too to get rid of pain. This also we learned…. Besides that, I also learned to speak in front of people.' *49 years old, Dalit, illiterate*
Barriers to sustainability of photovoice	'Without remuneration who will come to take training? These women from the village, when they have to speak in front of the group, their heart trembles … so if there was no money being given, why would they come then?' *45 years old, Dalit, illiterate*

Table 2
Photograph assignments taken by photovoice participants

Problem-posing question	Representative quotes	Photovoice results
What are the problems faced due to drought?	'This woman who has gone to plough the field is lying sad thinking how to grow food.' *45 years old, Dalit, illiterate*	
What are the impacts of water scarcity?	'Due to lack of water, these cows lick the soil….There is no water; life seems dried up.' *25 years old, Dalit, illiterate*	
What are the causes of stress?	'Despite working very hard in the field, we cannot have a good harvest; this gives pain in my heart.' *43 years old, Bahun, illiterate*	
Due to *hawapani bigriyera* (climate change), what diseases are contracted by us?	'Due to lack of drinking water, my little granddaughter is suffering from diarrhoea and vomiting. This little child is suffering; sometimes her fever is going high, sometimes low. Elder people are also getting sick; I am also sick – I have dysentery.' *45 years old, Dalit, illiterate*	

While further studies using larger samples and different settings will be needed to confirm the findings, women subsistence farmers in this study reported reduced depression after sharing stories and ideas using photovoice.

As in Uganda (Berrang-Ford *et al*, 2012), the Nepali women's photovoice discussions elucidated climate-sensitive health issues and showed how social and cultural factors influenced them. These Nepali women engaged with and enjoyed photovoice, supporting the view that participatory methods represent ethical, feasible and culturally appropriate approaches to engage community members for mental health promotion in the context of climate change (Wang & Burris, 1997); and that these methods can help reduce health disparities (Wallerstein & Duran, 2006). Photovoice could thus be used as a community-based and participatory mental health intervention in the context of climate change.

These findings imply that local Jumla policy should be adapted to support women *in place* and that dedicated resources are needed for this. Psychiatrists and community health workers can help by:

- integrating mental health services into primary care
- promoting community resilience
- educating communities about the mental health effects of climate change (Maughan *et al*, 2014).

Photovoice can be used as a well accepted tool to achieve these goals, particularly for building needed social capital.

Conclusion

Women subsistence farmers face formidable risks from climate change. Photovoice, as a well accepted participatory method, can help identify local and existing resources (e.g. women's groups, environmental training), generate adaptive strategies and promote mental health. This study highlights the importance of mental health and emotional responses related to climate change and their effect on adaptive capacities, coping and community capacity. Creating opportunities, such as photovoice, to share stories about the changing environment, and to discuss adaptive responses, may help to strengthen emotional resilience.

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