Risk Communication for Empowerment: Interventions in a Rohingya Refugee Settlement

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ABSTRACT: There are many reasons that people, when warned of an impending extreme event, do not take proactive, self-defensive action. We focus on one possible reason, which is that, sometimes, people lack a sense of agency or even experience disempowerment, which can lead to passivity. This article takes up one situation where the possibility of disempowerment is salient, that of Rohingya refugees who were evicted from their homes in Myanmar and forced to cross the border into neighboring Bangladesh. In their plight, we see the twin elements of marginalization and displacement acting jointly to produce heightened vulnerability to the risks from extreme weather. Building on a relational model of risk communication, a consortium of researchers and practitioners designed a risk communication training workshop that featured elements of empowerment-based practice. The program was implemented in two refugee camps. Evaluation suggests that the workshop may have had an appreciable effect in increasing participants' sense of agency and hope, while decreasing their level of fatalism. The outcomes were considerably more positive for female than male participants, which has important implications. This work underscores the potential for participatory modes of risk communication to empower the more marginalized, and thus more vulnerable, members of society.

KEY WORDS: Empowerment; relational model; risk communication; Rohingya refugees

1. INTRODUCTION

1.1. Problems with Disaster Risk Reduction

In the hills on the outskirts of the district of Cox's Bazar, Bangladesh, there is a massive encampment of Rohingya refugees who fled ethnic strife in nearby Myanmar. The makeshift huts, perched all across the hilly, denuded terrain, are vulnerable to flash floods, mudslides, and other risks from tropical cyclones and severe monsoons. This article takes up the challenge of communicating these risks.

Tropical cyclones, on the face of it, should be reasonably predictable phenomena. For more than a decade now, weather agencies have had the capability for providing predictions (of timing and location of landfall) as early as five days prior to arrival of a tropical cyclone (Rappaport et al., 2009). Locational forecasts have become reasonably accurate with average three-day locational errors in the Atlantic averaging about 75 nautical miles or 139 km (Landsea & Cangialosi, 2018) and windspeed errors averaging about 20 kt or 37 kph (Emanuel & Zhang, 2016). Though no amount of lead time may suffice to adequately prepare for an extreme weather event, the improvements in forecasting provide considerable opportunity for authorities to

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disseminate warnings and advisories to potentially impacted communities days in advance.

But, far too often, community residents are nevertheless caught unprepared when the tropical cyclone does strike. Evacuation, which is a clear, unambiguous action that authorities will often recommend, is often not undertaken by residents, and large casualties can result. In 2013, Typhoon Haiyan caused a series of storm surges that took the lives of at least 6,300 people in Tacloban City, Philippines, most of whom had stayed in their homes (Jibiki, Kure, Kuri, & Ono, 2016). In 2005, Hurricane Katrina brought storm surges that resulted in at least 1,200 fatalities in Louisiana and Mississippi; again, people failed to evacuate (Cole & Fellows, 2008; Knabb, Rhome, & Brown, 2005). The largest such tragedy, thus far recorded, occurred in Bangladesh when, in 1970, the Great Bhola cyclone, claimed up to half a million lives (Hossain, 2018).

The literature has provided ample insights into the factors that contribute to such tragedies. Massive storm surges are, often, once-in-a-lifetime events and, so, lie outside local personal and institutional memory which can make people underestimate what will happen and underreact (e.g., Gaillard, Hagler, & Denniston, 2008; Howe, Boudet, Leiserowitz, & Maibach, 2014; Jibiki et al., 2016). In some cases, evacuation intent is hindered by a lack of nearby evacuation centers or perceptions of unsafe conditions in them (Amin, 2007; Paul, 2014; Paul, Rashid, Islam, & Hunt, 2010). In many cases, problems with risk communication have been implicated. Surveys, done after a number of large tropical cyclones, suggest that advisory bulletins from authorities prove too technical or ambiguously worded such that many people ignore them (Cole & Fellows, 2008; Lejano, Tan, & Wilson, 2016; Paul & Dutt, 2010; Paul et al., 2010). Or, since the advisories are worded too generally, people do not feel these are directly pertinent to their own situations (Cole & Fellows, 2008; Jibiki et al., 2016; Lejano et al., 2016; Sorensen & Sorensen, 2007).

There is another important factor to consider: in the face of some extreme event, some feel powerless and are unable to act (Cornia, Dressel, & Pfeil, 2016). In some cases, people exhibit a kind of fatalism that prevents them from taking positive action (Baytiyeh and Naja, 2016; Paul et al., 2010; Rindrasih et al., 2018). For some, it is the larger social structuring that inhibits their action, as the lack of power experienced by women in some communities (Ikeda, 1995; Islam, 2011). There is a growing literature on the differential vulnerability of women to disasters (Ajibade, McBean, & Bezner-Kerr, 2013; Enarson et al., 2004; Neumayer et al., 2007; Sander, Lejano, Aliposa, & Casas, 2017). Social patterns, especially among lower-income communities, can add to such vulnerability—e.g., the practice of purdah, or seclusion inside the home, that can keep women in some communities excluded from networks of communication and action (Ikeda, 1995; Ahmed, 2004; Paul, 2014; Sander et al., 2017). In some case studies, women were found to have felt excluded from cyclone shelters that were dominated by men and not sensitive to their needs (Haque, 1995; Saha & James, 2017). These structural patterns magnify the vulnerabilities associated with poverty, such as the lack of mobility and resources needed for evacuation (Bolin & Kurtz, 2018).

In any case, these situations lead to a lack of agency among vulnerable groups (Brown & Westaway, 2011; Lin, Shaw, and Ho, 2008). Even when the barriers to risk cognition are surmounted, people can still fail to take positive action. In this article, we focus on this issue of lack of agency and inquire into how risk communication can address this. If we conceive of people's sense of morale as on a continuum between a state of helplessness and inability to act to one of empowerment and agency, how might risk communication help people move along the continuum? Surely, risk communication forums can take advantage of the considerable knowledge gained by scholars and practitioners on empowerment.

This can be particularly serious in the face of extreme events, where people can feel a loss of self-efficacy (Neuwirth, Dunwoody, & Griffin, 2000). Various models of risk decision making highlight the importance of people believing they can take positive and effective actions (in other words, having a sense of agency and self-efficacy) before they decide to act (e.g., Floyd, Prentice-Dunn, & Rogers, 2000; Lindell & Perry, 2012). Crosman, Bostrom, and Hayes (2019) make a distinction between agency (self-efficacy) and effectiveness (response efficacy) but underscore the need for both. We take up the idea of empowerment below.

1.2. Empowerment

In response to the problems described earlier, a sense of agency can be fostered if there are interventions that seek some type of empowerment of the most vulnerable. Empowerment is a process by which people gain mastery over issues of concern to

them (Zimmerman, 1995). To be empowered means one exhibits a sense of agency and can take action in the face of impending hazard. It means having the confidence that such action will have a beneficial impact. But through what interventions might empowerment come about? In this article, we focus on this particular aspect, which is how we might tailor the risk communication process to increase the level of empowerment among the target population.

There is a large and diverse literature, especially in the fields of health promotion and social work, around empowerment-based intervention, but some common ideas stand out. First, the interventions should revolve around helping participants realize that they have the capacity for self-determination—i.e., the right and ability to make their own choices and decisions (Aujoulat et al., 2007; Castro et al., 2016), in contrast with compliance with some external directive (McAllister et al., 2012). This means that risk knowledge is not simply transferred from source to recipient but coconstructed (Aujoulat et al., 2007). The task of risk communication is something that should be taken up not just by the authorities and experts but by the public themselves. In a word, we envision ways to democratize risk communication.

People's capacities or experience in decision making should be fostered. But the decisions need to be feasible or, in other words, the decision-maker needs to have a sense of self-efficacy (Babcicky & Seebauer, 2017; Bandura, 1982). To foster self-efficacy, interventions can include enabling the person to access resources and acquire skills and other competencies relevant to the issues at hand (Bennis & Nanus, 1985). This suggests that interventions include some type of competency-building aspect.

Practitioners of participatory action research and critical pedagogy have identified various empowerment-enhancing practices that can be incorporated into forums and workshops. Many of these trace their approach to schools of thought that include Freire's critical pedagogy (Freire, 1970) and action research (Adelman, 1993), which emphasize the capacity for voice and agency even among the most vulnerable in society. Some point to the potential of collaborative risk communication forums for increasing social capital and individual empowerment (Goldschmidt, 2018; Hanson-Easey, Every, Hansen, & Bi, 2018). Research on community engagement underscores how participation and empowerment can increase people's sense of response efficacy (Kerstholt, Duijnhoven, & Paton, 2017; Pa-

ton, 2008). Research in the area of risk analysis and communication supports the idea of participatory forums for involving the public in identifying and responding to risks. McComas, Arvai, and Besley, reviewing the literature on participation in risk analysis, discuss multiple justifications for increasing participation, from responding to people's inherent right to be involved to increased motivation toward action (McComas, Arvai, & Besley, 2009). Webler and Tuler (2018) discuss the distinct "dialogic turn" that has taken place in decision making around risks.

Language can be a factor—e.g., Verroen et al. show that messages emphasizing the efficacy of people's actions can increase their willingness to take risk-preventive steps (Verroen, Gutteling, & De Vries, 2013). Kievik and Gutteling (2011) demonstrated higher intent to act when messages emphasize levels of self-efficacy and response efficacy. The effect may be enhanced when messages underscore risk prevention and not just response (De Boer, Wouter Botzen, & Terpstra, 2014). In the field of health promotion, it has long been known that messages that emphasize positive outcomes and self-efficacy can induce greater behavioral change (Notthoff & Carstensen, 2014; Wansink & Pope, 2015).

The theme of empowerment loomed large around the case study that we will take up in this article, which deals with disaster risk prevention and risk communication among displaced communities—specifically, Rohingya refugees who left their homes in Myanmar and fled into neighboring Bangladesh.

2. CASE STUDY

2.1. The Rohingya Situation

In August 2017, Burmese troops conducted clearance operations in villages populated by ethnic Rohingyas in the western Rakhine region of Myanmar. Over the following month, at least 6,700 Rohingya residents, including 730 children, were killed in the operation, and 288 villages were burned.[1] Since then, almost a million Rohingya have fled Myanmar, crossing the border into southeast Bangladesh, in what the United Nations Human Rights Council has called an act of genocide on the part of the Myanmar government.[2]

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[1]https://www.bbc.com/news/world-asia-41566561.
[2]https://www.ohchr.org/en/hrbodies/hrc/myanmarffm/pages/index.aspx.

With assistance from the Bangladeshi government, the Rohingyas have settled into one of the largest refugee settlements in the world. The largest of these settlements, Kutupalong, is actually a collection of 34 distinct camps. It is managed by the Bangladesh government agency, the Refugee Relief and Repatriation Commission (RRRC), with the support of a large number of international development agencies and nonprofits. Supervision of the camp is divided into different sectors, such as housing, food, sanitation, and others. The specific sector of disaster preparedness and emergency response is overseen by the Cyclone Preparedness Programme (CPP), which works with communities in reducing their vulnerabilities to the heavy annual monsoons and tropical cyclones that beleaguer the country. The Red Cross/Red Crescent also participates in CPP's emergency response work in the camps.

The research team was approached by the CPP to assist the latter in conducting disaster risk reduction training in the Rohingya camps. Already existing training conducted by the CPP in lower-lying areas in Bangladesh focuses on risks from coastal and inland flooding associated with tropical cyclones. At the refugee camps, there are additional hazards as well, including the considerable risk from mudslides and slope failure during tropical cyclones and the strong monsoon rains. The hills upon which the camps have been built have been denuded of most of the original vegetation, exposing the soil to torrential rain and floods, and increasing the hazard. The CPP managers reasoned that residents of the Rohingya settlement were particularly vulnerable to risks from extreme weather, and people from the community shared with them difficulties experienced not just from torrential monsoons but droughts as well. It was decided that a concerted effort would be made at communicating knowledge of risks among the Rohingya and that this would be best conducted in participatory forums.

Fig. 1 shows the location of the camps, indicating the two camps where the workshops were held. The area featured rolling hilly terrain. Camp 1+ varied between 10 and 24 m above sea level, while Camp 4 varied between 7 and 32 m above sea level.[3]

[3]Sources of data used to generate maps were downloaded from the following public domain sites (to obtain boundaries of the camps and topographic contours, respectively):
https://data.humdata.org/dataset/outline-of-camps-sites-of-rohingya-refugees-in-cox-s-bazar-bangladesh
https://data.humdata.org/dataset/contour-lines-for-kutupalong-makeshift-settlement-and-extension-site.
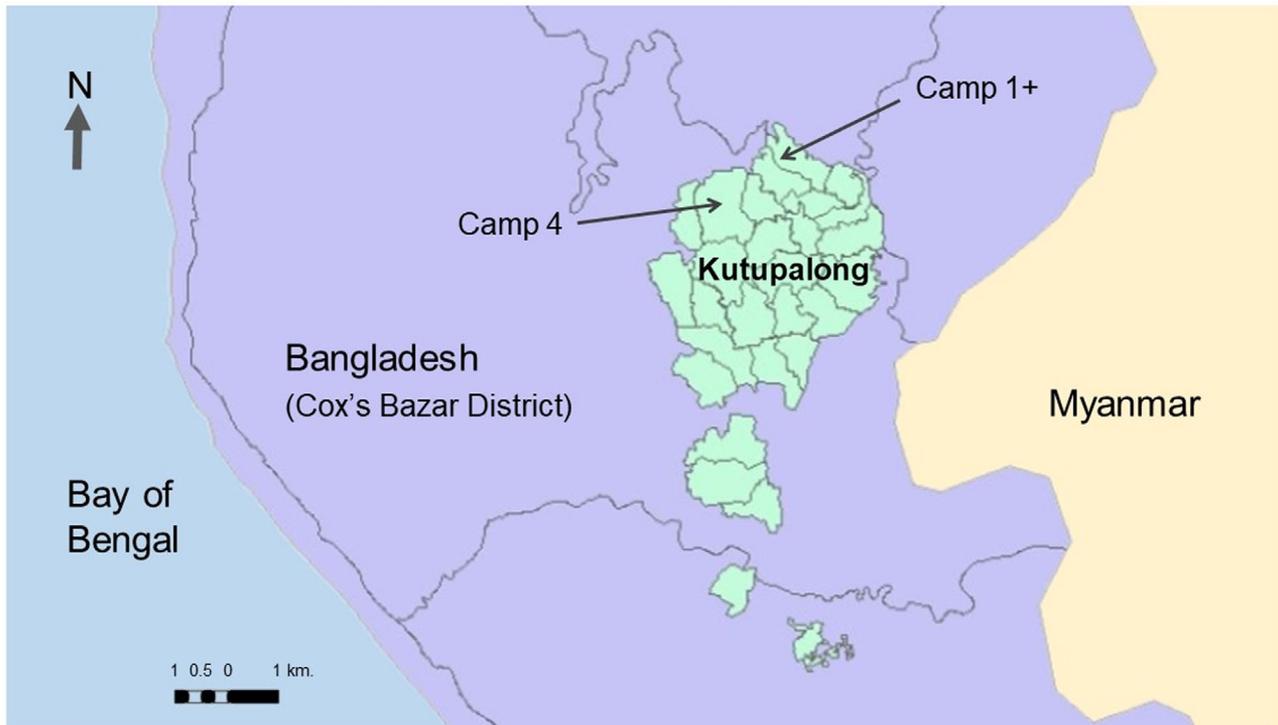
2.2. Challenges Faced in Initiating Disaster Risk Reduction in the Camps

The CPP worked, in less than an official capacity, to make the Rohingya community a part of their jurisdiction (unofficial because, technically, the Rohingya were not Bangladeshi citizens). The very first challenge, for the CPP, was instituting an early warning system in a community and place where, previously, there were no institutions at all, among people who had no prior knowledge of Bangladesh government programs and who spoke a different language. The CPP and American Red Cross (ARC) worked to create new protocol, brochures, and other program elements in the Rohingya language. To create a new early warning system (EWS) in the camps, the CPP installed flagpoles on which warning flags would be issued (consisting of one, two, or three flags, depending on the strength of the forecast cyclone).

Beyond the initial work of instituting a new EWS program, the CPP had to deal with the unique elements of the Rohingya situation. First, there was the coming together of multiple types of risks, including that from mudslides and slope failure, which were not part of the usual CPP programme. There was also the problem of doing disaster risk prevention among displaced people. There was the sheer lack of unfamiliarity with place and institutional context, coupled with deep poverty, that added to their vulnerability. The CPP managers also perceived an attitude of helplessness among many in the community, who had left everything behind, many of whom witnessed family members being massacred. Any interventions would have to deal with the issue of lack of agency.

This is not to say that the Rohingya community is devoid of resources. There have been intensive efforts by national and international organizations since the mass exodus, and more than $1B have been spent on the building up the camps in Kutupalong.[4] One might suppose that all this aid might suffice to give the Rohingya a sense of empowerment and confidence about the future. We can observe that the aid has helped a great deal. However, in the preworkshop meetings the team had at Kutupalong, the CPP director and volunteers shared with us their observation that a major challenge they faced was helping the refugees regain some confidence after undergoing the traumatic eviction from their homeland. The refugees were evicted from their home, and there

[4]https://www.citylab.com/equity/2019/09/rohingya-refugees-kutupalong-camp-design-myanmar-bangladesh/597076/.

Fig 1. Location of Kutupalong refugee camps and workshop sites.

is the growing realization that they might never return. At one point, during a dialogue with a group of Rohingya volunteers, a team member asked about hopes for the future, at which point the translators opted to skip the question, as it was still too painful to talk about now. During the conversations, a number of Rohingya participants became tearful. These otherwise casual, unstructured conversations and feedback made it evident that building empowerment into the workshops should be a goal of the project. Nevertheless, there is a considerable literature on the perils of international aid being used in ways that can actually disempower a recipient community and treat people as passive, dependent subjects (e.g., Bakewell, 2003; Lippert, 1999). Sometimes, the fear is that aid can lead to "learned helplessness" (Garber & Seligman, 1980). There are many reasons to strive for program designs that foster agency and empowerment. At the same time, practitioners are cautioned against underestimating the degree of agency (and overestimating the helplessness) among aid recipients (e.g., Canuday, 2006; Kisiara, 2015).

There is, in addition, the experience of ethnic violence. The community in this study differs from others in which the research team has conducted risk communication exercises. The Rohingya have undergone severely traumatizing experiences, some having experienced physical violence. Surely, such an experience will affect its victims in ways that spill over onto other issue areas. The research cannot parse out how the previous experience of personal and ethnic violence might affect the perception and response to a different area of risk. But we can surmise that, quite possibly, the previous experience may increase the need for empowerment-based workshop designs. The literature on victims of domestic and criminal violence underscores the lingering effects in the way of feelings of helplessness, grief, loss of interest, and other impacts (e.g., Bargai, Ben-Shakhar, & Shalev, 2007; Kluft, Bloom, & Kinzie, 2000; Maguire and Corbett, 1987; Shepherd, 1990). This is echoed in the literature on victims of conflict, particularly those who suffer violence and displacement (Egbuagu, Ugwu, & Ibeawuchi, 2018; Moya & Carter, 2019; Roberts et al., 2009). Though studies among the Rohingya are sparse, one earlier study at the Kutupalong camps suggested high levels of depression and significant levels of posttraumatic stress disorder (PTSD) (Riley, Varner, Ventevogel, Taimur Hasan, & Welton- Mitchell, 2017).

Closely related to these considerations is the recognition that disasters have a strong gender

dimension. In particular, the exclusion of women from decision making, community planning, and other networks of influence can render women in lower-income communities more vulnerable. Practitioners in Bangladesh have in recent years underscored the need for greater inclusion and participation of women in disaster risk prevention (Hasan, Nasreen, & Chowdhury, 2019; Paul, 2014).

The research team was charged with working with CPP and volunteers among the Rohingya to design and begin implementing an empowerment-based workshop on risk communication and disaster risk prevention. The goal was to share knowledge of natural hazards (particularly from tropical cyclones) in the community, but also to encourage community members to be proactive in taking risk-reducing actions.

2.3. Designing Empowerment-Based Risk Communication Workshops

The research team began designing a risk communication training seminar to be pilot tested at the Kutupalong camps. Conventionally, the training would consist of imparting knowledge concerning hazards from tropical cyclones and understanding CPP's early warning system. To this basic template, the team incorporated elements based on principles of empowerment.

These principles are discussed below and, further down, translated to elements of the workshop design. This design has been referred to elsewhere as a relational model of risk communication (Lejano, Casas, Montes, & Lengwa, 2018), since it emphasizes not just the transmittal of information but direct engagement of persons in the process. The relational approach entails translation of messages into everyday language, as if being told by one peer to another. This has roots in the elaboration likelihood model (ELM) theory, which posits that people are more likely to thoughtfully process (and act upon) risk information if such information is vivid enough to convey the nature of the risk and if it is seen as self-relevant to their own situation. The kind of direct communication recommended by the relational model, which simulates direct conversation between peers, is thought to increase the vividness and self-relevance of the information (Lejano et al., 2018). The workshop also draws from the areas of Freirean pedagogy (Freire, 1970; Gibson et al., 2019) and participatory action research (Lewin, 2016; McCall et al., 2012; Van Niekerk, Nemakonde, Kruger, & Forbes-

Genade, 2018), which emphasize the role of critical reflection in having a participant self-assess their situation and develop responses to it. The workshop design emphasizes the following principles (see also Lejano, Pormon, & Yanger, 2020).

1. Democratizing risk communication

The idea is that risk communication is most effective when participants are not just recipients of knowledge but bearers of it as well. In this way, participants can feel control over their destiny, being proactive with the knowledge and not passive. Another aspect of this is that the knowledge needs to be translated, from technical and formal, to direct and personalized forms—i.e., into an everyday narrative that community residents can share (but without sacrificing informational content).

2. Teaching to the nth power

The workshop design also aims to be a train-the-trainer forum, where participants learn to teach others to be risk communicators, as well. The idea is that, in this way, risk knowledge can penetrate into a community in a deeper way, hopefully reaching even those most excluded from the process. The workshop involves breaking into small groups, with each group run by a volunteer moderator from the Rohingya community.

3. Reflection and Conscientization

Drawing from Paolo Freire's pedagogy for empowerment and participatory action research, the workshop involves critical reflection by participants on how and why the community is vulnerable to extreme weather events, how people's experiences of trauma and expulsion may contribute to a lack of agency, and steps that can be taken by people to respond to their own situation. The workshop design involves the following elements.

2.3.1. Reflection

The first small group exercise involves critical reflection. Participants are invited to share their experiences, ostensibly with regard to dealing with extreme weather, and the challenges of settlement life, but allowing for discussions that pertain to the larger experience of displacement as well. The moderator then encourages the group to focus on risks from natural hazards, leading to a discussion of how and why residents are vulnerable to floods, mudslides, and other

risks. The discussion touches on why some residents are passive and do not take self-protective actions. Some time is allocated to discussions around what residents can do, including methods for risk prevention. This exchange closes with discussions on what each person can do to motivate neighbors to be more active in risk reduction.

2.3.2.   Active Translation

The second group exercise involves taking formal communication regarding tropical cyclones (including bulletins from the weather agency, EWS system warnings, and others) and translating this into more personalized forms using everyday language. The objective is to be able to tell a story that can be passed on from neighbor to neighbor. Participants take turns role-playing how they translate a formal message into their own narratives, simulating how they might broadcast messages on a megaphone or in a text message to friends.

2.3.3.   Sharing/Teaching

The entire assembly reconvenes, with groups taking turns presenting their work and teaching others about their strategies for communicating risk knowledge with others and local responses for reducing risks from tropical cyclones. The presentations are framed as opportunities for each group to teach the rest of the attendees.

Each small group has a moderator. At Kutupalong, these were teachers from the Rohingya refugee community who volunteered to lead each group. CPP staff made a deliberate effort to seek out and recruit teachers for the role. Each moderator spent a day with the research team to train for their roles. The training also included how to administer the survey instrument (as described below). Moderators also took charge of writing key notes from the discussions on a flipchart for use in presenting the output to the entire assembly.

3.   RESEARCH METHODOLOGY

Workshop material, including the workshop design and assessment instrument, is archived at the following website: https://environmental-communication.space. Two workshops were held, one in Camp 1-extension (referred to as 1+) and another in Camp 4 at the Kutupalong refugee camps in Cox's Bazar, Bangladesh. The research team sought out teachers from the Rohingya refugee community to act as group moderators and met with the volunteers the day before the workshop. Participants were divided into four groups in each camp, sorting out by age and gender. It was the opinion of the CPP and volunteers that small group discussions would be more engaging if these subgroups were formed. The composition of each group is shown in Table I. In recruiting participants, there was an effort to get participation from at least an equal (or greater) number of females as males. The entire workshop spans about five hours, with a break in the middle for lunch.

Each workshop involved recruiting 36 Rohingya participants. Each camp is divided into blocks—e.g., camp 4 has three blocks, which means finding 12 volunteers from each block. To do this, the CPP contacted the block leader (referred to as the majhi), who would then talk to people in the block to recruit volunteers. There were a few criteria used by the majhi, such as finding people who had not participated in the CPP training before and who were literate. Other than that, the majhi simply walked around the block talking to people, in no predetermined order, until enough people had volunteered to fill the 36 slots. The target number of 36 was chosen as the most manageable number that could reasonably participate in a workshop, the size of the venue (the meeting tent) being one determining factor. As discussed later in this article, the team found the level of discussion in each group to be encouraging and, moreover, the survey sample size adequate to provide indications of workshop effects.

The premise behind the workshop design is that they should have the effect of increasing the sense of agency, hope, and empowerment among participants and, thus, priming them away from inaction and toward risk reduction (including acting as risk communicators in the community). Pre- and postsurveys were administered to assess any changes in attitudes that might be associated with the workshop. Survey respondents were asked to rate their degree of assent to a number of statements on a Likert scale. The statements were written to reflect: fatalism, agency, and hopefulness. The main question is whether ratings attached to the different statements change after the workshop experience. The premise is that postsurveys should show a redistribution of survey scores away from fatalism and toward agency and hopefulness. A second area of inquiry is whether changes in response (i.e., post- vs. presurveys) might be different across gender. Respondents were asked

Table I. Age and Gender Distribution of Workshop (Camps 1+ and 4)

Camp	Gender	Age Bracket	No. of Participants in Group	Age Distribution of Persons in the Group (years)
1+	Female	12–25	10	12, 18, 20, 20, 20, 22, 22, 22 22, 24
1+	Female	26–60	10	30, 30, 30, 40, 40, 45,46, 50, 52,58
1+	Male	12–25	8	14, 20, 22, 23, 24, 25, 25, 25
1+	Male	26–60	8	29, 32, 33, 33 35, 52, 53, 60
4	Female	12–25	10	12, 16, 17, 18, 20, 23,24, 25 ,25, 25
4	Female	26–60	10	28, 28, 30, 30, 30, 40, 42, 42, 45, 55
4	Male	12–25	8	14, 20, 20, 21, 23, 24 24,25
4	Male	26–60	8	33, 34, 34, 40, 40, 42 48, 60

to rate each statement according to how much her or his sentiments agree with it. The statements being rated are as follows:

- Whatever happens to us will happen; just hope for the best. (fatalism)
- All we can do is stay in our homes until the storm passes. (fatalism)
- We have to get more information to decide what to do. (agency)
- We have to go to our neighbors and disseminate the warning to them. (agency)
- Hope I will be more prepared for disaster in future. (hopefulness)
- I hope to deal with the disaster itself in the future. (hopefulness)

Because the level of literacy was found to be below 50%, the survey was administered verbally, with moderators working with each individual to solicit responses to each survey item. Organizers also asked the research team to keep the survey short and relatively simple, since they thought that participants would have limited experience with surveys and, so, it would require extra time to administer the survey.

Differences between the pre- and postsurveys were analyzed using the Wilcoxon signed-rank test for paired ordinal data. Nonnormality of the data was confirmed, hence use of the nonparametric tests. To test differences across gender, the Mann–Whitney U test was performed since the samples are independent (female responses compared to male). All statistical tests were conducted using SPSS.

4.   RESULTS

The results of the statistical analysis are shown in Tables II and III. The data set combines survey responses from the two workshops in Camps 1 and 4.

Table II shows the statistical results from comparisons between paired pre- and postsurvey responses for each of the statements. The absolute magnitudes of the responses are not important in and of themselves; what matters is how they change after the workshops. As the table shows, there are appreciable reductions in the weight participants give to the fatalistic statements and appreciable increases in the weights attached to the statements pertaining to agency and hope. Results are significant to greater than 95% confidence.

Table III presents the statistical comparison of post-minus-presurvey responses for female versus male respondents. The drop in priority attributed to fatalistic statements seems to be approximately the same for women and men (with the change being slightly more pronounced among the men). But the increase in priority given to statements reflecting hope and agency seem to be substantially greater among women than the men. Except for the responses to the statements "Whatever happens will happen" and "We have to get more information," changes in responses for women were significantly greater than for men to better than a 95% level of confidence (differences for the second statement are significant to a 90% level of confidence).

The difference in results across gender was largest for the statement "We have to go to our neighbors," where responses for women improved by an average of 1.88 while there was no change on average for the men. There was also consider difference between genders in the response to the statement "I hope to be more prepared in the future," where responses for the women improved by an average of 1.90 and those for men improved by only 0.69. In contrast, the drop in fatalism was greater for the men for the statement "All we can do is stay in our homes," averaging −1.28 versus −0.13 for the women.

Table II. Results of Wilcoxon (Signed-Rank) Test for Paired Samples of Pre- and Postworkshop Surveys ($n = 72$)

Type of Statement	Statement	Presurvey (Mean)	Postsurvey (Mean)	Post-Pre Survey (Δ Mean)	Z	p
Fatalism	Whatever happens will happen, just hope for the best	2.58	1.33	−1.25	−4.95	<0.01
Fatalism	All we can do is stay in our homes until the storm passes	2.61	1.97	−0.64	−2.85	<0.01
Agency	We have to get more information to decide what to do	2.33	3.21	0.88	−4.68	<0.01
Agency	We have to go to our neighbors and disseminate the information to them	2.10	3.14	1.04	−4.66	<0.01
Hopefulness	I hope I will be more prepared for disasters in the future	1.90	3.26	1.36	−5.79	<0.01
Hopefulness	I hope to deal with the disaster itself in the future	1.64	3.24	1.60	−6.91	<0.01

Table III. Results of Mann–Whitney Test Comparing Female and Male Survey Responses

Type of Statement	Statement	Post-Pre (Δ), Female	Post-Pre (Δ), Male	Mann–Whitney U	Wilcoxon W	P
Fatalism	Whatever happens will happen, just hope for the best	−1.4	−1.06	503	1,323	0.113
Fatalism	All we can do is stay in our homes until the storm passes	−0.13	−1.28	868	1,688	0.009
Agency	We have to get more information to decide what to do	+1.20	+0.47	805	1,625	0.053
Agency	We have to go to our neighbors and disseminate the information to them	+1.88	0	1,080	1,900	<0.001
Hopefulness	I hope I will be more prepared for disasters in the future	+1.90	+0.69	912	1,732	0.001
Hopefulness	I hope to deal with the disaster itself in the future	+1.85	+1.31	823	1,643	0.031

5. DISCUSSION

The results provide ample reason to hope that participatory workshops, especially those designed with empowerment in mind, may help to move people from passiveness to action and from a loss of hope to a sense of agency. A particularly positive result is found in the seemingly greater effect of such workshops on women in the community. Conversations with the disaster preparedness community in Bangladesh have suggested that the marginalization of women in lower-income communities is a particular concern. In some cases, women are excluded from public spaces (e.g., the mosque, the marketplace, etc.) and sometimes relegated to the domestic sphere—this can have the effect of shutting women off from networks of knowledge and action. Such social patterns can also be conducive to a loss of sense of agency. It certainly makes sense that, if the need for inclusion and knowledge are greatest for some groups compared to others in a community, then these types of forums should have their greatest benefit for those groups.

The patterns found are suggestive, though not conclusive. We do not have enough experience with the workshops to make definitive conclusions. But the data do seem to underscore the importance of having more women fully participate in the risk communication process. Speculating and generalizing further, it is possible that these workshops may have a greater effect among the more marginalized members of a community.

While the results suggest that these types of forums can have a positive effect, we cannot ascertain what is it exactly that promotes a sense of agency and hopefulness about taking action. Does the gain come

mainly from the discussion groups, the informational content of the forums, or the sense of community and camaraderie that may be imparted in these events? We are not able to get finer results, in part to the difficulty of standardizing the process. Each workshop group has its own dynamic, and things like the skill and personality of the group moderator is a factor that may widely vary from group to group. One of the CPP managers shared with the research team insights about how the ability of the moderators to engage participants in sharing and reflection seemed to be key in managing the process.

There are a number of limitations to the research. There is the issue of what Bourdieu referred to as the synoptic error—i.e., well-intentioned participants answering surveys in ways that they perceive as being cooperative with the moderator or researcher (Bourdieu, 1984). Admittedly, we have no way to correct for this possibility, except that we suggest that the research design is not so transparent as to make the hypotheses behind the surveys obvious. In addition, the differences in answers between groups (i.e., female vs. male) is not consistent with the group simply trying to support the team's objectives. As with most other survey research, there is a degree of faith in that researchers need to presume that most of the respondents are answering in good faith.

The question arises, also, of long-term versus short-term change. The research described herein speaks to changes in attitude arising from the workshop. Beyond this, it is hard to say. It is difficult, especially in disaster reduction work, to establish counterfactual situations where one can compare behavior and outcomes with and without intervention. In a subsequent conversation with a Rohingya team leader, he reported that a number of workshop participants shared their learnings from the workshop with their fellow camp dwellers, formally through their regular meetings and also informally through interpersonal communications (though these interactions were not quantified or recorded). In addition, since the workshops, there (fortunately) have not been any tropical cyclones that necessitates emergency response at the camps. The research described herein pertains only to increased intention to risk preventive action in the near term. Nevertheless, we are guided by research that suggests that, provided there are no obstacles to action and that people see the efficacy of action, that intention often leads to positive action (e.g., Ajzen, 1991).

Similarly, the focus of the workshop was on empowerment at the individual level more than on the group. Distinguishing between individual versus collective empowerment is relevant because the processes needed at one level may differ from that required at another (Rocha, 1997). This is especially relevant considering that the workshop seems to have had a greater effect on the women's groups over that of the men's. The question arises of how effective it is for the individual to be empowered when broader societal structures do not change. For example, if women in a certain community are still excluded from decision-making forums, can a greater sense of empowerment lead to substantial change? With the Rohingya community in question, the group understood that the daily round of women and men might be different—e.g., men having greater access to the mosque. But this further underscored the need to include both women's and men's groups— i.e., women would have access to spaces frequented by females in the community and share knowledge this way. Limitations due to broader societal patterns are recognized. One common grievance among the refugees concerns how individuals would like to seek gainful employment but are prevented from seeking jobs outside the camps. Broader (societal, structural) patterns can have a limiting effect on the potential gains from workshops aimed at empowering people at the individual/personal level. But one should not underestimate the power of individual action and, moreover, the possibility that individual empowerment can lead to activities at higher levels such as seeking representation at national decision-making bodies (e.g., Agarwal, 1994).

6. CONCLUSION

The goal of risk communication is sharing knowledge about the nature of risks and what risk-reducing actions can be taken. But participatory modes of risk communication can pursue additional goals. One of these is empowerment, which is about motivating and encouraging participants to be proactive rather than passive about reducing risks. Empowerment is about participants discovering or reaffirming a sense of agency and a belief that their actions can have positive impacts.

At the other end of the spectrum of attitudes is a sense of loss of control over one's fate. This can lend to inertia toward positive action. CPP members were wary of this possibility in the case of the refugees.

Thus, the risk communication workshops were designed to be motivational as well as knowledge-enhancing. This entails building in opportunities for participants to be critically reflective of their own situation. Another element is encouraging them to become local experts and educators, who could guide others around them through similar processes of reflection and planning. These types of workshop activities would, ideally, enhance people's beliefs that their fate is not completely out of their hands. Workshop organizers were also cognizant of the possibility that, for some, talking about one's or one's family's risks can be traumatizing—in these cases, moderators can try objectifying the situation (e.g., "what would you tell someone in your community who is seeking advice?") so that people can assess the situation from some cognitive-emotional distance. There is also the factor that, while many risk-preventive actions can be undertaken by the individuals, other actions necessarily lie in the hands of agencies and organizations—the group reflection can take up these discussions as well.

The workshop was assessed by measuring changes in attitude before and after participating in the workshop. To gauge this, responses to a set of statements, corresponding to attitudes of fatalism, agency, and hopefulness, were solicited. The outcome, which was a positive change in degree of association with statement of agency and hopefulness and a decrease in association with fatalism, suggests that workshops like these can have positive attitudinal effects. Also important is that fact that the measured changes were largely greater for female participants. This highlights even more the urgent need for greater participation, decision-making authority, and voice for women in the community.

The research was able to assess the near-term effects of the workshop on participants' attitudes. What is not readily accessible to researchers are more distal effects like changes in evacuation rates and other risk-reducing actions. It is difficult to assess longer-term behavioral changes because there are too many uncontrolled variables. For example, one cannot create control groups since the desire is to extend these types of training to all the communities. The effects of a tropical cyclone is very much contingent on its effects in each locality (e.g., degree of flooding, size of storm surge, and severity of soil erosion). Nevertheless, we can be confident that longer-term outcomes are more likely when we can discern near-term changes in attitudes and behavior.

While the workshop has had some positive results, we do not deny the challenges involved in this endeavor. Risk communication can only touch on a part of the people's experiences, especially for the Rohingya refugees, who experienced enormous distress and persecution. Nevertheless, the workshops are a positive step. It is hoped that this research can be part of a continuing effort to identify practices that can instill the goal of empowerment into the design of risk communication forums.

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