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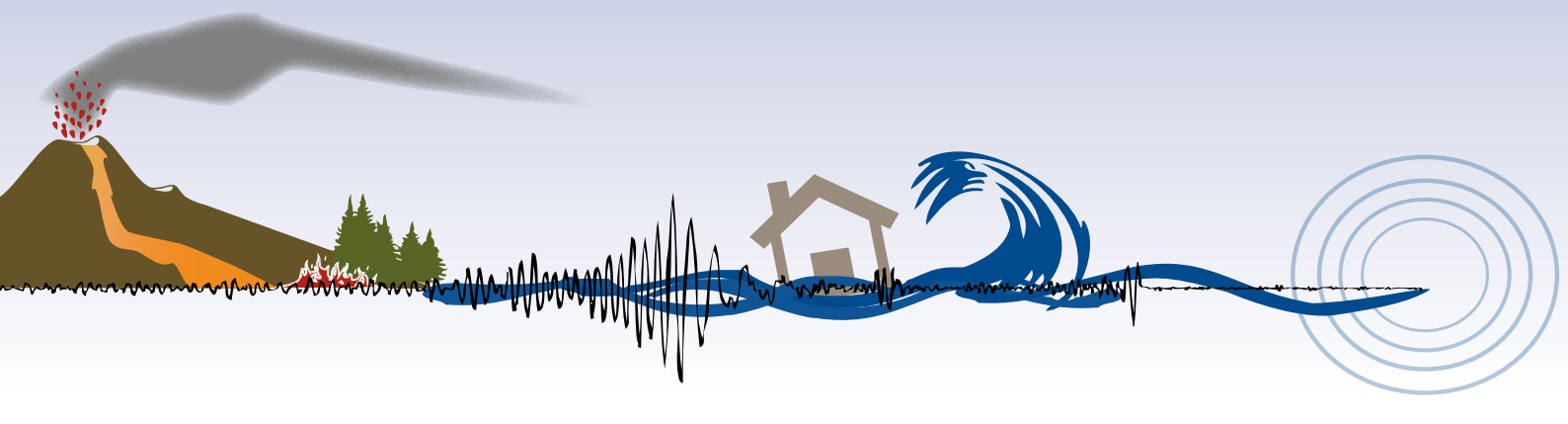

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Asking for help and receiving support after a disaster

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Abstract

After a disaster strikes, many people need support – material, emotional and informational. To what extent does their comfort with asking others for support affect the support they receive? Participants were 191 residents of Christchurch, New Zealand (79 males, 112 females), who had experienced two major (4 September, 2010; 22 February, 2011), and many lesser, earthquakes. Surveys measuring help-seeking comfort, amount of support received, disaster exposure, and socio-economic status were delivered by hand to varying socio-economic areas around the city. The results indicate that the support people received was more influenced by their disaster exposure than by their comfort in asking for support, and that there was a disconnection between the type of help they were comfortable requesting and the type of support that they received. Overall, our respondents most reported receiving emotional support, received from friends and family in particular.

Keywords: *Christchurch; earthquake; help-seeking; comfort; support*

A rise in the human population has seen the rate of those affected by disasters grow dramatically (Aldrich, 2010; UNISDR, 2005; Peek & Mileti, 2002). With our increasingly interconnected world, the news and consequences of any disaster easily cross national borders (UNISDR, 2005). It has become increasingly important to improve our understanding of how people recover from such disasters.

Although a major part of recovery from disasters is aid related, it has been observed that people often fail to receive the help they need despite its availability (Carlton & Deane, 2000; Gourash, 1978; Moreira et al., 2005). One reason why they may not receive help is because they do not feel comfortable about asking for it. Some individuals simply find it harder to ask for help than others (Gourash, 1978; Kaniasty & Norris, 2000). This paper looks at people's comfort in asking for help in the wake of the Christchurch, New Zealand earthquakes of 2010-2011, and how this related to the support they received.

Marshall (1997, p.491) remarked that "New Zealanders pride themselves on their frontier spirit of self-help". However, when a large scale disaster occurs, such as the earthquakes experienced on September 4, 2010 and February 22, 2011, this value may prove maladaptive. These two earthquake events left households from all socio-economic backgrounds in need of help and support from family, friends, and outsiders.

The second large earthquake, in February, 2011) resulted in the death of 185 people. Thousands of Christchurch residents vacated their homes due to damage or destruction (Bruns & Burgess, 2012; Giovinazzi, Stevenson, Mitchell, & Mason, 2012; Kaiser et al., 2012; Potter, Becker, Johnston, & Rossiter, 2015). Around 900 business properties, the majority of them in the Central Business District, were consigned to demolition. Residents also dealt with extensive liquefaction, which reoccurred after major aftershocks and disproportionately affected those in the eastern and poorer suburbs (Kaiser et al., 2012; Smyrou, Tasiopoulou, Bal, & Gazetas, 2011). In addition, widespread power outages were experienced for up to 10 days following the February earthquake (Massie & Watson, 2011) and the city's sewage system was seriously damaged (Billings & Charman, 2011). The February earthquake was therefore by no means the end of the earthquake sequence impacts. There were also major earthquakes on 13 June and 23 December in 2011 that produced considerable damage in some areas.

These events led to psychological distress for many people, including sleep disruption, cognitive disruption, stress, anxiety and depression (Goenjian et al., 2000; Helton, Head, & Kemp, 2011; Kemp, Helton, Richardson,

Blampied, & Grimshaw, 2011). Although most people who experience psychological distress after a disaster seem to recover in reasonable time (Gluckman, 2011), this is by no means always the case. Some disaster-affected individuals develop post-traumatic stress and other longer term disorders (see for example, Ozer, Best, Lipsey & Weiss, 2003; Yzermans et al., 2005). The way the development of post-traumatic stress disorder can be predicted by a lack of social support (Ozer et al., 2003) was of particular relevance to the current research.

Resilience is an important concept in considering people's recovery from disasters and how they manage that recovery (Allenby & Fink, 2005; Bruneau et al., 2003; UNISDR, 2005; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; UNISDR, 2007). There are many ways to define resilience and indeed Stevenson, Vargo, Ivory, Bowie and Wilkinson (2015) identified 120 different definitions of the concept. However, this variety of different definitions appears to reflect the vast variety of different applications of the concept rather than more conceptual differences in what the term implies.

For the current research, with reference to Allenby & Fink (2005), Norris et al. (2008) and Smith (2013), we defined psychological resilience to be a person's capability to cope and adapt following a significant emotional disturbance. Psychological resilience is studied partly with the aim of discovering and eventually creating the social environment needed to promote human resilience, thus further protecting at risk communities from future events (Carveth & Gottlieb, 1979; UNISDR, 2005; Norris et al., 2008; Smith, 2013).

In a post-disaster context, social support generally refers to the assistance that an individual may receive from his or her own network of social relationships during a stressful life event. This network includes family members, friends, co-workers, and acquaintances (Bott, 1971; Carveth & Gottlieb, 1979; Gourash, 1978; Norris et al., 2008; Tolsdorf, 1976), as well as non-governmental organisations and other agencies which essentially provide help to people who are not friends or acquaintances (Aldrich, 2010; Gaynor & Ben-Levy, 2003). There is good evidence that a high level of social support, variously measured by frequency of contact, number of individuals known or number of organisations offering help, can promote psychological resilience (Aldrich, 2010; Gaynor & Ben-Levy, 2003; Goodman et al., 1998; Norris et al., 2008; Pfefferbaum, Reissman, & Klomp, 2007; Tse & Liew, 2004). On the other hand, a low level of social support has been theoretically linked to a higher susceptibility to disease (Cassel, 1976; Cohen, 1988; Miller, Chen & Cole, 2009).

As referred to above, a higher level of social support is also thought to act as a protective factor against the development of longer-term mental problems following stressful life events (Carveth & Gottlieb, 1979; Clapp & Gayle Beck, 2009; Cohen & Wills, 1985; Gourash, 1978; Tolsdorf, 1976). This means that, for example, those who perceived themselves as receiving more social support following the Great East Japan Earthquake coped better than those who did not (Sugimoto, Umeda, Shinozaki, Naruse, & Miyamoto, 2015). In terms of sleep disturbance, people did better if they received emotional rather than informational or material support from close others (Matsumoto, Yamaoka, Inoue, Inoue, Muto et al., 2015).

To access social support, people often have to seek help, whether from friends, relatives or strangers. Hence, a person's willingness to seek help is believed to be a direct predictor of the amount of support received (Kaniasty & Norris, 2000). However, some individuals find it harder to ask for help than others (Gourash, 1978; Kaniasty & Norris, 2000). Thus, it is important to clarify the factors that affect an individual's attitudes towards seeking help.

People who are very comfortable seeking help appear likely to hold the effectiveness and usefulness of the support received from their social network in high regard. Previous research suggests that young educated females with a medium to high socio-economic status are most likely to hold these attitudes (Gourash, 1978; Kaniasty & Norris, 2000). However, most evidence supporting this finding comes from data collected at service agencies in Western societies (Gourash, 1978). This type of data context may bias the results towards those who feel comfortable requesting help from strangers when it is likely that people generally feel most comfortable seeking help from their family and friends, and turn to professional agencies only when they cannot or do not receive the help they need from their personal support network (Gourash, 1978; Kasl, Gore, & Cobb, 1975; Quarantelli, 1960). The issue of who it was that people turned to after the Christchurch earthquakes is therefore a focal point for the current research.

Apart from gender, socio-economic status (SES) may influence one's comfort in seeking help following a disaster. Previous studies by Fothergill & Peek (2004),

Masozera, Bailey, & Kerchner (2007) and Smith (2013) support this idea. Given that older adults may, on average, be more likely to develop psychological problems following disasters (Jia et al., 2010), it is possible that older people are both less likely to seek, and less likely to receive, help. It also seems natural to hope that people would both seek and receive more help if they are more exposed to the disaster, for example, if their house is more seriously damaged.

General Hypotheses

In summary, our first hypothesis was that people's comfort in seeking help would relate to the support that people actually received. This is referred to as general hypothesis 1 for the remainder of the current paper. This hypothesis might be true both overall and within groups of individuals receiving different types and sources of support. For example, those seeking informational support from friends may also be those most comfortable in seeking informational support from friends.

Our second hypothesis was that we expected that women, older people, and those of higher SES, as well as people who were more affected by the disaster would both be more comfortable in seeking help and would end up receiving more support. This is referred to as general hypothesis 2 for the remainder of the current paper.

Method

Questionnaire

Research data was gathered using a single questionnaire booklet focused on the measurement of help-seeking comfort and the support received following the Canterbury earthquakes. This questionnaire booklet was distributed to a total 870 households among various socio-economic areas of Christchurch City, New Zealand. More details are outlined below and the verbatim phrasing of all questionnaire items is provided in Appendix A.

Disaster exposure. To measure the extent to which individual respondents were affected by the disasters, respondents were asked whether they had suffered each of seven different losses or problems, based on prior research by Norris & Kaniasty (1992): physical injury, residential relocation, property damage, appreciable financial loss, sentimental damage to property, job loss, or feared for his or her life. Respondents were asked to limit their responses to direct results of one of the major Christchurch earthquakes between September 4th 2010 and June 30th 2012.

All questions were answered in a yes or no format, except for the financial loss question, which was measured as a difference between the dollar value of the reported property damage and the insurance pay out. We limited responses to this question to losses of $1,000 or greater as a measure of appreciable financial loss because $1000 produced close to a median split of the sample – 52% of the sample claimed a loss of $1000 or more. Physical injury was defined as the participant or another household member receiving physical injury, but all other questions referred to the respondent only.

Help-seeking comfort. Many help-providing agencies measure people's comfort in terms of seeking help from their particular agency. However, the current research required a measure that would cover both types of help that might be sought and from whom help might be sought. Kaniasty and Norris (2000) had developed a scale based on a prior scale by Hobfoll and Lerman (1989), that covered both the source of the aid (family, friends, and outsiders) and the type (material, emotional, and informational). This scale was found to be reliable for analysis in the current study (Cronbach α = .86). Definitions for each help source were also based on Kaniasty and Norris (2000). For example, outsiders were defined in the survey as: people who are outside your immediate support circle such as community leaders, voluntary organizations like St John, professional service providers like health care professionals or complete strangers. (cf. Kaniasty & Norris, 2000, p. 556).

Three questions addressed respondents' comfort levels when asking for material, emotional, and informational aid. Each question was asked in regard to requesting such aid from family, friends, and outsiders. The questions were as follows: How comfortable do you feel requesting material aid from family/friends/outsiders if you are in need of such aid?; How difficult is it for you to request emotional support from family/friends/outsiders if you have problems or are undergoing a crisis? and; How difficult is it for you to request advice or information from family/friends/outsiders when you need it? Respondents answered using a 5-point scale, based on Hobfoll & Lerman (1989): 1 = very uncomfortable/very difficult; 2 = uncomfortable/difficult; 3 = neutral; 4 = comfortable/easy; 5 = very comfortable/very easy.

Support received. We also based questions concerning support received on Kaniasty & Norris (1995). This meant we assessed the support received from a particular source, being family, friends, and/or outsiders, as well as the amount of a particular type of help, being

emotional help, informational help, and/or material help. The three types of support received by participants were measured using a total of 12 items:

1. *Emotional Support* was measured using three items concerning the expression of interest, assurance, and affection.
2. *Informational Support* was measured using three items about receiving suggestions, information on how to do something, and receiving help in order to understand a situation.
3. *Material Support* was measured using six items that covered receiving money, food, shelter, tools/equipment, things other than money, and receiving help with cleaning/improving property.

More details are provided in Appendix A of the current paper. Each of the 12 items was asked in terms of help received from family members, friends, and outsiders. This meant the total scale included 36 items, with a reliability of Cronbach's α = .92. Respondents answered each item using a four-point scale drawn from Kaniasty & Norris (1995): 1 = Never, 2 = Once or twice, 3 = A few times, 4 = Many times.

Socio-economic status. Socio-economic status was measured using the New Zealand Socio-Economic Index-96 (NZSEI-96) (Galbraith, Jenkin, Davis, & Coope, 2003). This measure has the advantage, in comparison to the more recent Elley-Irving Socio-Economic Index: 2001 Census Revision (Elley & Irving, 2003), of being readily applicable to females, part-time workers, and older people, with links to equivalent scales used in a range of other country settings (Davis et al., 2008; Galbraith, Jenkin, Davis, & Coope, 2003; Ganzeboom & Treiman, 1996). Respondents were asked about their occupation and responses were coded on a scale from 1 to 6, where 1 is high SES and 6 low SES occupations. Other, non-SES, demographic data concerning sex and age were also requested from respondents.

Procedure and Participants

Ethical approval was obtained from the University of Canterbury Human Ethics Committee. The questionnaire booklets were delivered by hand to people's homes. The homes were chosen so as to recruit respondents from low, medium and high SES areas as classified by Salmond, Crampton, & Atkinson (2007). The six areas were Jellie Park and Aranui, which were considered to both be low SES, Redwood South and Russley, both medium SES, and Holmwood and Kennedy's Bush, both high SES. For more detail on the choice of areas and maps of delivery routes within the areas, see the Method section and Appendix C of Urmson (2014).

Envelopes containing the questionnaire, an information sheet, and self-addressed stamped envelopes were hand delivered on the 22nd June 2012 to each address on predetermined routes in each of the six areas (145 packs to each area, totalling 870). After 8 weeks, reminders were delivered to households that had not yet replied. A total of 211 questionnaires were returned (24.3% of the total distributed). 20 of the returned questionnaires were substantially incomplete, reducing the number of questionnaires available for analysis to 191, with a 22% response rate.

The final sample of 191 respondents included 79 males and 112 females, who ranged in age from 22 years to 88 years with a mean age of 54 (*SD* = 15.2). Thirty-six (18.9%) had high SES (1 or 2), 56 (29.3%) had medium SES, 40 (20.9%) had low SES, and 59 (30.9%) provided no SES information.

Analysis

Repeated measures analyses of variance were used to investigate the effect of, source, and type of help on both the respondents' comfort in seeking help and the support they received. We used Pearson correlations to investigate the relationship between support received and comfort in seeking it, both overall and for each combination of support type and source. Multiple regression and analyses of variance (ANOVAs) between groupings were used to examine the overall predictability of the support received. Additional analyses used t-tests to investigate gender effects and correlations to examine age and SES effects. All analyses were conducted with Statistica (Version 12, 2013) software.

Results

Earthquake-related impacts

Respondents reported the following impacts, determined by the seven questionnaire options provided to them:

– physical injury, 16 percent of respondents

– residential relocation, 22 percent of respondents

– property damage, 92 percent of respondents

– appreciable financial loss, 52 percent of respondents

– sentimental damage to property, 53 percent of respondents

– job loss, 15 percent of respondents

– feared for his or her life, 54 percent of respondents

A total disaster exposure score for each participant was calculated by summing yes responses to the seven questions. The average score was 3.0 on a scale from 0 to 7 (median = 3; *SD* = 1.4).

Help-Seeking Comfort

Table 1 indicates that the respondents were most comfortable with seeking help from family and least comfortable in seeking it from outsiders. They were most comfortable with seeking informational help. A two-way repeated measures ANOVA was carried out on help-seeking comfort results showing significant effects of the source of help ($F(2, 362) = 74.1$, $p < .0001$), the type of help ($F(2, 362) = 74.1$, $p < .0001$) and an interaction between source and type ($F(4, 724) = 12.2$, $p < .0001$). Levels of statistical significance were unaffected after Greenhouse-Geisser corrections for significant sphericity. Bonferroni post hoc comparisons on the source of help identified consistently significant differences ($p < .05$) between all three source of support means. Related tests showed that the respondents were most comfortable seeking informational help, with no difference in levels of comfort with seeking material help and emotional help. Considering an interaction effect between type and source of help, the respondents may have been relatively comfortable in seeking emotional but not material help from friends.

Table 1.
Mean Comfort in Seeking Three Different Kinds of Support from Three Different Potential Sources of Support

Source*:	Family	Friends	Outsiders	Average
Type of support*:				
Material	3.37	2.79	2.38	2.85
	(1.37)	(1.26)	(1.22)	
Emotional	3.19	3.05	2.17	2.80
	(1.30)	(1.30)	(1.19)	
Informational	3.74	3.80	3.10	3.55
	(1.20)	(1.10)	(1.27)	
Average	3.43	3.22	2.55	

*Note. All measured on a 5-point scale from 1 (very uncomfortable) through 3 (neutral) to 5 (very uncomfortable). Standard deviations shown in parentheses under the corresponding means.

Support Received

Table 2 shows the corresponding results for the support that the respondents reported receiving. They received most support from family and least support from outsiders. Overall, they reported receiving emotional support most of all and material support least of all. The two-way repeated measures ANOVA showed significant differences in the source of the support ($F(2, 350) = 95.5$, $p < .0001$), the type of support ($F(2, 350) = 217.8$, $p < .0001$) and the interaction effect ($F(4, 700) = 83.5$, $p < .0001$), with these significance levels unchanged by Greenhouse-Geissler corrections for sphericity. Post hoc Bonferroni comparisons showed significant ($p < .05$) differences between all three overall means for both type and source of support. Table 2 indicates that there was little difference between the three sources of support received for informational support. However, there appear to have been marked differences for emotional support received, in terms of the source of support.

Table 2.
Mean Support of Three Different Kinds Reportedly Received from Three Different Potential Sources of Support

Source:	Family	Friends	Outsiders	Average
Type of support:				
Material	1.61	1.39	1.15	1.38
	(0.68)	(0.51)	(0.33)	
Emotional	2.79	2.47	1.51	2.26
	(0.94)	(0.88)	(0.67)	
Informational	1.80	1.75	1.69	1.75
	(0.75)	(0.75)	(0.79)	
Average	2.07	1.87	1.45	

Note. All measured on a 4-point scale: 1 (never), 2 (once or twice), 3 (a few times), 4 (many times). Standard deviations shown in parentheses under the corresponding means.

What Determines the Support Received?

Table 3 shows Pearson correlations between overall support received, averaged over all types and sources, with overall comfort in seeking help, again averaged over types and sources. Correlations are also shown between overall support received and exposure to the disaster and between support received and demographic variables. Inter-correlations are also shown. Overall, contrary to general hypothesis 1, there was no significant correlation between support received and respondents comfort in seeking help.

Table 3.
Pearson Correlation Coefficients (Pairwise) between Pairs of Variables

	HSC[1]	DE[2]	Female	Age	SES[3]
Support	.12	.36*	.22*	-.16*	-.01
HSC		-.02	.09	.07	-.04
DE			.16*	-.16*	-.07
Female				-.23*	.01
Age					.32*

*p < .05, two-tailed. Support = Overall support reportedly received from any source.

[1]HSC = Overall comfort in seeking help from any source.

[2]DE = Reported exposure to disaster. Female (=1; Male = 0). Age = Age group.

[3]SES = Respondent's calculated socio-economic status (higher status has lower number).

The best single predictor of the support respondents received was the extent of disaster exposure. Younger respondents and women also received significantly more support. Both of these results partially supported general hypothesis 2, that women, older people, and those of higher SES, as those more affected by the disaster would both be more comfortable seeking help and would end up receiving more support.

We performed a multiple regression analysis to predict total support received from the variables shown in the table, except for SES, which was omitted because of the large number of missing values. This regression produced a significant ($p < .05$) beta-weight for disaster exposure ($\beta = .34$) only, with an overall R^2 of .19 ($F(4,170) = 9.15$, $p < .001$).

Although there was no significant overall relationship between support received and comfort with seeking the support, table 4 shows significant relationships between support received and comfort seeking it for some types and sources of support. In particular, those who were more comfortable in seeking emotional support also reported receiving significantly more emotional support from all three sources. Respondents who were comfortable seeking information from friends also reported receiving more informational support. However, there were no significant associations between receiving material support and any source. Likewise, there were no significant association between informational support received and support received from family or outsiders.

Additional analyses showed that women ($M = 2.06$, $SD = .63$) were significantly more likely than men ($M = 1.77$, $SD = .53$) to receive support of all kinds from family ($t(182) = 3.25$, $p < .01$, $d = .50$) and friends (Women, $M = 1.81$, $SD = .56$; Men, $M = 1.62$, $SD = .50$; $t(185) = 2.37$, $p < .05$, $d = .36$), but not from outsiders. They were particularly likely to receive emotional support from friends (Women, $M = 2.63$, $SD = .91$; Men, $M = 2.16$, $SD = .75$; $t(189) = 3.74$, $p < .001$, $d = .56$). These represented findings with a moderate, small and moderate effect size, respectively. There were no significant ($p < .05$), interactive effects of SES with either source of support or type of support on the amount of support received. Overall, with respect to general hypothesis 1, support received did appear to vary with age, gender and exposure to the disaster, but not with SES.

Table 4
Pearson Correlation Coefficients (Pairwise) between Support Reportedly Received and Help-Seeking Comfort for Each Combination of Support Type and Source

Source:	Family	Friends	Outsiders
Type of support:			
Material	-.02	.03	.14
Emotional	.27*	.40*	.15*
Informational	.13	.17*	.07

*p < .05, two-tailed.

Discussion

Kaniasty and Norris (2000) examined both help-seeking comfort and support received, in terms of both source and type, after Hurricane Katrina. This analysis is displayed in tables II and III of Kaniasty and Norris (2000). Despite the similarities between their study and the current research, a direct comparison could not be made with the current findings. This is because Kaniasty and Norris (2000) used a somewhat different scoring system for support received. There were also differences between ethnicity related results because Kaniasty and Norris (2000) collected data concerning US-based ethnicities. However, the overall patterns of results were still quite similar. In both studies there was greater comfort in seeking help and greater support received from family, while least support was received from outsiders. Both studies found that respondents appeared most comfortable with seeking informational help but that they most often received emotional support. There were also some differences between the two studies. For example, the current respondents appear to have received less frequent support overall, compared to respondents in Kaniasty and Norris (2000).

Contrary to general hypothesis 1, neither individual nor group differences in participants' comfort with seeking help appeared to influence support received following the Christchurch earthquakes. Firstly, there

was no significant correlation between overall support received and help-seeking comfort. Secondly, there was an evident mismatch between the type of support respondents felt comfortable in seeking and the support they received. If the type of support received had matched participants' comfort seeking that support, then we would expect the category of most frequent support to have been informational. However it was emotional support instead. This overall finding needs some qualification because it applies when considering material and informational support in particular. Independently of other types of support, emotional support received did appear to depend on comfort with seeking that support, particularly when emotional support was received from family and friends.

Most of us would hope that, should a disaster occur, the people who received most support would be those who most needed it rather than those who were most comfortable in seeking it, or those who were most able to ask for it. Many of our findings, regarding the apparent equanimity of support received, are encouraging in this respect. Furthermore, the best single predictor of the amount of support that the current respondents received was the extent of disaster exposure, which is a reasonable indicator of need. As predicted in hypothesis 2, many of those who needed more support did on average appear to receive more support. It is also encouraging to observe that comfort with seeking help appeared unrelated to the extent of disaster exposure. This is a result which contrasts with that of Kaniasty and Norris (2000) and indicates that psychological responses to the Christchurch earthquakes may have been different than to Hurricane Katrina.

General hypothesis 2 had predicted that women, older people and those of higher SES would be more comfortable with seeking help and that they would also receive more support. These expectations were only partially confirmed by the results of analysis. Women and younger people did report receiving more support but there was no effect of age or gender on comfort with seeking help. Neither support actually received nor comfort in seeking support appeared related to SES. It is also worth noting that the overall amount of support received by respondents was moderately, rather than well, predicted by the combination of different variables examined. This indicates that there may be other important variables affecting the support people receive that were not measured or examined in the current research.

Differences between men and women were not large but women both reported more exposure to disaster and that they received somewhat commensurably more support. Interestingly, previous research (Kemp et al., 2011; Bonanno Brewin, Kaniasty & La Greca, 2010) has found that women tend both to see themselves as having greater exposure to disaster than men do and perhaps perceive themselves to be more in need of support.

Research and official attention have often focussed on the help that can be provided by official, outside sources, which are under the control of society in a way that the behaviour of families and friends is not. However, for most of our respondents these outside sources were not the most frequent sources of support. They were certainly not the most common sources of emotional support being sought. Perhaps it is family and friends who primarily support people in disasters. The strongest relationships between help-seeking comfort and support received appear to apply to emotional help from family and friends. In our study, emotional support was the support most frequently received. Previous research by Matsumoto et al. (2015) suggests that, for at least some post-disaster problems, this emotional support appears to be the most critical type of support.

We nonetheless need to remember that there were certainly disaster-affected people in the Christchurch community who were forced to rely on official agencies or on people they did not know well. Consider, for example, someone who had only recently moved to the city. Indeed the respondents in our study did report sometimes receiving emotional support from outsiders. Official agencies may also have an important role to play in facilitating support from friends and family, and the New Zealand Red Cross (2016) now offers a program on how to provide psychological support to trauma-affected family and friends.

Retrospective reporting by respondents forms a limitation of the current research which may have affected measures for disaster exposure, help-seeking comfort and received support. However, past research supports the reliability of the data collected in the current research project. An investigation into retrospective reporting of disaster exposure found retrospective reporting to be consistent up to 10 months following the event (Norris & Kaniasty, 1992). Funch and Marshall (1984) found that memories concerning major life events showed almost no decline over time. Respondents' attitudes towards help-seeking may have been influenced by the earthquakes, causing them to re-adjust their attitudes

to align with their most recent experiences of received support. However, if this re-adjustment did occur, then we arguably would not have observed the disconnect between type of support received and type of support that respondents were most comfortable with seeking. The current research has nonetheless considered a series of relatively distinct events. Both individuals and social groups learned and changed as the sequence of earthquakes progressed. We left respondents free to choose which of the major events their responses concerned, partly because individuals in different areas were affected more or less by different events and partly because we expected memories for the different experiences to combine to some extent. It is therefore not possible to determine developments in the way that people and organisations responded to the unfolding series of events from the current set of results.

It also needs to be stressed that the current results are for one particular set of disasters in one particular community. It is questionable whether these results could be generalised to, for example, the aftermath of a major flood in a developing country. This is particularly true as research on disasters in developing and developed countries appears to have, to some extent proceeded down separate paths. Perhaps this is because international aid is a more important ingredient in responding to and recovering from disasters in developing countries.That said, the present results do indicate that people's discomfort in seeking help may not always be a key constraint on receiving the support they need, particularly if they are seeking informational or material support.

Conclusion

We conducted a questionnaire survey of a sample of people affected by the Christchurch earthquakes, focussing on the support they reported receiving, the comfort they reported in seeking such support, and the relationship between them. We investigated not ony overall support and comfort but also support and comfort from different sources (family, friends and outsiders) and comfort and support of different types (material, emotional and informational).

We found no strong relationship between people's overall comfort in seeking help and the support they reported receiving, although those who were more comfortable with receiving emotional help from friends and family appeared to receive more support from these sources. Instead, the support people received appeared most strongly related to the extent of their exposure to a disaster. In general, family and friends were the most common sources of support of all kinds, and of emotional support in particular.

The current conclusions have practical implications. The results may be used as an indication for official agencies that overall they play a relatively minor role in supporting people in disasters, and that perhaps they might do best to encourage people to seek support from family and friends. For example, resources might be better used in running advertisements of the "it is OK to lean on your friends and family" kind, particularly regarding emotional support, than on employing people to provide this support. The results also suggest that if one wishes to target support according to different demographic categories, then support might be better directed at men and the elderly rather than poorer people.

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Appendix A: Questionnaire Instructions and Items

Disaster Exposure

We are interested in learning about the degree of support that you may have needed after any of the major earthquakes that occurred in Christchurch in the **21 months following 4 September 2010**. Please read each question carefully and answer them to the best of your ability. Most questions only require a yes or no answer but some require you to go into a little more detail. Remember all information you provide will be kept private and is completely anonymous.

Question 1. Did you or another household member receive physical injury (major/minor) as a direct result of any of the major earthquakes that have occurred in Christchurch following 4 September 2010?

Question 2. Did you ever feel like your life was in danger during any of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010?

Question 3. Did you receive any damage to your property (house, car, etc.) resulting from any of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010?

Question 4a. If you answered yes to question 3, what was the dollar value of the property damage you sustained as a result of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010?

Question 4b. If you answered yes to question 3, to what extent did you receive insurance coverage for your property damage which occurred as a result of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010? (This includes, both, house and contents insurance.)

Question 5. Did you receive any damage to property that had sentimental rather than financial value (family heirlooms, keepsakes, photographs, etc.) resulting from any of the major earthquakes that have occurred in Christchurch in the 21months following 4 September 2010?

Question 6. Did you need to relocate (move house temporarily or permanently) after any of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010?

Question 7. Did you lose work/your job as a result of any of the major earthquakes that have occurred in Christchurch in the 21 months following 4 September 2010?

Question 7a. If you lost work/your job as a result of the earthquakes how long were you out of work for? (Hours, days, weeks, months?)

Help-Seeking Comfort

We are interested in learning about how comfortable you have felt about asking for help from different groups of people in the **21 months after the 4 September 2010** Christchurch earthquake. In the following questions: **'Family members'** refers to those that are connected to you by blood or marriage; **'Friends'** refers to the people you choose to spend time with that are not you family such as neighbours, co-workers, and acquaintances from churches or social organizations; and **'Outsiders'** refers to people who are outside your immediate support circle such as community leaders, voluntary organizations like St John, professional service providers like health care professionals or complete strangers. Please read each item carefully and indicate how you feel about each statement by ticking one of the boxes. Remember all information you provide will be kept private and is completely anonymous.

Question 1. How comfortable do you feel requesting material aid from **family** if you are in need of such aid?

Question 2. How difficult is it for you to request emotional support from **family** if you have problems or are undergoing a crisis?

Question 3. How difficult is it for you to request advice or information from **family** when you need it?

Question 4. How comfortable do you feel requesting material aid from **friends** if you are in need of such aid?

Question 5. How difficult is it for you to request emotional support from **friends** if you have problems or are undergoing a crisis?

Question 6. How difficult is it for you to request advice or information from **friends** when you need it?

Question 7. How comfortable do you feel requesting material aid from **outsiders** if you are in need of such aid?

Question 8. How difficult is it for you to request emotional support from **outsiders** if you have problems or are undergoing a crisis?

Question 9. How difficult is it for you to request advice or information from **outsiders** when you need it?

Received Social Support

We are interested in learning about some of the ways that you feel people have helped you or tried to make life more pleasant for you in the **21 months following the 4 September 2010** Christchurch earthquake. Below you will find a list of activities that other people might have done for you, to you, or with you since this time. Please read each item carefully and indicate how often these activities have happened to you during this time. Remember all information that you provide will be kept private and is completely anonymous.

Please answer the following questions in regards to the help that you received from **family members** (those connected to you by blood or marriage).

Family Members:

Question 1. Gave me some information on how to do something (e.g., how to fill out appropriate forms, etc).

Question 2. Suggested some action that I should take. (e.g., You should contact a particular agency, you should secure that wall, etc.)

Question 3. Loaned or gave me money ($25 or more).

Question 4. Comforted me by showing me some physical affection.

Question 5. Gave me some information to help me understand the situation I was in (e.g., why you had to boil your water, the reason the power went out, explained the EQC process, etc).

Question 6. Loaned or gave me something (a physical object other than money) that I needed (e.g., a bed, clothes, furniture, etc.,).

Question 7. Let me know that he/she will always be around if I need assistance.

Question 8. Expressed interest and concern in my well-being.

Question 9. Provided me with a place to stay. (e.g., a spare room, a lounge, a holiday home, etc.)

Question 10. Provided me with food or drink.

Question 11. Loaned me tools/equipment that I needed (e.g., wheelbarrow, spade, camping/cooking equipment, etc).

Question 12. Helped me with cleaning and/or improving my property (e.g., clearing silt, securing walls, fixing cracks, etc).

The same 12 questions were asked for each of Friends and Outsiders.

Background Information

Finally, we are interested in gathering some demographic information in order to determine what your financial situation was before the first major earthquake occurred in Christchurch on **4 September 2010.**

Question 1. Are you male or female?

Question 2. What is your age?

Question 3. What was your occupation before the first major earthquake occurred in Christchurch on the 4 September 2010?

Question 4. Were you working at the occupation stated in question 3 for a minimum of 30 hours a week?

Question 5. What was your yearly income before the first major earthquake occurred in Christchurch on the 4 September 2010?

Accredited qualifications for capacity development in disaster risk reduction and climate change adaptation

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Abstract

Increasingly practitioners and policy makers working across the globe are recognising the importance of bringing together disaster risk reduction and climate change adaptation. From studies across 15 Pacific island nations, a key barrier to improving national resilience to disaster risks and climate change impacts has been identified as a lack of capacity and expertise resulting from the absence of sustainable accredited and quality assured formal training programmes in the disaster risk reduction and climate change adaptation sectors. In the 2016 UNISDR Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030, it was raised that most of the training material available are not reviewed either through a peer-to-peer mechanism or by the scientific community and are, thus, not following quality assurance standards. In response to these identified barriers, this paper focuses on a call for accredited formal qualifications for capacity development identified in the 2015 United Nations landmark agreements in DRR and CCA and uses the Pacific Islands Region of where this is now being implemented with the launch of the Pacific Regional Federation of Resilience Professionals, for DRR and CCA. A key issue is providing an accreditation and quality assurance mechanism that is shared across boundaries. This paper argues that by using the United Nations landmark agreements of 2015, support for a regionally accredited capacity development that ensures all countries can produce, access and effectively use scientific information for disaster risk reduction and climate change adaptation. The newly launched Pacific Regional Federation of Resilience Professionals who work in disaster risk reduction and climate change adaptation may offer a model that can be used more widely.

Keywords: *capacity development, accreditation, disaster risk reduction, climate change adaptation, training.*

This paper calls for accredited formal qualifications for capacity development identified in the 2015 United Nations (UN) landmark agreements in disaster risk reduction (DRR) and climate change adaptation (CCA). It will be particularly important to provide an accreditation and quality assurance mechanism that is shared across boundaries. The current paper argues that by leveraging support for a regionally accredited capacity development, the production of, access to, and effective use of, scientific information for DRR and CCA can be achieved in all UN member states.

The number of reported disasters has steadily increased since the 1950s. As shown in figure 1, this trend was peaking at the beginning of the current century. Between 2005 and 2015, it is estimated that over 0.9 million people lost their lives and more than 1.8 billion people were affected by disasters in various ways, with women, children, and several other vulnerable groups impacted disproportionately (CRED/EMDAT, 2016). Disaster impacts also set back hard-won economic development gains and affect all socioeconomic strata, societal institutions, and sectors in one way or another. The total economic loss was estimated to have exceeded USD 1.5 trillion over the 2005−2015 period (CRED/EMDAT, 2016). There is an urgent need to support sustainable capacity building to reduce these impacts.

Disasters are not natural events. They are endogenous to society and disaster risk arises when hazards interact with the physical, social, economic, and environmental vulnerabilities and exposure of populations (UNISDR, 2015b). Therefore, the attention of the policy community has naturally fallen on the hazards and the related physical processes that result in disasters. This attention is now increasingly linking these with the consequences of climate change (IPCC, 2012), as shown in figure 1.

The IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation states that, “Inequalities influence local coping and adaptive capacity, and pose disaster risk management and adaptation challenges from the local to national levels (high agreement, robust evidence)” (IPCC 2012, p. 10). Harris and Baker (2011) from the Institute for Development Studies reported that practitioners and policy makers working across the globe are recognising the importance of bringing together disaster risk reduction (DRR) and climate change adaptation (CCA). For example, in the Philippines, disaster risk reduction and climate change laws mandate the inclusion of DRR and climate change, respectively, in school curricula (Murray et al., 2012). The UNISDR’s Office for Northeast Asia and Global Education Training Institute (UNISDR ONEA-GETI) forms another example. This office was established in 2010 to develop a new

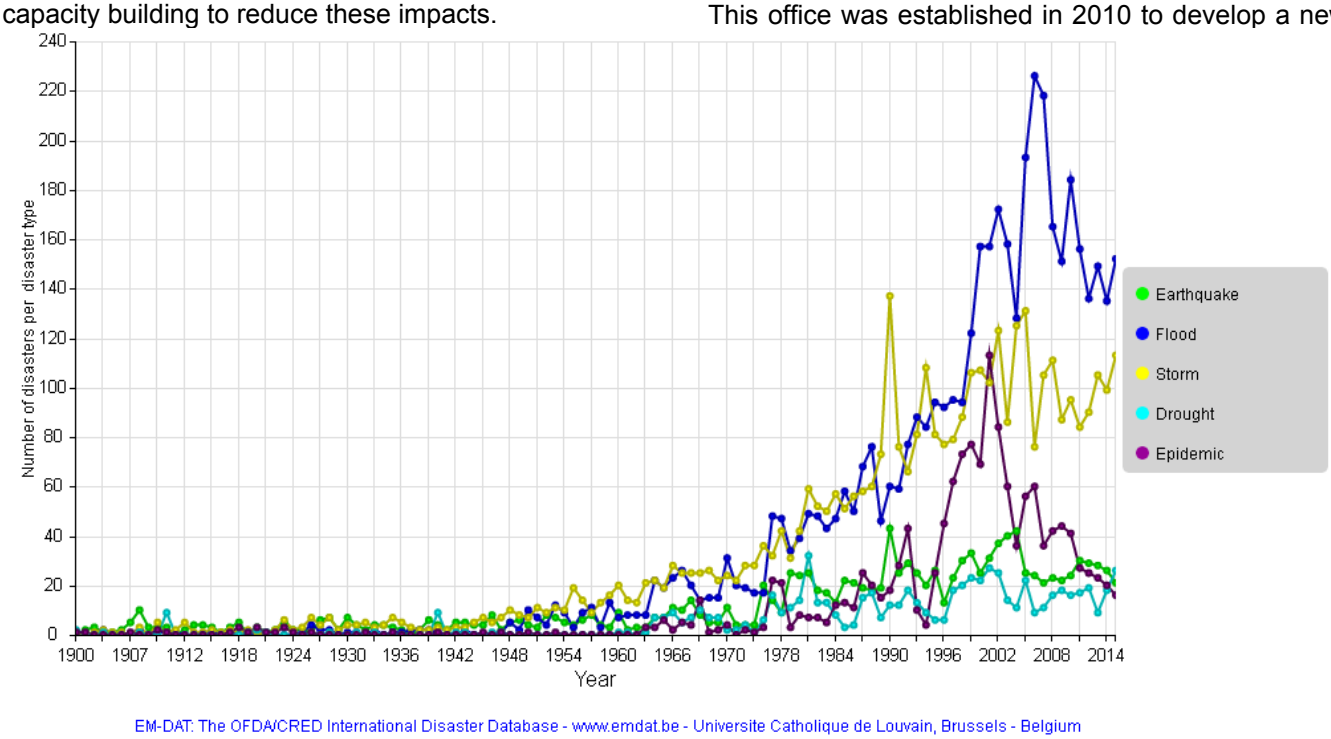

Figure 1. Total Number of reported natural disasters between 1900 and 2015. Reproduced from *EM-DAT: The OFDA/CRED International Disaster Database*. Brussels, Belgium: Université Catholique de Louvain. Reproduced with permission.

cadre of professionals in DRR and CCA for disaster resilient societies. This institute supports the increased recognition of the value of mainstreaming CCA and DRR activities, to reduce vulnerability and increase resilience.

By focusing on one part of the world, the Pacific Islands Community, studies across 15 Pacific island nations have shown that a lack of capacity and expertise, resulting from the absence of sustainable, accredited and quality assured formal training programmes in the DRR and CCA sectors forms a key barrier to improving national resilience against disaster risk and climate change impacts (Buliruarua et al., 2015; Jordon et al., 2010). Considering that this regional finding may correspond to a global issue, this concept paper focuses on a broader call for accredited formal qualifications for capacity development. Note that this wider need has also been identified in the three 2015 United Nations (UN) landmark agreements in disaster risk reduction and climate change adaptation, which are discussed below.

The Three UN Landmark Agreements and Their Implementation

The year 2015 presented an unparalleled opportunity to align important global agreements through convergence of the three main UN landmark agreements:

– The Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework), finalised in March 2015;

– The Sustainable Development Goals (SDGs), finalised in September 2015; and

– The Paris Agreement (COP21), finalised in December, 2015.

The timeframes of each of these agreements are summarised in figure 2 below.

As shown in figure 2, these major global policy instruments align to better facilitate science and technology (S&T) participation in DRR, sustainable development, and climate change mitigation and

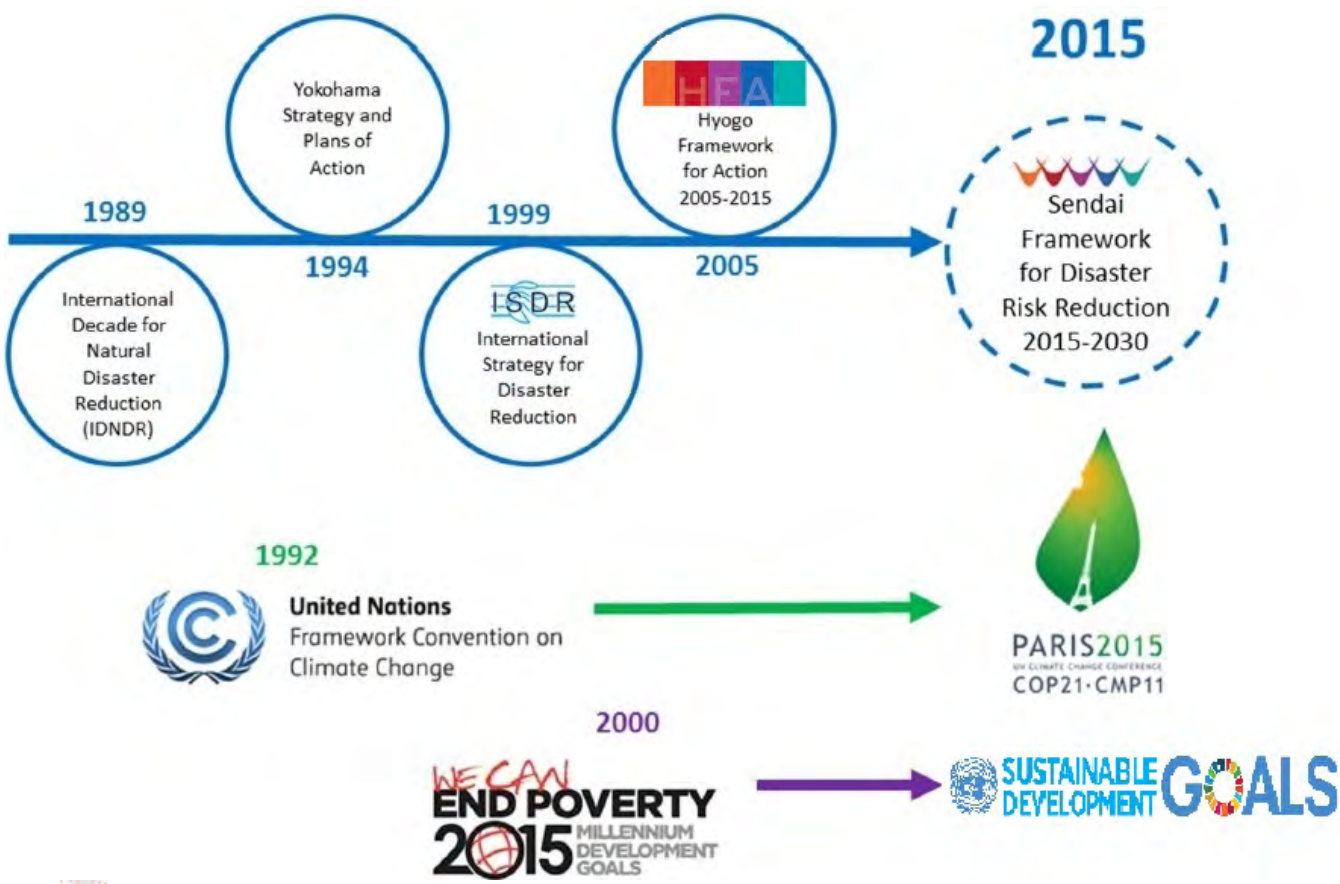

Figure 2. Twenty five years of international commitments to disaster risk reduction. Reproduced from *Launch of the 2015 Global Assessment Report on Disaster Risk Reduction* by Andrew Maskrey, 2015, Geneva, Switzerland: UNISDR . Reproduced with permission.

adaptation. Capacity building for appropriate DRR and CCA responses is one particular area of alignment where there is an identified need for input from the science and technology community (Buliruarua et al., 2015). The current paper is based on a review of each of the three global agreements, performed by science and technology stakeholders to the Sendai Framework, the SDG's and the COP21. Key statements on training and capacity development have been identified as a result.

The Sendai Framework was developed from the need to ensure DRR policy reflects the evolved understanding of the complexity of disaster risk in the twenty-first century. Implementation requires close collaboration among all sectors including the wider health and environmental health sectors, in order to prevent, prepare for, respond to, and recover from disasters that result from highly interdependent and evolving risks.

The Sendai Framework emphasises the role of S&T in DRR. Additionally, the role of capacity development and training is clearly outlined as a means to implement the Sendai Framework to achieve its goal to, ''prevent new and reduce existing disaster risk…" (UNISDR, 2015b, p.12). The role of S&T and capacity development and training have been identified in all parts of the framework including in each of the four priorities for action: 1) Understanding disaster risk; 2) Strengthening disaster risk governance to manage disaster risk; 3) Investing in DRR for resilience; and 4) Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction. The key statement from the Sendai Framework on accredited formal qualifications for capacity development DRR is:

> *27 j) to promote the development of quality standards, such as certifications and awards for disaster risk management with the participation of the private sector, civil society, professional associations, scientific organisations and the United Nations.*
>
> (UNISDR, 2015b, p.18)

Answering the call from the Sendai Framework for an emphasis of S&T capacity development, the UNISDR Science and Technology Advisory Group (STAG) identified six scientific functions in shaping the UNISDR Science and Technology Road Map, one of which was an emphasis on "Capacity development to ensure that all countries can produce, access, and effectively use scientific information" (Aitsi-Selmi et al., 2016, p.5).

The need for appropriate capacity development is amplified by the UNISDR Science and Technology Road Map which was published as an outcome from the conference. This Road Map included a recommendation to "support capacity building and ensure that capacity development for disaster risk management is interdisciplinary, shared across international boundaries, and demand-driven"(UNISDR 2016b, p.24) where deliverables are expected to be "Training and capacity building of science and technology in disaster risk reduction" (Aitsi-Selmi et al., 2016, p.6) and "Measures to build capacity development in knowledge management, innovation and learning, research and technology..." (UNISDR, 2016b, p.6). In 2008, UNISDR published its terminology on DRR where it stated that capacity development could be defined as **"**The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions" (p.6). The following annotation was added to this entry in the list of terminology:

> *…capacity development is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.*
>
> (UNISDR, 2009, p.6)

The SDG's are a set of global aspirational goals that were developed and agreed upon by the United Nations Development Programme as the successor to the Millennium Development Goals. The SDG's cover a broad range of sustainable development concerns, and address many issues relating to capacity development and training. Goal 3 specifies ensuring healthy lives and promoting well-being for all at all ages, and calls for efforts to:

> *3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks*
>
> The United Nations (2016a, para 3)

Goal 13, in particular, is about climate change adaptation, while DRR is a theme cutting across the specified targets. This goal articulates the urgency for combating climate change and its impacts with three out of the five component targets aimed at capacity development. This goal therefore outlines the importance of addressing capacity development in CCA & DRR sectors. The two targets (United Nations, 2016a) in Goal 13 aimed at capacity development are:

> *13.3) Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.*
>
> *13.5) Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.*
>
> (The United Nations, 2016a, para 13)

In 2015, at the United Nations Climate Change Conference, the United Nations declaration concerning COP21 identified actions to be taken on capacity building post 2015 in all global regions, with a particular focus on developing countries. The Durban Forum on Capacity-building was established as a result of the Conference of the Parties (Climate Change Policy & Practice, 2016), with more in-depth discussion to be held during the fifth meeting of the Durban Forum during the 44th session of the Subsidiary Body for Implementation (SBI) (United Nations, 2016b). However there appears to have been no mention of accreditation or standards for capacity development at the time of writing the current paper.

In addition to the strong call for capacity development identified in the three UN landmark agreements, there remains a clear academic and technical argument for capacity building in DRR. Menoni et al. (2014) stated that "civil protection, emergency, disaster risk management (DRM) have been traditionally considered professions to be learnt on the ground" (p.3) but they went on to report that:

> *…there is an increasing demand for more training, more skills in the field of organisational management, in juridical aspects connected with administrative responsibilities, economic elements related to the cost of prevention, lack of prevention and intervention during crises.*
>
> (Menoni et al., 2014, p.3)

Menoni's call for more systematic educational approaches to disaster risk-related capacity building resonates with observations that extend back to the 1980s, and which were reflected, as one example, during the 1986 establishment of the Asian Disaster Preparedness Centre in Bangkok, Thailand. A decade later, Alexander (1997) made the critique that despite these advances, limited cross-disciplinary training in the disaster risk domain still resulted in it "constantly being reinvented by practitioners who were unaware of previous work outside their own field" (Alexander, 1997, p.298). He lamented both the persisting absence of "agreed standards of training for disaster specialists" (Alexander, 1997, p.298) and limited "consensus on the body of general knowledge of disasters that the neophyte should be required to absorb" (Alexander, 1997, p.298).

Encouragingly, in the past two decades, there has been growing momentum for more systematic, cross-disciplinary and sustainably embedded approaches to disaster risk-related capacity building. This is particularly evident in Africa where, despite the urgency to build strategic and technically competent human capital in the field, DRM capacity-building capabilities in 2005 have tended to lag substantially behind those of Asia and the Americas (Holloway, 2005, 2009, 2014). In a departure from efforts in other regions, the purposeful introduction of disaster risk reduction elements into continental university curricula appears to have substantially changed Africa's skilled DRM human resource profile. By 2016, these deliberate efforts to sustainably integrate the disaster risk domain within institutions of higher learning have been materially reflected in more than 20-30 accessible disaster risk-related academic programmes and modules across the continent. These programmes appear to have been offered in English, French and Portuguese, as well as in national languages, for example Amharic and Malagasy.

Africa's rapid acceleration in self-generated disaster risk-related capacity building has been facilitated through the Periperi U partnership, building on early disaster risk curricula successes in South Africa (Holloway; 2009, 2014). Beginning in 2006-2007 as a pilot project, by 2016, Periperi U has incrementally scaled-up to constitute twelve universities with more than 1,000 registered students and 170 staff.

Prompted by a shared commitment to mobilise higher education to address the continent's complex risk-scape, Periperi U has consistently argued "that African higher education institutions should be more active in filling this capacity gap, given that disaster risk management and reduction are core areas of scholarship and practice" (Periperi U, 2015, p.5). In this context, Periperi U has shown that academia is in many ways as important as the political call for capacity development. The effectiveness of their approach has been independently confirmed, with external evaluation noting that:

> *Periperi U is providing evidence that well designed interventions through and by the higher education sector offer very significant advantages in efforts to build capacities that can serve the continent during a time of increasingly powerful man-made and natural disasters.*
>
> (Ofir & Mentz, 2015, p.iii).

This solution provides a clear identification of training needs for DRR and in part CCA but does not yet resolve the need for practitioner accreditation. Periperi U is nonetheless a good example of how shared academic and community practitioner capacity development can deliver much needed DRR knowledge building and practice. Other organisations in Asia and around the world can also deliver these capacity developments. Some examples are cited in Appendix 1. From the viewpoint of practitioner led capacity development, it is apparent that academic and other training organisations are best if they work in partnership to reflect the local needs on the ground while also providing global learning.

An Example: The Reality of Training for DDR and CCA in the Pacific Islands Region

The Pacific Islands Region (PIR) can be used as an example which outlines and contextualizes DRR and CCA linkages. This region also highlights how climate change can be recognised as a slow-acting hazard. During the lifetimes of the Pacific Islands Framework for Action on Climate Change 2006-2015 and the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005-2015, efforts were made to integrate DRR and CCA policy. These efforts are ongoing at the time of writing because the intended replacement for these policies, the Framework for Climate and Disaster Resilient Development in the Pacific (FRDP), has yet to be approved by all 15 Pacific-African, Caribbean and Pacific (P-ACP) countries. The FRDP will provide a new regional policy tool with guidelines on an integrated management of CCA and DRR, with the goal of improving the resilience of Pacific Island communities. Implementation of the FRDP, as with the Sendai Framework, relies to a great extent on capacity building. The FRDP states that "such needs-based capacity building can provide a significant return on the investment" (p.27) and has identified that in order for component goals to be achieved:

> *Training, education, community planning workshops involving multi-sector participation, and other forms of human resources development are critical to building resilient communities, who can more effectively participate in risk-reducing initiatives and protect the interests of their most vulnerable people..*
>
> (UNISDR, 2016, p.27)

Many, if not all, policies linked to CCA and DRR also appear to reflect the need for capacity building (Appendix 1). For example, Tuvalu asks specifically for capacity building support at a central government level, to assist with "Improving Understanding and Application of Climate Change Data, Information and Site Specific Impacts Assessment to Inform Adaptation and Disaster Risk Reduction Programmes" (Buliruarua et al., 2015, p.22) . Palau's Climate Change Policy For Climate and Disaster Resilient Low Emissions Development (2015), states that by 2020, Palau's educational system will include coordinated climate change and disaster risk information in its curriculum and will offer professional development. A full analysis of these particular policies has been published by Martin et al. (2015).

For the Pacific, a regional and interdisciplinary approach to DRR and CCA capacity development is essential. This is because PIN countries face similar hazards types and negative impacts of climate change, with varying but comparable effects on the countries' economy and the livelihood of their inhabitants. Moreover, countries such as Tuvalu, Republic of Nauru, Niue, Cook Islands and Republic of Palau have small populations ranging from 1,500 to 20,000. These countries may therefore not have the capacity to establish effective national quality assurance systems.

The integrated interdisciplinary approach to DRR and CCA shown in figure 3 is based on the links identified between these areas of concern (UNISDR, 2016). Formal education is needed to develop national capacities to reduce vulnerability and anticipate, plan for and

respond to and recover from disasters that result from interdependent and evolving vulnerabilities. The needs-based development of regionally-specific, accredited qualifications in this context is highly innovative. This approach to development forms the impetus for the European Union Pacific Technical Vocational Education and Training in Sustainable Energy and Climate Change Adaptation Project (EU PacTVET). However, at the time of writing, structures remain to be put in place for quality assurance of regional qualifications as well as regionalization / globalisation and mutual recognition of broader qualifications.

The Pacific Register of Qualifications and Standards, maintained and quality assured by the Pacific Community's Educational Quality and Assessment Programme (EQAP) only recognises national qualifications, without focusing on CCA or DRR. In this regard, and in response to DRR and CCA being significant challenges currently facing the region, EU PacTVET is proposing strategies to develop DRR and CCA qualifications and support their recognition/ accreditation at national and regional levels, including the establishment of a federation for resilience.

As a result of these deliberations the development of and launching of the Pacific Regional Federation of Resilience Professionals who work in DRR and CCA will work in partnership with EQAP, to support mechanisms for accreditation, development and/or the endorsement of formal qualifications in the TVET sector at a regional level for DRR and CCA (Jacot Des Combes et al., In Press).

Examples of Training Systems Available and Their Benefits

Selected examples of training systems, which have and are being developed to provide training related to DRR and CCA regionally and globally, are summarised in table 1. A more detailed table is provided in Appendix 2. Table 1 summarises the accreditation systems for Doctoral and Masters Qualifications which are generally accredited through the offering university but short courses do not generally appear to be accredited. Only

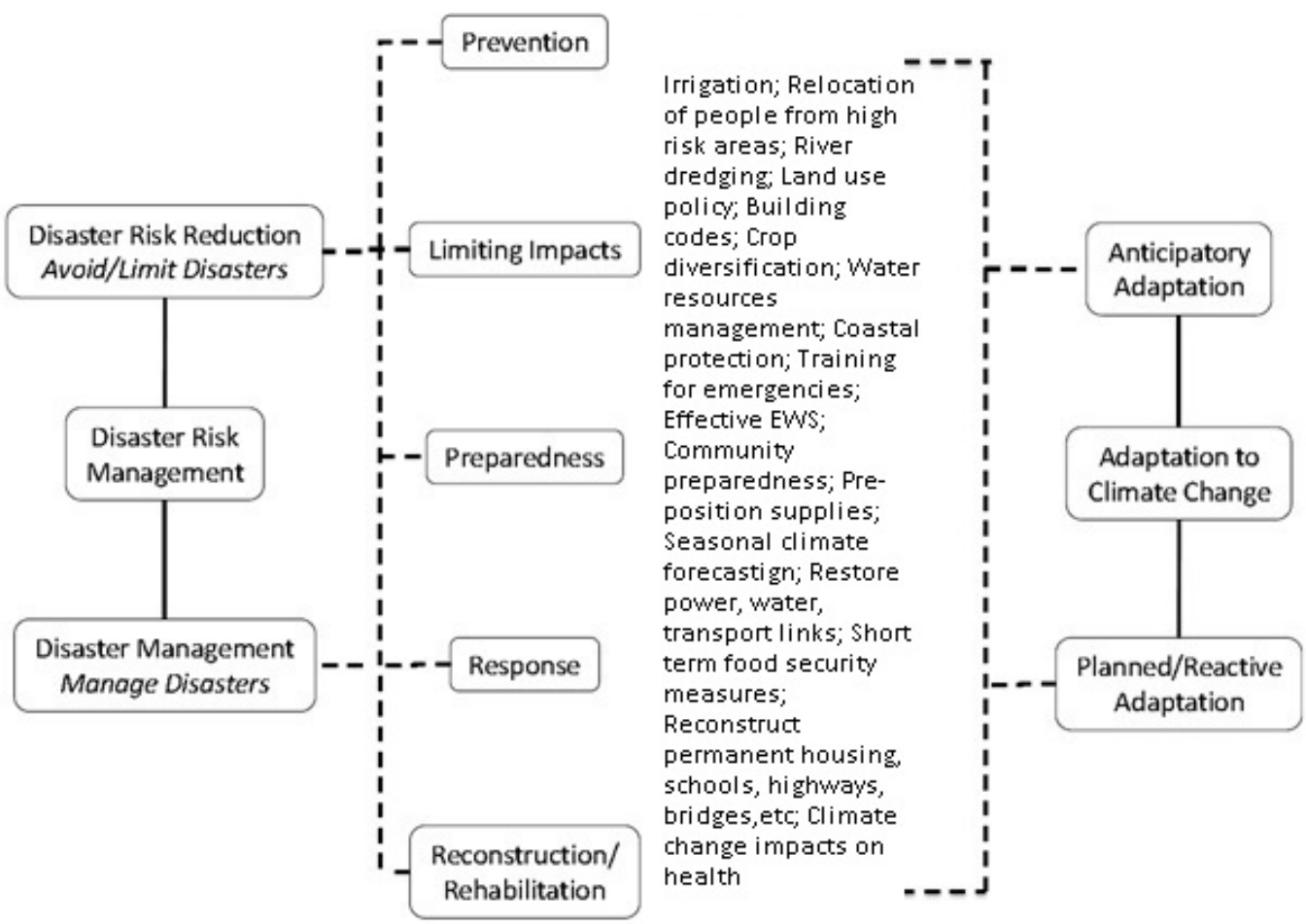

Figure 3. Linkages between disaster risk management and climate change adaptation.

the TVET project has a clear accreditation. This project is accredited by the Fiji Higher Education Commission and is listed on the Pacific Register of Qualifications and Standards, Pacific Community Education Quality and Assessment. In summary, accreditation for DRR and CCA appears mostly academic, among local institutions focusing on Master and PhD programs. Few other programs have wider remits.

Discussion

By encouraging international collaboration there may be an opportunity for interdisciplinary partnerships which actively build integrated preparedness, leadership and other solutions. These partnerships may support sustainable capacity development in DRR and CCA for practitioners. Currently, few of the training systems listed in Table 1 fulfil the UNISDR S&T Road Map UNISDR (2016b) recommendation to "support capacity building and ensure that capacity development for disaster risk management is interdisciplinary, shared across international boundaries, and demand-driven" (p.24). The remit and accessibility of these partnerships would benefit from expansion.

As part of implementing the Sendai Framework through the judicious application of S&T, it is crucial to purposefully align the development of cross-disciplinary disaster risk research with disaster risk capacity building for decision-makers, practitioners and associated professionals. The UNISDR Science and Technology Conference on the implementation of the Sendai Framework resulted in a short concept note on capacity development. This note highlighted substantial, global disparities in capacity development for science in the DRM field (UNISDR, 2016a). The concept note also indicated a heavy dependence on international organisations and associated experts to support training in developing countries. This was in addition to limited South–South cooperation which is also, albeit partially, identified in Appendix 2.

Until recently, the majority of formal capacity development efforts appear to have followed a highly specialised natural sciences pattern, for example geo-sciences. Over the last ten years or so, capacity development has transitioned towards more inter- and trans-disciplinary approaches. This change was summarised in Box 7.6 of the 2015 Global Assessment Report which documents

Table 1.
Examples of Initiatives that Aim to Provide DRR/CCA Capacity Development Training

Type of Diploma	Organisation/Initiative*	Accreditation
PhD, Doctorate School	Academic Network for Disaster Resilience to Optimise Educational Development (ANDROID) Online Doctoral School & Residential Doctoral School; Association of Pacific Rim Universities-International Research Institute of Disaster Science (APRU-IRIDeS) Multi-Hazards Program; New Zealand universities; United Nations University (UNU); USP; The University of Manchester: Humanitarian and Conflict Research Institute (HCRI)	Generally accredited through the offering university
Masters	International Institute of Seismology and Earthquake Engineering (IISEE), A Centre of Excellence of UNESCO, Master Program in Seismology, Earthquake Engineering and Tsunami Disaster Mitigation; New Zealand universities; UNESCO Master courses by International Centre for Water Hazard Risk Management (ICHARM, Japan) on water related hazard management; United Nations University (UNU) Joint Master (M.Sc.) Geography of Environmental Risks and Human Security with the University of Bonn; University of the South Pacific the University of Manchester: the Humanitarian and Conflict Research Institute (HCRI)	Generally accredited through the offering university
Short Courses	Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response (CCOUC) Disaster and Humanitarian Specialised Public Health Courses, Summer Short Courses, Croucher Summer Course, e-Learning courses: climate change and health; Griffith University- Environmental Health and Disaster Management 5 day Short Course training endorsed by International Federation of Environmental Health (IFEH); Partners Enhancing Resilience for People Exposed to Risks (Periperi U) RADAR's short course on Community Risk Assessment (accredited at NQF level 6)	Uneven accreditation patterns
Technical and Vocational Education and Training	Pacific Community / University of the South Pacific - European Union Pacific Technical Vocational and Education in Sustainable Energy and Climate Change Adaptation Project (EU PacTVET)	Accredited by Fiji Higher Education Commission and listed on the Pacific Register of Qualifications and Standards, Pacific Community Education Quality and Assessment

*This list is based on the authors' experience and does not represent an exhaustive list of available training.

the key activities related to the Hyogo Framework for Action (HFA). This section of the Global Assessment Report (UNISDR 2015b) recommended supporting the development of scientific, technological, technical and institutional capacities needed to research, observe, analyse, map and, where possible, forecast natural and related hazards, vulnerabilities and disaster impacts. The Global Assessment Report also recommended the development and improvement of relevant databases and establishing and strengthening capacities to summarize, disseminate, and exchange statistical information and data on hazards mapping, disaster risks, impacts, and losses. The development of common methodologies for risk assessment and monitoring was also recommended.

Low education baselines in many countries limit progress in implementing cross-disciplinary tertiary level learning processes in emerging risk and resilience domains (UNISDR, 2016a). On this note, it is important to consider the conceptualisation of any DRR/CCA curriculum to ensure it is capable of operating in the local context and economic setting of the initiative, including whether the curriculum responds to identifiable stakeholder needs (Hagelsteen & Burke, 2016).

The accumulation of global experience in disaster risk-related training and education, especially successful capacity building efforts that are culturally coherent and contextually nuanced, require formal capacity-building processes. Note that the Sendai Framework makes extensive reference to the delivery of culturally sensitive DRR related activities. Attention to cultural context and inclusiveness therefore need to be integrated aspects of implementing capacity development.

With rapidly growing global demand for disaster risk information, the scientific community is challenged to consider how the dissemination of training modules and other capacity building tools can be achieved through existing and forthcoming technologies. These challenges include methods for harmonising communication and technologies as well as making these methods accessible in remote locations. Ad hoc training, lack of quality assurance and low national capacity to sustainably and collectively deliver training leads to failure when trained individuals leave the original training context (Woods et al., 2006). This issue foregrounds the importance of accessible training, which is culturally appropriate and communicated in local languages and dialects. With risk communication often constrained by language barriers, there is scope for technologies to enable the interpretation into different languages and culturally appropriate materials, in addition to handing this aspect of capacity building over to local colleges and other schools. These approaches would allow the training to be appropriately delivered in a language that communities understand, while helping facilitate local ownership of the training materials (Buliruarua et al., 2015).

Another key issue is providing an accreditation and quality assurance mechanism that transcends professional and national boundaries. This mechanism should include systems for continuing professional development. This would in turn enhance the recognition of professions actively involved in DRR and CCA.

Initial Stocktake of Progress: Baseline Assessment, Good Practice Exemplars

An initial scoping, assessment and stocktake of developments related to formal qualifications for capacity development in DRR and CCA has clearly indicated bona fide progress. This progress includes progress in developing a significantly increased number of formal qualifications in the higher education sector (Ronan, 2015a, 2015b). Such qualifications could have a number of benefits, including:

1. A baseline assessment to help us better measure progress across the Sendai Framework and the other agreements.
2. Data that can be leveraged off and learned from to help plan for the next 15 years and beyond. This would include: exemplars of good practices, innovative ways to establishing training programs, and multi-disciplinary training; means used to evaluate effectiveness of training programs, both in terms of learning/capacity-building outcomes but also combined DRR-CCA outcomes; means used to successfully implement and sustain these programs; and means of resolving issues that have arisen across training programs related to formal accreditation challenges and successes.

Such an initial stocktake, assessment and analysis should not be limited to higher education as narrowly defined by the Bologna Process (see European Higher Education Area, 2014) but should also include national technical and vocational training and the potential pathways between them. For the technical and

vocational education and training sector, the assessment and analysis should focus on a competency-based approach and take into account skills, knowledge and attributes. This assessment should be regularly updated to integrate new science and innovative technologies where relevant (Buliruarua et al., 2015). The result of this initial stocktake, assessment and analysis can then be translated into important next steps, including enhancing pathways for developing formal qualifications and accreditation frameworks.

Formal Accreditation Standards

The development of accreditation standards can be complicated and accreditation processes generally appear to have been taking place at the national level. However, a more widely shared set of multi-disciplinary common principles can still be established and validated at regional or global levels before being utilised within country specific contexts. This has occurred in other areas of capacity development. Some examples of multi-country agreed training systems with certification and other forms of accreditation outside of directly addressing DRR and CCA are provided below.

The only universal training that the current authors have identified and that that is led by a UN system organisation comes from the International Maritime Organisation and relates to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 which was adopted on 7 July 1978 and came into force on 28 April 1984. The main purpose of this Convention is to promote safety of life and property at sea and the protection of the marine environment by establishing commonly agreed international standards of training, certification and watchkeeping for seafarers.

Some training is aligned with standards developed by standards organizations such as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), the European Committee for Standardization (CEN), and national standards bodies. These organisations have developed best practice norms for how DRR can be organized. Guidelines are also produced and made widely available by non-governmental organisations such as the International Federation of Red Cross and Red Crescent Societies and other international organizations such as the International Organization for Migration.

Industry training providers support trainees in understanding how to implement standards in an organization and how to meet the requirements for certification. For example, worldwide provision is offered by a collaboration between the British Standards Institution (BSI), American National Standards Institute (ANSI) and the American Society for Quality (ASQ) (ANSI-ASQ National Accreditation Board). This collaboration seeks to offer a suite of local accreditation by these international providers.

Each of the initiatives outlined above cost money, for example, to develop and deliver training materials alongside possible accreditations. There is also a large number of private companies in most countries that sell support, accreditation and training for the implementation of the most popular standards. Examples include ISO 14001 Environmental Management, ISO 31000 Risk Management, and ISO 22301 Business Continuity Management. This approach to standards could spread to disaster-specific standards such as ISO 22315 Mass Evacuation and ISO22319 Spontaneous Volunteers in Emergencies.

In terms of developing standards, ISO uses their ISO Academy to provide training materials on a range of subjects about standards and standardisation. This includes support for people who want to share their best practices by developing a particular standard through one of its committees. The role of developing countries is critical in ISO standard development. Their involvement will help ensure the global relevance of standards, encourage capacity development in these countries, and help ensure that valuable standards are exploited in a range of country settings. The five outcomes that ISO (2016) is pursuing include:

- Outcome 1: Standardisation has a recognized, effective role in support of public policies
- Outcome 2: National standards bodies' strategic capabilities strengthened
- Outcome 3: National standards bodies' capacity strengthened at the operational and technical levels
- Outcome 4: Increased involvement of developing country members in international standardization
- Outcome 5: Coordination and synergies with other organizations and among projects implemented

(ISO, 2016, page 6)

The plan to achieve this is to: disseminate materials, tools and information services; focus on regional-based capacity-building and awareness-raising projects;

provide country-based training and technical assistance to build the capacity of national standards bodies (ISO, 2006). It seems that ISO sees the focus on developing countries as part of corporate social responsibility. Perhaps there is a role for other sorts of providers to align a corporate social responsibility agenda with the delivery of CCA and DRR training.

A wide range of organisations have accreditation systems for training that are recognised by individual organisations or more widely. For example, the Projects IN Controlled Environments (PRINCE2) is a globally recognized process-based method for effective project management. Another example is Advanced Trauma Life Support (ATLS), which is a course on concisely assessing and managing patients with multiple injuries.

There are numerous accredited courses in subjects that relate to DRR and CCA. These include the following:

– Certified Emergency Manager (CEM) and Associate Emergency Manager (AEM). This is qualification is administered by the International Association of Emergency Managers. It also forms a recognition of excellence which is earned by emergency managers who demonstrate a strong understanding of the emergency management field through knowledge, experience, work history, training, education, and contributions to their profession. More than 1,375 emergency management leaders currently hold these credentials.

– Certified Floodplain Management (CFM). This course is offered by the Association of State Floodplain Managers. This program to certify floodplain managers is recognised in all states of the USA.

– Disaster Recovery Institute International (DRI) provides an international qualification in business continuity management. There are currently more than 14,000 professionals registered as accredited by the DRI and working in a range of settings.

– Royal Institute of Chartered Surveyors (RICS). This institute has over 127,200 qualified fellows and training members identified as accredited Chartered Surveyors, working in countries around the world.

– The Chartered Institute of Logistics and Transport (CILT). Their Humanitarian suite of qualifications includes a series of certificate qualifications for humanitarian logistics professionals or those in operational positions in the humanitarian field. These qualifications are accredited by CILT UK and provide a recognised standard for practitioners in the humanitarian sector.

– Project Management in Development (PMD Pro). This organisation issues a certificate qualification for Project Managers working in the development sector. It is accredited by Accrediting Professional Managers Globally (APMG) International and is widely recognised by the international non-governmental organisation sector.

Some accredited qualifications are recognised in more than one country, but not all recognise related professional status. The current authors are aware of other groups interested in supporting a call for developing accredited formal qualifications for capacity development in DRR and CCA, including the Worldwide Universities Network (2016).

Although the current paper calls for a globally accredited training system for DRR and CCA, the context for developing a globally recognised training system varies widely between and within different countries. This requires discussions about complicated combinations of aspects such as specific training required and the content of that training. There is nonetheless a need for countries to start by working together towards a regional platform, where partnerships and networks are created for education systems. This will also help facilitate shared, rather than, replicated training resources.

It would be of particular value to find where such regional collaborations fit as part of developing a staged approach from local, national, regional to global. It seems that the need for professionally qualified emergency practitioners can only really be recognised though considering a more regional approach to fit for purpose training programmes. For example, reviewing the learning of different organisations and processes concerning development of and launching of the Pacific Regional Federation of Resilience Professionals who work in DRR and CCA has illustrated mechanisms for accreditation, development and/or the endorsement of formal qualifications in the TVET sector at a regional level for both DRR and CCA (Jacot Des Combes et al., In Press). The current authors consider that this development will add credibility to the professionalization of the emergency management sector. This will demonstrate the value of DRR and CCA formal accreditation through the mitigation of a range of disaster impacts.

Limitations

The current concept paper recognises how complicated an accreditation process for DRR and CCA practitioners can be. The need for globally accredited DRR and CCA training and the complications of implementation have also made it very complicated to develop a concept paper on this topic. Relevant accreditation processes aim to address a range of complex DRR and CCA settings and scenarios, through the consideration of diverse stakeholder groups and their interests. These complications may help explain why the concept of accredited qualifications for capacity development for DRR and CCA remains mostly within the administrative bounds of academic and local institutions, with a focus on Master and PhD programs and postgraduate diplomas at some universities.

Wider systems for accreditation can be fraught from a multitude of perspectives. The current group of authors have tried to identify the current knowledge of what is available. In doing so, it has become clear that a more detailed review was well beyond the scope of this concept paper. The current approach has nonetheless been able to identify DRR and CCA training systems where a wider system of accreditation has been developed. A good example may be the International Federation of Environmental Health (IFEH) which has been providing a pathway for environmental health DRR training recognition. However, this approach still relies on endorsement by the IFEH via a Memorandum of Understanding (MOU) with Griffith University in Australia. Training is delivered by a combination of partner universities and environmental health professionals across the IFEH Asia and Pacific Region. This approach therefore depends on a single university and collaborating practitioners. In order to maintain trust, partnerships are required when addressing administrative procedures including records, management review, course content, tutor and candidate selection, training and performance review, continuing professional development, and issuing training certificates.

Conclusion

There has been a call for accredited formal qualifications for capacity development identified in the three 2015 UN landmark agreements: the Sendai Framework, the SDG's, and the COP21. However, no single solution has yet been identified. The recent development and launch of the Pacific Regional Federation of Resilience Professionals who work in DRR and CCA may support professionalisation of the DRR and CCA sector. The progress of this regional federation will nonetheless need to be monitored to determine if it could form a model for a single global solution for accrediting specialist DRR and CCA practitioners.

We consider that the Pacific Federation may provide a solution for quality assured practitioners in DRR and CCA. This federation may be able to provide a sustainable approach, while supporting tailored programmes that respond to the specific needs of countries where those programmes are implemented. The Pacific Federation will also provide a platform for reviews of training modules and tools. These reviews will be carried out by the scientific community in an effort to ensure accuracy and reliability, for both higher education in universities and in technical and professional training offered by national providers. Ideally, scientific reviews will be associated with methods focused on local indigenous knowledge, and cultural and linguistic considerations. Reviews from the scientific community will help ensure that all practitioners, who are not always trained in universities, have access to the latest scientific developments in their field. The validation of the training modules and tools by the scientific community will become one aspect of recognised quality assurance mechanisms on a global basis and this could complement the recognition of local requirements together with broader guidance on DRR and CCA legal requirements.

These steps, together with other measures outlined in the current paper, mark how more rapid progress in support of the three landmark UN agreements can be achieved through attention to accreditation standards and processes for the professionalisation of DRR and CCA practice. By leveraging global support for capacity development, the scientific community and a range of other stakeholders will help ensure that all countries can produce, access, and effectively use scientific information for DRR and CCA.

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Glossary

ANDROID	Academic Network for Disaster Resilience to Optimise Educational Development
ANSI	American National Standards Institute
APMG	Accrediting Professional Managers Globally
APRU-IRIDeS	Association of Pacific Rim Universities-International Research Institute of Disaster Science
ASQ	American Society for Quality
AUDEM	Asian University Network of Environment and Disaster Risk Management
BSI	British Standards Institution
CC	Climate Change
CCA	Climate Change Adaptation
CCOUC	Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response
CEN	European Committee for Standardization
CILT	The Chartered Institute of Logistics and Transport
COP21	The 2015 United Nations Climate Change Conference
CSR	corporate social responsibility
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
GRIPS	(Japan National) Graduate Institute for Policy Studies
EHEA	European Higher Education Area
EHADI	Environmental and Humanitarian and Disaster Assistance Initiative
EPFL	École Polytechnique Fédérale de Lausanne
EU PacTVET	European Union Pacific Technical Vocational Education and Training in Sustainable Energy and Climate Change Adaptation Project
ICHARM	International Centre for Water Hazard Risk Management
IEC	International Electrotechnical Commission
IFEH	International Federation of Environmental Health
IFRC	International Federation of Red Cross and Red Crescent Societies
IISEE	International Institute of Seismology and Earthquake Engineering
ISO	International Organization for Standardization
JICA	Japan International Cooperation Agency
MLIT	Ministry of Land, Infrastructure, Transport and Tourism

MOU	Memorandum of Understanding
MPH	Master of Public Health
MSc	Master of Science
NGOs	Non-governmental Organisations
P-ACP	Pacific-African, Caribbean and Pacific Countries
PDPs	Professional Development Programmes
Periperi U	Partners Enhancing Resilience for People Exposed to Risks
PIR	Pacific Islands Region
PMD Pro	Project Management in Development
RICS	Royal Institute of Chartered Surveyors
SBI	Subsidiary Body for Implementation
SDG	Sustainable Development Goals
Sendai Framework	Sendai Framework for Disaster Risk Reduction 2015-2030
SPC	Secretariat of the Pacific Community
SRDP	Strategy for Climate and Disaster Resilient Development in the Pacific
STAG	Major Group on Science and Technology
UN	The United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISDR	The United Nations International Strategy for Disaster Reduction
UNU	United Nations University
UNU-EHS	United Nations University Institute for Environment and Human Security
USP-EU GCCA	European Union Global Climate Change Alliance Project
WADEM	World Association for Disaster and Emergency Medicine

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Appendix 1 : Key Policies by Country

Country	Key Policy
Cook Islands	Cook Islands Joint National Action Plan for DRM & CCA Climate & Disaster Compatible Development Policy 2013-2016
Fiji	National DRM Plan 1995 National Disaster Management Act 1998 Fiji National CC Policy 2012 Draft Energy Policy
Federated States of Micronesia	Joint State Action Plan for CC & DRM Draft National Policy
Republic of Kiribati	Kiribati Joint Implementation Plan for CC and DRM 2014-2023
Republic of Nauru	Nauru has not yet established a specific environmental policy. A no regrets approach has been adopted to adaption accommodating climate and sea level change considerations and implementation of the National Environmental Action Plan and the Rehabilitation Master Land Use Plan
Niue	Niue's Joint Action Plan for DRM & CCA
Republic of Palau	Palau Climate Change Policy For Climate and Disaster Resilient Low Emissions Development 2015
Papua New Guinea	The National Development Strategic Plan (2011-2030)
Republic of the Marshall Islands	RMI Joint Action Plan for CCA & DRM Vision 2018 (2003-2018) National Climate Change Policy Framework 2011 Ministry of Education Strategic Plan (2013-2016)
Independent State of Samoa	National Policy of Combating Climate Change 2007 Greenhouse Gas Abatement Strategy 2008 Strategic Action Plan 2008 Samoa National Action Plan for DRM 2011-2016
Solomon Islands	Solomon Islands National Disaster Risk Reduction Policy (2010) National Development Strategy 2011-2020 Solomon Islands Climate Change Policy (2012)
Democratic Republic of Timor-Leste	National Strategic Development Plan (2011) National Disaster Risk Management Policy/ Plan (PNJRD/NDRMP) National Adaptation Programme of Action on Climate Change (NAPA)
Kingdom of Tonga	Tonga National Climate Change Policy and Joint National Action Plan for CCA & DRM 2010-2015 A Resilient Tonga by 2035
Tuvalu	Tuvalu National Strategic Action Plan for CCA & DRM 2012-2016
Republic of Vanuatu	Vanuatu Disaster Risk Reduction and Disaster Management Plan 2006-2016 Republic of Vanuatu National CCA Strategy (2012-2022) Climate Change and Disaster Risk Reduction Policy 2016 - 2030

Appendix 2:Examples of Initiatives that Aim to Provide DRR/CCA Capacity Development Training

This list is based on the experience of the authors and does not represent an exhaustive list of the available training.

Organisation	Initiative	Brief Description	Accreditation
Academic Network for Disaster Resilience to Optimise Educational Development (ANDROID)	Online Doctoral School & Residential Doctoral School	EU Inter-disciplinary consortium focused on several major capacity-building and baseline knowledge acquisition on innovative inter-disciplinary approaches to working, mapping of DRR teaching and research programs, policy capacities, emerging risk and open educational resources.	
Asian University Network of Environment and Disaster Risk Management (AUDEM)		Platform for university partnership to reduce disaster and climate change risks in Asia, including a specific focus on CCA-DRR interface. Focus includes building multi-disciplinary DRR-CCA capacity through the higher education sector.	
Association of Pacific Rim Universities-International Research Institute of Disaster Science (APRU-IRIDeS) Multi-Hazards Program		Large collaboration of universities in Asia-Pacific with main aim of building "safer and more disaster resilient societies through education, research, and partnerships" (Fernandez & Shaw, 2016, p.215-225)).	

Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response (CCOUC)	Disaster and Humanitarian Specialised Public Health Courses and Summer Short Courses	Formal disaster and humanitarian technical training for Master of Public Health (MPH) students and field practitioners at the Chinese University of Hong Kong.	Certificates for individual courses for non-MPH students, or Master's degree upon completion of MPH degree requirements
	Croucher Summer Course	Five-day residential summer course, aimed at postgraduate students and early career. Researchers in relevant fields from Hong Kong and the wider region on Research Methodology for Disaster and Medical Humanitarian Response.	Non formal: Certificate of completion
	E-Learning Courses: Public Health Principles in Disaster and Medical Humanitarian Response; Climate Change and Health; Others in development	Free online courses for individuals studying and working in health, policy, education and humanitarian sectors.	Non formal: Students who obtain 60% or above in the final assessment will be issued a printable certificate in recognition of completing the course
	Train the trainer workshops in Mainland China and Asia	In collaboration with government, academia and civil society stakeholders, the training develops the capacity of international and local practitioners on disaster preparedness and resilience in urban, suburban and rural communities.	
	Professional Development Programmes (PDPs) for Secondary School Teachers	Working with Hong Kong's Education Bureau to assist teachers to apply public health principles to disaster management using case studies and prepare for the teaching of Globalisation and Public Health modules in the liberal studies curriculum.	Non formal: Certificate of attendance
Griffith University, Australia	Environment Humanitarian & Disaster Initiative Environmental Health Disaster Management Course	Courses that will include DRR and Resilient Cities approaches plus the existing CDC Environmental Health Training in Emergency Response to state and Local City Government and other specialists. Currently looking to expand to other countries.	Endorsed by the International Federation of Environmental Health (IFEH) via an MOU.
International Federation of Environmental Health (IFEH)	Establishing SIGs on DDR World Congresses and World Academic Congresses on Environmental Health	The IFEH covers and connect 43 national EH organisations and 26 universities globally – and thereby some 50,000 environmental health professionals. These initiatives will be used as a platform in order to create awareness about Disaster Risk Reduction, in order to build capacity and in order to exchange and share knowledge on DDR	
	IFEH is endorsing the course offered by Griffith University: Environmental Health Disaster Management Course which includes Disaster Management as well as Disaster Risk Reduction.	Environmental health professionals and university masters students are provided with five days of intensive training with the skills and knowledge required to ensure they can adequately prepare for, respond to, recover from, and mitigate the adverse environmental health impacts of disasters.	
International Institute of Seismology and Earthquake Engineering (IISEE). A UNESCO centre of excellence.	Masters Program in Seismology, Earthquake Engineering and Tsunami Disaster Mitigation (in cooperation with National Graduate Institute for Policy Studies (GRIPS). Earthquake Engineering for Latin America in Spanish. Global Seismological Observation Course.	Training courses in English in seismology, earthquake engineering and tsunami disaster mitigation to researchers and engineers since 1960, in cooperation with the Japan International Cooperation Agency (JICA) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).	

Japan International Cooperation Agency (JICA)	Knowledge Co-Creation Program since 1955	More than 400 training and dialogue programs annually cover wide range of subject areas, with more than 20 courses on DRR including flood, landslide, tsunami, earthquake, meteorology, and comprehensive DRR.	
New Zealand Universities		Several New Zealand universities offer sub-degree courses, graduate and post-graduate degrees in DRR, DRM and Emergency Management (e.g. Massey University, University of Auckland, Auckland University of Technology, University of Canterbury and Lincoln University).	Formal –Open2Study Emergency Management MOOC, Graduate Certificate, Graduate Diploma, Postgraduate Diploma, Masters and PhD. (Part of the PGDip CC awarded by USP).
Pacific Community / University of the South Pacific	European Union Pacific Technical Vocational and Education in SE and CCA Project (EU PacTVET)	National Certificate Levels 1 to 4 in Resilience –DRR & CCA.	Accredited by Fiji Higher Education Commission and listed on the Pacific Register of Qualifications and Standards, Pacific Community Education Quality and Assessment Programme.
Partners Enhancing Resilience for People Exposed to Risks (Periperi U)	For example, RADAR's short course on Community Risk Assessment is benchmarked at NQL 6 and is credit-bearing.	University partnership in Africa with locally relevant risk reduction short courses and formal, accredited DRM/R/S academic programmes available. They are designed to align with local needs and capacities.	
Secretariat of the Pacific Community (SPC)	Global Climate Change Alliance: Pacific Small Island States	Government employee training on cost benefit analysis, project planning, and disaster response.	Non-formal – Certificate of participation
	Geosciences Division	Training on post disaster recovery for National Disaster Management Officers.	Non-formal – Certificate of participation
United Nations Educational, Scientific and Cultural Organization (UNESCO)	Masters courses by International Centre for Water Hazard Risk Management (ICHARM, Japan) on water related hazard management National Observatory of Athens (Greece) and Tribhuvan University (Nepal) on DRR focusing on earthquake École Polytechnique Federale de Lausanne (EPFL) offered certificate of advanced studies in DRR	UNESCO affiliated universities and institutions offer master and doctoral programmes and certificate courses on general DRM and subject specific courses such as water related and geo-hazards.	Master/Doctoral degree and certificate
United Nations University (UNU)	Joint Masters (M.Sc.) Geography of Environmental Risks and Human Security with the University of Bonn	The two-year programme offers an in-depth introduction to problem-oriented research methods, theories and concepts in vulnerability assessment, resilience analysis, risk management and adaptation strategies, and environmentally induced internal displacement and transboundary migration.	Internationally accredited M.Sc. Certificate from UNU-EHS and the University of Bonn
	Doctoral Programme	Offered by the UNU-EHS in collaboration with a wide range of international universities, PhD students are usually integrated in ongoing research projects at UNU-EHS and are free to select a corresponding participating international university.	Upon graduation, students are awarded a doctoral degree by their supporting international university.
	Affiliated Degree Programme	Several distinguished universities around the world have incorporated United Nations University (UNU) teaching and training components into their master's and doctoral degree programmes.	Upon successful completion of the UNU component, students will receive the relevant degree from the affiliated university.

	Non-degree courses such as the Intensive Summer Course: Advancing Disaster Risk Reduction to Enhance Sustainable Development in a Changing World from the Institute for Environment and Human Security (UNU-EHS)	To increase awareness of academics and practitioners working in related fields, regarding the complexity and importance of vulnerability and resilience in the field of DRR and CCA.	Non-formal - Certificate of participation
	E-learning	UNU-EHS conceptualizes and generates eLearning materials in relation to the core competencies of the institute.	
The University of Manchester (UK): Humanitarian and Conflict Research Institute (HCRI)	Six postgraduate programmes and postgraduate Certificates	Masters programmes: Humanitarianism and Conflict Response; International Disaster Management; Peace and Conflict Studies; Disaster Management- Resilience, Response and Relief (Online); Global Health (Online). Online PG Certificates: Global Health PG Diploma in Global Health	Upon graduation, students are awarded an MA, MSc or PG Certificates, depending on the programme.
	Two undergraduate programmes	Undergraduate programmes in: International Disaster Management and Humanitarian Response; Global Health.	Upon graduation, students are awarded a BSc degree
	Doctoral programme	Designed by the student on a topic of their choice across disaster management, humanitarianism and global health.	Upon graduation, students are awarded a PhD degree
The University of the South Pacific	European Union Global Climate Change Alliance Project (USP-EU GCCA)	Elective course on DRM in the Post-Graduate Diploma on climate change. MSc and PHD on climate change with topics linking DRM and climate change.	Non-formal – Certificate of participation
		Post Graduate Diploma in Climate Change	PGDip CC awarded by USP
		Master of Science in Climate Change	MSc CC awarded by USP
		PhD in Climate Change	PhD CC awarded by USP
World Association for Disaster and Emergency Medicine (WADEM)		Facilitation of academic and research-based education and training.	

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The role of the organisation following disaster: Insights from nurse experiences after the Canterbury earthquakes

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Abstract

This research aimed to explore nurse perceptions of impacts and organisational support following the Canterbury NZ earthquake sequence. Semi-structured interviews were undertaken with 11 nurses in the Canterbury area to explore the challenges faced during and following the 2010/11 earthquake sequence. The interviews took place three years after the start of the earthquake sequence to enable exploration of longer term aspects of the recovery process. The interview transcripts were analysed using thematic analysis. A number of themes were identified that related to organisations, including initial impact, emotional impact, work impact and organisational support. Changes to workloads and roles were both organisationally driven and personally motivated. There is a need to consider the psychosocial impact of working and living in a post disaster context. There is also a need to develop support packages to ensure the health and wellbeing of health care professionals. This research highlights a number of ways in which organisations can support employees following disasters.

Keywords: *disaster, recovery, mental health, burnout, organisations, nursing*

Organisations have a significant role to play in disaster recovery. Much of this role is divided between meeting the personal needs of workers who may have reduced capacity and motivation to work, and meeting demands to deliver services as usual (Nilakant, Walker & Rochford, 2013). Large-scale disasters can have a profound effect on group and individual functioning, with significant effects on organisations and their employees (Byron & Peterson, 2002). People may find it challenging to focus on their jobs when they are overwhelmed by problems such as loss of home, home damage, loss of personal and community facilities, and dealing with insurance companies. These challenges occur at the very time that organisations most need their employees – especially for those organisations that are crucial to economic and social recovery from disaster (Hall, Malinen, Vosslamber & Wordsworth, 2016).

It is expected that nurses, like other health professionals, will play a significant role following a disaster. Indeed, nurses have been active participants in response and recovery efforts during and following disasters (Kako, Ranse, Yamamoto & Arbon, 2014; Robertson, Dwyer & Leclercq, 2005; Palmer et al., 2003). However, in the wake of disasters, human service workers and their managers often turn their attention to the needs of service users, rather than considering impacts on the functioning of their own staff (van Heugten, 2012). Ranse and Lenson (2012) found that in addition to providing clinical care, nurse roles involved providing psychosocial support, coordinating care and resources, and practical problem solving. However there is a lack of research identifying the support needs of nurses in a post disaster environment. The current paper focuses on nurse perceptions of work issues relating to these kinds of roles following a series of earthquakes affecting employees and organisations in Christchurch, New Zealand in 2010 and 2011. It also focuses on their perceptions of organisational support within the same disaster-affected context.

Health and safety legislation in New Zealand places an obligation on employers to monitor the work environment and take all practicable steps to ensure that hazards do not cause harm (Health and Safety at Work Act

2015). Other countries have their own regulatory regimes and practices requiring employers to manage exposure to hazards and to ensure minimisation and/or mitigation of any identified risks. Hazards relating to stress are particularly relevant after a disaster, where a changed workload and/or duties can produce extra pressure on employees. Other factors such as workplace displacement, restricted work spaces, increased exposure to distressed clients/customers or potentially hazardous environments can also contribute to additional stress. Factors external of the organisation, such as longer or more complicated commutes or worry over family recovery issues, may have additional impacts.

Several studies have explored organisational implications of disaster and post-disaster management of employees (Nilakant, Walker, Rochford & van Heugten, 2016; Goodman & Mann, 2008; DeSalvo et al., 2007). Within an organisational context, signs of worker distress can include absenteeism, reduced efficiency and effectiveness, and an increase in conflicts (Garside, Naswall, Johal, & Johnston, 2013; Elfering, Semmer & Grebner, 2006). A post-disaster context may also be marked by *presenteeism* (Garside et al., 2013), which occurs when employees to continue working despite their own ill health (Dew, Keefe & Small, 2005). Surrounding research indicates a role for employers to monitor stress and offer support (DeSalvo et al., 2007; Leon, Hyre, Ompad, DeSalvo & Muntner, 2007; Norris, Friedman & Watson, 2002). Tangible types of assistance such as housing, meals and emergency supplies may reduce employee stress, absenteeism and foster positive work related attitudes (Byron & Peterson, 2002; Sanchez, Korbin & Viscarra, 1995).

The Post-Disaster Canterbury Context

In 2010 and 2011, the Canterbury region of New Zealand was hit by a number of significant earthquakes. The first earthquake, on September 4, 2010, was of Magnitude (Mw) 7.1 and resulted in numerous injuries and significant infrastructure, land and building impact (Potter et al., 2015). There was no loss of life but many people were displaced from their homes and a local State of Emergency was declared. A second major earthquake, on February 22, 2011 was of a lower magnitude of Mw 6.3 but resulted in significant loss of life: one hundred and eighty five people died as a direct result of the earthquake and thousands were injured (Potter et al., 2015). This was the second deadliest natural disaster in New Zealand history. A national State of Emergency was declared and remained in effect until April 30, 2011 (Potter, Becker, Johnston & Rossiter, 2015). By March 2016, greater Christchurch had experienced almost 18,000 aftershocks; over 35 of these were of magnitude 5 Mw or greater (CERA, 2016). The continuing aftershocks resulted in recurring activation of acute stress responses, in addition to substantial chronic stress caused by the on-going challenges of dealing with damage to homes, businesses and infrastructure (Gluckman, 2011). The loss of lives and impact on communities and livelihoods had severe implications for the health and wellbeing of individuals in the affected areas, and required collaborative action to support psychosocial recovery (Potter et al., 2015).

The earthquakes also resulted in significant impact on organisations. Research by Stephenson (2011) indicated that smaller organisations were vulnerable to negative revenue impacts following the disasters, whereas larger organisations were more likely to hire staff following the disasters. Retail, wholesale trade, accommodation and food services organisations experienced particular downturns in revenue (Stephenson, 2011). A survey of over 300 businesses following the September 4 earthquake found the impact on organisations, business owners and their employees, was substantial, and that managing wellbeing in the period following the earthquakes was the biggest challenge reported by organisations (Kachali et al., 2012).

Organisations that employ people involved in the recovery process, such as human service workers, may have had even more demanding responsibilities, leading to distinct psychological consequences for employees. Research has shown that disaster responders and recovery workers are at higher risk for vicarious trauma, secondary stress, compassion fatigue and burnout (Usher, Woods & West, 2014; Linley & Joseph, 2006; Palm, Polusny & Follette, 2004). A study by Mark and Smith (2012), exploring occupational stress in mental health nurses, found that job demands such as high workload and time pressures were related to higher levels of anxiety. These findings are relevant to a post disaster recovery environment, especially in the human service sector where it may not be possible to reduce increased job demands. Given that it may not be possible to reduce work demands through structural

changes, a primary focus on individual and social support factors may be particularly relevant for human service occupations in a post disaster context.

Organisational disaster literature has tended to focus on pre-disaster issues, such as minimising risks and developing business continuity plans, with less attention paid to the longer term recovery phase (Nilakant et al. 2016; Lettieri, Masella & Radaelli, 2009). Following the Canterbury earthquakes, Nilakant et al. (2013) conducted qualitative research to identify how organisations can help support employees in the post-disaster context. This research identified outlined how employee needs varied between individuals and changed over time. The research concluded that organisations that were sensitive to these changing needs and which displayed emotional awareness were better able to mitigate harmful effects of the disaster. Another study focusing on teachers following the Canterbury earthquakes suggested that burnout develops over time, and that it is significantly related to the perceived quality of organisational disaster responsiveness, the effect of the disaster on personal and work domains, and reported absenteeism and turnover intentions (Kuntz, 2014). The current research investigated nurses' work experiences and the support provided by their employing organisation in the months following the Canterbury earthquakes. The data was collected as part of a broader study by Johal, Mounsey, Brannelly, and Johnston (2016), exploring nurses' experiences during and following the earthquakes.

Methods

The current study used a qualitative approach to incorporate the experiences of the individual nurses and the meanings they attached to their experiences. Semi-structured interviews were used to ensure that the perspective of each nurse could be heard and explored in detail. The interview questions were based upon a previous format used in a study of the role of primary care physicians in disaster response and recovery, by Johal, Mounsey, Tuohy and Johnston (2014). This study design was applied to the current research subject to the Massey University Human Ethics Committee Low Risk process and all participants were informed accordingly.

Eleven nurses from across Christchurch were invited to be interviewed. The inclusion criteria were that they were Registered Nurses who had been working in Christchurch between September 2010 and February 2011, i.e. during the period emcompassing the first two large earthquakes. Convenience sampling was used to recruit these nurses with support from: the Canterbury District Health Board, who circulated details of the research; and through key informants, who invited nurses to participate. Respondents were asked to describe:

a) Their experiences during and subsequent to the September 2010 and February 2011 earthquakes.

b) Their experiences of providing care and support during the ongoing recovery phase.

c) Their support and wellbeing needs during the 3 years since the earthquake sequence began.

In accordance with principals of informed consent, each participant was provided with an outline of the research purpose, research process and their own rights as a participants, prior to interviews being scheduled. Participants then signed a formal permission document consenting to participate in the research. Although all research participants were advised that their participation was voluntary and they had the right to withdraw at any time, no participant withdrew at any stage of the research.

The interviews took place in October and November 2013, approximately three years after the beginning of the earthquake sequence. This allowed the interviews to cover both the initial aftermath of the earthquakes and the on-going recovery process. The interviews were conducted in a private setting convenient for each nurse and were audio-taped with permission. The length of interviews ranged from 39 to 70 minutes. As the data were being collected, the research team held weekly meetings to check project progress and to identify any major themes emerging. Data collection was stopped once 11 participant interviews had been reviewed. No further participants were invited at this stage because the research team judged that no new information was being collected, reflecting an approach outlined by Bowen (2008).

The majority of the interviewed nurses were female (91%) which is representative of their profession in New Zealand: 92 percent female (Nursing Council of New Zealand, 2014). Their ages ranged from 49 to 64 years, with a mean age of 55 (SD 6.06). At the time of the earthquakes, five of the nurses were working in a public hospital setting, four were community based and two worked in residential care for older adults.

The process of thematic analysis outlined by Braun and Clarke (2006) was used to analyse the data resulting from interviews. Transcribed interview data was read and re-read several times and the recordings were listened to several times to ensure the accuracy of the transcription. This process of repeated reading while listening to the original audio results in data immersion and increases the researcher's closeness with the data (Braun & Clarke, 2006). The transcripts were then coded building on the notes generated through the data collection and transcription phases. These codes identified features of the data that the researcher considered pertinent to the research question. The third stage of this thematic analysis involved identifying themes through combining different codes that were similar or that considered the same issue in the data.

The following provides an example of the thematic analysis process. The statement, "People don't have the resources, we're probably doing a lot more problem solving with them. We're tapping into a lot more social agencies for people that we wouldn't normally have tapped into" was initially marked with the following codes:

– Patients lacking resources

– Problem solving

– Making connections

– Social agencies

– Supporting patients

These codes were then combined to form the sub theme 'patient driven changes in role' which sits under the higher order theme of 'work impacts'. This theme, along with all other themes, was checked for coherence through discussions within the research team.

Results and Discussion

Thematic analysis identified four key themes developed through our interpretation of the participant data. These themes have been labelled as initial impact, emotional impact, work impact and organisational support.

Initial Impact

The nurses shared their experiences of the September and February earthquakes. Those on duty cared for patients in whatever way they could and this included working in the hospital emergency department, evacuating wards, assessing conditions in residential homes and working in the community. These nurses reported how the earthquakes resulted in significant impacts on organisational infrastructure and available resources due to damage and power shortages, for example Nurse F stated that:

> *We had chemotherapy patients with drips and no hair and masks and hats and blankets and took them all outside and we had most of them outside and there was another big aftershock and we were standing outside and the concrete was just rippling on the building, every level.*

For staff in residential facilities there was a focus on ensuring that there were sufficient resources and maintaining hygiene. This was illustrated by Nurse I, who stated that:

> *It was very much making sure that people were clean, that they had food, that they were - that there was a hygienic situation. We had to think about disposal of waste. We were really concerned about the water situation. We had a huge storage of water, but when you end up with extra patients and nothing comes with them, you don't kind of allow for that in that immediate two or three days.*

The interviews indicate that the nurses put their own fears and concerns to one side to focus on the situation at hand. For many, this act of keeping busy and focusing on others appears to have helped them get through the experience. For example, Nurse A stated that:

> *because I was so busy working and concentrating and supporting staff and patients… I didn't actually realise half of the things that actually occurred in the earthquake.*

When reflecting on their experiences during the earthquakes, the participants reported that the need to make rapid contact with family members was one of the key organisational issues. It appears that a number of organisations changed their policies after the September earthquake, in response to this need. Employees could now keep their cell phones with them, as outlined by Nurse I: "…the policy states that the staff weren't to carry cell phones in their pockets, well that went out of the water, they were allowed to carry cell phones in their pockets so long as they were not on loud."

Organisational issues were a further key area of concern. There appears to have been a lack of clarity around whether nurses should remain at work or leave following a significant earthquake or aftershock. Different organisations and even different departments within an

organisation appear to have had differing expectations, depending on the nature of employees' roles. For example, Nurse K stated that, "They've pretty much said that we can all go home, you know? Unless there was something imminent or something we were actually doing at the time." Nurse G stated that:

> *apparently it's earthquake safe and you don't go home if there's an earthquake, you stay at work. And I've heard that there isn't a lot of sympathy about you know, you don't stay at home, you're expected to come to work.*

Emotional Impact

The nurses noted the emotional impact of working in a post disaster environment, especially when they had experienced the same disaster as their patients. The nature of their work included listening to others' narratives while managing personal consequences of the earthquakes such as home damage. It appears that this combination of vicarious and personal emotional demands contributed to emotional impact on the nurses interviewed. For example, Nurse K stated that, "I seemed to burn out and I took a week off work, which helped a lot. That was more just the on-going stress of the insurance quagmire, and not getting anywhere." Nurse E stated that:

> *You can only go through so many other people's lived experience of what the quake was and what it meant to them and what it meant to their family, and, before you, because you've been through that experience yourself, I would listen and then I got to the point where I just thought, "I can't, I don't want to hear about it anymore."*

The nurses reflected on the broad range of emotions they had experienced during and since the earthquakes. These emotions appeared to include fear, guilt, pride, apathy, gratitude, relief, empathy, frustration, sadness, happiness and anxiety. Many of the participants talked about longer term impacts, particularly in terms of exhaustion, in terms of patients, colleagues and the wider population. These longer term impacts were also discussed by van Heugten (2012), who stated that while many Christchurch workers had coped well following the earthquakes, they appeared to be coming to the end of their reserves by late 2011. As stated by Nurse K, "fatigue is a big one that you just get worn down by it all." Nurse I provided a clear example of how they had reached a state of exhaustion: "I'm tired now and I think that's, if you talk to a lot of people now they'll tell you the same thing. People are absolutely shattered. The adrenalin's gone. We're all just exhausted."

There was also sense that the nurses had focused on coping in the immediate aftermath. For some, this meant that they did not reflect on their own experiences until later. Nurse B stated that, "I think because I was so busy, so intense at work, I didn't have time to, to think about that till much later."

Work Impacts

There were a number of impacts on workloads and work patterns, particularly in the immediate few weeks following the February earthquake. Reasons for these impacts included damaged infrastructure and lack of resources. In addition, the changing needs of patients resulted in nurses having more of a social worker role, connecting their patients to social support agencies. For example, Nurse F stated that, "the consultant and I would go and do house calls and determine what was required." Nurse I stated that, "I had to come in at seven in the morning because we had no registered nurses to do the medications." Nurse K provided another example: "we've got to point people in the right direction, you know, and get some sort of advocacy for them in terms of insurance."

The interviews were conducted approximately three years after the start of the earthquake sequence. Six of the 11 nurses interviewed stated that their roles or working hours had changed at this stage since the earthquakes. For some of the participants, this had been driven by organisational changes. For others, the changes were due to personal choice. For example, Nurse J stated that, "I don't work as long as I did and I have a more measured approach to my working life." Nurse B stated that, "I knew I needed to, a break, and do something less, with less responsibility."

For some nurses, work stress had had such a significant emotional impact that it reduced their physical capacity or emotional capacity to provide support to others. For example, Nurse E stated that, "the other role I have stepped away from is supporting other nurses... emotionally, I don't think I've got too much more to give in terms of supporting." Changes in role appeared to be more common among nurses that felt unsupported by their organisation following the earthquakes. For example, Nurse I stated that, "I had had enough, I needed to get out. I was becoming incredibly stressed and I needed to move out of that environment and into an environment where I was going to be supported."

Organisational Support

Following the immediate aftermath of the earthquakes, organisations offered a number of support services for their employees including:

– Employment Assistance Programmes (EAP)

– Onsite counsellors

– Work place support

– Financial advice

– Earthquake Commission (EQC)[1] and other insurance advice sessions

– Time off for relocation/family purposes

– Regular information updates

The interviews suggested that this range of support was not universally available because different employers had very different approaches. The majority of those nurses who worked for the regional health board felt well supported, for example Nurse A stated that, "we also now have not just EAP at our workplace, but workplace support as well. So people on the ground coming and talking." Nurse F stated that:

> *They had psychologists available, anybody who wanted help in that respect, they had financial experts the people who needed help with their claims and insurance and they were holding seminars on how to deal with this.*

Previous research by Byron & Peterson (2002) and Nilakant et al. (2013) has found that lack of communication, support and compassion towards employees during disaster recovery relates to lowered commitment and engagement, as well as increased staff turnover. This was reflected in the current research. Nurses who perceived that there had been a lack of support from their organisation were among those who had changed roles following the earthquakes.

The nurses appeared to feel particularly unsupported when managers and leaders did not have what they described as an authentic understanding of what it was like to live and work in the changed environment following the earthquakes. Those working in leadership roles in residential homes commented on the lack of support they received. This was particularly true when senior managers of multiple location residential home organisations or franchise owners were not based in Christchurch and were not experiencing the wider impact of the earthquake on home lives and on their ability to travel. According to the nurses, this meant the practical consequences and implications of the earthquakes for staff members were less understood. Nurse I stated that, "the lack of support from head office. I felt that they didn't understand what we were actually experiencing and the stress that it had on us."

Colleagues appeared to be one of the most significant sources of support for the nurses interviewed. Organisations appeared to enable this support by providing time for people to get together. Previous research by van Heugten (2012) identified that many of the social workers felt strongly supported by their colleagues in a post-disaster working environment. They enjoyed having fun together and appreciated organisations that endeavoured to facilitate this. This also appeared to be the case for nurses interviewed in the current study. For example, Nurse K stated that, "we had a barbeque at work and just [spent] time together where we weren't stressed by work and just chilled out a bit." Nurse E stated that, "the hugging and the warmth and being able to demonstrate your support for each other is really important, because sometimes the words just aren't there." Nurse C stated that, "there was a lot of camaraderie. So I think, yeah that's what got me through really."

Professional support was available through access to workplace counselling both from internal staff members and external sources. Some of the respondents identified a reluctance to seek help and support, particularly counselling. This appeared associated with not wanting to admit that they were not coping or were in some way weak. There was also a sense that organisations needed to be more proactive in supporting staff members. The way that nurses did not want to appear weak while not not wanting to actively seek support suggests that employers may need to consider how support services are offered. This combination, of not wanting to appear weak while wanting a more proactive approach, was outlined by Nurse E:

> *If somebody had made the approach to me, rather than me feeling, cause when you make the approach personally it's kind of, I felt like it was admitting a weakness. That I needed something and I wanted to be seen as being able to cope.*

1 The Earthquake Commission (EQC) provides primary natural disaster insurance to the owners of residential properties in New Zealand.

A number of the nurses felt that being at work was helpful as it provided an escape or distraction from personal or home demands. For example, Nurse G stated that:

> *I suppose going to work took my mind off the house at home. Yeah. Yeah. And then I was, and being with friends, being around my work mates made the days go faster and getting back into doing a role which is good for the brain.*

The timing of interview data concerning needs for support approximately three years after the start of the earthquake sequence shows how support was not only needed in the immediate aftermath of the earthquakes but also in the following years. The participating nurses talked about the on-going practical and emotional impacts on both themselves and their patients. This appears due in part to the on-going aftershocks experienced and the impact of secondary stressors such as dealing with damaged homes and infrastructure. In the meantime, practical support such as time off for moving into temporary accommodation or family reasons enabled many people to continue working effectively.

Prior research has shown that certain job characteristics, such as job strain, burnout and low engagement, can have profoundly negative impacts on work-related well-being. For example, a number of studies indicate that job demands such as a high work pressure, emotional demands, and role ambiguity may lead to sleeping problems, exhaustion, and impaired health (Doi, 2005; Halbesleben & Buckley, 2004). Other research has demonstrated that the combination of high job demands and low job control is an important predictor of psychological strain and illness (Karasek, 1979; Schnall, Landsberger & Baker, 1994).

However, the relationship between job demands and negative impacts is not entirely simple. Bakker and Demerouti's (2007) Job Demands Resources (JD-R) model outlines how each occupation may have its own specific risk factors associated with job stress. The JD-R model also outlines how risks posed by job demands are moderated by *job resources*, which are physical, psychological, social, or organisational aspects of a job that support goal attainment, reduce job demands or stimulate personal growth, and which have a significant influence on employee well-being. Hochwarter, Laird and Broue (2008) considered the impact of this kind of balance between demands and resources in the aftermath of hurricane disasters in the Gulf of Mexico, including Hurricanes Katrina and Rita. They found that after disasters, workers may experience job satisfaction in the face of increased demands if they are well resourced. If they are badly resourced, demands will lead to dissatisfaction. In the present study, the imbalance between high demands and reduced control was evident among nurses during recovery from the Canterbury earthquake sequence. Working conditions had changed quickly and nurses had had few choices about how their work environment was organised.

Conclusion

The results of the current research were generated from interviewing a convenience sample of 11 nurses who experienced a series of earthquakes in New Zealand. The goal was to understand impacts of the disaster on these nurses and the ways in which their organisations were supportive. The thematic analysis findings may have been different had the study included other countries, or different health care professionals and we therefore caution against generalisation from the current results. Furthermore, the current thematic analysis assumed an interpretivist epistemology. In brief, the analysis represented researchers' subjective interpretations of participants' own interpretations. This approach to analysis depended heavily on both researchers' and participants' viewpoints. A different set of researchers would therefore not be expected to arrive at the same analytical findings.

The study nonetheless constitutes an important contribution to the literature on nurses' experiences and the important impacts organisations can have on their own employees during disaster recovery. The results outlined above reinforce the broader notion that organisations have a responsibility to support employees following a disaster and to ensure that hazards, including mental health hazards, do not cause harm. Organisations should consider how they can best support employees to deal with increased demands or the need to work differently, and promote positive coping strategies. Following disasters, there is a heightened risk of employee burnout and compassion fatigue and relevant impacts on human service organisations need to be well considered (Garside et al., 2013).

The present study helps to illustrate how a number of participating nurses reduced their hours or changed roles. While we cannot state that these changes were all due to the earthquakes, there is a suggestion that increased job demands contributed to these decisions. Some nurses felt they had experienced compassion

fatigue and burnout which could have had a negative impact on their ability to carry out their work and in turn on their organisations. Staff shortages, changes to work patterns and workloads may have also had an impact on the nurses' productivity and well-being.

This study provides insights into the experiences of nurses in both the initial aftermath of the earthquakes and over time, how the earthquakes impacted on workloads, work patterns and the sources of support that nurses valued. Interview data illustrated how there were different support needs depending on personal circumstances and timing. The need for organisations to offer a broad range of support services and to recognise diverse needs has been outlined by the NZ Ministry of Health (2007) and Mooney et al. (2011). The current interview data highlights the particular importance of peer support and how organisations can facilitate this support by providing opportunities and time for colleagues to talk to each other. These insights suggest that organisations need to understand the needs of their employees over time. Organisations need to provide resources to help employees deal with the increased and changing demands if employees are to effectively contribute to recovery. This is particularly true for human service organisations as their services will be in high demand and employees have limited opportunity to control workload or the working environment after a disaster.

Future research can build on the findings of the present study and investigate the role of organisations in supporting other occupational groups in a range of disaster affected contexts. Further research is also needed to further clarify how post-disaster changes to job demands and resources impact on the well-being of human service employees.

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Toward a substantive dialogue: The case for an ethical framework in emergency management, Part 1

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Abstract

The changes in and interactions between the social, built, and physical environments are making some hazards more severe, concentrating risk, and widening exposure and vulnerability. The scale, interdependencies, and uncertainty of these transformations foreshadow dramatic influences on humankind, greatly increasing the probabilities of future catastrophes. This dynamic context coupled with diminishing resources will require the EM/DRM professionals and the wider communities they serve to make difficult and uncertain values based decisions. The existing opportunity is to begin a process of reasoning together, in order to discern the essential components of an ethical framework for 21st century emergency management and its related interdisciplinary communities. The intent of this essay is not to provide answers or solutions, but rather to stimulate a dialogue about the moral basis for EM/DRM decisions in a world that is becoming increasingly complex and risk laden. To kindle the early phases of the discourse, a series of related articles will follow in the coming months.

Keywords: *disaster risk management; emergency management; ethics; values; decision making; emergency; disaster*

> *We have neither a theory that can locate societal goodness, nor one that might dispel wickedness, nor one that might resolve the problems of equity.*
>
> *(Rittel & Webber, 1973)*

As the world becomes increasingly interconnected and interdependent, the social systems we live and work in are fundamentally transformed (Castells & Cardoso, 2005). Further, changes in and interactions between the social, built, and physical environments are making some hazards more extreme, creating new previously unknown threats, and increasing many vulnerabilities (Etkin, 1999; Mileti, 1999; Lagadec, 2008). This complex new terrain is marked by areas of greater population densities, rapid unplanned urbanization, more people living in high risk hazard zones, environmental degradation, biodiversity loss, emerging pathogens, and climate change. The scale, interdependencies, and uncertainty of these transformations foreshadow dramatic influences on humankind, greatly increasing the probabilities of future catastrophes. Of concern is the central role of emergency management /disaster risk management (EM/DRM) navigating through these unprecedented challenges.

The concentration of risk and the dynamic nature of hazards have already produced significant demands on human safety and humanitarian systems, and outpaced capacity in many places (Jensen, Feldmann-Jensen, Johnston & Brown, 2015). The youthful field of EM/DRM is facing a myriad of present and future disasters. Unmistakably, limited and diminishing resources amid an ever changing environment of hazard, exposure, and vulnerability will necessitate unprecedented value-based choices. Examples of such choices include deciding between strong governance and individual freedoms to live in places of high risk, economic growth versus environmental health, and to what degree societies engage in the socialization of risk. At their core, these difficult and unclear choices are elicited by ethical issues; moreover, these dilemmas engage people and societies of very different worldviews and values. Ethics have a vital role, not just for disaster research, but also for decisions at the policy level and in the domain of action.

EM/DRM as a Profession

The developing profession of EM/DRM is charged with the vision of "promoting safer, less vulnerable communities with the capacity to cope with hazards and disasters" (Principles of EM Working Group, 2007, para 2), at the same time facing an increasingly complex hazard and vulnerability landscape. Advancing the emerging profession and promoting a common understanding are widely accepted definitions, which have been established for practice, research, and institutional policy for example:

-The practice of Emergency Management (EM) "is the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters" (Principles of EM Working Group, 2007, p.4).

-Disaster Risk Management (DRM) is "the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster" (UNISDR, 2009, para 27).

-The academic purview of EM is "the scientific study of how humans and their institutions deal with hazards, vulnerabilities, and the events that result from their interaction" (Disciplinary Purview Focus Group, 2013, p. 1).

Pointing to a theoretical underpinning of praxeology, the application of scientific knowledge to better inform human action, the definitions recommend action to be taken toward the vision. The adjustment of the means to both the goal and reality is also reflected in the guiding doctrine of the eight EM professional principles: comprehensive, progressive, risk-driven, integrated, collaborative, coordinated, flexible, and professional (Principles of EM Working Group, 2007). One of the next steps in furthering the profession would be to begin an in depth dialogue about the ethical values for EM/DRM because ethics have a vital role for EM/DRM decisions, both in the domains of action, research, and policy.

International Context

Three significant global policy developments occurred in 2015, which can provide both occasion and foundation for timely dialogues about a framework for values based decisions in EM/DRM contexts. The historic and interrelated global agreements that were achieved include: 1) The Sendai Framework for Disaster Risk Reduction 2015-2030, 2) The Sustainable Development Goals, and 3) The Paris Agreement on Climate Change (Aitsi-Selma, Murray, Wannous, Dickinson, Johnston, & Kawasaki et al., 2016). While the humanitarian action field has an established foundation for value based action, the 2016 World Humanitarian Summit imparted further impetus toward strengthening these processes. For the purposes of this discussion, the focus will primarily be on the Sendai Framework for Global Disaster Risk Reduction. The Sendai Framework promotes an ethical goal to reduce disaster losses of human life, health, and assets (UNISDR, 2016). The targets and priorities established in the framework align with the principles of human rights and dignity; further, it extends value based considerations to the interaction of policies with human dignity, justice, and social responsibility (UNISDR, 2016). These recent policies provide a unique opportunity to open a values based dialogue for EM/DRM.

The Need for Dialogue

The existing opportunity is to begin a process of reasoning together, in order to discern the essential components of an ethical framework for 21st century emergency management and its related interdisciplinary communities. Rational and inclusive debate is critical to determine such a framework's components, as perspective influences the analysis. Uncertainties can affect predictive capacity, speed of change, scope of the issue, and completeness of knowledge (COMEST, 2013). Other contextual factors that influence moral judgments include legislation and policy, multiculturalism, and religious affiliations. Examples can include deciding between strong governance and individual freedoms to live in places of high risk, economic growth versus environmental health, and to what degree societies engage in the socialization of risk. At their core, these difficult and uncertain choices are elicited by ethical issues; moreover, these dilemmas engage people and societies with very different worldviews and values. The debate for an ethical decision framework is needed not only to better address current EM/DRM issues, but also because complex interactions and interdependencies are altering the context within which EM/DRM exists.

The intent of this essay is not to provide answers or solutions, but rather to stimulate a dialogue about the moral basis for EM/DRM decisions in a world that is

becoming increasingly complex and risk laden. To kindle the early phases of the discourse, a series of related articles will follow in the coming months. It must also be acknowledged that basic ethical dimensions applicable to emergency management are already documented in various forms and can be built upon. Further, internationally recognized principles exist in the practices of other disciplines and professions, which can also inform the dialogue. An EM/DRM ethics discourse can also be informed by existing frameworks that have similar applicability concerning optimized actions. An example could include the Climate Change ethical principles, which contains the following themes: "1) The link between foreknowledge and the duty to act on it; 2) The precautionary principle for action in the face of uncertainty; 3) Human rights; 4) Consideration for future generations in the ethical outline; and 5) Obstacles to sharing and differentiating responsibilities" (COMEST, 2010, pp. 27-30). Moreover, aligning the configuration of an emergency management ethical framework with existing works would more broadly unify efforts in related practices.

A foundational value for an EM/DRM ethical framework is the worth of protecting those most vulnerable to a hazard event. For this reason, transparency is an essential point for the discussion. Transparency is not only a key component of both social capital and effective risk communications, but it also influences decision making concerning inequality and predatory behaviours following a disaster (Aitsi-Selma et al., 2016). The direct connection of these considerations to justice, equity, and public good implies a deeper significance. Therefore, the needs of those most vulnerable before, during, and after hazard events, as well as the obligations that may be due to them, is worth highlighting for values based dialogue.

Conclusion

Values based decision making is an indispensable element within any set of disaster risk managment and resilience building considerations. Yet, ethical matters are seldom clear in discourse, and as a result, are not thoroughly debated. A thorough discourse suits a holistic approach, fitting well with renewed emphasis on whole of community involvement. All phases of disaster management engage multiple sectors, disciplines, and organizations; therefore, widening the scope of reflection for interdisciplinary and community participation is recommended (UNISDR, 2016). The course of examination is optimally grounded in ethical theory, and addresses ethical issues pertinent to the discipline and profession of EM/DRM. The collective discourse toward the formation of an EM/DRM ethical framework will not only have a substantive influence on professional strategies and decision making, but also on the lives of those who are casualties of a disaster.

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Toward a substantive dialogue: The case for an ethical framework in emergency management, Part 2

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Abstract

Emergency management/disaster risk management is a profession that focuses on reducing the suffering of people, and it would greatly benefit from the undergirding of a robust ethical foundation. A basis of ethical principles specifically for emergency management/disaster risk management has been insufficiently developed thus far, and a broad dialogue would do much toward enhancing the profession and establishing a moral basis for emergency management/disaster risk management actions. A collective dialogue toward developing an ethical framework is becoming increasingly important given the complex and dynamic vulnerabilities and risk environment societies are facing. Further, the discourse is encouraged to be broad, inclusive, thoughtful, and inclusive of ethicists as well as emergency/disaster managers and the wider communities they serve. A discourse toward establishing a framework will embrace a variety of ethical theories, acknowledge the plurality of values that exist in current societies, and further define the emergency management/disaster risk management community. The beginnings of a discourse regarding an ethical framework for emergency management/disaster risk management should optimally be grounded in theory. Therefore, a number of relevant ethical theories and values that could be used to support the professional discourse have been reviewed in this paper.

Keywords: *disaster risk management; emergency management; ethics; values; decision making; emergency; disaster*

Many professions have ethical principles that are used to provide guidance for their members regarding appropriate conduct and decision making. Examples include engineers, psychologists, doctors, nurses, and others. In fact, the existence of ethical principles extends far back in history; examples include the Hippocratic Oath for physicians, the Babylonian Code of Hammurabi, and the ancient Egyptian Law of Tehut. Even pirates (Johnson, 1724) had a Code of the Brethren, which at times included special protections for women (Creighton & Norling, 1996). Such ethical frameworks were, and are, common because they serve important purposes; they reflect the cultural norms used by people in professional practice to guide their decisions and actions and provide standards for behavior.

The intent of this paper is to inform a more substantive dialogue toward an emergency management/disaster risk management (EM/DRM) ethical framework through an overview of ethical theories that underlie the profession and the wider communities they serve. While some efforts have been made in this area (IAEM, 2011), further discourse is needed to root an EM/DRM framework more deeply in ethical theory, and engage the broader community of transdisciplinary practitioners and researchers, who interface with disaster risk management or emergency management activities.

Emergency management is the responsibility of more than government; it involves NGOs, community groups, and individuals. Part of being an effective manager in the public service means creating a trusting relationship with the public and media. Trust is an essential factor in almost every action within the EM/DRM profession. Personal networks and relationships are critical to effective disaster management, and unless there are trusting relationships in place any process is likely to

become dysfunctional. Co-workers and victims alike must have trust in the competence and character of those managing a disaster (Etkin, 2015). EM/DRM is based upon the value of reducing human suffering, and as such should reflect ethical considerations.

Ethical actions draw their meaning from social relations, and are rooted in social context (Lewis & Gilman, 2012). Engaging in a broad discourse that addresses an ethical framework for EM/DRM would also benefit both the profession and the wider communities they serve. Such a framework could provide a compass for behaviors and difficult resource decisions, enhance development in professional practice of EM/DRM, and improve consistency of policy and procedures.

Ethical Theories

To encourage a deeper dialogue, a few theories that may inform the EM/DRM considerations are briefly summarized. Clearly, a broader range of perspectives and values will need to be brought into the dialogue as the collective conversation grows. The intent here is to begin to inform a basic dialogue regarding an ethical framework for the EM/DRM profession and the wider communities they serve.

Utilitarianism

> *Actions are right in proportion as they tend to promote happiness; wrong as they tend to produce the reverse of happiness, i.e., pleasure or absence of pain.*
>
> *(John Stuart Mill as cited in Beauchamp & Walters, 1999, p. 11)*

The consequences of action accounting for context and flexibility form the central basis of Utilitarianism (Lewis & Gilman, 2012). It is a theory of normative ethics, which evaluates actions based upon maximizing utility at the same time as reducing suffering. In utilitarianism, the moral worth of an action is determined only by its resulting consequences, which is often expressed via the concept, *the greatest good for the greatest number* (Etkin, 2015).

Utilitarian theory can also apply to values, such as reducing human suffering in a disaster. Yet, disaster situations are complex and require the consideration of a number of issues as a system. Where multiple goals are addressed, the set of goals must be optimized in some fashion. A system perspective generally requires the use of trade-offs, which greatly complicates an analysis. Trade-offs are common in the field of EM/DRM; multiple players exist on both sides of risk creation and risk consequence and become important for hazard prone area risk assessments, but yield benefits to select groups when developed.

As long as the end justifies the means, Utilitarianism can accept bad things happening to some people. For example, during the Red River Flood in Manitoba, Canada in 1998, it was perceived that some communities were sacrificed in order to save the city of Winnipeg from flooding (Klohn-Cripeen, 1999). Is such a utilitarian based decision justifiable, and if so what are the moral arguments that support it? And if few are sacrificed for the greater good, what obligations ensue towards them following the disaster?

Defining what is good for the greatest number and how to measure goodness is a value laden exercise that leads people, organizations, and cultures in diverse directions. Cost-benefit analysis, a process with both significant strengths and weaknesses (Hanley, Barbier & Barbier, 2009), is fundamental to analyzing utilitarian arguments. Numerous mitigation studies show very positive cost-benefit ratios (Rose, Porter, Dash, Bouabid, Huyck, & Whitehead et al., 2007), which from a utilitarian perspective support public policy mitigation initiatives. Some social programs are based upon utilitarian theory as well, one example being disaster financial assistance funded from a tax base; by reallocating resources from those who can afford it to those in need, thereby the greater good is served.

Utilitarian theory is an important way of thinking about morality and decision making. Nevertheless, used in isolation, utilitarianism can lead to morally repugnant actions, especially when a definition of 'good' is based upon extreme political or religious philosophies. Utilitarian arguments are powerful when it comes to disaster ethics and play an important role in EM/DRM. These types of arguments are equally important in non-disaster times, when most of the construction of risk takes place. Utilitarian arguments promote egalitarian values, and accordingly represent an important influence in EM/DRM. A social contract that requires the government to care for and protect all of its citizens is rooted in a utilitarian ethical theory.

Deontology

What ought I to do?

(Immanuel Kant as cited in Porter, 1894, p. 25).

Duty or the principle behind the action is at the core of Deontology (Lewis & Gilman, 2012). The principles of deontology judge the morality of an action based on its adherence to rules. The notions of duty, obligation, standards, and rules are foundational to this concept. In deontological theory, morality is a function of the actions themselves and the intent/motive of those who are acting (Etkin, 2015). The argument is that intrinsic good and bad is not situationally dependent, but rather is absolute. This fixed ideal means that good actions, such as truth telling, must be followed under all circumstances, even if the outcomes are harmful.

Another fundamental element of the deontology perspective is human dignity and worth (Lewis & Gilman, 2012). Zack's analysis of disaster ethics lists several values and principles that are commonly accepted in western democratic society: "1) Human life has intrinsic worth, 2) everyone's life is equally valuable, 3) everyone has the same right to freedom from harm by others, and 4) everyone is entitled to protection from harm by nonhuman forces" (Zack, 2010, p. 23). Following from these values are three primary ethical principles, that: 1)"We are obligated to care for ourselves and our dependents, 2) we are obligated not to harm one another, and 3) we are obligated to care for strangers when it doesn't harm us to do so" (Zack, 2010, p. 23). The connection to obligations suggests that these principles are rooted in deontology; and accordingly have a variety of implications for EM/DRM.

Deontological theory underlies the belief that government and citizens have duties to help those who have suffered in a disaster, and that victims have the right to assistance. This principle has also served as the basis for the development of the international disaster response law. All societies have sets of rights and obligations for their citizens and governmental organizations, though they vary from culture to culture. An important challenge arising from globalization is the influence of increasing values variation at both global and community levels (Jensen, Feldmann-Jensen, Johnston & Brown, 2015). Key drivers of these diverse and changing values are access to global communication structures and ease of population movement. The complex cultural matrix must be taken into account in EM/DRM discourse toward an ethical framework to achieve any meaningful guidance.

Virtue Ethics

All virtue is summed up in dealing justly.

Aristotle

Virtue is about character, intentions, motives, and attitudes (Lewis & Gilman, 2012); and at its basis, virtue ethics emphasizes right being over right action. The founders of virtue ethics go far back in time, and include the Greek philosophers Plato and Aristotle. Different from utilitarian and deontological theories, virtue ethics considers character traits and virtues a person should adopt, which in turn will help them to live a moral life and choose moral actions. At its core, virtue ethics is about character and values manifesting in the treatment of others (Lewis & Gilman, 2012).

How people view the worth of others (Etkin & Timmerman, 2013) is evidenced in character traits, such as empathy, compassion, or honesty. Human beings can adopt two basic perspectives of others, which can be called 'I-Thou' or "I-It". Within an 'I-It' relationship objects or beings are viewed by their functions (Buber, 1958). Inevitably in the large and complex world we live in, 'I-It' relationships are likely more common. An 'I-Thou' relationship engages in a mutual dialogue that goes beyond function, and acknowledges the fundamental worth of the other. Unlike 'I-It' relationships, 'I-Thou' ones are imbued with rights, duties, and moral worth. The disconnection between the two perspectives takes form primarily as a lack of empathy (Buber, 1958). Therefore, the trait of empathy is an acknowledgment of 'I-Thou' relationships.

In EM/DRM, human beings can be treated as objects or obstacles. In a disaster, people can very quickly be turned into obstacles to the greater or individual good (during a stampede, for example), and are thus transformed into an "It" as opposed to a "Thou" (Etkin & Timmerman, 2013). The most famous expression of this situation is found in Simone Weil's work on violence. She argues that part of the essence of violence is the turning of one's opponent into a thing (e.g. dead meat) as one inflicts violence (Weil & Bespaloff, 2005). In order to get to one's goal, one 'cuts through' the opposition. In such an approach, it is only the goal that matters, while injured people become things that can be described as collateral damage.

When the institutions and people who construct risk are disconnected from those who bear its negative consequences then relationships become of an 'I-It' kind, thus removing the issue of moral/ethical values

from the risk management equation and reducing it to simple economics. When people are given no dignity or respect, injustices are easier to carry out (Glover, 2000). Disaster case studies suggest that utilitarian principles are less important than egalitarian or deontological ones in EM/DRM (Zack, 2010), which suggests that more attention should be paid to the character and virtues of decision makers.

Virtue ethics has received less attention than other ethical theories in EM/DRM, and deserves more consideration. In particular, the importance of treating people as moral beings imbued with dignity and rights, as opposed to objects, is fundamental to ethical EM/DRM. Altruistic motivations often lead people into the EM/DRM field. Disaster situations are complex and no playbook can cover all possible situations. Decision makers, therefore, should embody the characteristics and values that will enable them to deal with wicked problems that are important, rife with uncertainties, and create dilemmas that require resolution.

Other Values to Consider

The discourse toward the development of an EM/DRM ethical framework can also benefit by considering values-based concepts from other disciplinary areas. Many such constructs are relevant to the distributed functions of EM/DRM. As examples germane to EM/DRM, Social Contract theory and Environmental Sustainability are considered below.

Social contract

Social Contract theory is a moral and political philosophy that may also add value to the discourse. Social contracts between citizens and their governments exist in legislation, policy, and cultural values. The idea is based upon the notion that there is an agreement, implicit or explicit, between citizens and those who govern, which specify rights, freedoms, and liberties (Zack, 2009). In particular, citizens forego some rights and freedoms in order to live in a state that provides security and safety. It is then the responsibility of government to provide a society, which is better than would have existed without such an agreement (Rousseau, 2003).

The notion of a social contract is fundamental to disaster management. In western democracies, such a contract does exist, both informally in the minds of citizens and also formalized in legislation and policy. Citizens, as part of the social contract, give up freedoms in exchange for the benefits that government can provide; thus follows the duty of governments to engage in disaster risk reduction initiatives. Individuals have duties as well. The motive behind duty and its action closely links the social contract with deontological thought. Identifying where individual duties end and collective duties begin is complex, but can be clarified through social discourse.

A social contract can be a basis for EM/DRM undertaken by different levels of government. Land-use planning and building codes are forms of government regulation designed to make society safer. Governments also have the responsibility to continue functioning during and following a disaster; hence the emphasis on Continuity of Operations (COOP) in order to fulfill the contract. These actions display explicit values already exist in social contracts. Further, evidence of adaptation to changes in environment and culture also suggest that social contracts are not static. Therefore, the evolving social contracts would be a critical factor to integrate into the forthcoming discourse.

Environmental sustainability

Environmental values address the moral relationship of human beings to the environment. Traditionally, environmental values have played a weak role in the disaster field, but it is becoming much stronger for two reasons. The first is an increasing recognition of the role that the degradation of natural systems plays in exacerbating natural hazards. The second is a growing awareness of the impact of humans on the rest of the natural world. Environmental degradation will contribute to difficult choices in the future, and the misuse of the environment sets the stage for future catastrophes.

Uncertain and adverse environmental trends are beginning to emerge. Among these important changes are: increasing population density in high risk hazard areas, environmental degradation, unreliable and unclean water supplies, emerging pathogens, loss of biodiversity, and changing weather patterns. Therefore, the value of environmental sustainability becomes important to the discussion. The articulation of this principle has been set forth in the global forums of United Nations Education Scientific and Cultural Organization (UNESCO) and World Commission on the Ethics of Scientific Knowledge and Technology (COMEST); where the global collaborative established a framework of ethical principles for climate change adaptation. In

that global context, environmental sustainability was expressed as:

> *the moral relevance of the fact that humanity is dependent on the environment for its long term survival. Human beings are therefore in a relation with the environment, modifying the habitat in using modern and traditional technologies to change the material conditions of their living. Moral virtues addressing this relationship are important in order to maintain the condition of life itself.*
>
> *(COMEST, 2013, p. 16)*

Correspondingly, environmental sustainability has importance for EM/DRM context, both in its influence on scale and frequency of future disasters and potential to reduce human suffering.

The complex challenges of the 21st century increasingly demand the application of environmental values. The principle of environmental sustainability can be understood as the moral obligation to care for the earth's environment because it supports the very basis of human life on the planet (COMEST, 2013). A vital consideration to be included into an EM/DRM ethical framework discourse will be values of environmental sustainability and stability.

Conclusion

The central focus in the field of emergency management is the reduction of human suffering and loss. At the same time, the dynamic context of concentrated risks, diminishing resources, and changing nature of hazards, exposures, and vulnerabilities require the EM/DRM professionals to make difficult and unclear value-based choices. Interestingly, the moral basis for action within the humanitarian field has been well established and articulated; yet, this same attention has not yet been given to EM/DRM. The need for discourse about the moral basis for EM/DRM actions is clear. Further, the articulation of an ethical framework advances the EM/DRM professionalization.

The optimal course of examination should be grounded in theory. For that reason, a number of relevant ethical theories and values that could be used to support the professional discourse have been presented and discussed in this paper. At the same time, the constructs reviewed here are skewed toward a western cultural perspective, and other cultural perspectives need to be included for a meaningful discussion and holistic design. The aspiration for the dialogue is to ultimately move toward a recognized ethical framework or even a code of ethics. These papers represent a step in the process that will hopefully lead to a larger engagement and a profession rooted in ethical principles.

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