Emergency preparedness through community sector engagement in the Blue Mountains

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ABSTRACT

There is an expectation that communities exposed to potential disaster events will make preparations for themselves (COAG 2011). However, communities are frequently underprepared for the onset and results of disaster and a default response is to rely on emergency services organisations. This reliance is exacerbated by the presence within communities of highly vulnerable individuals who, because of age, infirmity or isolation, require additional levels of assistance by responders. Partnerships between community organisations and emergency services organisations can build preparedness by using programs that increase emergency response awareness. This paper provides a study of two partnership programs established by the community and emergency services sectors in the Blue Mountains, New South Wales. These programs successfully raised the level of emergency preparedness and community resilience to disasters.

Introduction

According to Thomas and Lopez (2015), the frequency of climate-related natural disasters is rising and communities need to assess their risks and prepare for emergency events. The *National Strategy for Disaster Reduction* (COAG 2011) calls for increased responsibility on the part of communities and individuals, however what constitutes community responsibility is not completely clear.

Community organisations include neighbourhood houses or centres, and other agencies that deliver family and community services. Community organisations inherently have a deep understanding of their community, have strong networks and employ local residents. In NSW neighbourhood centres are mandated by the Department of Family and Community Services to enable connections within communities and build capacity and community wellbeing. Although some community organisations may be connected with emergency services organisations and agencies, they are not generally included in emergency planning and response. Being effectively involved in emergency planning is an important contribution to their mission to enhance community wellbeing.

Sharing responsibility at a community level involves partnerships with emergency services organisations and other government and non-government organisations with roles to play in emergency and disaster management (e.g., Red Cross, Rural Fire Service (RFS), State Emergency Services (SES) and Police). Partnerships of this nature allow different levels of connection within the community and provide programs at household, neighbourhood and community levels.

Research in Australia and elsewhere indicates that households are often not adequately prepared for a disaster even in disaster-prone areas (Cretikos *et al.* 2008). Adequate preparation can help to reduce the immediate damage of a disaster as well as equip people to look after themselves in the immediate aftermath of the event (Kapucu 2008).

Previous research on connected communities indicates that people in the Blue Mountains did not have adequate resources or assistance to manage during a disaster. In particular, people with chronic conditions such as mental illness, people living alone, single parents and people over 75 years of age were less likely to cope adequately and recover quickly. This situation is exasperated as some people are in all three categories (Redshaw *et al.* 2015).

Householder preparedness includes developing family communication and evacuation plans, maintaining a disaster supply or emergency kit and being informed about home emergency preparedness (Diekman *et al.* 2007). A key aspect of community resilience is preparedness, which is considered to include cultivation of individual wellbeing and intentionally engaging in preparedness, so that readiness becomes more than risk management; it becomes an integrative, fluid and health-promoting state that facilitates adaptive post-disaster trajectories (Gowan *et al.* 2014).

Community networks in the complexity of preparedness include personal and contextual factors such as health status, self-efficacy, community support and the nature of the emergency (Levac *et al.* 2012). Ratnam and colleagues (2016) include 'place attachment', which is bonding of people to place, as a factor of people's risk perception. In addition, interaction between neighbours has been shown to be effective in motivating people to prepare for disaster (Paton *et al.* 2008). It is evident that if householders begin to embrace preparedness measures others in the vicinity will also be inclined to do so. Promoting discussion among neighbours to consider required measures increases the likelihood of action being taken.

Kim & Kang (2010) argue that:

> ***Building a community-level communications environment where individuals can develop an integrated connectedness to different community storytellers (such as the local media, community organisations and neighbours) should be the first and most critical step in helping residents prepare for various natural disasters.*** (Kim & Kang 2010, p. 484)

Kim & Kang (2010) show that community organisations play an important role in community communication. Their findings indicate that pre-disaster messages about damage and consequences were more likely to motivate people to act. People who believe 'it won't happen to me' are more likely to relate to impacts on the community than on themselves (Kim & Kang 2010, p. 484).

People involved at a community level are essential to extend engagement and preparedness. For this paper the communities of the Blue Mountains (which is heavily forested and subject to bushfires) are examined. The purpose is to evaluate and present the effectiveness of fire preparedness initiatives.

Case Study: Blue Mountains fire preparedness

Communities in the Blue Mountains are frequently confronted with the threat of fire. The community sector and the emergency services sector have come to work with each other in a partnership that bolsters the overall capacity and ability to reach households and assist the community members with specific needs when planning responses to events. After major fires in 2013, a working group was formed with both sectors represented. The working group initiated the Blue Mountains Sustainable Approaches to Fire and Emergencies (BSAFE) project. The project was designed to build on a number of existing, stand-alone community engagement and education activities and household preparedness learning practices.

Analysis of the outcomes of two preparedness initiatives are reported here. The principles derived from the analysis have general applicability across different disaster scenarios.

More Than a Fire Plan

More Than a Fire Plan (MTFP) is a structured, two-hour seminar held in central locations in the lower, mid and upper Blue Mountains with presentations from emergency services personnel. The information provided allows people to understand the functions of each service. In the seminars the RFS presents on preparedness and Red Cross presents on emotional preparedness. Presentations from SES and Police are included where officers are able to attend.

Meet Your Street

Meet Your Street (MYS) events are barbecues organised in local parks in settlements in the Blue Mountains. The events are attended by neighbourhood centre staff and RFS representatives. At these events a survey was used for staff to have conversations with people about fire preparedness.

Communities in the Blue Mountains are surrounded by bush and frequently confronted with the threat of fire.

Image: Mary Lou Keating

Method

Procedure

Ethical approval for conducting the research was provided by Charles Sturt University. At each MTFP and MYS event participants were asked to complete a survey. Preparedness questions included whether householders had talked about fire preparedness plans, made evacuation plans, practiced their plans, created emergency kits, prepared the house and grounds for bushfire and had contact details of neighbours.

Post-survey follow-up included contacting participants in the programs who had agreed to be contacted. This was initially by email and then by phone to complete the follow-up survey. The follow-up survey contained basic demographic and preparedness questions based on the initial survey.

Participants

Preparedness programs evaluated under the BSAFE project directly reached over 500 households within the Blue Mountains, with 533 surveys completed. Table 1 shows the number of events and surveys completed. Follow-up responses were obtained with 61 participants. The total number of participants across all programs was fairly evenly distributed across the Blue Mountains villages, with about half of all participants living close to bushland and one third of participants living two or more streets away from bush areas. Approximately two-thirds of participants were female and one third male.

Table 2 provides the age distribution of respondents. About half of the attendees surveyed at MYS events were under 50 years of age, whereas participants at MTFP events tended to be older.

Table 3 shows that most respondents in all groups lived with other people. The proportion of respondents living alone was lower for MYS.

Follow-up surveys were completed by 41 MTFP participants and 20 who attended MYS. The follow-up survey included questions on preparedness measures that could be correlated with the original surveys. There were additional questions relating to conversations and events that had occurred since attending the program.

Results

At MYS events, an average of 33 per cent of respondents said they had met new people. As getting to know more people in the local area, and even better, in their own street, has been demonstrated to increase preparedness (Levac *et al.* 2011, Paton *et al.* 2008, Diekman *et al.* 2007), this can be considered a successful outcome of the MYS program.

Table 4 shows findings on the development of emergency plans from respondents contacted during the preparedness programs (during the intervention) and from respondents contacted for follow-up (post intervention). The data collected was qualitative in nature (the respondents either had undertaken, or had not undertaken, the task referred to in the question). The two sample groups (during intervention and post intervention) were of different sizes and therefore the analysis worked with proportions rather than numbers. It was also assumed that the samples had been drawn independently and randomly from a during-intervention population and a post-intervention population. The significance of the changed levels of responses observed was tested using

Table 1: Event number, totals and gender of those surveyed.

Event	Number of events	Number of surveys	% of males	% of females
Meet Your Street	21	356	32	68
More Than a Fire Plan	6	177	34	66
Total	**27**	**533**	**33**	**67**

Table 2: Survey respondent age groups for each type of event.

Event	<34	35–49	50–59	60–69	70–84	85+
Meet Your Street	17	33	30	15	5	0
More Than a Fire Plan	6	12	29	33	19	1

Table 3: Household composition of respondents for each type of event.

Event	Living with others	Living alone
Meet Your Street	89	11
More than a Fire Plan	75	25

Gatherings with local people for Meet Your Street.

Image: Mountains Outreach Community Services

the z stastic for the difference between two population proportions (see Keller & Warrack 1997, pp. 472–474) with the null hypothesis that there was no difference between population responses during intervention ($p1$) and population responses post intervention ($p2$).

In the initial survey, it was found that although 76 per cent of participants from across the two programs said they had talked about an emergency plan within their household, a much smaller percentage had done anything about it. Of concern was the fact that only 59 per cent of respondents had an emergency plan in place and only 33 per cent of total respondents had actually practiced their plan.

The post-intervention findings were considerably more encouraging. For example, there were significant increases in the numbers who had created an emergency kit, practiced an emergency plan, prepared the house and obtained neighbours' contact details. The results suggested that an increase in the numbers making an emergency plan had risen, although the test statistic lay just outside of the conventional critical value in this case. Of particular interest was the large increase in the proportion of householders who had prepared their home for an emergency.

Although there was no increase in any of the categories for which action was planned, the results showed that those who had previously planned to prepare their house had done so, resulting in a significant fall in this category.

Given the unequal samples and the assumption of randomness and independence, care must be taken in attributing the observed differences to intervention (although they are consistent with the expected impact of intervention on the reported outcomes). A better approach would have been to conduct a matched pairs experiment. In the current context, this not possible as no matching of data between the initial survey and the follow-up survey had been undertaken.

Table 4: Comparison of survey responses during and post intervention.

	$\hat{p}1$	$\hat{p}2$	$\hat{p}1 - \hat{p}2$	z
(A) In Place				
Talked about what I should do	0.76	0.79	-0.03	-0.51084
Created an emergency kit	0.44	0.61	-0.17	-2.52503
Made an emergency plan	0.59	0.70	-0.12	-1.78154
Practiced emergency plan	0.33	0.54	-0.21	-3.09944
Prepared house	0.89	-0.25	-0.25	-4.21008
Neighbours' contact details	0.60	0.74	-0.14	-2.14778
(B) Plan to do				
Talked about what I should do	0.13	0.08	0.04	-0.21926
Created an emergency kit	0.39	0.36	0.03	-0.15161
Made an emergency plan	0.23	0.26	-0.03	-0.69888
Practiced emergency plan	0.35	0.36	-0.02	-0.15501
Prepared house	0.08	0.16	0.16	2.84118
Neighbours' contact details	0.20	0.20	0.00	-0.55172
(C) No Response				
Talked about what I should do	0.12	0.08	0.03	0.797299
Created an emergency kit	0.18	0.03	0.14	2.879949
Made an emergency plan	0.19	0.03	0.15	2.996879
Practiced emergency plan	0.32	0.10	0.22	3.53652
Prepared house	0.12	0.03	0.09	2.367067
Neighbours' contact details	0.20	0.07	0.14	2.595058

Notes: $\hat{p}1$ = proportion during intervention; $\hat{p}2$=proportion following intervention. z = approximately standard normally distributed test statistic. The null hypothesis $H_0 = (p1 - p2) = 0$. z values in excess of 1.96 indicate that the difference is significant to at least the 95 per cent level of confidence.

In addition to the information provided in Table 4, more than half of the participants across the two programs reported they had conversations in their street since attending a program. More than 60 per cent reported having a conversation with particular neighbours about emergency situations. Higher proportions of those attending MTFP functions had conversations with people in their street (54 per cent), with neighbours (76 per cent) and others outside their area (83 per cent) since the workshop. Approximately 40 per cent of those who attended MYS had conversations in their street, 60 per cent with particular neighbours and 70 per cent with friends and family members.

Respondents from both MTFP and MYS were asked, in the follow-up only, who they would seek help from in an emergency. Responses are reported in Table 5. Very few nominated emergency services organisations or community organisations as their source of assistance and slightly more indicated that they would rely on family or friends. By far the majority said that they would not need help.

Table 5: Sources of emergency assistance.

Survey responses	% of total responses
Emergency services or civil defence would help me	5
Family or friends would help me	10
I don't know who would help me	8
I or my family wouldn't need help, I could evacuate myself	59
My neighbours would help me	7
People living in my home with me would help me	8
Someone from a community organisation would help me	3

The follow-up survey included questions on the level of confidence respondents have in taking particular actions when confronted with a bushfire event. The responses are reported in Table 6 and indicate, as might be expected, that people are more confident about taking shelter or evacuating than they are about combating the event. In keeping with this, more people had defined plans to leave and few had plans for circumstances where they might have to stay in place.

Discussion

The results of the initial survey indicate that, as is the case with many disaster-prone areas (Cretikos *et al.* 2008), communities of the Blue Mountains were poorly prepared for bushfire. The benefits of appropriate preparation (Kapucu 2008) and the engagement of community organisations (Kim & Kang 2010) were recognised by the community. Action was taken to address the issues of individual preparedness, particularly in relation to home emergency preparedness (Diekman *et al.* 2007), engaging in preparedness (Gowan *et al.* 2004) and a higher level of community networking (Levac *et al.* 2012, Ratnam *et al.* 2016, Paton *et al.* 2008).

In keeping with the *National Strategy for Disaster Reduction* (COAG 2011) the Blue Mountains community has undertaken a number of community-based interventions to improve preparedness for bushfire. The effectiveness of two interventions (MTFP and MYS) was considered. Surveys conducted following the interventions indicate that there had been a substantial improvement in the preparedness for bushfire, especially with respect to preparing homes for an emergency. These intervention programs contributed to spreading awareness and to bringing about more detailed awareness.

Further research would examine whether initial contact through programs such as MYS results in further engagement and detailed planning through attendance at other programs. Additional research would also gauge the importance of MTFP for the engagement of other groups, with a potential focus on vulnerable and at-risk individuals and households. It is also suggested that future research should adopt a matched pairs approach to examine the impact of intervention.

To avoid burdening households during a bushfire or emergency situation, responsibility for other community members or neighbours should focus on raising awareness about the need for an emergency plan and assistance with

Table 6: Confidence levels when dealing with emergency events.

	% indicating level of confidence to act*				
Actions during an emergency event	1	2	3	4	5
Defending home	22	20	30	20	7
Remaining in home when power lost and roads closed	7	16	16	38	23
Sheltering in home when no time to evacuate	23	23	18	23	13
Evacuating area	11	13	23	25	28
Confronting emergency	15	8	51	16	10

*Level of confidence scaled 1(lowest) to 5(highest).

developing the plan. In some circumstances checking up on neighbours is appropriate to ensure they have received the necessary information and are able to communicate with others. For those who have no family or others to assist them, it is important that they are assisted by local organisations.

Two approaches, MYS and MTFP, were designed using community development and capacity building practice frameworks. The use of community education, community engagement, community participation and community capacity building is the basis of each of these approaches and speaks strongly to their transferability and sustainability. This is particularly so when responsibility for delivery is accepted by locally embedded community organisations such as neighbourhood centres that work in partnership with emergency services organisations to deliver the programs.

Conclusions

The findings of BSAFE demonstrate that the partnership between emergency services organisations and community organisations has led to greater and more successful community engagement. More household preparedness events were held in 2014-2015 and more households were reached on the issue of bushfire preparedness.

The two household preparedness programs (MYS and MTFP) are premised upon a partnership approach between emergency services organisations and community organisations. Community-based organisations are embedded in communities and, as a part of their core business, they have a defined role in building sustainable approaches to community preparedness and readiness.

Continuing to develop partnerships and involvement of communities in disaster preparation and planning is important for optimising shared responsibility and increasing community resilience. Engagement tools and activities are central to the approach and monitoring developments via ongoing data collection and analysis is important for evaluation.

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