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A research-based primer on the potential psychosocial impacts of flooding

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A research-based primer on the potential psychosocial impacts of flooding

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Abstract

Purpose – Following recent flooding in New Zealand a brief review of research on psychosocial impacts of flooding was undertaken to identify lessons. The paper aims to discuss this issue.

Design/methodology/approach – A pragmatic review of the literature concerning psychosocial or mental health impact following flooding incidents in locations with similarities to New Zealand identified. In total, 12 papers from between 2008 and 2015 were reviewed to identify lessons for New Zealand.

Findings – The review findings illustrate how floods can have great impacts on people's psychosocial needs and mental health. The extended timeframe and disruptive nature of the impacts of flooding are such that the effects of secondary stressors are highly significant as they prolong the welfare, physical and psychosocial needs of those affected.

Originality/value – This brief review provides important insights into the psychosocial impacts of flooding by examining research from similar areas to New Zealand.

Keywords Aftercare, Disasters, Emergency response, Psychological, Natural hazard, Psychosocial

Paper type Literature review

Introduction

In response to flooding across several regions of New Zealand in the winter of 2015 (NZ Herald, 2015a, b, c) a review of research on psychosocial impacts of flooding was undertaken. As with other types of major incidents or disasters the effects of flooding on people's health, relationships and well-being can be extensive (North, 2014). The aftermath of a disaster is a time when survivors can experience many psychosocial symptoms such as stress, grief, depression and anxiety (Cohen, 2002; Reyes and Elhai, 2004; Adams *et al.*, 2002; Norris *et al.*, 2002; Warsini *et al.*, 2014; Neria *et al.*, 2008). The psychosocial impact may be exacerbated and prolonged by personal and property losses, relocation and disruption to social support networks and daily activities (Mitchell *et al.*, 2008; Nikapota, 2006). However, the majority of people in these instances experience passing distress but return to psychological health, with less than 30 per cent of adults experiencing severe, lasting levels of these psychological problems (Bonanno *et al.*, 2010).

Flooding differs from some other types of disaster as: it is often possible to prevent the impacts; and due to the often lengthy recovery period. This can increase the risk of secondary stressors; those stressors that are indirectly related to the flooding such as economic strain as well as the impact of worry about recurrence on those who are affected by floods (Stanke *et al.*, 2012).



Methods

As part of a wider study on psychosocial impacts of disasters this paper identifies research that has relevance for the situation in New Zealand and identifies ways in which psychosocial well-being could be supported. A pragmatic approach to the literature was taken with studies looking at psychosocial or mental health impact following flooding incidents in locations with similarities to New Zealand identified through a search of the Science Direct, PsychINFO and PubMed databases. Identified papers were from between 2008 and 2015. References from articles were also followed up. In total, 12 papers were reviewed to identify lessons for New Zealand.

Findings

One of the key papers identified was a literature review undertaken by the UK Health Promotion Agency concerning the mental health impacts of flooding (Murray *et al.*, 2011). In this review 48 papers were identified and analysed. The authors summarised that mental health impacts following flooding events included: bereavement; economic problems for families; behavioural problems in children; increased substance use and/or misuse; increased domestic violence; as well as exacerbating, precipitating or provoking people's existing problems with their mental health. Often, people's experiences, which reflect the personal and social meanings of the event for them, and the understandings and meanings they derive from it, have more influence on the psychosocial impact of the event than the event itself. Recovery from distress after disasters, including flooding, is characterised by adaptation to circumstances that have changed and by rebuilding communities. The wider literature shows that the experiences of people, who are distressed in the aftermath of all disasters including floods, are not always easy to distinguish from the symptoms of common mental disorders. On the other hand, the research suggests that the incidence and prevalence of common mental disorders after flooding is substantially increased and that these disorders can persist long after the flooding has passed. This stresses the importance of planning for and providing effective and timely public mental health and clinical responses to provide responses to these and other eventualities (Stanke *et al.*, 2012).

Over the last ten years there have been a number of significant flooding incidents in the UK particularly in the summer of 2007 which was the wettest since records began in 1914. Research following such events indicates that social impacts such as disruption to lives and displacement from the home during the restoration period have a strong impact on psychological health. One study used real-time longitudinal diaries to document and understand the everyday experiences of individuals following the floods of June 2007 in Hull (Sims *et al.*, 2009). The study found that mental health effects were particularly prominent with many participants reporting increased levels of stress, anxiety and depression and a loss of interest in everyday activities. The authors state that much of the emotional trauma experienced was related to the stresses and strains of dealing with the practicalities of flood such as the loss of personal possessions to coping with insurance companies and the experience of being displaced into temporary accommodation. In many cases, feelings of anxiety continue to be experienced long after repairs have been completed and the person has returned to their home. Periods of bad weather can be particularly stressful, as people fear a return of the flooding and are reminded of the hardships that they faced at the time (Sims *et al.*, 2009).

Carroll *et al.* (2010) looked at the psychological impact of the protracted rebuilding and recovery phase following the 2005 Carlisle (UK) floods. The participants identified a

number of primary flood-related stressors such as danger from flood waters, damage to property and possessions, evacuation, issues following being displaced and living conditions while homes were damaged. Secondary stress factors were also identified such as disputes with insurance companies, builders and other agencies being the repair phase.

Paranjothy *et al.* (2011) reported on health impact assessments conducted in South Yorkshire and Worcestershire between three and six months after the summer 2007 floods. Surveys were conducted using postal, online, telephone questionnaires and face-to-face interviews. The study explored the prevalence of four mental health symptoms (psychological distress, generalised anxiety disorder, depression and post-traumatic stress disorder (PTSD)) between flooded and non-flooded populations, and examine the role of risk factors, particularly incident management variables (evacuation and disruption to essential services). The study found that the prevalence of all mental health symptoms was two to five-fold higher among individuals affected by flood water in the home. People who perceived negative impact on finances were more likely to report psychological distress, probable anxiety, probable depression and probable PTSD. Disruption to essential services increased adverse psychological outcomes by two- to threefold. Evacuation was associated with some increase in psychological distress but not significantly for the other three measures. The authors concluded that further work is required to investigate risk factors associated with psychological distress in individuals who are evacuated from their homes and effective interventions to minimise the impact of emergencies on communities.

Lamond *et al.* (2015) explored the factors affecting long-term psychological impact and deterioration of mental health in flooded households five years after the 2007 UK flooding. A survey was completed by 280 flooded households to detail the psychosocial impacts, along with information on flood experience, actions taken during the flood and household demographics five years after the floods. The majority of the respondents reported no or minimal deterioration in mental health following the flooding (64 per cent) though 11 per cent reported extreme deterioration. Over 60 per cent of respondents reported always or very often experiencing anxiety when it rains. The study found that mental health deterioration was negatively correlated with household income with those on lower income levels more likely to experience severe psychological impacts. The severity of the damage caused also had an impact with flood depth being positively correlated with deterioration of mental health and actions taken before the flood to decrease damage (such as using sandbags, moving items to higher floors) negatively correlated with deterioration of mental health.

Mason *et al.* (2010) used a cross-sectional survey to investigate the psychological symptoms associated with the aftermath of the flood amongst adults living in the affected communities. In total, 444 completed questionnaires on trauma and symptoms of PTSD, anxiety and depression and coping strategies were returned. In total, 27.9 per cent of participants met criteria for symptoms associated with PTSD, 24.5 per cent for anxiety and 35.1 per cent for depression. Females had higher mean scores on PTSD, anxiety and depression than males. Most frequently reported coping strategies were rational, detached and avoidant, with the least frequent being emotional coping. Having to vacate home following flood, previous experience of flooding and poor health were associated with greater psychological distress.

The impact of the summer floods in Brisbane 2011 were studied by Alderman *et al.* (2012) using a community-based survey. Psychological outcome variables include psychological distress, sleep quality and PTSD. Those residents whose households were directly affected by flooding were more likely to report psychological distress poor sleep quality and probable PTSD. The risk of suicide following such disasters has

also been the focus of research. One study following the 2009 Red River Flood found that greater amounts of time spent volunteering in flood efforts were associated with increased feelings of belongingness and decreased feelings of burdensomeness (Gordon *et al.*, 2015). The authors concluded that communities pulling together during a disaster can reduce interpersonal risk factors associated with the desire for suicide.

A study of 274 adults over age 60 (Bei *et al.*, 2013) found that compared to those not personally affected (78.8 per cent), personally affected individuals (21.2 per cent) reported significantly higher PTSD symptoms, with about one in six reporting PTSD symptoms that might require clinical attention. Personally affected individuals also reported a greater increase in anxiety post-flood, but changes in their depressive symptoms and self-reported health were not significantly different from those not personally affected. Greater flood exposure and the lack of social support were the risk factors for poorer mental and physical health. Higher stoicism was associated with higher post-flood depression and poorer self-reported mental health. The use of maladaptive coping, such as venting and distraction, was associated with greater deterioration in mental health after floods, whilst emotion-focused coping such as acceptance, positive reframing and humour, was protective against such deterioration.

Research has also been conducted in New Zealand following the Matata floods of 2005 (Spee, 2008). Impacts of the flooding and debris flow included closures of the main road and railway, the destruction of 27 houses and damage to a further 87 properties, the evacuation of 538 people, disruption to water and electricity supplies, stormwater and septic tank systems and the deposition of debris throughout Matata township and lagoon⁵. Research undertaken two years after the event explored how the community was recovering through a survey and qualitative work. It was identified that even though it was two years after the event “people’s emotions around the night and events since the disaster were still very raw. Much like an open wound that keeps festering, people seemed stuck in a place of continual hurt and anger” (Spee, 2008, p. 15). Much of this “anger” was directed towards the recovery process and decision making subsequent to the disaster. Furthermore, a number of response-generated demands of the disaster which included the inability to return to homes until months later, moving four times in one year, being in a state of limbo while waiting to learn of property’s fate and having to live in another community permanently while still considering their Matata home. The report acknowledges that welfare agencies did respond quickly to the situation but that there was a lack of acknowledgement of the psychosocial impact of the disaster. Counselling was available in the earlier stages, however, many did not make use of this as they were dealing with the more practical aspects of the disaster such as cleaning up and finding a place to live. The report concluded:

[...] community participation is crucial post-disaster as people are often suffering from a strong sense of powerlessness and being directly involved in their own recovery gives them a sense of control and hope (Spee, 2008, p. 32).

Recent research undertaken following two flooding incidents in Australia – the Mackay flood 2007 and the Brisbane 2011 floods looked specifically at the psychosocial impact of the aftermath of the disasters (Dixon *et al.*, 2015). This research which used both qualitative and quantitative methods found that severity of stress in the rebuilding phase was the strongest predictor of post-traumatic stress symptoms even when other variable such as objective disaster severity and subjective trauma were controlled for. Aftermath stress was also related to depression with the length of time taken for homes to be repaired being a key predictor of depression.

Discussion

As was found by Stanke *et al.* (2012) in a previous literature review the focus of the majority of the research conducted has been the incidence of PTSD, with some focus on anxiety and psychological distress. The severity of damage and the need to evacuate was associated with higher levels of distress, other factors such as negative impact on financial resources, lack of social support and disruption to essential services also had a deleterious effect. The impact of secondary stressors was a critical factor across several of the studies especially in relation to the need for temporary accommodation and complication in the insurance process. Swift actions, such as moving items to higher floors and the use of sandbags seemed to be protective against mental health deterioration. Even though the use of sandbags is not always appropriate (UK Environment Agency, 2009), it appears that there may be some value in their deployment. Further research is necessary to understand whether this is due to real changes in the course of water that they facilitate, whether they confer a sense of agency and control to those deploying them or who may benefit from their use, or if they are effective through some other mechanism.

The majority of the studies were undertaken a few months after the flooding so little is known about the longer term impacts. Longer term research such as Lamond *et al.*'s (2015) study suggests that feelings of anxiety continue to be experienced long after repairs have been completed and the person has returned to their home. Several studies suggest that periods of bad weather can be particularly stressful, as people fear a return of the flooding and are reminded of the hardships that they faced at the time. Climate change and associated phenomena driven through changing weather patterns such as El Niño may also provoke anticipatory anxiety for residents of affected regions, as well the consequences of the actual event once it gets under way.

Though this is a purposely constrained literature review, our findings illustrate how floods can have great impacts on people's psychosocial needs and mental health. The extended timeframe and disruptive nature of the impacts of flooding are such that the effects of secondary stressors are highly significant as they prolong the welfare, physical and psychosocial needs of those affected.

Communities affected by floods will best be served by responding organisations that are cognisant of the potential psychosocial and mental health impacts. These response agencies will ideally strive to support emotional well-being, recognise and respond to community distress, and take action to prevent onset of additional mental health problems. Responses need to be flexible and responsive to needs, taking into account people's existing social support as well as economic and social circumstances. As was identified by Spee (2008) and others, it is important that this support extends beyond the immediate crisis as flooded communities can experience continued social and economic disruption after flooding.

It is encouraging to see that the New Zealand Government has announced a further package of interventions to support flood affected rural communities ten weeks after the flooding occurred (Manawatu Standard, 2015), with specified funding for psychosocial support. The challenge is to ensure that data collections continue to help to assess the progress of affected communities, families and individuals over time and that commensurate support and funding continues to be made available throughout the recovery, as well as helping to build personal and societal resilience to future events.

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