

## Australian bushfires – a burning issue

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### **Abstract**

**Background:** Bushfires are an inevitable occurrence in Australia due to the country's dry and arid landscape. Australia's last major incident, aptly named 'Black Saturday' that occurred in February 2009 is one of the worst bushfire disasters worldwide, with fires ravaging over 450,000 hectares of land, claiming 173 lives, 414 additional casualties resulting in significant physical and psychological impacts on affected communities.

**Objective:** To explore how bushfires are managed in Australia, identify problems with the current management, propose solutions for these issues and explore what medical students can do to improve routine and long-term medical care in the context of bushfire preparedness and long-term mental health recovery following bushfires.

**Methods:** A comprehensive literature search for relevant articles from the year 2000 to October 2012 was conducted on Medline, EMBASE, Australian Public Affairs Information Service – Health (APAIS – Health) and Australasian Medical Index (AMI) databases using the keywords: Australia, Disasters, Fire, Bushfire, Response, and PTSD (post-traumatic stress disorder). Additionally, a manual search was conducted on Australian Government and University websites and databases. All articles documenting emergency response time, short and long-term effects of bushfires on the individual, psychological problems resulting from bushfires, and the levels of awareness and preparation of those who had experienced bushfires were included.

**Results:** The initial search returned 124 articles. After removal of duplicates, 24 articles met the inclusion criteria and were included in this review. Very few reports documented the time and nature of the medical response to bushfires in Australia. However there is a wide range of literature that strongly supports the association of long-term psychological problems as a result from bushfires. The key findings in our literature review were that people who have 'indecisive' plans or no plans at all had a greater risk of harm due to leaving very late during an actual fire, and that higher levels of awareness and support of the 'Stay and defend or leave early' policy reflect positive experiences.

**Conclusion:** The key issues involve identifying and managing long-term psychosocial issues for the survivors, as well as improving preparedness for defending and evacuation of a bushfire in an acute setting. Medical students and health professionals can play an important role in the overall improvement of care by empowering the community through first aid training and re-evaluating management strategies of psychosocial issues in both clinical care and research. These strategies will help create a framework for the overall health recovery and development of future bushfire responses in Australia.

## **Introduction**

Bushfires are a disaster of grasslands and forest regions that can arise from severe weather conditions including lightning storms or alternatively, as a consequence of unattended fires or uncontrolled back-burning. These disasters pose a threat to many individuals, especially those living in rural regions because of their proximity to fire-prone areas.

Bushfires have a high occurrence in many regions throughout the world but is of particular significance in Australia as the country's dry and arid landscape provides the ideal environment for developing and sustaining these fires. Australia's last catastrophic encounter with bushfires, 'Black Saturday', occurred on Saturday, 7<sup>th</sup> February 2009. On this date, the State of Victoria experienced its hottest day on record at 46.4°C (Victorian Bushfires Royal Commission, 2010). Four hundred recorded fires occurred throughout the entire state, with 12 of the largest contributing to most of the destruction wrought upon communities. This culminated in widespread damage affecting more than 78 communities and destroying 450,000 hectares of land (Australian Emergency Management Institute, 2009).

Bushfires create a substantial load on the healthcare system. In the case of 'Black Saturday', much of this was handled well through pre-hospital triage and planning (Cameron et al., 2009). However, with 173 deaths and 414 casualties, 'Black Saturday' is still considered to be one of the worst bushfire disasters worldwide (Seifman et al., 2011). Many of the deaths were attributed to the immediate physical impact of the fires on 7<sup>th</sup> February and an additional five lives were lost due to sustained injuries from the fires (Seifman et al., 2011). These figures exceed the mortality rate from previous Australian bushfires – including those from 'Ash Wednesday' in 1983 (Department of Sustainability & Environment, 2012). It is estimated that this series of bushfires alone amounted to \$4 billion AUD and warranted the activation of Australia's national burns disaster plan, AUSBURNPLAN (Victorian Bushfires Royal Commission, 2010).

The acute presentation of bushfire victims ranges from physical trauma to dehydration and heat exhaustion. In addition to its significant environmental impact, the large volumes of smoke and ash dispersed into the atmosphere also results in respiratory complications. Evidence suggests that a major concern in the context of recovery is the strong association between traumatic events like bushfires and the development of mental illness – namely, anxiety, depression, and PTSD (McFarlane, Clayer, & Bookless, 1997). Ultimately, this can culminate in anxiety and grief, and even place victims at a greater risk of developing depressive symptoms and suicide (Johnston, 2009). The significant number of casualties, damaged properties, and ongoing health problems, stands as a testament to the threat that bushfires pose to Australia in both the acute and chronic settings.

Although addressing the immediate impact of bushfires is well recognised, there is limited evidence illustrating a proper management plan to reduce the adverse psychological effects of bushfires. The crux of this problem is ultimately a consequence of the indecisiveness of individuals when given the choice between staying and leaving their homes. As bushfires are a natural part of the Australian environment, it is now an imperative for these issues to be addressed to allow a transition from current emergency care protocols into establishing holistic, long-term management plans that enhance medical support to bushfire victims.

### **Methods**

A comprehensive literature search for relevant articles from the year 2000 to October 2012 was conducted on Medline, EMBASE, Australian Public Affairs Information Service – Health (APAIS – Health) and Australasian Medical Index (AMI) databases using the keywords: Australia, Disasters, Fire, Bushfire, Response, and PTSD (post-traumatic stress disorder). Additionally, a manual search was conducted on Australian Government and University websites and databases. All articles documenting emergency response time, short and long-term effects of bushfires on the individual, psychological problems resulting from bushfires, and the levels of awareness and preparation of those who had experienced bushfires were included.

### **Results**

The initial search returned 124 articles. After removal of duplicates, 24 articles were selected based on an inclusion criteria of addressing one or more of the following subject headings: emergency response time, short and long-term effects of bushfires on the individual, psychological problems resulting from bushfires, and the levels of awareness and preparation of those who had experienced bushfires.

#### **TIMING OF RESPONSE**

There is very limited literature documenting the time and nature of medical response to bushfires in Australia. In the literature review of 24 articles, literature regarding only 2 of the 50 bushfires in Australia since 1851 that resulted in death, injury or damage to property were recorded to have documented any form of emergency response times (eg. first aid, ambulance arrival, hospital admission time, state disaster response, the time for the trauma centre's preparations or theatre times for surgical procedures).

Richardson and Kumar found that in the Canberra bushfires that began on 18 January 2003, after the Chief Minister of the Australian Capital Territory declared a state of emergency at 1445, the first major fire-related presentation at The Canberra Hospital (one of two public hospitals in the city) arrived at 1535 and the first burns patient at 1630.

Similarly, Cleland, Proud, Spinks and Wasiak documented the response times in the 'Black Saturday' bushfires that began in Victoria on 7<sup>th</sup> February 2009. The results showed that of the patients that were admitted into the Victorian Adult Burns Service, the mean time it took from the initial injury to the receipt of documented first aid was 2.17 hours (SD = 2.80), mean time to documented ambulance arrival was 2.16 hours (SD = 2.02), and the mean time from injury to admission was 6.62 hours (SD = 4.92).

## **MORTALITY**

Of the 50 major bushfires in Australia since 1851 that resulted in death, injury or damage to property as recorded by the Australian Government Attorney-General's Department, an average of 16 mortalities were recorded per bushfire incident.

## **MEDICAL PROBLEMS**

Three specific bushfire incidents were examined in the literature review. The authors reviewed articles relating to the 'Ash Wednesday' bushfires in Victoria and South Australia in 1983, the Canberra bushfires of 2003 and the 'Black Saturday' bushfires in Victoria in 2009. While the literature is limited in its description and detail of injuries and medical problems suffered by survivors, and do not take into account the minor injuries that did not require a hospital presentation, the articles do highlight the other significant medical problems besides major burns.

Common acute injury presentations from bushfires besides burns include smoke inhalation, radiant heat injury, dehydration, heat exhaustion and physical trauma. It was found that after the Canberra bushfires of 2003, of the 233 hospital presentations within 48 hours of the incident, the most common presentation was breathing problems/smoke inhalation (27.9%), followed by trauma such as falls and motor vehicle accidents (19.3%) and eye problems such as irritation, ulcer and foreign bodies (18.5%). These respiratory and ophthalmological problems were more prevalent than burns, which comprised of only 10.3% of hospital presentations.

Cleland, Proud, Spinks and Wasiak documented the characteristics and injuries of the patients in their study of admissions to the Victorian Adult Burns Service following the 'Black Saturday' bushfires in Victoria in 2009. It was found that the common sites of burn injuries were the hands (78.9%), upper limbs (73.7%) and lower limbs (63.2%), and it was noted of these burn injuries, 63.2% of presentations had < 10% full thickness body surface area (FTSA) being burned, as compared to 10.5% who had 10%-19% FTSA burns and 26.3% having 20% FTSA burns. Cleland, Proud, Spinks and Wasiak also noted post-burn injury complications of admitted patients, which include infective complications such as blood stream infections, chest infections and positive wound culture donor site,

and non-infective complications such as non-healing wound requiring skin grafting and perioperative respiratory arrest.

Also identified, were the long-term health effects of survivors of bushfires in Australia, including mental health issues. Johnston describes a study in which 1526 survivors of the 'Ash Wednesday' bushfires in Victoria and South Australia in 1983 were surveyed 12 months after the bushfire incident. As compared to the general population, the bushfire survivors had a higher prevalence of a range of conditions including hypertension, gastrointestinal disorders, diabetes and mental illness. It was also found that 42% of respondents met the criteria for a psychiatric diagnosis, in particular anxiety, depression and post-traumatic stress disorder (PTSD). This figure was also supported by Bryant (Page3, 1), who suggested that while the rates of PTSD vary widely due to the different factors that are associated with the traumatic events, the prevalence of PTSD is 30-40% higher among direct victims of such events.

Likewise, Caruana further supports the relationship between disaster incidents such as bushfires and mental health issues. Caruana states that other psychological responses that follow traumatic events include depression, which is the second most common condition to arise in the aftermath of a disaster, generalised anxiety disorder, grief and an increased rate of excessive alcohol consumption in communities following disasters.

Johnston also describes a school-based screening program after the Canberra bushfires of 2003, and found that younger children and those with greater exposure to, or perception of threat, experienced higher levels of PTSD and emotional distress. It was noted that in a study of the 'Ash Wednesday' bushfires in Victoria and South Australia in 1983, one third of the children studied were found to have a continual preoccupation with their exposure to the fire 26 months after the bushfire incident, however, suggested based on a separate longitudinal study, that the disaster experience had minimal long-term impact on mental health outcomes in adulthood (Caruana).

## **Discussion**

The 2009 Victorian bushfires or otherwise known as 'Black Saturday' has proven the extensive damage a natural disaster can inflict on a nation. In addition to destroying homes and infrastructure, it caused emotional devastation to the families of the 173 lives claimed by the fire, the highest death toll from any bushfire (URBIS, 2010). Catastrophic weather conditions (prolonged high temperatures, low humidity and strong dry winds), close proximity to major population centres and an outdated warning system are some possible factors that resulted in the high mortality rate from 'Black Saturday' (Victorian Bushfires Royal Commission, 2010).

As the statewide and national emergency bushfire responses were triggered early, the intensity and speed of the fires meant most people who were injured either died or survived with minor injuries. The medical system coped well with the small number of patients with serious burns associated with the above. However, ambulances had difficulty accessing certain areas which led to delays in delivery of medical attention (Handmer, O'Neil, & Killalea, 2010).

There has been limited research on the other acute presentations of injury from 'Black Saturday', with most research focusing on burns. However, other health effects resulting from both the smoke and thermal effects of bushfires have been well documented all over the world - including Australia. Bushfire smoke consists of gaseous products of combustion and particulate matter which increases inflammatory and cytotoxic activity in the body. Inhalation of bushfire smoke increases the risk of respiratory effects such as dyspnoea, cough and sputum production. Eye irritation and corneal abrasion have also been reported. Reduced visibility due to the smoke has also caused fatal motor vehicle accidents when people flee from the fire (Finlay, Moffat, Gazzard, Baker, & Murray).

Other than the acute medical problems, significant long-term ramifications of disasters such as PTSD and depression have been found among bushfire victims. Parslow, Jorm, and Christensen (2006) screened victims of the Canberra bushfires in 2003 and found that 5.0% screened positive for PTSD three months after the tragedy. This is significant in comparison to the Australian PTSD prevalence of 1.5% (Rosenman, 2002). Although a large proportion of bushfire victims do not present with mental health issues in their first year post-disaster, delayed mental health issues are an important complication that occurs after the immediate focus of bushfire victims on returning to 'normality' (Victoria, 2009). In doing so, they tend not to process the emotions until they completely return to their normal routines and home rebuilding. Thus, subsequent follow-up of bushfire victims who do not immediately suffer from mental health issues could potentially lead to earlier treatment outcomes. The number of fire-related experiences is also proportional to the prevalence of PTSD – Parslow et al. (2006) found that 55% of victims exposed to nine or more bushfires developed PTSD compared to 10% in victims exposed to four bushfires.

Studies have shown that there is also a fraction of victims who experience reduced physical and social health, e.g. suicidal ideation and alcohol abuse due to the initial trauma as well as the social disruption during the recovery period (Victoria, 2009; Warshaw et al., 1993). It is also important to recognise that PTSD does affect responders to the bushfires as well. In the 1983 bushfires, 21% of the firefighters who fought bravely had persistent PTSD over a 2 year period (McFarlane, 1988). These subpopulations should not be forgotten and should be part of our management strategies.

These patterns are not unique to Australia, as it is also observed in a literature review involving 60,000 post-disaster victims worldwide, 68% were screened positive for PTSD and 36% screened positive for depression (Norris et al., 2002).

## **Problems with and solutions to Australia's disaster management system**

A critical issue in the weeks to years following bushfires is mental health, which is a decisive area that has a direct and significant impact on the success of a recovery plan's transition from acute medical care to improving longer-term health outcomes.

Currently there is no consensus as to which interventions are most effective at facilitating the transition to long-term recovery, by promoting stress-resistant and resilient outcomes following the immediate post-disaster phase. More recently, there has been a shift towards recommending a social connectedness and community development approach to recovery, with a case management service being an example of such a system (URBIS, 2010).

In the immediate period following 'Black Saturday', the Australian Government implemented a centralised case management service through the Department of Human Services, in order to address the wide range of health, social and community effects of people affected by the disaster. This service utilised professional case managers to act as a dedicated access point to the wide range of support services and grants available to the people affected by the bushfires. These case managers directly worked with individual families, to identify needs and advocate for them in matters such as personal assistance, counselling, health and legal issues, and actively followed up contact with their clients over a period of two years. Three months after Black Saturday, 393 case managers were working with 4365 families, and the service provided support to a total of 5506 households by the next year (URBIS, 2010).

Although case management allows individuals to be navigated through a complex and sometimes disjointed system through a single contact avenue, there are major barriers to its effectiveness when there is insufficient financing and investment in the service prior to the disaster. Poor service coordination and minimal overarching collaboration with government can further limit these services. The Victorian bushfire case management service was well resourced itself and had strong support from government agencies, but the rapid establishment of the service only days after Black Saturday meant that preparation was lacking in certain functional aspects.

For example, there was a lack of clarity in the scope of duty for the case managers, as well as inconsistencies in the amount of training each case manager received prior. Some clients had issues that the service was initially unable to resolve, such as problems requiring specific knowledge about impacts of fires in the rural context. Although these were resolved later on in time, the delays in addressing such issues had a negative impact on the recovery process of people affected by bushfires. Hence to be truly effective from the onset, there must be a well-funded and equipped pre-existing

system with government coordination allowing organised and rapid cross-agency support to address issues that the service may be unable to handle independently.

44% of the fatalities in 'Black Saturday' fell into one or more of the following categories: under 12; or aged 70 or over; had a chronic or acute disability (Victorian Bushfires Royal Commission, 2010). Special care must be taken to cater for vulnerable population groups; particularly individuals with disabilities, children, elderly and individuals with limited English proficiency. These groups should be reached out to and actively supported to avoid negative outcomes (URBIS, 2010). One potential solution of ensuring that no vulnerable group is inadvertently overlooked could be to implement a structured and predetermined screening criteria for all new cases seen by case managers, for the purpose of identifying and assessing any special needs early on. This would allow the relevant support systems or referrals to be put in place in advance, and would help to avoid placing the case manager in situations that they are not personally equipped to deal with.

Whilst case management may be effective at assisting fire-affected communities after bushfires, the relative predictability and seasonal timing of bushfires places Australia in a unique position of being able to prepare in advance for these disasters, rather than having to deal with their aftermath. With preparedness, we can reduce the burden of physical and mental health issues on the health care system. In fact, 26% of fatalities were attributed to waiting and seeing before deciding what to do (Handmer et al., 2010).

At risk populations may know they are in danger from bushfires for days to weeks before the fire strikes and can hence take actions to protect their home from the ongoing fires. Australian policy gives residents of wildfire prone areas the choice between either staying and defending their property or evacuating, preferably well before the fire reaches the community (Handmer & Haynes, 2008; Tibbitts & Whittaker, 2007). To increase successful implementation of the two possible wildfire responses, Australian fire agencies encourage residents of fire prone areas to determine an action plan ahead of the bushfire season, and properly prepare for this plan. However, when given the choice between defending versus evacuating, many people prefer an indecisive or 'Wait and See' plan instead (Whittaker, Haynes, McLennan, Handmer, & Towers, 2010).

To reduce the lack of preparedness, agencies could emphasise the importance of being fully prepared for both defending *and* evacuating in case of an indecisive fire-plan, and motivate people to prepare for both actions by increasing their awareness of the current value attached to their 'either/or' or 'and/and' plan. This could be aided by letting people run through different scenarios at the time of a fire and think about what would need to be done beforehand to increase the chances of successfully carrying out their actions. Such technique could also be used as a way to reduce the second problem

of late evacuation. Agencies could help people spell out when they will evacuate (i.e., by making them aware of the decreasing value of evacuation as time goes on) (Tibbits & Whittaker, 2007).

### **Non-Governmental Organisations**

The Australian Healthcare system provides universal coverage and services to the healthcare needs of all bushfire victims (Cameron et al., 2009). The bushfire victims are transported to burns centres, and the other non-burns related patients are redirected to major hospitals (Cameron et al., 2009; Cleland, Proud, Spinks, & Wasiak, 2011). The government is also the main medical care provider in the recovery phase (Cleland et al., 2011). The high quality nature of the medical system means that the government is well equipped to provide acute and long-term medical services to bushfire victims. However, it is worth noting that the first aid services to fire-fighters and refugee centres were provided by the Non-Governmental Organisation (NGO) St John Ambulance Australia (Conn, 2009).

In addition, the Bushfire Recovery Services Unit of the Department of Human Services manages much of the psychosocial supports provided to victims. These services include: the Case Management Service, Community Service Hubs, and temporary housing for victims who lost their place of residence (Conn, 2009).

Besides services mentioned above, NGOs have an instrumental position in psychosocial support for the victims. The Australian Red Cross has been vital in the acute and long-term management of bushfires (Taylor, Tharapos, Khan, & Sidaway). On the medical side of things, they are the provider of the blood products required in acute management. However, it is through their Victorian Bushfire Appeal Fund (VBAF) that they made a huge impact. The fund allowed the provision of services by the Victorian Bushfire Reconstruction and Recovery Authority that helped at various stages in the recovery of bushfire victims (Victoria, 2009). These services included: support groups, participation activities for the elderly, youth outreach workers, discussion groups for the bereaved, and a youth mental health online portal (Conn, 2009).

Four other NGOs who were vital in the recovery effort were The Salvation Army, Uniting Care, Baptcare, and Anglicare. All of these faith based NGOs helped with the VBAF, and also provided funds, food, and other services to bushfire affected communities. These efforts made a real difference to the lives of victims over the coming years (Victoria, 2009).

Although bushfires are relatively common in Australia, some bushfires like 'Black Saturday' stand out in their severity (Cameron et al., 2009). For such bushfires, it is not unusual for the response teams in Australia to receive support from international personnel. During 'Black Saturday' the Australian firefighters received assistance from 100 New Zealand firefighters and 73 firefighters from the United States of America (Quimby, 2009; Taylor et al.).

Natural disasters do not respect state border, and bushfires are no exception. However, Australia has no national organisation to react to bushfires, and emergency disaster management is predominantly the responsibility of the State Governments (Victoria, 2009). Each state has its own organisation to coordinate firefighting and as with international assistance, any interstate assistance provided is done so on an ad hoc basis (Ansley, 2009; Quimby, 2009).

### **The Role of Medical Students and Future Doctors**

There are a number of ways medical students and future doctors can assist in the improvement of long-term medical care of bushfire events.

Firstly, medical students can empower the community by conducting simplified community first aid workshops with a particular focus on acute burn management, targeting especially communities in high-risk areas. First, it enables the community members to perform simple, yet potentially life-saving medical interventions. For example, disinfecting traumatic wounds with alcohol and applying a bandage can reduce the risk of septicaemia and its complications significantly. Secondly, having an extended capability to respond to emergency medical situations may provide a sense of security and ultimately improve the mental health of individuals.

Indeed, perturbed mental status of these individuals might be a component of the vicious cycle between death, mental illness and subsequent bushfire unpreparedness (which leads to further death and the cycle goes on). Another alternative to tackle the mental impact of bushfires is to involve the psychologists for therapeutic counselling. Two desirable components of such program are for it to be effective and free-of-charge. Both criteria can be achieved directly and indirectly via clinical research. Population-wide studies on medical impact of bushfires will allow for accurate identification of important health problems, thereby informing us of areas to focus on in providing mental care. Additionally, associations with other co-morbidities such as chronic physical illness might also be revealed and addressed separately. Clinical research will also be critical in promoting awareness of bushfire-related mental illness (and its magnitude) to the general community. For example, scientific paper and poster publication and presentation in multi-national student conferences as well as in local communities certainly will be a means of advocacy. This in turn will augment the success of fundraising by medical students to fund these counselling programs.

Finally, as doctors and researchers themselves are designers of the medical school curriculum, it is possible to propose constructive changes in relation to bushfire responses. For instance, a clinical rotation on disaster medicine should be implemented as an alternative elective of the medical course. This might take the form of assignment to an affected area, clinical training with mental health as a focus, as well as data gathering for research purposes. This ensures that medical students are well-equipped from the very beginning in this challenging field.

## **Conclusion**

The 2009 Victorian bushfires are one of the worst bushfire disasters in Australia resulting in significant physical and psychological impacts on individuals and communities. It has since been three years, the psychosocial needs of people have changed and services need to be flexible to address these new issues. Medical students and doctors can play a role in the long-term medical care by receiving comprehensive training in the psychological impacts of trauma, empowering the community through first-aid training, identifying vulnerable patient populations and advocating for more psychosocial services and resources for survivors of 'Black Saturday'. Although bushfires are a natural occurrence in Australia, it is important that we learn from emergencies such as Black Saturday to respond more effectively in the future. People living in rural areas with a higher risk of bushfire occurrence will need to be better protected with bushfire preparedness for both defending and evacuating in case of an indecisive action plan. More research is also required in bushfire medical response to ultimately form evidence-based strategies that will hopefully result in better health outcomes for bushfire affected communities.

## Reference

- Ansley, G. (2009, 10th February). Harrowing images as bushfire toll stands at 135, *The New Zealand Herald*.
- Australian Emergency Management Institute. (2009). Event – Bushfire – Black Saturday, Victoria. from <http://www.disasters.ema.gov.au/Browse%20Details/DisasterEventDetails.aspx?DisasterEventID=2894>
- Cameron, P.A., Mitra, B., Fitzgerald, M., Scheinkestel, C.D., Stripp, A., Batey, C., . . . Mehra, R. (2009). Black Saturday: the immediate impact of the February 2009 bushfires in Victoria, Australia. *Med J Aust*, 191(1), 11-16.
- Cleland, H.J., Proud, D., Spinks, A., & Wasiak, J. (2011). Multidisciplinary team response to a mass burn casualty event: outcomes and implications. *The Medical Journal of Australia*, 194(11), 589-593.
- Conn, N. (2009). Victoria's Bushfire - Message from the chancellor. from [http://www.stjohn.org.au/index.php?option=com\\_content&task=view&id=333&Itemid=999](http://www.stjohn.org.au/index.php?option=com_content&task=view&id=333&Itemid=999)
- Department of Sustainability & Environment. (2012). *Ash Wednesday bushfire – 1983*. Retrieved from <http://www.dse.vic.gov.au/fire-and-other-emergencies/major-bushfires-in-victoria/ash-wednesday-1983>.
- Finlay, S.E., Moffat, A., Gazzard, R., Baker, D., & Murray, V. Health Impacts of Wildfires. *PLoS Currents*, 4.
- Foa, E.B., Stein, D.J., & McFarlane, A.C. (2006). Symptomatology and psychopathology of mental health problems after disaster. *J Clin Psychiatry*, 67(Suppl 2), 15-25.
- Handmer, J., & Haynes, K. (2008). *Community bushfire safety*: CSIRO PUBLISHING.
- Handmer, J., O'Neil, S., & Killalea, D. (2010). Review of fatalities in the February 7, 2009, bushfires.
- Johnston, F.H. (2009). Bushfires and human health in a changing environment. *Australian family physician*, 38(9), 720.
- McFarlane, A.C. (1988). The longitudinal course of posttraumatic morbidity: The range of outcomes and their predictors. *Journal of Nervous and Mental Disease*.
- McFarlane, A.C., Clayer, JR, & Bookless, CL. (1997). Psychiatric morbidity following a natural disaster: an Australian bushfire. *Social psychiatry and psychiatric epidemiology*, 32(5), 261-268.
- Norris, F.H., Friedman, M.J., Watson, P.J., Byrne, C.M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981–2001. *Psychiatry: Interpersonal and Biological Processes*, 65(3), 207-239.
- Parslow, R.A., Jorm, A.F., & Christensen, H. (2006). Associations of pre-trauma attributes and trauma exposure with screening positive for PTSD: Analysis of a community-based study of 2085 young adults. *Psychological Medicine*, 36(3), 387-396.
- Quimby, F. (2009). *Secretary Salazar Joins Australia's Prime Minister And Secretary of Agriculture in Lauding Wildland Firefighters*. Washington, D.C.: Retrieved from <http://usrsaustralia.state.gov/us-oz/2009/03/26/doi.html>.
- Rosenman, S. (2002). Trauma and posttraumatic stress disorder in Australia: findings in the population sample of the Australian National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*, 36(4), 515-520.
- Seifman, M., Ek, E.W., Menezes, H., Rozen, W.M., Whitaker, I.S., & Cleland, H.J. (2011). Bushfire Disaster Burn Casualty Management: The Australian “Black Saturday” Bushfire Experience. *Annals of plastic surgery*, 67(5), 460.
- Taylor, D., Tharapos, M., Khan, T., & Sidaway, S. Downward accountability for Victoria’s ‘Black Saturday’ bushfire recovery: evidence from reports of government and NGOs.
- Tibbits, A., & Whittaker, J. (2007). Stay and defend or leave early: policy problems and experiences during the 2003 Victorian bushfires. *Environmental Hazards*, 7(4), 283-290.
- URBIS. (2010). Evaluation of the victorian bushfire case management service.

- Victoria, State Government of. (2009). *After the bushfires: Victoria's psychosocial recovery framework*. Melbourne.
- Victorian Bushfires Royal Commission. (2010). *2009 Victorian Bushfires Royal Commission : final report*. Melbourne: Government Printer for the State of Victoria.
- Warshaw, M.G., Fierman, E., Pratt, L., Hunt, M., Yonkers, KA, Massion, AO, & Keller, MB. (1993). Quality of life and dissociation in anxiety disorder patients with histories of trauma or PTSD. *American Journal of Psychiatry*, *150*, 1512-1512.
- Whittaker, J., Haynes, K., McLennan, J., Handmer, J., & Towers, B. (2010). Victorian 2009 bushfire research response: Household mail survey. Melbourne: Bushfire Cooperative Research Centre.