

Reducing the impact of cyclone, flood and storm-related disasters in rural areas on non-communicable diseases through public health infrastructure resilience

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Introduction

Rural and remote areas of Queensland have recently experienced a number of significant cyclone, flood and storm related disasters [1]. For example, Cyclone Larry (2006), flash flooding in the Lockyer Valley towns of Withcott, Grantham and Gatton (2011); Cyclone Yasi (2011); flooding in Bundaberg (2013) and Cyclone Nathan (2015). Cyclones, floods and storms account for the majority of disaster related deaths (88%) and costs (80%) in Australia [2]. They are a feature of the climate and this threat is expected to continue, if not increase in both intensity and frequency [1, 3, 4].

For people with non-communicable diseases (NCDs) disasters can cause a significant risk to their health. Traditionally public health has focused on communicable diseases after a disaster, however, the actual risk is low, particularly in developed countries such as Australia [5]. Population ageing along with changes in lifestyle and diet have contributed to a 'disease transition' from communicable diseases to NCDs [6-9]. Any disruption to essential treatment, care, equipment, water and food for people with NCDs can result in an exacerbation of existing conditions or even death [9-16]. This risk is highlighted by the 47% increase in mortality and morbidity one year after Hurricane Katrina, attributed to NCDs [17].

The NCDs of major concern can be grouped into four categories: cardiovascular diseases; cancers; chronic respiratory diseases; and diabetes [8, 18, 19]. These conditions account for the majority of deaths in Queensland, Australia and across the world and have common behavioural risk factors (smoking, physical inactivity, poor nutrition and harmful use of alcohol) [8, 18, 19]. NCDs also impose major burdens on health care resources and this impact is expected to rise over the coming decades [7, 8, 20, 21].

This research aims to address the issue of disasters and the subsequent health impact on people with NCDs in rural and remote communities by exploring the role of PHI resilience in mitigation. Specifically this research will identify awareness of PHI; explore if PHI resilience has a role in protecting the health of people with NCDs before, during and after a disaster; and identifying mitigation strategies.

Methods

Focus groups and interviews were conducted with people who have NCDs, disaster responders and health specialists in the Cairns, Toowoomba and Townsville regions. Government officials with state-wide responsibility for disasters located in Brisbane were also interviewed. The focus groups and interviews explored the impact of disasters on NCDs, resilience concepts and mitigation strategies. The NCDs targeted by the research were: cardiovascular diseases; cancers; chronic respiratory diseases; and diabetes.

The data from focus groups and interviews were transcribed and thematically analysed. A preliminary analysis was completed and occurred via a combination of manual analysis and with the assistance of N-VIVO Qualitative Data Analysis Software. Ethics approval was obtained from James Cook University (H4871) and Queensland Health (HREC/13/QTHS/251).

Results

Six focus groups and 35 interviews were completed with a total of 99 participants. The focus groups were held in Roma (n=2), Malanda (n=2) and Townsville (n=2). The interviews were in Brisbane

(n=12), Cairns (n=8; patients n=3 and providers n=5), Toowoomba (n=9; patients n=5 and providers n=4) and Townsville (n=6; patients n=1, provider n=5).

Ten interviews were with people who have cancer (n=3), diabetes (n=2), renal disease (n=4) and respiratory conditions (n=1). The remaining 25 interviews and six focus groups were with disaster responders and specialists. This included representatives from Local Government, Department of Health, Queensland Police Service, Queensland Fire and Emergency Service, Australian Army, Commonwealth Government and public health professionals.

A preliminary analysis identified disasters can disrupt treatment and care for people with NCDs through damage to PHI such as essential treatment, care, equipment, water supplies and access to nutritious food. This disruption increases the risk of exacerbation of their illness (including death). Possible mitigation strategies include: a focus on strengthening PHI (e.g. multiple options for providing treatment, care and safe water), improving communication and education across the health system (e.g. consistent messages and preparations tailored to individual patient needs); basing disaster plans on community priorities (e.g. reflect local burden of disease); and ensuring the presence of general practitioner services at evacuation centres.

Conclusion

The research found a disaster can interrupt treatment management and care for people with NCDs living in rural and remote areas of Queensland. This disruption has the potential to increase the risk of their condition exacerbating or even death. A preliminary analysis of the results has identified mitigations strategies, which include: strengthening PHI, improving communication and education; basing plans on community needs; and ensuring the presence of general practitioner services at evacuation centres. The findings provide a platform for disaster planners and public health professionals to develop and implement effective disaster mitigation strategies for people with NCDs.

Recommendations

1. Government and non-government agencies establish and implement an inter-agency approach to mitigate the impact of disasters on the health of people with non-communicable diseases.
2. Disaster management activities are focused on strengthening public health infrastructure to help mitigate the impact of disasters on the health of people with non-communicable diseases.
3. Disaster planning reflects community priorities such as the needs of people with communicable and non-communicable diseases.

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Presenter

Benjamin Ryan is a PhD candidate at James Cook University; Disaster Coordinator for the Cairns and Hinterland Hospital and Health Service, Queensland, Australia; and Director of Disaster Risk Reduction for the International Federation of Environmental Health (Asia-Pacific). Ben's professional interests and research are focused on mitigating the impact of disasters on the health and wellbeing of individuals and the community through public health infrastructure resilience. He has worked on responses to natural disasters and disease outbreaks (including Ebola and Dengue), managed public health projects in Aboriginal and Torres Strait Islander communities, facilitated delivery of health services to asylum seekers and worked in public health at all levels of government in Australia and internationally. Most recently, has led engagement with international agencies and governments to operationalise Ebola Treatment Centres and Units in Liberia and Sierra Leone. He is passionate about the role public health interventions should have in the prevention, preparedness and response phases of disaster management and hopes to share his experiences, insights and research with people across the world.