Summer of sorrow: measuring exposure to and impacts of trauma after Queensland’s natural disasters of 2010–2011

The Australian state of Queensland experienced severe flooding in the summer of 2010–2011; more than 78% of the state was declared a disaster zone and damage to public infrastructure totalled over $6 billion. Climate change projections predict more intense and frequent weather-related disasters and increasing public health burdens. Experiencing traumatic events can be causally related to mood and anxiety disorders, potentially initiating psychosocial stressors (eg, unemployment or underemployment, displacement, relationship disturbance), and further symptoms. Emotional trauma leading to adverse psychiatric outcomes is an important and increasingly likely public health concern.

Our aims in this study were to quantify the public health burden of a widespread natural disaster by sociodemographic characteristics for (i) exposure or being affected by damage; and (ii) emotional effects.

Methods

Data were collected as part of the Queensland Government’s annual Self-Reported Health Status (SRHS) survey by means of computer-assisted telephone interviews from 11 March to 6 June 2011. Households were sampled by random-digit dialling to interview one person aged 16 years or older per household; the SRHS survey included 12,564 people, representing a response rate of 44%. Data were weighted for probability of selection based on the number of fixed phone lines and eligible people in the household and by age, sex and health region. The SRHS survey monitors numerous health indicators, so respondents were randomly allocated survey modules to reduce participant burden. The module relevant to this study assessed disaster-related exposures or impacts (Appendix 1; online at mja.com.au), and had items covering “damage exposure”, being “affected” (by exposure to specific damage and “in any way”) and “emotional impacts”. Remoteness and the Socio-Economic Indexes For Areas (SEIFA) Index of Relative Socio-Economic Advantage and Disadvantage (IRSAAD) quintile were assigned according to respondents’ residential areas.

Statistical analysis was undertaken in Stata, version 11.2 (StataCorp). The Queensland Government Human Research Ethics Committee approved the study (HREC/10/QHC/49).

Results

A total of 6104 respondents (aged 18 years or older) received the natural disaster modules of the SRHS pertinent to this report (Appendix 2; online at mja.com.au).

Two-thirds of respondents (62%) reported being affected by the 2010–2011 weather-related disasters (Appendix 3; online at mja.com.au). About a third (37.2%) had damage to their own suburb or local area, or to the home of a significant other (family member, friend or carer). Damage to their own homes was reported by 9.2%, and 11.7% reported damage to those properties. Trauma impacts ranged from 14.3% of respondents feeling “terrified, helpless or hopeless” to 3.9% thinking they might be “badly injured or die”. Up to 5 months after the disasters, 71% of respondents were “still distressed” and 8.6% were “worried about how they would manage”. Adults of working age and residents of regional and remote areas and of socioeconomically disadvantaged areas were disproportionately likely to report exposure to damage and emotional impacts.

Conclusions: Weather-related disasters exact a large toll on the population through property damage and resultant emotional effects. Vulnerable subpopulations are more severely affected. There is a need for realistic, cost-effective and rapid-deployment mass interventions in the event of weather disasters.

Abstract

Objectives: To assess the population prevalence of property, income and emotional impacts of the 2010–2011 Queensland floods and cyclones.

Design, setting and participants: Cross-sectional telephone-based survey using a brief trauma exposure and impact screening instrument, conducted between 11 March and 6 June 2011, of 6104 adults who answered natural disaster and mental health questions.

Main outcome measures: Natural disaster property damage exposure and emotional wellbeing impacts.

Results: Two-thirds of respondents (62%) reported being affected by the disasters, with property damage exposure ranging from 37.2% (suburb or local area) to 9.2% (own home, with 2.1% living elsewhere at least temporarily). Income was reduced for 17.0% of respondents and 11.7% of income-producing property owners reported damage to those properties. Trauma impacts ranged from 14.3% of respondents feeling “terrified, helpless or hopeless” to 3.9% thinking they might be “badly injured or die”. Up to 5 months after the disasters, 71% of respondents were “still distressed” and 8.6% were “worried about how they would manage”. Adults of working age and residents of regional and remote areas and of socioeconomically disadvantaged areas were disproportionately likely to report exposure to damage and emotional impacts.

Conclusions: Weather-related disasters exact a large toll on the population through property damage and resultant emotional effects. Vulnerable subpopulations are more severely affected. There is a need for realistic, cost-effective and rapid-deployment mass interventions in the event of weather disasters.
Residents of the most disadvantaged IRSAD quintile were up to 39% more likely to have income-producing property damage than those in the most advantaged quintile (Box 2). Residents of regional and remote Queensland than in major cities (Box 2). Residents of regional and remote areas also experienced more damage. In major cities, a quarter reported local area damage; such damage in inner regional, outer regional and remote areas was 6.8 times more likely, and 6.8 times more likely to be displaced than people in major cities (8.8% and 4.6%, respectively, compared with 1.3%; data not shown).

More people were affected by the disasters in regional and remote Queensland than in major cities (Box 2). Residents of regional and remote areas also experienced more damage. In major cities, a quarter reported local area damage; such damage in inner regional, outer regional and remote areas was 51%, 60% and 64%, respectively. Similarly, income-producing property damage was 8% in major cities compared with 13%, 20% and 37% for these same non-metropolitan areas (Appendix 3; online at mja.com.au). Residents of regional and remote areas were much more likely than were city residents to report disaster-related income loss (Box 1).

Only a small proportion (2.1%) of Queenslanders were displaced from their homes at least temporarily after the disasters, amounting to over 70 000 individuals among over 300 000 reporting damage. Prevalence did not vary by sex, age, employment or socioeconomic quintile, but did vary by remoteness. People in remote areas were 6.8 times more likely, and in outer regional areas 3.6 times more likely, to be displaced than people in major cities (8.8% and 4.6%, respectively, compared with 1.3%; data not shown).

One in 25 respondents (3.9%) thought they might be “badly injured or die” during the disasters (Box 1). Retirees were up to 68% less likely to have been affected by any type of damage, reporting less damage or income loss. Residents of the most disadvantaged IRSAD quintile were up to 39% more likely to be affected than those in the more advantaged quintiles (Box 2). Residents of regional and remote Queensland than in major cities (Box 2). Residents of regional and remote areas also experienced more damage. In major cities, a quarter reported local area damage; such damage in inner regional, outer regional and remote areas was 51%, 60% and 64%, respectively. Similarly, income-producing property damage was 8% in major cities compared with 13%, 20% and 37% for these same non-metropolitan areas (Appendix 3; online at mja.com.au). Residents of regional and remote areas were much more likely than were city residents to report disaster-related income loss (Box 1).
The large number of individuals with possible PTSD or another post-disaster mental health problem reinforces recommendations that all health and social care workers should be aware of the psychological impact of traumatic events.4 Health services and clinicians must collaborate to develop realistic, cost-effective and rapid-deployment mass interventions in the event of weather disasters. Our findings also clearly indicate the need for an increasing focus on disaster preparedness and response needs of children, and their unavoidable exclusion from this study, further research should focus on the disaster preparedness and response needs of children specifically. For all people, clinicians will need access to simple screening tools for use before disasters to help identify those most at risk, and simple postdisaster screening tools to identify quickly and easily people with symptoms of psychological trauma.

Limitations of our study include the low response rate and the fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling frame. The response bias appears minimal, based on sample representativeness (Appendix 4; online at mja.com.au) and comparison with previous SRHS surveys.20 Fixed-phone-line-only sampling
Sampling may underestimate the prevalence of emotional affects of weather-related trauma due to displacement, but excluding mobile-only households may introduce bias.

Among our large, population-representative sample, very large numbers of Queenslanders reported disaster-related damage to property and place, with extensive emotional impacts. We found evidence of substantial continuing distress and worry. Queensland's most vulnerable were more likely to be exposed and affected. A disproportionate number of these same people also experienced events that meet the stressor criteria for PTSD. Although many people will make an acceptable recovery from their distress, our findings strongly suggest a burden of mental illness after disasters that might impinge on social wellbeing and have implications for the provision of mental health services.

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