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# A randomised trial of nutrient supplements to minimise psychological stress after a natural disaster

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## ABSTRACT

After devastating flooding in southern Alberta in June 2013, we attempted to replicate a New Zealand randomised trial that showed that micronutrient (minerals, vitamins) consumption after the earthquakes of 2010–11 resulted in improved mental health. Residents of southern Alberta were invited to participate in a study on the potential benefit of nutrient supplements following a natural disaster. Fifty-six adults aged 23–66 were randomised to receive a single nutrient (vitamin D,  $n=17$ ), a few-nutrients formula (B-Complex,  $n=21$ ), or a broad-spectrum mineral/vitamin formula (BSMV,  $n=18$ ). Self-reported changes in depression, anxiety and stress were monitored for six weeks. Although all groups showed substantial decreases on all measures, those consuming the B-Complex and the BSMV formulas showed significantly greater improvement in stress and anxiety compared with those consuming the single nutrient, with large effect sizes (Cohen's  $d$  range 0.76–1.08). There were no group differences between those consuming the B-Complex and BSMV. The use of nutrient formulas with multiple minerals and/or vitamins to minimise stress associated with natural disasters is now supported by three studies. Further research should be carried out to evaluate the potential population benefit that might accrue if such formulas were distributed as a post-disaster public health measure.

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## 1. Introduction

When natural disasters strike, one of the first daily functions to be impaired is the ability to obtain and prepare nutritious food. Hence, at a time when stress and anxiety are elevated, the nutrition needed to maximise mental health may be in short supply.

It is logical to consider that enhancing people's intake of minerals and vitamins (micronutrients) might be helpful for coping with natural disasters, as it has been known for centuries that a good diet can help optimise health. For example, micronutrients act as cofactors in neurotransmitter synthesis and metabolism, where they can be rate-limiting factors (Ames et al., 2002). There are at least seven randomised controlled trials (RCTs) of B-Complex and combined mineral/vitamin formulations in which improvements in depression, anxiety and stress have been demonstrated (Carroll et al., 2000; Harris et al., 2011; Kennedy et al., 2010; Lewis et al., 2013; Long and Benton, 2013a; Rucklidge et al., 2012; Schlebush et al., 2000) although not all trials using broad-spectrum micronutrients have shown benefit for changing mood

and anxiety (Cockle et al., 2000; Haskell et al., 2008, 2010). However, all the negative trials were conducted on people who had no presenting psychological/psychiatric challenge. Further, a recent meta-analysis showed a small but meaningful effect of micronutrients on stress and anxiety but not mood (Long and Benton, 2013b).

The information most directly relevant to the context of natural disasters is the series of studies conducted in Christchurch, New Zealand after the earthquakes of 2010–11. When the 7.1 magnitude earthquake hit on September 4, 2010, the Mental Health and Nutrition Research Group at the University of Canterbury was in the midst of conducting a clinical trial of a broad-spectrum mineral/vitamin formula in adults with ADHD, but some individuals had completed the trial or not started the trial and therefore were not taking it on the day of the earthquake and the following weeks. Two weeks after the earthquake, those who were taking the formula at the time of the earthquake were significantly less anxious and stressed than those not taking it (Rucklidge and Blampied, 2011; Rucklidge et al., 2011). Subsequently, when the February 22, 2011 earthquake of 6.3 magnitude struck, this research group immediately implemented a randomised trial in the general population, comparing two doses of the same formula to a B-Complex formula (Rucklidge et al., 2012) previously shown to be efficacious for the treatment of stress and anxiety (Carroll et al., 2000;

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