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## Research-to-Practice Spotlight: Nutrient Supplements Repeatedly Shown to Ameliorate Depression, Anxiety, and Stress Following Natural Disasters such as the 2013 Alberta Flood

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### Background

In the event of a natural disaster, many routine activities break down. One of the first activities to be negatively affected is the obtaining and preparing of nutritious food. Therefore, when stress and anxiety are elevated, the nutrition needed to maximize resilience may be in short supply. This leads to the question: can we improve resilience by enhancing people's nutrition?

It is logical to expect that enhancing people's nutrition will help them cope with natural disasters, as it has been known for centuries that minerals and vitamins (micronutrients) play important roles in optimizing brain health. For example, they act as cofactors in neurotransmitter synthesis and metabolism, where they can be rate-limiting factors (1). There is now much recent data showing that micronutrient supplementation improves mental health in both clinical samples and the general population. For instance, there are at least seven randomized controlled trials of B-Complex and combined mineral/vitamin formulations in which improvements in depression, anxiety, and stress have been demonstrated (e.g., 2-4).

The research most directly relevant to the context of natural disasters is a series of studies conducted in Christchurch, New Zealand after the earthquakes of 2010 to 2011. When a 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



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had completed the trial or not started the trial and therefore were not taking any nutrients on the day of the earthquake or the following weeks. Rucklidge and colleagues demonstrated that the individuals in this clinical sample who were taking the formula at the time of the earthquake were significantly less anxious and stressed than those not taking it (5-6). Five months later, when the Feb 22, 2011 earthquake of 6.3 magnitude struck, the same research group immediately implemented a randomized trial in the general population, comparing two doses of the same formula to a B-Complex formula previously shown to be efficacious for the treatment of stress and anxiety (7). A non-randomized group of adults from the community who did not take any micronutrients served as the control group. Those taking the nutrients showed significantly lower levels of post-traumatic stress disorder symptoms after one month as compared with the controls, and those taking higher doses reported greater improvement in mood and anxiety. In addition, the benefits were still significant one year later (8).

Our research team had the unfortunate 'opportunity' to try to replicate the findings of the New Zealand studies after the southern Alberta flood of June 2013. As our population was in crisis, use of a placebo was deemed unethical. Therefore we developed a research design to compare the psychological impact of three different micronutrient formulas in the general population.

#### Methods

Facebook, Twitter, and other media (e.g., newspapers) were used to invite adults in southern Alberta to participate in the study. Our team collaborated with the New Zealand team that had done the post-earthquake research, to ensure that our criteria and outcome measures were identical and therefore, our results could be compared directly. We screened in participants who were over the age of 18 years, and scored above defined cut-offs on the Depression, Anxiety and Stress Scale (DASS) which indicated they were symptomatic. Participants also had to be free of psychiatric medications for at least four weeks, and able to swallow capsules. Following screening and the collection of baseline information regarding demographics and symptom levels, 56 people were randomized to one of three treatments: single nutrient (vitamin D, NPN 80009658), a few-nutrients formula (B-Complex, NPN 80021762), or a broad spectrum mineral/vitamin formula (Truehope EMP, NPN 80000383). The DASS was the primary outcome measure of mental health symptoms, and it was implemented for on-line monitoring for the six weeks of the trial.

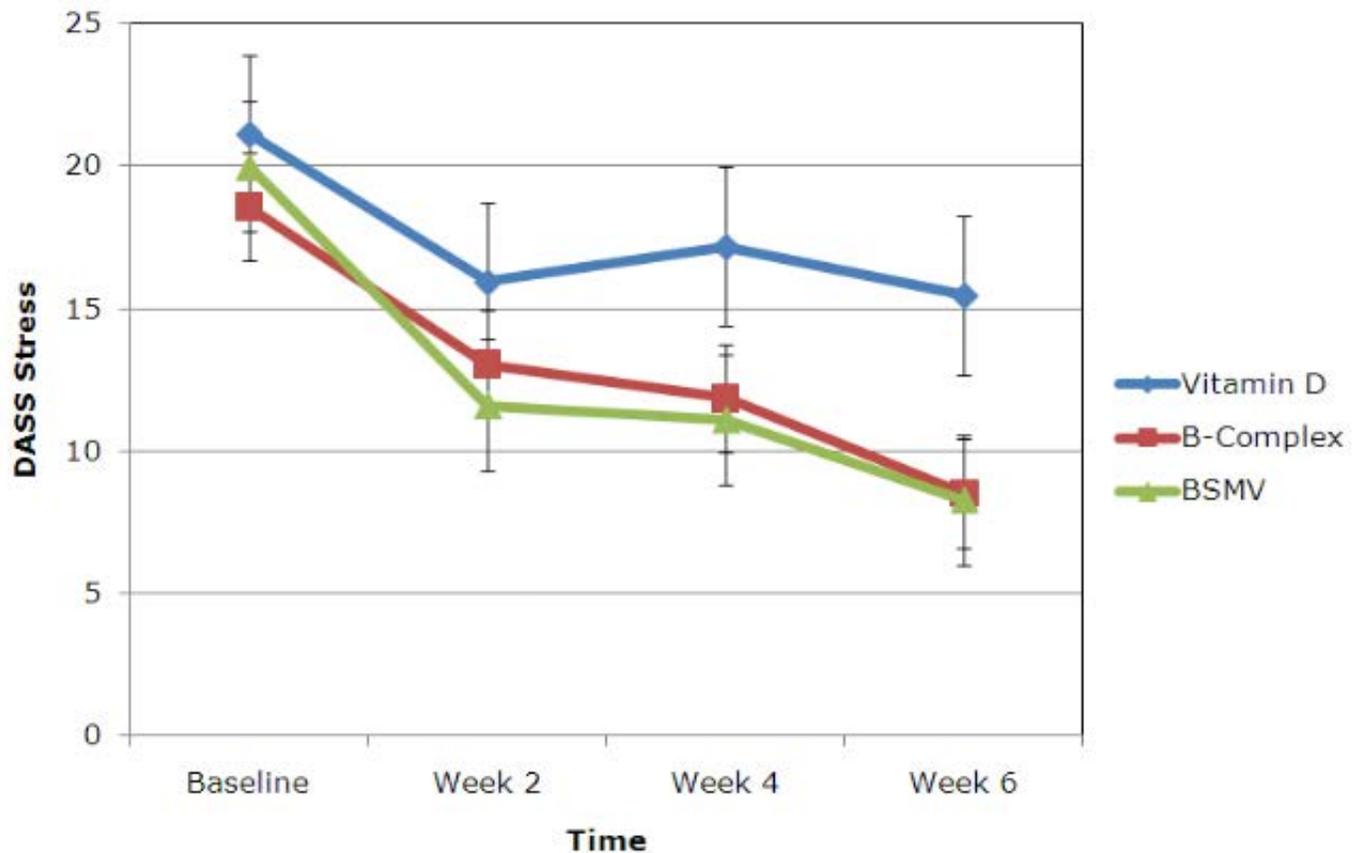
#### Results and Conclusion

The key finding of our research was that those consuming either the B-Complex formula or the broad spectrum formula showed greater improvement in stress and anxiety on the DASS compared to those consuming a single nutrient, vitamin D (Figure 1). Specifically, large effect sizes were observed on both the Anxiety and Stress subscales of the DASS and DASS Total between the vitamin D group and the B-Complex group (Anxiety,  $d=0.89$ ; Stress,  $d=0.76$ ; DASS Total,  $d=0.81$ ), and between the vitamin D group and the broad spectrum group (Anxiety,  $d=1.08$ ; Stress,  $d=0.88$ ; DASS Total,  $d=0.94$ ), indicating that the treatment effect on both



the B-Complex and broad spectrum groups was greater than the effect of the treatment on the vitamin D group. Although all groups improved over time, only medium effect sizes were generally observed for the vitamin D group, whereas large or very large effect sizes were observed for the other two groups.

Figure 1: Change in DASS Stress from Baseline to Week 6



BSMV = broad spectrum mineral vitamin formula

### Knowledge Translation

The use of nutrient formulas with multiple minerals and/or vitamins to minimize negative mental health effects following natural disasters has now been empirically supported in several research studies, across multiple continents, and in multiple disaster contexts. The next step in this work should be to convey the relevant information to individuals who provide assistance to others following natural disasters, house fires, and other emotional crises. Distributing mineral/vitamin formulas is an inexpensive public health measure that could easily be undertaken by governments and aid workers. It is especially important in areas where cooking facilities are not readily available, and could have widespread population benefits. Our team has begun contacting potential partners in the mental health community, and we have met with the members of the Calgary Emergency Management Agency to discuss next steps.

### Acknowledgements

This research was funded by a private donor fund through the University of Calgary, and the authors have no corporate financial interests. We are extremely grateful to the Albertans who participated in this study at a very stressful time in their lives, as well as to Douglas Laboratories and Truehope Nutritional Support who provided all the nutrient formulas at no cost. We also thank our study interviewers, Marsha Carnat, Amanda Loven, Marcus Kupila, Wendy Salvisberg, and Lida van den Hadelkamp.

This research was published in the journal *Psychiatry Research*, and may be accessed [here](#).

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## Other Stories of Interest: Perceptions among Alberta Healthcare Professionals of Prescription Drug Misuse

Canadian Centre on Substance Abuse (CCSA)

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Prescription drug misuse is a significant public health and safety concern for North Americans. Therapeutically-prescribed opioids, stimulants, sedatives, and tranquillizers have several harms associated with their use, including addiction, withdrawal, injury, overdose, and death.

Between 2010 and 2012, Canada was found to be the second highest prescriber of opioids in the world (2). In 2012, psychoactive prescription drug use was reported by 24.1% of Canadians over the age of 15 (1), with females reporting significantly higher usage than males. Although health care professionals play an important role in combating prescription drug misuse, little research has been conducted on their perceptions of the issue.

Recently, the CCSA conducted a survey of health care professionals to investigate opinions about various aspects of prescription drug misuse. Over 1000 physicians, nurses, pharmacists, dentists and other health care professionals in Alberta responded to the survey between November 2013 and February 2014.

**Suspected prescription drug misuse**

Health care professionals' perceptions of prescription drug misuse were influenced by drug class (opioids, stimulants, and sedatives/tranquilizers) and patient characteristics.

The survey found that health care professionals thought older patients and patients with mental

health issues were more likely to misuse sedatives and tranquilizers. Patients with chronic pain or a history of drug abuse were more likely to have been suspected of opioid misuse.

#### Barriers to identifying prescription drug misuse

Symptoms of prescription drug misuse are difficult to identify, and health care professionals reported that they lacked adequate training to effectively recognize cases of misuse.

Participants also identified several other barriers to identifying prescription drug misuse, including patient honesty, lack of communication with patients, families, and other professionals, and finally their own reluctance to discuss issues of prescription drug misuse with patients. Lack of access to a central prescription history database was identified as a major technological barrier.

#### Strategies to address prescription drug misuse

Most health care professionals felt that they did not have adequate support to prevent, identify, and treat prescription drug misuse. They felt that better access to chronic pain and mental health professionals would help prevent and address their patients' prescription drug misuse. Health care professionals also expressed a desire for clear prescribing guidelines, as well as regular education about prescribing.

#### Research outcomes and possible next steps

This study found that health care professionals perceive prescription drug misuse differently based on the type of drug and characteristics of the patient. There were both similarities and differences between the responses of the physicians, nurses, pharmacists, and dentists, which highlights the importance of studying different groups of health care professionals.

Although participants reported difficulty identifying risk factors for prescription drug misuse, they routinely pointed to certain characteristics and behaviours as potential indicators. Based on the findings of this and other research, it might be feasible to develop a screening tool to help health care professionals identify patients at risk. A screening tool would serve to reduce "abuser" stereotyping and correspondingly, improve under-treatment of patients with chronic pain.

In general, health care professionals felt unsupported, and inadequate at preventing and addressing the harms of prescription drug misuse. One way to address these concerns is by encouraging collaboration and teamwork between different types of health care professionals (e.g., physicians and pharmacists).

Improving technological support is also key to reducing prescription drug misuse. By establishing a central database for prescriptions, health care professionals will more easily be able to identify unsafe behaviours, such as prescription forgery, and double doctoring.

The complete report can be found [here](#).

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#### Did You Know...?

- In the average year, 1 out of every 5 Canadians will experience a mental health or addiction problem (2).
- When compared to the general population, Canadians with a mental illness are twice as likely to also have a substance use disorder (1).
- More than 20% of Canadians report having both a mental illness and co-occurring substance

use disorder (1).

- In 2012, the Canadian Community Survey found that approximately 168,000 Albertans reported experiencing any type of mood disorder in the past year, while close to 145,000 Albertans reported having a substance use disorder (alcohol or drug) in the same time frame (3).

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## Research Partnership Program Progress Update

### Collaborative Research Grant Initiative: Mental Wellness in Seniors and Persons with Disabilities (CRGI)

In June, the CRGI project came to an end. In total, 42 research grants were awarded, including 6 Operating Grants, 13 Seed/Bridge Funds, and 23 Ideas Funds. There were 37 research grant recipients and 282 project partners. The large size and scope of the CRGI led to a wide-reaching impact on clients, mental health researchers, and service providers.

The results of the CRGI research projects revealed six commonly occurring themes:

- A need for improved programming and increased program funding
- A need for increased education for care providers
- Continue to work toward improved quality of life for clients and caregivers
- A need to improve caregiver support
- Consider investigating alternative approaches to intervention and support
- A need to increase the use of technological innovations in patient care

All final research reports are available [online](#).

### CRGI Snapshots

Concise two-page summaries of all the Seed/Bridge and Ideas Funds research projects have been prepared. These Snapshots are intended to familiarize researchers and clinicians with current Alberta research conducted on mental wellness in seniors and persons with disabilities. You can read all the CRGI Snapshots [here](#).

### Alberta Centennial Addiction and Mental Health Research Chairs Program

#### Mental Illness and Addictions Research Chair

Dr. Katherine Aitchison has completed her annual report. You can read it [here](#).

### Recent Chair Publications

- Rucker, J. H. J., Tansey, K. E., Rivera, M., Pinto, D., Cohen-Woods, S., Uher, R., Aitchison, K. J., Craddock, N., Owen, M. J., Jones, L., Jones, I., Korszun, A., Barnes, M. R., Preisig, M.,

Mors, O., Gill, M., Maier, W., Rice, J., Rietschel, M., Holsboer, F., Farmer, A. E., Craig, I. W., Scherer, S. W., McGuffin, P., & Breen, G. (2015). Phenotypic association analyses with copy number variation in recurrent depressive disorder. *Biological Psychiatry*. [Epub ahead of print]

- Ferentinos, P., Koukounari, A., Power, R., Rivera, M., Uher, R., Craddock, N., Owen, M. J., Korszun, A., Jones, L., Jones, I., Gill, M., Rice, J. P., Ising, M., Maier, W., Mors, O., Rietschel, M., Preisig, M., Binder, E. B., Aitchison, K. J., Mendlewicz, J., Souery, D., Hauser, J., Henigsberg, N., Breen, G., Craig, I. W., Farmer, A. E., Müller-Myhsok, B., McGuffin, P., & Lewis, C. M. (2015). Familiality and SNP-heritability of age at onset and episodicity in major depressive disorder. *Psychological Medicine* 20, pp. 1-11.
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## Upcoming Events

### Canadian Psychiatric Association 65<sup>th</sup> Annual Conference

<http://www.cpa-apc.org/browse/documents/92>

October 1–3, 2015

Vancouver, BC

### XX<sup>th</sup> World Congress of the World Federation for Mental Health

<http://www.wfmh2015.com/>

October 16–19, 2015

Cairo, Egypt

### Issues of Substance Conference

<http://www.ccsa.ca/Eng/newsevents/Issues-of-Substance-Conference/Pages/default.aspx>

November 16–18, 2015

Montreal, Quebec

## Funding and Job Opportunities

Available on the [Opportunities](#) section of the website.

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